

Human nature, worth, and civilization

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For my students

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## Chapter 1 Overview of the nature of human beings

This Big History book contains a short description of human nature, human worth, and human civilization, including the origins and current ways of society, government, business, and religion. What is the same about every human being? Whenever a person is thinking, doing, or talking, that action involves love and children, spouse, family and friends, or community and justice—and little else. That is all there is to a human being, anywhere on the planet, and throughout the 200,000 years of our species—and beyond. If people raised their hand while thinking of these things, then throughout every day, nearly every person on the planet would have their hand raised. These concerns are innate to our species because we are parenting mammals and social primates. Parenting mammals and parenting love has existed for 200 million years. As does every other parenting mammal today, we live for our children.

Why are we a social species? For the surprisingly simple reason that the food of primates occurs in group-sized bundles, so they search for food as a group and then share it when it is found. The group also watches for predators. This is a mutually beneficial exchange of assistance. We expect our society to be mutually beneficial for all of us and we will react against any unfairness or injustice in any interaction within our community. We all agree that the proper behavior between the family, friends, and neighbors of our society is to do as the other did and to expect the other to do what you did. Our primate ancestors did this for millions of years. It is in our genes to exchange assistance on any task that is larger than an individual can do alone. Parenting and social groups begin with parenting and social emotions, and these become innately ingrained.

Each species of mammals has a social hierarchy, headed by one individual, for example, the alpha wolf. For us apes and monkeys, society differs from the other mammals in that the hierarchy is not based on the individual but on the extended family. A primate group does not have an alpha male, it has an alpha family. That is why we care first for our extended family members and why our extended family cooperates as a unit. We have done this for millions of years.

Our basic emotions are happiness, sadness, fear, disgust, surprise, anger, sympathy, pride, embarrassment, guilt, and shame. Still today, we are each born with these same emotions—and no others. Our emotions are millions of years old, and they are innate. You are not taught to feel these emotions, nor do you invent them as you age. Many of these emotions occur only in social situations. We have names for many emotions that are gradations of these. This small set of emotions developed millions of years ago as they proved to be the best response to situations that continually occurred through thousands of generations. These emotions are still evoked by events that occur in today's society just as they did long ago. For example, you might feel as if you get angry for thousands of reasons, but you get angry only when you feel that you have been wronged or treated unfairly or unjustly. If you think of the last time few times that you were angry, you might remember the specific injustice that caused your anger. *We get angry for no other reason.*

We have been speaking in a full language for only 70,000 years, but facial expressions are millions of years old and have been used to communicate our moment-by-moment emotional state. By the second, mom and dad read our emotional state like a book. Still today, around her sixteenth birthday, girls become adept at reading the emotional state of other persons.

Every human being that has ever lived, anywhere on the planet, shares these feelings and emotions. Others are not "toy people," but thinking and feeling human individuals who are just like you and me in that they share the same desires and concerns for love and family and for community and justice. Each of us hopes for a pleasant future. We simply want to laugh and joke with our spouse, family, friends, and neighbors, raise children, and pursue life and the limits of our individual and combined talents and passions.

The DNA of a person has about 20,000 genes. About half of our genes produce cells, about half produces arms and legs and livers and such, and about 2% makes us human. Of those 20,000 genes, only about thirty determine our outer appearance, including the shape of our nose, ears, lips, cheeks, and jaw and our hair color, eye color, and skin tone and such. Two human beings share 99.9% of their genes and so are only 0.1% genetically different. This is true whether or not those two individuals come from the same hometown or come from opposite sides of the Earth, and whether or not they are of the same race. Two siblings differ by half of that 0.1%. This also means that a stranger from the other side of the planet is only twice as different from you as is your sibling. Gathering five persons from throughout the planet produces little-more variety than gathering five siblings.

We human beings are a bunch of genetic clones—with a range of personalities. We share identical feelings, needs, and desires. How do we differ? Only in cultural details, such as the way that we greet others, celebrate births and weddings, and make food and such. As we grow, we learn our local culture with fierce conviction. Culture consists of our recipes for how to do everything in life, and it involves some 40,000 details that fit in the brain of each person (so we are each very smart). As we learn our local culture, we strive to do exactly as our group members do, and we might ridicule anyone doing something differently. This can be expanded into the bigotry and racism that we sometimes have. We end bigotry and racism by teaching grade-school children some details of the cultures of the world and that it is ok for the world to be filled with thousands of cultures. We will stop teaching our children to ridicule and insult each other and find something else to joke about. We will stop stating skin color when we talk about another person. As it is said, out of the entire universe, all we human beings have is each other.

What is the same about each of the world's religions? The Golden Rule. Onto this is tacked thousands of cultural details describing what to say, what posture to take, and how to hold your hands and such.

When and why did religion expand from nature deities to moral instruction? How has everyday life changed as we switched from being gatherer-hunters to village farmers and then to factory workers? The answers are written inside this book.

Have you wondered:

- What are the laws of nature and how many laws are there?
- Where did your atoms and molecules come from?
- How did molecular life begin and then evolve into worms fish, amphibians, reptiles, mammals, primates, and humans? What are the differences among these animals?
- What are our basic emotions, and when and why did they originate?
- What is the same about every human being?

- How did we get from the Big Bang to bacteria and on to religion, democracy, and globalization?
- What is life like for gatherer-hunters?
- When did we first become farmers and first build cities, and what was life like at those times?
- What was life like in Ancient Mesopotamia, Ancient Athens, Medieval China and Europe, 19th-Century New England, and in the U.S. during the 1920s or the 1980s?
- What was the Industrial Revolution and how has it changed our lives?
- What are the Hindu, Muslim, Confucian, Jewish, Christian, Buddhist, and Humanist religions and world views?
- How have our wages, infant mortality rates, life-spans, crime rates, and poverty and inequality rates varied through the ages?
- What are the biggest economic and social secrets in the U.S. today?
- What are some meaningful goals and priorities for our civilization and how can we measure the success of our attempts to reach those goals?

Rather than waiting for college, every high school student should learn these things about human nature and about human society and civilization.

## Overview

What is the same about every human being? Whenever a person is thinking, talking, or doing, that action involves love and children, spouse, family and friends, or community and justice—and little else. That is all there is to a human being, anywhere on the planet and throughout the history of our species. If people raised their hand while thinking of these things, then throughout every day, nearly every person on the planet would have their hand raised.

We are not the first generation to have these actions. These actions are innate to our species. Through thousands of the earliest generations of parenting mammals and social primates, these actions resulted in individuals who were more likely to live long enough to have children—and to raise those children until they, in turn, can have children of their own. That is why these actions became innate.

What is meant by innate behavior? Those behaviors are in our genes, they are automatic, and they do not have to be learned. Some simple examples of innate things include breathing, sneezing, coughing, and yawning. When we are surprised then our jaw drops. This reaction is innate, not learned. The people of every culture do this. When chimpanzees are surprised, their jaw drops, too, and this indicates that the reaction began before our evolutionary lines diverged. A toddler innately follows mom around, holding on to her leg, and mimics everything that others do. The toddler does not have to be taught to do this—it automatically happens. Parents automatically and innately care for their newborn child. We are born with a small set of emotions that are innate reactions to those circumstances that repeatedly occurred through thousands of generations. We do not learn emotions, these reactions are innate just as breathing is innate.

What is behavior? While Santa Claus checks for “good and bad behavior,” scientists instead



use the term “behavior” to refer to activities such as feeding and parenting. For all mammals, parenting behavior includes cleaning and grooming, transporting, retrieving, feeding, defending, babysitting, and teaching. You have seen each of these parenting behaviors in cats and dogs, and they occur in every other mammal, from aardvarks to zebras. Notice that “good” behaviors are simply those that are the most common when plotted in a bell-shaped curve.

Offspring are taught by example as they watch their mother to learn everything needed in life, including which foods to eat, how to make sleeping places, and the details of interspecies behaviors. Still today, we humans learn most effortlessly simply by watching and then doing. This practice is older than language. We say, “watch, do, and then teach.”

Individuals vary in height and resistance to specific diseases and such. Variations in the traits or genetic makeup of the individuals of a species occur and are tested for usefulness by the environment of climate, predators, and prey. The environment does not produce these changes, it only tests the usefulness of the existing variations in the individuals of the species, so this is said to be evolution by natural selection. The useful traits continue to get passed on to future generations simply because future generations are then more likely to occur.

As the environment and hence the requirements of the best-match slowly change through many generations, there will be a shift in the average characteristics of that species. After several such shifts, the species will have changed significantly: it will have evolved. Whenever you hear the word *evolution* you should think of “changes in the most-appropriate traits due to changes in the environment of climate, predators, and food.” Evolution is about becoming better matched to the environment and is not about becoming stronger or more complicated. It is not about “the survival of the strongest.” Behavioral and emotional traits are also passed on to successive generations and are subject to the same rules of evolution by natural selection.

Evolution is the answer to every question in biology, and it is behind every biological process. Not only limbs and livers but emotions and behaviors are also selected by the environment in the process of evolution. For example, sympathy and empathy develop at the same time that a species becomes parenting.

DNA molecules are inside the cells of every living creature, and DNA contains the chemical instructions that grow a creature from surrounding chemicals and food. When you place the seeds of a rose bush in contact with the chemicals in dirt, air, and water then the DNA molecules of the seed will chemically react to those external molecules by producing the chemicals that grow the seed into a rose. When you feed milk to your baby, DNA molecules chemically convert the molecules of milk into the molecules of the bones and organs of your growing baby. Each DNA molecule contains billions of atoms. (In this book, “billion” represents one-thousand million rather than one-million million, as occurs in some number systems.)

The chemical operations of DNA occur through the electric force. A block of any material, including DNA included, consists of zillions of atoms, each electrically pulled by every nearby atom. Each atom moves in the direction of the net force, shifting its location until it arrives at a place where the net force on it is zero. In this way, the size and shape of every molecule is electrically determined, and the shape of a molecule determines its biological function. A block of iron has its cubical shape because each atom within the block has moved to the place where the net force on it is zero. If one atom is displaced, the net electrical force is no longer zero on that atom so it will be pushed back to its equilibrium location. That is why a spring pulls itself back to its equilibrium

length. Chemical interactions and processes occur through the electric force.

DNA molecules electrically replicate (duplicate) themselves, DNA molecules grow an individual by electrically constructing the chemicals that comprise the individual, and DNA molecules operate an individual as each specific chemical imbalance within the body causes DNA to produce a chemical response to restore the balance. (Ever since life began on the Earth, chemical signals have been used in the operation of multi-component creatures.)

In response to specific situations, DNA builds adrenaline, oxytocin, and the other chemicals associated with each of our emotions. Our emotions are just as much a part of us as are our livers. For example, DNA molecules produce adrenaline molecules that provide the burst of energy that occurs in “flight or fight” situations. Dopamine is produced in our brain when we experience pleasure. Oxytocin occurs in our brain while we are falling in love or feeling love. In the seconds after child birth, a microgram of oxytocin bonds parents and offspring for life. This occurs in all mammals species. While petting your dog and feeling love for it, your “heart twirls” and measurable amounts of oxytocin are being produced in your brain.

Brains are as old as the fish and share much in common throughout a wide range of species. For example, MRI studies find that brain regions of people, dogs, and dolphins are similarly activated while anticipating food. MRI studies can be used to show that the brain’s pleasure center is activated when any animal is eating food. That’s why we eat food.

Once the first self-duplicating molecule developed on the Earth, it would naturally occur that any change making that molecule better able to duplicate itself would result in increased numbers of that molecule. Evolution began with the first self-duplicating molecule. As a DNA molecule is duplicating itself, mistakes rarely happen, and when they do happen, the change usually makes an individual less able to function. Sometimes, an altered DNA makes an individual that is better-able to function, and this improvement is passed on to future generations. The rate at which alterations occur can be used to calculate how many years have elapsed since one species split into two. Life consists of the chemistry of the self-duplicating, self-directing, and self-growing, electrically interacting DNA molecules, and evolution consists of the changes that occur through the generations.

When chemicals A and B are placed into a container, the mix will always result in the same final chemicals, say C, D, and E. These chemical reactions will always occur and will always produce the same end result—in fact, they must. It is the electrical force that binds atoms and molecules into those structures that are electrically able to form.

Most of the one-hundred types of atoms combine to form only cubical structures, but groups of carbon atoms form into rings of rings that make sheets and crumpled proteins that have biological functions and result in creatures that ponder themselves. As Rebecca puts it, one difference between living and non-living matter is just a simple divergence of atomic structure. DNA is a special molecule that electrically builds and operates individual creatures, and it is self-replicating. Since most collections of molecules from rocks and such, we see that we human beings are a lucky bunch of atoms.

The same set of twenty amino acids occur in all of the Earth’s living creatures. Each section of DNA produces one amino acid. Various amino acids are combined to form the larger molecules that are proteins, enzymes, and hormones. Proteins are combined to make the tissues and organs comprising a living creature. Some proteins include hair, nails, muscle, and spider webs. In this way, DNA builds proteins, cells, tissues, and organs such as the heart, lungs, brain, bones, arms, and legs.

From head to toe and backbone to skin, a human being has a couple dozen organs, a couple hundred bones, about five hundred body components including muscles and such, and eleven organ systems. These are the circulatory, nervous, muscular, skeletal, reproductive (which has two varieties), urinary, digestive, respiratory, lymphatic, cardiovascular, and endocrine systems. Each organ within our body contains cells organized into four types of tissue, which are epithelial, connective, nerve, and muscle. Epithelial tissue forms the lining around organs and also forms skin. Connective tissue includes ligaments, tendons, cartilage, bone, blood, and the fibers of organ walls. This tissue connects, supports, and protects other tissues. Nerve tissue forms brains, transmits signals to muscles, and senses hot and cold and other exterior conditions. Muscle tissue includes the four varieties that i) continually move and support bodies, ii) flex when signaled to move particular bones, iii) continually beat hearts, and iv) the smooth variety that contracts on its own to move the internal fluids of bladders, lung bronchi, and the walls of the blood vessels. Blood and nerve signals flow within every organ.

The organ systems composing our own bodies have accumulated through the sequence of stepping-stone animal forms that have developed through the 750 million-year history of multi-cellular creatures, including non-boned invertebrates with eyes and a sense of touch, fish with bony skeletons and hearts and brains, amphibians that left the oceans for the land, reptiles that lay hard-shelled eggs, parenting mammals, and social primates. We humans share organ systems, skeletal structures, and senses with these other animal species.

The vast majority of our genes produce our bodies with cells, arms, legs, eyes, hearts, and livers and the other organs. Every animal species retains or inherits its DNA from ancestral species. The same genes produce eyes in either a fly or a mouse. Additional genes make the eye of a mouse different from the eye of a fly. Your own DNA, and that of every other species on the earth, is a direct descendent of the first self-duplicating molecule that developed some four billion years ago.

Scientists have cataloged some 6,000 species of mammals, 9,000 species of birds, and about one million insect species. All together, more than 1.5 million animal species have been studied, but this is only a fraction of the estimated ten million species that exist on the planet. For each species that exists today, about one hundred have come and gone in the past.

Scientists determine the time at which each fossil species appears and then later disappears. This reveals the time-sequence of changes in plant and animal species. Each fossil skeleton is like a snapshot of the development of a species. A series of snapshots forms a movie. The observed time-sequence of small changes that have occurred for each species shows that they are evolving in time. Changes in species occurs through changes in genetic mutations or in response to changes in predators, food, or climate. A species typically exists for about one million years before becoming extinct but some species last one-tenth or even one-hundred times that long. Through the 750 million years that have elapsed since multi-cellular life first appeared, somewhere between 200 and 2000 species-sized changes have had time to occur and to evolve bacteria into people. This means that we human beings might be model number 1000 in the Earth's multi-cellular life forms. Some of today's species might be model number 200 while others might be model number 2000.

It was previously mentioned that two human beings share 99.9% of their genes. It is also true that humans and chimpanzees share 98% of their genes and that humans and mice share 85% of their genes because most of these genes are used to make lungs and livers, and arms and legs and such. For example, less than 2% of the genes of a mouse occur only in mice, 14% of its genes are in

common with other mammals, 6% is shared with other back-boned animals, 27% with other multi-cellular creatures, 29% is shared with the eukaryotes, which are single-celled creatures having a nucleus, and 23% are shared with prokaryotes whose cells have no nucleus. This means that about half of our genes produce cells, about half produces arms and legs and livers and such, and about 2% makes us human.

We have a range in personalities. Some of us are adventurous while others are cautious, some are organized while others are messy, some are outgoing while others are reserved, some are sensitive while others are detached, and some are nervous while others are confident. With a set of ten such yes-or-no categories, there are one-thousand ( $2^{10}$ ) possible combinations. If there are one-thousand personality combinations, then one in one-thousand human beings share your combination and are your “personality twins.” Your combination-twins are in every city and on every continent. This means that a stranger has a one in one-thousand chance of having your personality combination. Of the eight-billion ( 8,000,000,000 ) persons on the Earth, about eight million ( 8,000,000 ) of them match your personality combination.

How are we human beings the same? We are a bunch of 99.9% genetic clones, and we all agree that life involves love and children and spouse, family and friends, community and justice—and little else. We share identical feelings, emotions, needs, and desires—so there are no “toy people.” We show a range in personality. How do we differ? Only in cultural details, such as the way that we greet others, celebrate birthdays and weddings, and make food and such. These cultural details are minor things tacked onto our genetic frame. All persons are human beings no matter how they celebrate birthdays.

Culture consists of a group’s recipes for how to do everything in life, and includes some 40,000 details that take decades to learn. These 40,000 details fit in your brain, so there are no “stupid people,” nor “simple people” because even the gatherer-hunter and cave painter’s culture consisted of tens of thousands of details. Our big brains are meant to hold and to invent culture, and invent we do. For example, if you ask someone how to fold a shirt the night before a wedding, someone will think of an answer that might be copied for centuries. Weddings consist of many cultural details, including rings, the exact music, and walking in precisely the right way. If you ask members of one culture why do they throw rice at a wedding, they will answer “Because it has always been so, and to do otherwise risks everything.” In about half of the world, red is the wedding color while white is the wedding color in another half of the world. The [white wedding dress](#) became the new standard only around the year 1950, but we assume that it has always been so.

It takes a newborn about twenty-five years to learn the local culture. The twelve-year-old has learned about half of these details and might become the “know-it-all” who speculates freely on the unknown half. It takes a lifetime to learn one culture, so it is hard to fully understand a second culture, and it takes a lifetime to learn the details of one religion, so it is hard to fully understand a second religion.

What is the same about each of today’s world religions? The Golden Rule is the crucial point of each of them. Onto this is added thousands of cultural details describing, for example, exactly how to stand, walk, talk, and sing. Those of us who are Christians say “Do unto others as you would have them do unto you.” Those of us who are Buddhists say “Treat everyone as if they are you” and that “The group is important, not one individual.” Islam teaches one to “Love for your brother what you would love for yourself,” and Confucianists say “Before you act you should apply the personal test:

how would you feel yourself? You can find the answer in yourself." If you simultaneously asked persons from each of our world religions to state our guiding principle, they would answer "The Golden Rule" in unison.

Culture can not be unlearned or too-greatly changed later in life. For me, my view of the "correct" world froze in 1976 when I was eighteen years old. When I see a movie that takes place in 1976, I see the cars, homes, fashions, occupations, hair styles, utensils, and decorations and think "This is the way that the world is supposed to appear."

You can take a newborn child from anyplace on the planet, and plop him or her into your own family. This newborn will learn your culture with fierce conviction and think that all other cultures are "different and strange." Since there has been little change in our biology, you could even take the newborn from 50,000 years ago and he or she would still learn your local culture and be just as likely to be a fine engineer, artist, or surgeon as any other newborn from anyplace today.

As we grow, we learn the local culture with fierce conviction, and ridicule anything "different." This fierce drive to become the local culture may be all that is behind the bigotry and racism that we sometimes have, but in turn, this means that we can end bigotry merely by teaching our children that it is ok for the world to consist of many cultures, each doing small things in slightly differing ways. We end racism and bigotry by teaching sufficient details of other cultures to children throughout grade school.

Through the last 200,000 years, culture has been very local and differed for every group of persons. There have been 10,000 cultures around the world, and all are equally valid and strange. Today, culture changes a little every one-hundred miles or kilometers and every one-hundred years. One culture, in a 500-person village or in a five-million-person city, can not decide that theirs is "the only right culture" and demand that everyone else in the world either conform or disappear.

We, the human beings of the world, will stop teaching our children to ridicule our fellow human beings just because their culture or the shape of their nose is "different." We will instead find something less deadly to talk and joke about. In fact, we will stop teaching our children to state skin color whenever referring to another person. Every human being agrees that the most beautiful thing in the universe is another person. Since our daily interactions are now global, we will now be fully tolerant and even celebrate each other. The human in me greets the human in you.

Fully developed speech, consisting of thousands of words, began only about 70,000 years ago, which is indicated by the sudden appearance of art throughout the world, but we have been a monogamous species, falling in love with a lifelong spouse, for more than one million years. All without speaking sentences. For millions of years, before our hominid ancestors could use sentences, we had been communicating our emotional state using innate facial expressions. Facial expressions are older than words, and are older than the dispersal of human beings around the planet. We primates have been recognizing faces for millions of years but we human beings have been naming individuals for much less time. Still today, our brains are better equipped to recognize faces than to remember their names.

As toddlers, we acquire language by carefully watching what our family and group members are doing and listening to them speak as they are doing it. Sue Savage-Rumbaugh explains that the toddler is tuned to the many contextual and gestural clues that accompany spoken words. For example, the toddler notices that every time a person leaves he or she says "bye." The actual sound or word that is made does not matter. It is different in every place around the planet. We could just

as well communicate the departure by tilting our head, clapping, or pulling our ear. The child would do the same. The toddler also notices that every time a ball is held, a certain word is said. Within a few years the child has noticed several hundred such pairings of words and events or objects. Children learn by hearing the words that accompany actions.

While learning language, the toddler spends hundreds of hours learning to manipulate the seventy-five muscles that make our tongue, throat, and lips alter puffs of air to produce strings of alternating consonants and vowels. Children soon take the production of speech for granted in the same way that they take breathing for granted. We speak effortlessly and forget how complicated it really is. By the way, it also took a few hundred hours of effort for you to learn to walk, dance, throw, catch, or do algebra and such. Once learned, these things are “automatically” done with little thought. While we are struggling to learn, we feel a tiny pain in our head as new neuronal connections are being made in our brain. Those new connections are the new knowledge. We are changing our brain while we learn.

We have an innate predisposition to learn and to use complex language but the specific form of that language is not preset within our genes. We might learn either to speak Farsi or to sign Italian. It has also been found that if, during childhood, we are not surrounded by other people and so do not have the opportunity to learn language by the age of ten or so, then we will never learn language. Similarly, we also have an innate predisposition to form culture, but the details of that culture are not genetically predetermined.

We have an “inner voice” that automatically produces the word to accompany the sight of every object—whether we want it to or not. Persons who are deaf at birth and then learn sign language during childhood will develop an inner-signer rather than an inner-voice. We feel as if we cannot think without internal language, but surprisingly, after an entire thought has developed within our brain then our brain next produces the words needed to vocalize that thought. Words are an afterthought. MRI studies find that the same part of our brain that processes word order also processes the order of steps needed to complete tasks using tools.

Before fully spoken language existed, our hominid ancestors could partially communicate using hand-gestures. Still today, many of us paint meaning with our hands. For some especially expressive persons we might say “If you tie his hands then he could not speak.” Gesturing is so ancient that some still have worldwide meaning. For example, palms down always means “no,” palms up means “what or why,” and hands akimbo on hips means “waiting.” Such gestures are older than the human dispersal out of Africa. It is likely that [Mitochondrial Eve](#) and [Y-chromosomal Adam](#) made these same gestures.

The human voice can make about one hundred different sounds, including the clacking sound that you make as you pull your tongue away from the roof of your mouth. The language of some peoples, including the !Kung, make use of this clacking sound, which is written with the exclamation symbol. Each of the world’s 6,000 languages put to use a subset of those one-hundred, possible sounds. Today, English and Latvian use very similar subsets.

We use our lips and tongue to alter puffs of air to produce a series of alternating consonants and vowels that bracket words and make a sentence, which is a complete thought. Many lip-tongue combinations produce, for example, a “k” sound, and each toddler finds his or her own combination. You might notice that some of us stick our tongue out when producing the “th” sound.

And what do we human beings use our precious language to most often talk about? Studies

find that two-thirds of our conversation is used to talk about each other. We are social creatures. Of the one-billion words in the dictionary, the most common words used in our big-city, social but rushed existence include person, child, man, woman, time, day, year, week, thing, world, life, and hand. Six-year-olds can [speak](#) 2,000 words and understand 20,000 more. All this fits in our brains.

Each language is a local agreement and has a complicated grammar. The language rules of a gatherer-hunter is as complicated as the rules of your own language. Through history, political systems have spread their local language across wider regions.

Nearly all of the languages of today's Europe and India have evolved from the ancient Indo-European language. Two languages diverge when, for example, 'p' sounds evolve into 'f' sounds and convert "pater" into "father." Surprisingly, Lithuanian has remained close to Sanskrit, and the languages of today's Finland and Hungary still have much in common.

About one-third of today's English alphabet can be traced directly back to Ancient Egypt. For example, alpu was the word for ox in ancient Egypt, and the alpu symbol was drawn as an oval head with two horns. In Ancient Greece, the alpu symbol became alpha, and was drawn with two curly, ox horns. The Greeks put the alphabet into its finished form of consonants and vowels. The alpha next became the Latin A, which has a triangular head and two ox horns facing downward.

When traveling in foreign countries, I can not believe the rate at which one person produces funny sounds and another person comprehends them. Each local group of people have a mutual consensus on the sounds of speech that will communicate every specific word. Our use of language is a large part of being human. But here too, we are not all that different from other primates and mammals.

The bonobo chimpanzee [Kanzi](#), learned hundreds of words the same way—by being surrounded by people since birth and watching and listening to them as they are doing things. Kanzi understands spoken English. For example, in the kitchen, Sue can say "Kanzi, wash the potatoes and put them in the pan" or "put the green box in the refrigerator," and he will. Kanzi also communicates with a lexigram board. When new scientists join the team working with Kanzi, it takes them one year to learn the hundreds of symbols on the lexigram board. Kanzi understands several hundred spoken words. Other bonobos, including Panbanisha, acquired language and many other skills just as Kanzi had done.

Kanzi also makes stone tools, plays video games, blows out the candles on his birthday cake, writes symbols, expresses anger and sadness, protects others, and does countless amazing things. Kanzi is one of many apes who has been taught to communicate using symbols or sign language. For example, [Koko](#) was a gorilla who was taught sign language. When she was first given a radish to eat, she called it "cry-hurt fruit." Koko was close friends with a kitten, whom she named All-Ball. When All-Ball was killed by a vehicle, KoKo expressed her sadness and loudly cried. In the wild, chimpanzee mothers have been seen to carry their deceased infant for days before giving up hope.

General mammalian behaviors include feeding, play, communication, relations with others of the same group and with other groups of the same species, defense against predators, dealing with the climate, reproduction, and child rearing and training. For the last 200 million years, these have been the daily activities of our direct mammalian ancestors, as they are for us human beings still today.

Mammals have a child rearing strategy in which they protect, teach, and rear their offspring through infancy until they in turn become old enough to have their own children. We have seen that

natural selection means that those individuals whose traits are better matched to their environment of climate, predators, and food will be more likely to live long enough to have offspring. For mammals, the most-genetically fit individuals are those who are matched to their environment *and* successfully rear their children to the point that they in turn are prepared to raise their own children. Mammalian parenthood is a large part of the human animal. Reproduction is of utmost importance in the continuation of a species, so it is surprising that the process of reproducing is not innate but must be learned.

Mammals are also much better at communicating than are reptiles. They make it obvious to each other that they are friendly, are going to attack, or that they are happy, sad, or angry. I can understand the face and posture of a growling dog but communicate little with insects or reptiles. We human beings have been using facial expressions to communicate emotional states for millions of years but have had full language for 70,000 years or so. Scientists have found that dogs are able to read some human emotions.

There are 6,000 species of mammals. Every furry creature, from mouse to giraffe, is a mammal. Mammals are parenting creatures. Human beings, too. We live for our children. We will do anything just to see them smile. Parenting behavior and parenting love developed simultaneously, neither occurred without the other. It was not the case that the first parenting mammals acted as parents for hundreds of generations and then the emotion of parental love was later added. What is the meaning of life? Parents easily answer "My children." Children are our greatest joy. Notice that we receive happiness only from other people, not from shoes or phones and such.

Throughout the 200,000 years of our species, parents have been bouncing children on their knees, encouraging toddlers to walk and dance, preening their face and hair, hugging them every few minutes, lovingly touching their cheeks, adoring them and their light weight while lifting them and carrying them on hips and shoulders, lovingly gazing at them with that contented facial expression, and have been ruled by the youngster who looks up at them with those big eyes. Every human being on the planet does the same. (Eyes are big because the newborn has fully grown eyes and ears, which are needed immediately in life. The 1200-Hertz tone in an infant's voice matches the 1200-Hertz peak in mom's ability to hear. The newborn has no kneecaps, but can drink and breathe at the same time.)

Fish, amphibians, and reptiles are rarely parents. Some exceptions include the female rattlesnake who protects her offspring for their first few days of life. A female alligator protects her offspring for one or two years. In a few species of fish, babies will hide in the mouth of a parent when predators approach. Birds are parenting creatures.

For millions of years, the priority of every day has been to feed the youngsters. Adults are persistent in getting youngsters to eat. If this were not done then the species would end in a few days or weeks, so adults have an innate urge to feed the youngsters. When adults see children eating then those adults feel that all is right in the universe.

For each mammalian species, the social size is determined by the available food packet size. There are three general approaches to finding food. First, if the food of a species is found in widely scattered places and occurs in such small quantities that only a single individual can make a meal of it, then that species often consists of lone hunters such as coyotes or house cats. Second, if food sources are widely scattered but occur in group-sized bundles then the members of that species typically forage as a group and then share the food when it is found. This is the approach typically



adopted by us primates. The third case occurs when food is so abundant that it is within each member's constant reach. It then plays a smaller role in their behavioral interactions, as happens for the grazing mammals such as gazelles and horses. That makes just three ways of finding food for the 6,000 species of mammals.

Why are we a social species? For the surprisingly simple reason that the food of primates occurs in group-sized bundles. We search for it as a group and then share it when it is found. Our ancestors did this for millions of years. Still today, we have an innate predisposition to eat together, and eating is much of our social interaction. For primates, we innately exchange assistance looking for food and watching for predators. This is a mutually beneficial exchange of assistance. It is in our genes to exchange assistance on any task that is larger than an individual can do alone, and we are adept at identifying which chores qualify. We human beings innately form social groups without having to think about it. That's why we live in groups.

The continued well-being of each group-member depends on the continued functioning of the group. If the group ceased to exist then each member would again be going it alone and be less likely to survive. A lone primate is less able to find food and watch for predators and might soon be eaten by predators.

Still today, we social primates are properly upset by the news of any disruption, from a fistfight to a crime, of the society on which we are all mutually dependent. But in the U.S. only, the local news insists on listing every upsetting crime (out of the local region containing 20 million persons) because our strong emotional response "keeps us watching the channel." This enables the owner of the news channel to sell lots of oatmeal commercials, but misleads us into thinking that everyone is a criminal. The news channels in other countries do not list the region's crimes. How many of us commit murder? It is about one in 100,000 persons per year. In the most unjust cities, this number can rise to 50 in 100,000. Numerically, a gatherer-hunter group containing one-hundred persons would have a murder every one-thousand years. How many persons commit more than one murder? It is about one in 100 million. If we were all murderers then our species would have ended in its first generation.

For us humans today, to "know" a person is to be able to predict his or her behavior in various situations. We are naturally adept at doing this. It is something we do effortlessly because our brains have evolved to perform this specific task. For a few million years, our hominid ancestors have lived in groups of 50 or so individuals. This is the reason that our brains have the capacity to know well that number of persons.

For each social species, the members of a the group create a dominance hierarchy to avoid fighting over food and mates and such. The hierarchy is determined during encounters that begin among juveniles. For example, if there are eighty individuals in a group then each has an agreed-upon rank in the hierarchy. Whenever two group-members approach an item of food then the higher ranking individual takes the food and the other moves on. For example, whenever individuals seven and eight approach the same item of food, number seven will eat that food. The hierarchy avoids fighting that might end society and cause group members to again be going it alone in the wild. If each encounter instead resulted in a fight to the death then the species would quickly disappear. If those eighty individuals instead paired up one day and fought to the death then there would be just forty group members the next day. If those remaining members paired up the next day and fought to the death then there would be twenty group members. Through the next week, the sequence of

numbers would be 80, 40, 20, 10, 5, 3, 2, and then 1. This means that the group would have eliminated itself in just one week. Group members especially avoid fighting to the death. This is innate behavior as genes “know” not to fight to the death. It is rare for the members of a species to fight to the death. We humans do not fight to the death. We have had no claws or fangs for several million years so we know that we have not been fighting to the death throughout that span of time. To murder requires a weapon. If 8.5 billion ( $2^{33}$ ) persons paired up one day and fought to the death, how many days would elapse before there was only one person left alive? The answer is that we would all be gone in thirty-three days. Our genes “know” not to fight to the death. We innately know to stop fighting else society dissolves and we are again going it alone and might soon be eaten by predators.

There are a few hundred species of primates, which are monkeys and apes. The apes include gorillas, orangutans, common chimpanzees, bonobo chimpanzees, and human beings. One difference between apes and monkeys is that a monkey’s arms and legs make only a forward and backwards motion. No sideways movement can be made. They can not dangle and swing in tree branches. Instead, they run through the trees more in the manner that a dog runs. Apes differ from monkeys in that they have developed a rotating shoulder that enables them to raise their arms out sideways when grasping a tree branch. You make this motion with your arms as you do jumping-jack exercises, a monkey can not. The apes rotating shoulder was followed by the development of elbows and wrists. You can turn your palm right side up or downward. Your dog can not do that, neither can a monkey. Monkeys have tails, apes do not.

How do we primates differ from the other mammals? Primates recognize the members of the extended family, and the extended family cooperates as a unit. Primates form a hierarchy of extended families, not of individuals. When two extended families approach food, all members of the dominant family eat first. The non-primate mammals do not do this. Primates are about 80 million years old, so the hierarchy of extended families might be 80 million years old. Your extended family includes cousins, aunts, uncles, and grandparents and such, and the extended family forms a large part of human nature. Still today, you know that your cousins, aunts, uncles, and grandparents are special persons. You will assist them first and they will come to your assistance. While the typical mammalian hierarchy results in interactions among individuals, without regard to family, the primate hierarchy results in interactions among extended families. The most-dominate extended family has the greatest number of healthy mothers and children. It’s like saying “Your family should eat first because you have the greatest number of healthy mothers and children.”

The nuclear family forms a large part of human nature. Still today, parents tell their arguing children to hug and make up so that there is no disruption in the family.

Recognizing the individuals of a group and knowing who is related to whom and who will come to the assistance of whom, promotes bigger brains, sympathy, empathy, and self awareness. Complex social systems promote the evolution of bigger brains.

Our brains are made for social reasoning. For example, we can readily figure out that Kyle is trying to get Bryan to interfere in the relationship between Isabella and Jake because his third-cousin's ex-roommate Kari thinks April should get even with Jake for yelling at Jeff, who is her friend. It is not as effortless for us to do arithmetic, like dividing the number twenty-two by seven.

We primates have been eating eggs for millions of years, making us very sensitive to the

sulphurous odor of rotten eggs. Carl Sagan explains that we also share a fear of snakes and a fear of falling from heights because those are two of a primates biggest worries. Notice that phobias involve only certain things that have been around for millions of years, such as spiders and water. No one ever develops a phobia of cars.

The family and social roles of a person changes as he or she ages through the decades. To remain alive, the toddler sticks with mom and dad. At about age ten, we start to have friends and expand beyond our parents to begin our social lives. The ten-year-old is supposed to look out for Number One, be a little selfish and unaware of others, and not gamble on uncertain foods. This is in our genes because it makes the ten-year-old more likely to live long enough to have children. The sole goal of genes and biology is for the individual to live long enough to have children because that continues the species. Older persons put much effort into getting younger persons married and raising children. Near their sixteenth birthday, girls become fully aware of the emotional state of everyone around, but boys take several more years before making this switch from “Number One to Everyone.” For example, Bill and Bonny see Tim and Tina arguing. In reaction, Bonny says “Oh no, I hope that Tina doesn’t feel bad,” but Bill says “I hope that she dies,” and “It would be cool if the TV suddenly exploded.” An emotional situation can make all the girls gasp in unison while the boys ask “What happened, Why did you all gasp at once?” While boys might discuss the theoretical existence of emotions, they still feel all emotions, and girls read their emotional state like a book. (How can you tell females from males? Females have longer necks.) By the second, mom and dad read the emotional state of their children. By their late teens, children are ready to be fully independent of their parents.

During the decades of being grandparents, we innately look out for all of our descendants, in every generation. Humans are one of the few mammals that have menopause, which enables grandma to better look-out for all of her descendant generations simultaneously rather than giving birth again and concentrating her efforts on raising that one more child. A person’s priorities in life innately change through the decades, without having to be taught.

Some 500 generations or 10,000 years ago, the first farmers and herders had to learn by trial and error which plants and animals could be domesticated. They also learned about the necessary procedures of crop rotation, when to plant and in which type of soil, and how much seed to keep for the next year. News of a successfully domesticated plant or animal spread quickly. For example, goats are wild in Iraq but were soon found in Syria and Palestine where they were not wild, and emmer wheat from Syria was taken to Iraq.

Of the 6,000 species of mammals on the planet, only about one dozen proved to be domesticate-able. Surprisingly, no new species of plant or animal has been domesticated since our earliest efforts. We have inherited the knowledge of our earliest farming and herding ancestors. Whenever someone on the planet learns something, it is soon known by everyone else and never forgotten. No single region had to independently invent everything for itself. Still today, wheat, rice, and maize account for two-thirds of our food supply.

Since the time of the first humans, all of the humans of the Earth have been combining knowledge. Today’s science and technology is the combined sum of all the facts, tools, and procedures ever discovered or invented by anyone throughout the planet. Your everyday life is filled with things you have inherited from the many peoples of the earth, as explained in Ralph Linton’s essay about the diffusion of inventions that I will now recite. He describes the origins of many

elements of daily life for a man who lives in the United States.

"Our solid American citizen awakens in a bed built on a pattern that originated in the Near East but was modified in Northern Europe before it was transmitted to America. He throws back covers made from cotton, domesticated in India, or linen, domesticated in the Near East, or wool from sheep, also domesticated in the Near East, or silk, the use of which was discovered in China. All of these materials have been spun and woven by a process invented in the Near East. He slips into his moccasins, invented by the Indians of the Eastern Woodlands, and goes into the bathroom, whose fixtures are a mixture of European and American inventions, both of recent date. He takes off his pajamas, a garment invented in India, and washes with soap invented by the ancient Gauls. He then shaves, a masochistic rite that seems to have been derived from either Summer or Ancient Egypt.

"Returning to the bedroom, he removes his clothes from a chair of southern European type and proceeds to dress. He puts on garments whose form originally derived from the skin clothing of the nomads of the Asiatic steppes, puts on shoes made from skins tanned by a process invented in Ancient Egypt and cut to a pattern derived from the classical civilizations of the Mediterranean, and ties around his neck a strip of brightly-colored cloth that is a vestigial survival of the shoulder shawls worn by the seventeenth-century Croats. Before going out for breakfast he glances through the window, made of glass invented in Egypt, and if it is raining puts on overshoes made of rubber discovered by the Central American Indians and takes an umbrella, invented in southeastern Asia. Upon his head he puts a hat made of felt, a material invented in the Asiatic steppes.

"On his way to breakfast he stops to buy a paper, paying for it with coins, an ancient Lydian invention. At the restaurant a whole new series of borrowed elements confronts him. His plate is made of a form of pottery invented in China. His knife is of steel, an alloy first made in southern India, his fork a medieval Italian invention, and his spoon a derivative of a Roman original. He begins breakfast with an orange, from the Mediterranean, a cantaloupe from Persia, or perhaps a piece of African watermelon. With this he has coffee, an Abyssinian plant, with cream and sugar. Both the domestication of cows and the idea of milking them originated in the Near East, while sugar was first made in India. After his fruit and coffee he goes on to waffles, cakes made by a Scandinavian technique from wheat domesticated in Asia Minor. Over these he pours maple syrup, invented by the Indians of the Eastern woodlands. As a side dish he may have the egg of a species of bird domesticated in Indo-China, or thin strips of the flesh of an animal domesticated in Eastern Asia that have been salted and smoked by a process developed in northern Europe.

"When our friend has finished eating he settles back to smoke, an American Indian habit, consuming a plant domesticated in Brazil in either a pipe, derived from the Indians of Virginia, or a cigarette, derived from Mexico. If he is hardy enough he may even attempt a cigar, transmitted to us from the Antilles by way of Spain. While smoking he reads the news of the day, imprinted in characters invented by the ancient Semites upon a material invented in China by a process invented in Germany. As he absorbs the accounts of foreign troubles, he will, if he is a good conservative citizen, thank a Hebrew deity in an Indo-European language that he is 100% American."

We are all in this together. We all contribute to the progress of our civilization. Which future tool will be next to significantly alter our lives? Will it be genetic engineering, fusion power, quark-based machinery, the colonization of other planets, or something as unimaginable as were electronic computers 150 years ago when Maxwell finalized the equations describing electricity?

The same human being that made cave paintings some 30,000 years ago now makes spaceships—using nothing but our animal minds. The humanist Josua Mitteldorf has asked “Would a person from 30,000 years ago be proud of the civilization that we have created today, and will we be proud of the civilization that our ancestors will create 30,000 years in the future?”

As stated above, what is the same about every human being? Whenever a person is thinking, doing, or talking, that action involves love and children and spouse, family and friends, or community and justice—and little else—because we are parenting mammals and social primates. That is all there is to a human being, anywhere on the planet, through the last 200,000 years of our *Homo sapiens sapiens* species, and even throughout several million years of ancestral hominid species. If people raised their hand while thinking of these things, then throughout every day, nearly every person on the planet would have their hand raised. By the second, we human beings have been smiling and exchanging loving kindness with family, friends, and neighbors for 200,000 years.

As it is said, out of the entire universe, all we human beings really have is each other, and we have everything that we need to solve any problem that comes our way. Our mutual efforts have solved every problem that has ever come our way. The proof is given by the fact that we are still here.

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## Questions

1. Describe how our life would be different if we could not communicate with other humans. How would our civilization be different?
2. After we began to use spoken language, how much time elapsed before someone made the first poem by saying a sequence of musically-related sounds. When and why did we start singing? Which other animals sing? Why do they sing? Scientists have found primate species in which family members sing to one another from the forest trees, see . Whales and birds sing to communicate, especially with potential mates. It may be that our ancestors were singing for the same reasons. Wolves sing, too. Does your pet dog ever sing along with you? Did our ancestors sing emotion-laden tones before they were able to communicate with spoken words? Is poetry spoken music? Are its rhyming sounds pleasing to the ear in a musical manner? (You might like to view the PBS video *Song of the Earth*.)
3. What is your tongue doing while you are chewing, blowing your nose, or talking? Who taught it to do this? Does everyone move their tongue and lips in the exact same way to produce the same sounds? These are very complicated motions that we seemingly do without consciously struggling to generate each sound. That is, we do not stop to think about where to place our tongue and lips to form the sound for the letter 't' and such. Do you stop to think about this process or about grammar and the order in which your words are said?
4. Can you surgically alter a newborn chimpanzee's throat so that it could make human speech? Would it be able to learn to speak?
5. Describe how you learned to talk, eat, and walk. How did you come to know what a word meant and how to arrange a group of words into a sentence that had your intended meaning, for example "I eat apple" rather than "Apple eat I?"
6. If we equipped a newborn human infant with a transponder and let it listen to dolphins communicate with their whistles would this child learn to understand what the dolphins were saying? Would it have to live among the dolphins to be able to do this? Would it need anything else?
7. If our brain circuitry does not automatically create language then we instead have invented this tool and pass the invention between generations. Could we have invented upright walking? List some other things that we have assumed to be part of our automatic biology but that we might have instead invented.
8. Can another animal species invent communication using tooth clacks, head shakes, and body twists?

9. If a toddler can learn the thousands of details involved in learning language and culture can it also learn the thirty essential facts of arithmetic, algebra, trigonometry, calculus, and such? Do some children learn mathematics and how to play musical instruments and such simply because they were given the opportunity? How many of us are given the opportunity?
10. Does Kanzi have an inner-lexigrammer?
11. List two hundred of the most commonly used words—such as big, small, near, far, blue, one, two, and several—and try to see how well you can communicate using just those words. Can you accomplish your daily tasks using just these words? Can you discuss ideas or art? How many words does a gatherer-hunter group need to survive? Which would be their most useful words? (My friend Erin points out that the word "not" multiplies the number of thoughts you can communicate with other words, as in "not left," "not big" and such.)
12. Many words express an idea. Find a few foreign words that do not have a precise equivalent in your own language. Why is there no overlap in ideas between these two groups of persons?
13. Why are words sometimes considered to be magic? For example, a witch has only to say the right poetic words to make things happen. When did we first decide words were "magic?" Was it a million years ago? 50,000 years ago? 2,000? Do words hurt more than "sticks and stones?" Why is silence deafening? How long after we began using language before someone "got the last word?"
14. Can you model an infant's personality growth? First measure the spectrum of existing character traits for a number of persons under a range of social situations. You will also have to measure the less-varied spectrum of newborn traits. Each of these spectrums will surely follow a bell-shaped curve. Then place the child in a long series of randomly selected social situations involving one or more other persons. Also, randomly select the character traits of each of those other persons from the previously measured spectrums. Maybe the child's personality trait for each type of situation is due to its own characteristic at birth plus the average deviation from the norm of the traits of each of the persons it has interacted with during previous situations of this same type. When some of us are continually surrounded by one type of behavior, it drives us away from repeating that behavior ourselves. What percentage of us move toward that average and what percentage move away from it? Can this spectrum be measured? Can this be incorporated into the model as a movement away from that average rather than toward it? What is the probability that more than half a series of ten (or one-hundred) one-on-one interactions will be with a person from the bad side of the spectrum? Does this mean we are born with increasingly average traits or that we all modify our behavior toward our society's current average? (Reproduction is set up to maintain a wide spectrum of characteristics so that we do not become all-alike. We have seen that the average of the spectrum may shift but a range in characteristics is needed for the species to exist beyond changes in its environment. Our genes are not the average of those of our parents or of our prior generations. A baby's characteristics are not the average of its two parents because divergences of a factor of one thousand would be eliminated when averaged through just ten successive generations. That is, dividing 1024 by 2 ten times in a row results in the value 1.
15. How many variables would be needed to produce a realistic model of the development of our personality throughout our life?
16. Describe how you learned to talk, eat, and walk. How did you come to know what a word meant and how to arrange a group of words into a sentence that had your intended meaning, for example "I eat apple" rather than "Apple eat I?"
17. If we equipped a newborn human infant with a transponder and let it listen to dolphins communicate with their whistles would this child learn to understand what the dolphins were saying? Would it have to live among the dolphins to be able to do this? Would it need anything else?
18. If our brain circuitry does not automatically create language then we instead have invented this tool and pass the invention between generations. Could we have invented upright walking? List some other things that we have assumed to be part of our automatic biology but that we might have instead invented.

19. Many words express an idea. Find a few foreign words that do not have a precise equivalent in your own language. Why is there no overlap in ideas between these two groups of persons?
20. We saw that a newborn mammal assumes the first thing it sees will be its mother. How is the bond between mother and child affected when a premature baby has to be placed into an incubator? What is the effect on the bond when the newborn baby is placed into the nursery ward instead of staying in the mother's arms? How are bonds formed between children and their adopted parents?
21. A clone of yourself is made by using your DNA to grow another copy of you. This person would begin life (age zero) with the same nature as yourself but it would not have the same life experiences—same nature but different nurture. If you were to raise such a cloned copy of yourself, do you think you could get your copy to follow the life-steps of your own choosing? Would you know the mind of your clone and be able to convince it or trick it into doing what you wanted—as nobody has been able to do with their teenagers? Would your copy choose the same hobby as you had when it reaches the age of eight? A similar hobby? No hobby at all? Why do we have hobbies? Would your copy have the exact same interests and choose the same career? If your copy was about to make the same mistake in life as you had earlier made could you reason with yours copy to change its mind? Would your clone develop the same personality as you? Write down your ten largest personality traits. When and why did you acquire these? Would your clone have the same interests, talents, personality traits, religious beliefs, and illnesses? If you sent it as a baby to go live with the people on the other side of the world, or to Ancient Mesopotamia, or into a slum of a nearby city, which behaviors, talents, religious beliefs, and interests would remain the same? Would your clone be an inferior "toy person" because it lived in another country or lifestyle? What clues can clones provide about the nature versus nurture problem?
22. Describe a social situation in which you would wonder if you were being socially cheated.
23. Why are words sometimes considered to be magic? For example, a witch has only to say the right poetic words to make things happen. When did we first decide words were "magic?" Was it a million years ago? 50,000 years ago? 2,000? Do words hurt more than "sticks and stones?" Why is silence deafening? How long after we began using language before someone "got the last word?"
24. Describe some innate behaviors of an infant and some learned behaviors.
25. Compare the behaviors of a puppy and a child.



## Chapter 2 From the Big Bang to biology

The matter, space, and energy that comprise the universe is seen to be expanding outward. In the year 1929, astronomer Edwin Hubble measured the distance, speed, and direction of travel of the galaxies and found that they are all moving away from each other. This is what the universe is seen to be doing. It is an observational fact. The galaxies are not expanding outward into previously existing, empty space that had been sitting there waiting for their arrival, but instead, space is expanding outward and taking the galaxies with it in a single existence. Going backward in time from today, we deduce that the galaxies had been closer together and that some 13.8 billion years ago, the matter, energy, and space comprising the universe was in a volume smaller than that of an atom. The space and matter had to be close enough together for sub-atomic forces to propel it outwards in what has been called the Big Bang. There may be countless Big Bangs occurring within other Bangs like soap bubbles within interlaced soap bubbles.

Albert Einstein explained that if all the mass of the universe was concentrated at a single point, just before the instant of the Big Bang, then all of space was also concentrated at that same point because mass bends space. The curved space then tells matter how to move. Einstein also showed us that mass is another form of energy,  $E = mc^2$ , where mass,  $m$ , and the speed of light,  $c$ , give  $10^{19}$  J for a 100-kg person. About  $10^{68}$  calories or Joules of energy comprise the universe. This energy total does not change. It is the same today as it was at the moment of the Big Bang. Portions of energy change from one form to another. Some of that energy now comprises the atoms of your own body. The energy content of the atoms of your own body was there at the Big Bang.

Astronomers measure the distance to nearby stars using triangulation. As the Earth makes its annual motion about the Sun, the closest stars are seen to shift slightly back and forth relative to the more distant stars. In another technique, astronomers measure the distance to stars in terms of their relative brightness because distant stars appear less bright. Cepheid stars supply a standard brightness. Astronomers measure the speed of stars and galaxies using the Doppler Effect. We are all familiar with the shift in tone from high to low as an ambulance or train passes by. In the case of light waves, we see a shift toward blue as a star approaches and a shift toward red as a star moves away.

To make sense of the sequence of events in the aging universe, we first look at the changes in matter that occur as its temperature increases from very low to very high. For example, let's look what happens on an atomic scale as ice is heated to water and then steam. We learn in grade school that water is composed of hydrogen and oxygen. Within a block of ice, each molecule jostles thermally back and forth while also being electrically held in place by its neighbors. As the block is heated, the molecules jostle and move more and more rapidly. At the melting temperature, the molecules are moving so rapidly that neighbors can no longer electrically hold each other in place. The block of ice melts, becoming water. A water molecule is no longer held in one place by its neighbors, but can roam around within the liquid pool that still holds together somewhat. Upon further heating, water becomes steam.

Steam is still nothing but water molecules, but each molecule is now moving so rapidly that it can freely disperse. Continue heating the steam and its constituent hydrogen and oxygen atoms will break free of each other, becoming separate gasses. Each atom consists of a nucleus of protons and neutrons, which are held together by the nuclear force. The nucleus is orbited by electrons held to

the nucleus by the electrical attraction between electrons and protons. Heat those separated hydrogen and oxygen atoms further, and the orbital electrons gain enough thermal energy to break free of the electrical bonds holding them to the nucleus. Heat yet further, and the protons and neutrons within the nucleus will separate. A proton is composed of three quarks.

Scientists have measured the temperatures or thermal energies at which each of these changes occur. Sub-atomic energies are measured in particle accelerators, such as this one at CERN in which large magnets force particles to move with increasing speeds in a circle that has a diameter of nine kilometers. Accelerators attain energies as great as had occurred just a fraction of a second—actually,  $10^{-43}$  seconds, after the Big Bang. These measurements enable us to understand the evolution of the universe from that moment onward throughout its 13 billion-year history. We do not yet know how the universe functions at energies higher than those measurable within today's particle accelerators. Scientists use particle accelerators to give a small amount of matter as much energy as it had at the very instant after the Big Bang.

We heated that block of ice until it separated into its elementary particles. The reverse process also occurs; as elementary particles are cooled, they will merge into nuclei and then atoms and molecules. This occurs no matter the size of the material, even if it is as large as the universe. The total energy of the early universe was contained in a small volume at a very high temperature. As the volume expanded, the energy became less dense and so had a lower temperature. The elementary particles cooled and merged, eventually forming lots of hydrogen atoms that gravity pulled into massive clumps to become stars.

## Gravity

Gravity is the mutually attractive force between masses. Picture two skaters who are holding hands while facing each other. As they lean back, spin around each other, and pull inward on each other's arm, the mutual force causes them to orbit each other. The gravitational force reaches out just like the skater's arms and causes two masses, such as the Sun and Earth, to orbit each other.

Gravity is an attractive force that causes pairs of masses to be pulled toward each other. Gravity caused the material of the early universe to coalesce into stars. As some stars age, they go supernova and throw debris across space. The mutually inward, gravitational force will cause the material forming a clump of interstellar gas to coalesce into a new star. Within larger clumps, smaller clumps gravitate into planets that will orbit the star.

Computer simulations show that it takes about a million years for gravitationally interacting matter to accumulate into a central, spherical mass. A new star is born when the accumulating weight of the outer portion of the star is great enough to crush together interior pairs of hydrogen atoms, fusing them into helium atoms and releasing energy. This fusion process releases tremendous amounts of energy in the form of heat and light. Fusion energy powers the sun. In turn, the energy from the sun drives the weather and powers all life on Earth. The newly formed star begins to emit light that pushes outward the remaining, small dust particles and clears the solar system.

Your atoms were formed within stars and during supernova explosions

We have seen that just after the Big Bang, the early universe consisted of energetic, elementary particles and light. As the universe expanded and cooled, protons, neutrons, and electrons formed and merged into hydrogen atoms and a small amount of helium atoms. Essentially none of the other one-hundred types of atoms yet existed except for hydrogen and helium

The atomic elements that are heavier than hydrogen and helium, up through iron, are formed by fusion within stars. Fusion produces carbon, oxygen, iron, and other atoms within internal layers. Iron is the twenty-sixth element and is the largest atom formed by stellar fusion. Element numbers twenty-seven through ninety-two, which are cobalt through uranium, are formed only during supernova explosions. This means that the oxygen, iron, and copper atoms that comprise your own body were created within stars and supernova explosions. It is often said that you are made of star material.

A supernova explosion ejects stellar material and its atomic brew out into interstellar space as a thin and expanding, spherical cloud of debris. The Ring Nebula is the remnant of a supernova explosion. Debris from exploded stars can gather in interstellar space as giant clouds of dust. Gravity will then re-gather this dust to form a second generation solar system that begins with oxygen and iron and such. The iron within the Earth is a remnant of previous stars.

Life did not exist anywhere in the universe before stellar fusion had formed the carbon and other atoms that are needed for life. It is likely that life first occurs in second generation solar systems because they contain elements beyond hydrogen. The lifetime of a star ranges from ten million to ten billion years depending on the star's mass. The most massive stars burn brighter and have shorter lives.

## Formation of the Earth

Our own solar system formed from the debris of former stars and so had the benefit of beginning with carbon, oxygen, and iron and such rather than having only hydrogen and helium. The debris gravitated into one central sun, although many solar systems have two suns. Smaller clumps formed into the planets, including the Earth, and yet smaller clumps near the planets formed into some 200 moons. While it was accumulating material, the Earth grew in size. Within the Earth, the weight of the outer material crushed the central material and caused sufficient pressure to melt the core. The heaviest material then sank toward the center, resulting in an iron core. The lighter material mostly floated to the top, forming the crust and continents. Released water formed the ocean. The crust and continents first solidified some 4.5 billion years ago. Remember that the Big Bang occurred some 13.8 billion years ago. The material of the Earth would have cooled off within 50 million years but radioactive atoms within the Earth generate enough heat to keep it molten still today. The early atmosphere was mostly carbon dioxide.

## Plate tectonics

The analysis of earthquake waves tells us that the interior of the Earth consists of several concentric, spherical shells and that the surface of the Earth is not formed of one solid piece of material. Instead, it is broken up into thirty sections in the manner of adjoining jigsaw pieces that geologists call "tectonic plates." The continents ride along on top of the heavier, crustal material in the same way that bread would float on oatmeal. Below the Earth's crust, some hotter sections of the mantle are moving upwards while adjacent sections are cooler and moving downwards. This convective movement of mantle pushes the plates and continents around the surface of the Earth. They move at a speed of about one inch or 2.5 centimeters per year. This is about the speed with which your fingernails grow. This movement and speed is easily measured by satellites.

Sometimes a continent is sitting on top of two adjacent plates that begin to move apart due to an upwelling of mantle material. This causes that continent to become torn or split into two pieces which then begin to move away from each other. An ocean may develop between those pieces. For example, about two hundred million years ago, the South American and African continents were not separated by an ocean but were adjacent to each other. Still today, the shapes of their coastlines are similar. The plates move so slowly that it has taken about two hundred million years for the Atlantic ocean to have its current width of 2,500 miles or 4,000 km.

Plates often collide in a process that takes several million years and builds mountains. It then takes another fifty million years for the erosive effects of the wind, ice, and rain to wear down that mountain range. There have been many such cycles of mountain formation and erosion throughout the Earth's history. New mountains are rugged, tall, and steep, like the Sierra Nevada, Andean, European Alps, and Himalayan ranges, while old mountains have been worn down in size, like the Australian Alps and the Appalachians.

## Climate

As the continents slowly move around the planet, their climate changes, and so do the plants and animals living on each continent. For example, as a continent moves from equatorial to polar locations, its tree cover changes in time from pine trees to palm trees. This history is determined from geologic layers and from radioactive dating. Through the Earth's 4.5 billion-year history, each continent has spent time submerged under oceans, has had sections uplifted into mountains, and has experienced climate ranging from glacial, to desert, and to rain forest.

When most of the continents are located near the equator, then the seasonal variation in temperature is minimal, resulting in a year-round, daily temperature of about 70 degrees Fahrenheit or 21 Celsius throughout the planet and there are no glacial regions which are covered with year-round ice. We are said to be in an ice age whenever there are regions of year-round ice, such as today. Glaciation has retreated pole-ward from its last maximum that occurred 20,000 years ago. Notice that about 13,000 years ago, glacial retreat first allowed people to migrate overland from Asia to America. During a glacial maximum or "ice age," summer temperatures are ten to twenty degrees Fahrenheit (or five to ten degrees Celsius) colder than they are now.

Through the last 2 million years, there have been about 20 cycles of glacial advance and retreat in which year-round ice has reached as far south as Kansas. These cycles are connected to the

100,000-year cycles in solar output and in the Milankovitch cycle that changes the Earth's orbit from more circular to more egg-shaped. At the same time, the tilt of the axis of the Earth varies from 21 to 24 degrees in a 41,000-year cycle, and its orbits precesses with a 23,000-year period.

About 25% of the incoming solar energy evaporates water and cause the rain. Sunlight strikes perpendicularly to the ground at the equator but glances along the poles, making the equator hotter and causing wind and water currents to move. When continental positions allow ocean currents to flow from the equator toward the poles, the currents carry heat that warms the poles and keeps them free of glaciers. The ability of ocean currents to move equatorial heat pole-ward changes as the location and shape of the continents change through time.

About thirty-six million years ago, the Antarctic continent moved to the southern pole, and a circumpolar oceanic current developed that conducts little equator-to-pole heat movement. The resulting glacier in Antarctica averages 6,500-feet or 2,000 meters in thickness and accounts for 90% of all glacial volume. Greenland's glacier accounts for another 9% of the total volume.

The amount of sea-ice occurring at the north pole was indirectly enhanced by the joining of North and South America about three million years ago. This blocked an east-west flowing ocean current that was replaced by the gulf stream. It carries moisture-laden air northward, increases precipitation near the north pole and moderates European winters.

When North and South America joined, ocean currents took some time to reset and this may be what caused the climate in Africa to fluctuate so wildy that locations alternated between desert and deep lake in a series that repeated every thousand years or so. It's probably not a mere coincidence that this is the time at which the brain size of our ancestors doubled.

The age of the glacial advances and retreats are determined in many ways. For one, as a glacier retreats it exposes underlying rock to cosmic radiation. The radiation builds up through time and can be measured to deduce how much time has passed since the glacier retreated. Coral reefs always remain near the surface of the ocean, growing upwards and downwards as the level of the ocean changes; a history of their height reveals ocean levels and hence glacial volumes through time. Ocean levels and glacial volumes also give information about past temperatures, as do past longitudinal distributions of warm- and cold-water plankton.

Geologists and paleontologists have pieced together a history of the Earth's past temperatures in many ways. Information is obtained from the types of plants and animals that are found in geologic layers because the temperature range of each species is known. Insects are especially useful in this way because each species lives in a particularly limited temperature range. If a ten-million-year-old geological layer contains seeds from palm trees rather than pine trees, then we know something of that region's past climate. It is known that in tropical regions, with high temperatures and high rainfall amounts, leaves are broad instead of narrow and have smooth instead of jagged edges. The ratio of broad-to-narrow and smooth-to-jagged-edged leaves indicates past temperatures.

There are a large number of factors affecting the amount of glaciation on the Earth's surface. Mile-thick glaciers cannot accumulate on the ocean surface but can build on mountain tops. As the number of mountain ranges on the Earth varies through time, the total volume of water held in mountain glaciers also varies through time. Continental glaciers can occur whenever a continent is located at a pole during a time of both cool temperature and high precipitation at polar latitudes; glacial buildup most rapidly occurs in the presence of warm equatorial oceans with pole-ward currents. The continental positions, shapes, and groupings also determine if sea currents can carry

warm water from the equators toward the poles. The amount of sunlight that reaches the ground to be absorbed by the Earth's surface depends on how much is reflected back into space. The reflected portion of solar energy depends on the distribution of land and sea by latitude, the percentage of ice-covered and cloud-covered land, the nature of the land surface in that seas absorb sunlight while ice and desert reflect it, and the composition of volcanic dust held in the atmosphere. Through the last few centuries of industrialization, we humans have been altering the chemical composition of the atmosphere sufficiently to change its absorptive and reflective properties. Many man-made chemicals, from carbon-dioxide to soot, are contributing to global warming.

The two main factors that determine the temperature of the Earth are the heat output of the sun, which satellite measurements have so far found to vary by 0.1%, and the heat-holding properties of the Earth's oceans and atmosphere. If the Earth had neither, then its temperature would be just like that of the Moon which has neither atmosphere nor ocean and is the same distance from the Sun as is the Earth. The Moon's nighttime and daytime temperatures range from  $-250^{\circ}\text{F}$  to  $+250^{\circ}\text{F}$  or  $-150^{\circ}\text{C}$  to  $+130^{\circ}\text{C}$ . Our heat-holding ocean and atmosphere reduce the Earth's daily temperature swing to 5% of that of the Moon.

The temperature of the Earth's atmosphere depends on its chemical composition because that determines its ability to hold heat. Our factories, electrical generating plants, and cars have been changing the chemical composition of the atmosphere. This may be causing it to retain more heat and become hotter. The world's scientists and engineers would be thrilled to design homes, cars, and factories that emit nothing into the environment. In that way, we would no longer be gambling with our future.

Much of the workings of nature involves the flow of energy. Energy is neither created nor destroyed, it is only changed from one form to another. For example, a tiny portion of the energy of the Big Bang is stored in the mass of the Sun. The Earth receives a portion of the Sun's energy in the form of heat and sunlight that was emitted during nuclear fusion. Some 1400 watts of solar energy per second hit the Earth's outer atmosphere. About one-quarter of 1% of this energy is absorbed by plants during photosynthesis and is stored as chemical energy within those plants. This tiny portion of the Sun's energy powers all life on Earth. About 10% of the energy stored in plants is consumed by the animals that eat the plants, and about 10% of this energy is consumed by the animals that eat the animals that eat the plants. Eating a spoonful of peas will give you enough mechanical energy to run for thirty seconds and then climb up a flight of stairs. This heats you, and in turn, heats the surrounding air. The heat energy then radiates back into outer space.

## Atoms

A fundamental force of nature is the electrical force between charges. Remember that there are two types of charge, called positive and negative, and that like charges repel but unlike charges attract. The flow of charge is seen in electricity within wires and in lightning.

An atom consists of negatively charged electrons that orbit a nucleus of positively charged protons and uncharged neutrons. The electrical force makes electrons orbit the nucleus in the same way that gravity makes the Earth orbit the Sun and the way that holding hands made the two skaters orbit each other due to the force they exert on each other by holding hands.

There are about one-hundred different types of atoms, they differ in that hydrogen always has

one proton in its nucleus, helium always has two, carbon has six, oxygen eight, and uranium has ninety-two. There is a range in the number of neutrons within each type of atom. These are isotopes, many of which emit radiation.

Of all the atoms within a person, about two-thirds are oxygen and one-quarter are carbon. By the way, an atom typically stays in your body for about eighteen months before being replaced by another, identical atom, while your whole body remains the same.

It is mathematically possible to form zillions of combinations of those 100 atoms by taking them two at a time, three at a time, and such or by combining one of each, two of each, and so on. The grand total is equal to the number of combinations of 100 things taken up to 100 at a time. Out of the zillions of combinations, a smaller number are actually able to form into what are then called molecules. Those combinations of atoms that are electrically able to hold together, do. Those that electrically repel do not form into a molecule.

The simplest combination involves a large number of a single type of atom—iron, for example—without mixing in any other types of atoms. The result is usually a cube-shaped block that can be large enough to hold in your hand. Each iron atom is electrically held in place by its neighbors. The electrical forces are represented here as springs holding neighbors in place. Regularly-spaced blocks of atoms are the typical result of combining large numbers of a single type of atom.

Carbon atoms are special in that they form rings rather than cubically-shaped blocks, and rings of rings can be combined into endless shapes. A long, one-dimensional line of rings can be folded into a repeating s-shapes that is then a two-dimensional structure. The sheets can be folded over into complicated shapes, such as occurs in phenylalanine hydroxylase. The entire molecule consists of equal numbers of positive and negative charges and so is electrically neutral, but some of its sides have a non-zero electrical charge. Four copies of this molecule will electrically hold onto each other when their sides are oriented in a certain way. The electrical forces between components of an organic molecule cause the folding and crumpling of the structure. If nearby portions electrically repel then they will not join, if they electrically attract then they will join—indeed, they must. In the end, each specific molecule always takes the same shape, and this shape is electrically determined.

Tyrosine and alanine molecules are two of the twenty amino acids that occur in all of the Earth's living creatures. Amino acids are combined to form larger molecules that are proteins, enzymes, and hormones. Proteins are combined to make the tissues and organs comprising a living creature. Some proteins include hair, nails, muscle, and spider webs.

Much of biology involves the chemistry of carbon. Carbon rings combine into endless shapes. If you start with one carbon ring and add one atom to its end each year for a billion years, then you will have a billion-atom molecule such as this DNA molecule. Much of it consists of the four molecules that we will refer to as A, C, G, and T molecules. A and T molecules will electrically hold onto each other, as do G and C, but the other pairings repel each other. DNA has the shape of a helix or twisted ladder whose rungs consist of either a G-C or an A-T pairings of molecules. The ladder sides are like mirror images of each other. A certain molecule causes the DNA ladder to split down the middle. Since the DNA halves are immersed in a soup of A, C, G, T, and other molecules, each half of the ladder will electrically attract its mirror image. The DNA molecule has been replicated. Replication is one of the special properties of DNA.

Along a ladder rung, each series of three A, C, G, or T molecules electrically directs the formation of one of the twenty amino acids that are then combined into hormones and proteins that are used in the construction and operation of our bodies. For example, the triplet sequence AGC followed by AAT will cause tyrosine and alanine molecules to be formed out of the surrounding mix of chemicals and then joined together.

The DNA molecule contains the chemical construction map used to produce the sequence of chemicals needed to grow an entire individual, from seed to adult, from absorbed and ingested chemicals. In response to specific situations, DNA also builds adrenaline, oxytocin, and the other chemicals associated with each of our emotions. Within the body, each specific chemical imbalance causes DNA to produce a chemical response to restore the balance. In this way, DNA builds and operates an individual creature, be it bacteria, mouse, or person. Life consists of the chemistry of these self-duplicating, self-directing, and self-growing, electrically interacting molecules.

#### Summarized sources

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#### Questions

1. How much has the Sun changed during your lifetime?
2. How much have the shapes of the constellation figures changed during your lifetime?
3. Is there life outside the Earth right now?
4. Will humans build cities on other planets?
5. Can you use trigonometry to determine your distance from a tree or building of known height?
6. Find two trees separated by about one-hundred footsteps. Walk from the first tree toward the other and then go ten steps beyond the second tree. Now turn right by 90 degrees and as you walk ten more steps, make a note of the change in angle between your direction of motion and the positions of the two trees. The closer tree appears to move relative to the more-distant tree. This is called parallax and is the way astronomers measure the distance to nearby stars. Instead of moving ten steps, the Earth moves a distance equivalent to the diameter of its orbit as it circles halfway around the Sun.
7. Describe a machine that uses gravity.



8. When will we harness fusion power? If you had available for your own use as much energy as is currently used by all the people of the entire planet, what would you do with it? How would your life be different?
9. What does it mean that you have breathed the same oxygen atom that Julius Caesar had earlier breathed? During your lifetime, what percentage of the Earth's atmosphere will you have breathed? Are the oxygen atoms of our atmosphere disappearing? Are new ones appearing? Were any of the carbon atoms in your body today part of Caesar's body in the past?
10. Did the copper atoms within everyone's body come from the same star or from many different stars?
11. The average atom in your body remains there for just a couple of years before being replaced by another. How can we still be the same person if each of our atoms are being replaced?
12. Will all of the stars eventually burn out? What happens then? You might like to read *Heat death and the Phoenix: entropy, order, and the future of man*, Norman H. Dolloff, 1975, Exposition Press, Hicksville, NY
13. Has there been a series of Big Bangs and Big Crushes within our universe? Some astronomers use the term Big Gnap for a Big Crush because it is the reverse process of a Big Bang.
14. The news often discusses global warming. Measurements show that in the last century, the Earth's temperature has increased by one degree centigrade (two degrees Fahrenheit). What should we measure in order to determine if humans are causing this to occur?
15. What causes ice ages and warm periods? How long do they last? How quickly does an ice age develop or end? How much warmer or cooler is the temperature during these periods than it is today?
16. How would the Earth's distribution of plants and animals be different if the continents never moved? Suppose the continents moved completely around the Earth seven times per year while moving in figure-eight patterns. Describe your region's annual temperature changes. How would this affect the type of trees and animals in your region? What if the continents circled the Earth once every one-hundred years?
17. Write down the equations for relativistic plate tectonics. (These would be useful if the continents circled the Earth seven times per second.)
18. How would life be different if we had two-hour days instead of 24-hour days? We never see the backside of the Moon because it always presents the same face toward the Earth. From the surface of the Moon, this means that one side always faces the Earth while the other side always faces outward into space. If the Earth spun about its axis only once during the time needed to make one orbit around the Sun—that is, if each day lasted a year—how would life vary from one side to the other and along the light-dark boundary? How would the Earth's distribution of plants and animals be different if one side of the Earth always pointed toward the Sun throughout the year? What if the Earth then flipped its orientation every 50 (or 500 or 5,000) years so that the opposite pole faced the Sun? If the region of the border between light and dark didn't move as the flips occurred, this region would provide the most stable home. A portion of the observed stars systems have more than one Sun so that days and nights occur in more complicated intervals on its planets than happens on the Earth. How would this change the Earth's life? The output of many stars varies by a factor of two through periods of several months. If our Sun was such a variable star, how would that affect life on Earth? By the way, the planet Mercury has but three days every two years and a sufficient difference between closest and farthest orbital distances that, from the surface of Mercury, the Sun's apparent size grows and shrinks through the year.
19. How will our civilization change when the next glacial advance or retreat occurs? And the next?
20. List some physical, chemical, geological, and astronomical things that affect the rate of appearance of new species.

## **Chapter 3 Our brains, feelings, and emotions are millions of years old**

As we recall an image of an apple, we "see" an object that is sort of round and maybe red, but it takes some effort to concentrate on that image to add the details of its appearance. The stem and that fuzzy stuff at its bottom, the detours from roundness, the exact color and the gradations in color are added to our image only if we concentrate.

Our brain functions by creating interior representations of external events. A real apple does not exist within our head but only a mentally-generated representation of one. This makes it less surprising that nightmare-troubled children and schizophrenics believe that the monsters they see in their head are real. As we mentally picture an apple, it seems to be as real as any other. Our brain defines who we are, and it produces our view of the world around us.

For thousands of years people have wondered what is going on inside our brain the instant before an idea "pops" into our head. Scientists now use MRI machines to measure this pop as it develops in a split-second. A person is placed in the MRI machine and then asked to picture, for example, an apple. Within the person's brain there are, at first very few neurons involved but with mental concentration the number keeps growing. When a great enough number of neurons have become involved, we feel that we have just had an entire thought. Susan explains that our thought process involves "growing regions of neuronal activity."

Our lifelong consciousness really consists of a series of individual five-second awarenesses, one after another. That is, we will consider one thing for about five seconds and then we go on to consider something else for five seconds. You might like to keep track of the sequence of the thoughts that you have during a one-minute period. This means that the present lasts for about five seconds.

About two weeks are needed for our brain to adjust to a big change in life, such as getting married, joining the army, going to prison, or moving to a boarding school. The brain soon decides that the new situation is now the normal one.

Our brain is naturally adept at handling the situations that our ancient, biological ancestors continually encountered through the generations, including those comprising our socially cooperating and mutually beneficial group. For example, we effortlessly notice the simultaneous absence of a certain man and woman. Our brain makes predictions of the behavior of the others within our social group. We think in terms of social costs paid and not-paid and of benefits accepted or denied. We do not seek the absolute best solution because we do not have the time to consider every detail of every option. We instead seek the most overall beneficial choice that can be made quickly. We jump to a decision that feels right. This is more important to us than finding the most logical solution. The day after a fast-paced event occurred, we have more time to consider logic and might say "I do not know why I did that, I just followed my feelings at the moment." Our feelings amplify one criterion over another and assign weights to each alternative.

Have you noticed the inner feeling of pleasantness or unpleasantness you have while mentally selecting from a list of options. For example, while simply choosing what to eat for lunch we perform a series of mental steps: we think of one food, develop a feeling for it, gauge the level of goodness or badness of that feeling, think of another food, develop a feeling for this one, gauge the level of goodness or badness of this feeling, and then select that food which provided the most-positive inner feeling. We make larger decisions in the same way. We do this when choosing

between jobs and cities. The weighting of feelings is done within the cingulate gyrus of our brain.

We are constantly surrounded by thousands of things but pay attention only to those that we deem to be of biological importance because they can impact our life. You might see buildings, trees with swaying leaves, blowing grass, gliding birds, airplane tracks in the sky, a line of ants, two persons conversing, a leaking faucet, a mother and daughter walking, a parked bicycle, an ambulance, a restaurant, a big dog roaming, a coin, an attractive person, and some traffic. We are surrounded by a continual barrage of events. Our feelings serve to greatly amplify the importance of those events that are biologically relevant to us and help us to ignore the others so that we are hardly conscious of them. For example, mates and predators are biologically important to us while the motion of wind-blown grass is not. An event is not remembered if it warrants no feeling: you probably don't remember the fallen twig you passed last week. Things producing strong feelings are never forgotten. Our inner feelings help us to learn and to remember.

The tiny cut caused by a doctor's needle does no damage but our feelings greatly amplify the perceived importance of this. Our brain amplifies the needle pain and makes us feel as if we will die if we don't react to end the pain. Similarly, our brain amplifies the news that a crime has occurred in our society and makes us feel that society is about to die. We social primates are properly upset by anything from a fistfight to a crime that might end our mutual society and cause us to again be going it alone in the wild.

For each event in life, the entire sensed environment of sight, sound, taste, smell, and touch is stored in our memory. We also store our inner feeling of pleasantness or unpleasantness for each event. We not only remember each experience but also the feeling we were having as it occurred. Just as we have an "inner voice" that produces the name of each item seen, we also have an "inner feeler." You can not turn off either of these.

We agree on the words used to vocalize feelings, actions, and thoughts. We experience a feeling and then to verbalize it, we search from a list of words others have used when expressing what we think likely had been a similar feeling for them—for example, being exhilarated, feeling dread, or anxiousness. Notice that words are not needed to experience our feelings or to choose actions. We are adept at noticing what others are doing or feeling—and what they are saying while they are doing or feeling it.

Early in life, each situation is new to us. After gathering some experience, we avoid those situations or behaviors that produced a bad feeling and repeat those that produced a good feeling. Our religious sages urge that each night, you should review the day's thoughts and actions and repeat those that made you happy while avoiding those that did not. While choosing a response to a situation, that brain circuit in the cingulate gyrus performs a summed average of innate reactions and predispositions, of mental recollections of past experience, and of mentally imagined, likely outcomes.

When a foreign chemical contacts the tissues of our nose or tongue, chemical reactions occur that result in our sense of smell and taste. The chemicals that we encounter do not possess odor. The odor is not real. It is merely our perception of the chemical that has contacted our sensory tissue. It is the way our brain represents that chemical within our thoughts. When we smell rotten food, we have a repulsive feeling because those ancient individuals who did so were more likely to live long enough to have children than were those individuals who ate that rotten food. This is the reason that we perceive an unpleasant smell when we encounter things that consistently proved to be harmful

through many generations. We share these experiences with our ancestors who lived millions of years ago.

There is no "sweetness" in sugar. Instead, the sweetness is the reaction that we have evolved to experience when we taste this food. The pleasant feeling we experience while eating sugar is meant to encourage us to do so. Throughout our biological past, sugar was found only in fruit and such. The molecules of sugar react with the molecules of our tissue in a purely electrical manner. Our conscious experience of odors, sweetness, and beauty are illusions created within our mind rather than being actual, physical properties of the objects themselves or of their molecules. This is the way of our mental world.

Within our brain, the circuits that handle vision and the other senses are intertwined with our pleasantness circuits. Dopamine is released onto the nucleus accumbens through a DNA-directed process whenever an animal is experiencing pleasure. We experience a pleasant feeling while watching a sunset because the regions of the brain that handle sight are also connected by neurons to this pleasure center of our brain. We can experience pleasure through any of our senses. Oxytocin accompanies the experience of love, and adrenaline is released whenever an animal is experiencing pain. Since this occurs even in species of animals as ancient as the fish, it means that they are in fact experiencing emotions too, though they do not look like they are doing so to us. Mammals found it useful to communicate visibly their emotions to other individuals. Notice that little communication occurs between predator and prey. Communication is used for all other reasons.

Why do we think certain people have beautiful faces? Scientists use a computer to digitally combine hundreds of photographs of faces. The greater the number of photographs that are averaged together, the more beautiful we perceive the resulting face to be. Through daily life, we do this mentally, without even being aware of it. It seems inconsistent at first that the average can be the most beautiful, but it is due to an average arrangement of genes, and those have been making individuals that are among the most well-adapted to the environment of predators, food, and climate. An unusual face represents a genetic experiment.

The most beautiful female face occurs when the average face is altered to have a shorter than average lip-to-jaw distance and lips that are fuller than average. However, we are placing an undue emphasis on outer appearance since it results from a tiny portion of our genes. Only a few dozen of our 20,000 genes account for the outer appearance of a person.

Our basic emotions are happiness, sadness, fear, disgust, surprise, anger, sympathy, pride, embarrassment, guilt, and shame. We are born with this small set of emotions that developed millions of years ago as they proved to be the best response to situations that continually occurred through thousands of generations. These emotions are evoked by events that still occur in today's society. Johnston explains that witnessing an emotional response today to an event that evoked it is like traveling back in time to observe the emotions and events that evoked them in our biological ancestors. You feel the same way during the same situation as did an ancestor one million years ago.

Some 50,000 years ago, on a Tuesday afternoon, a three-year old boy stumbled and scraped his knee. As he cried, his six-year-old sister hugged and calmed him and ended his crying. The same fall and comforting hug occurs many times today.

Most of these emotions occur only in social situations. During the earliest generations of the primate social system, those individuals who could detect and respond to these behaviors in others were more likely to live long enough to reproduce than were the individuals who were oblivious to

these behaviors. Social animals have these feelings while non-social animals do not. Each emotion occurs through a DNA-directed release of chemicals during the corresponding situation. Notice that we feel these emotions one at a time, never simultaneously. A person does not have to be taught which emotion to have in a particular situation: the reaction is innate. We are born with these emotions and their number remains constant throughout our lifetime. We do not learn feelings and emotions any more than we learn physically to grow. You cannot invent a new emotion.

We have names for many emotions that are different gradations of these. The intensity of happiness goes from joy to ecstasy, sadness ranges from discomfort to great depression, and disgust ranges from loathing to revulsion and contempt. Fear ranges from light apprehension or anxiety to intense panic or terror. Anger goes from mild irritation to rage.

Facial expressions are millions of years old and have been used to communicate our emotional state. For example, we use a protruding tongue and closed eyes to show disgust. As stated above, we have been speaking in a full language for only 70,000 years.

Scientists most easily observe emotions in infants because their behavior is the least complicated. Their emotional reactions have not yet been altered by extensive life-experience. At first, innate responses control the muscles that create an infant's facial expression but later we learn to control these muscles at will as we become able to act and pretend. Teenagers do not yet have sufficient experience to correctly recognize all facial expressions. For example, teenagers do not yet distinguish the facial expressions of fear and anger. Teenagers do not agree with adults about the meaning of an expression. Do teenagers agree with adults about beauty?

Surprise occurs during an unexpected event. We show surprise with a wide-open mouth. Chimpanzees do the same. We are learning every time that we are surprised.

We readily recognize the happy smiles of other persons. A newborn shows happiness with an innate smile. Even when we are blind from birth we will smile.

Our social emotions include pride, shame, and embarrassment. Our reputation within the group is both the carrot and the stick for much of our behavior.

As the first society developed millions of years ago, a race began among individuals to socially outsmart each other. Membership in a society leads to bigger brains. We are experts at detecting possible cases of having been socially swindled by another individual. We react strongly to any violation as an injustice. Society and its justice are the topics of many conversations and artworks.

You might feel as if you get angry for thousands of reasons, but you get angry only when you feel that you have been wronged or treated unfairly or unjustly. If you think of the last time few times that you were angry, you might remember the specific injustice that caused your anger. *We get angry for no other reason.* We use lowered eyebrows, eyes wide open with tightened lower lid, lips pulled back, and stretched lip corners to show anger. A child becomes angry when something has hurt it; the child might say "The ball hurt me on purpose."

Love attaches us to other humans. Without love's binds we would instead be lone individuals. If a child does not have the opportunity to form a bond with at least one adult during its first two years of life then it will have trouble forming any social and affectionate relations for the rest of its life. It will whine and cling to anyone. This child will show an excessive desire for attention and its future relationships will be superficial. It will show slow development and be withdrawn and depressed. This has been determined through many studies, some lasting forty years and involving

large numbers of persons.

We use wide open eyes, furrowed and raised eyebrows, and a stretched mouth to show fear. Even an infant shows fear when near a cliff or when hearing a loud noise. In our ancient past, loud noises were most often made by predators. We show fear when faced with anticipated pain or danger. Later in life, we feel fear from an increasing number of events that we believe might cause us harm. For example, we might fear the loss of our job, our home, or our health. Fear does not produce pain.

We show “a small smile but not a grin, a slight head tilt, puffed up chest and posture, arms are either akimbo or, in an extremely proud moment, held overhead.” This is pride. A child is first seen to beam with pride for its own actions but soon shows pride for the actions of his or her family and friends, too. The more pleasure we have received from an individual, the more pride we feel for their accomplishments and the more guilt we feel if we cause their unhappiness. An infant will get a sad face and cry in sympathy when another person cries. A child's social feelings of embarrassment, guilt, and shame first occur around age three when he or she has cheated in a mutually beneficial social relationship. A child will not feel guilty about not returning a borrowed item unless he or she had earlier developed good feelings about having similar items. The loss of an item will not evoke sadness unless that item had earlier evoked happiness. The intensity of sadness for that item's loss is related to the intensity of the happiness that item had brought.

Johnston explains that our feelings are a bridge to the minds of our ancestors who gathered food, lived, and loved on the African plains more than a million years ago. Our feelings are precious to us. Our passions add love and meaning to the silent void of the universe. To lose them would return us to the amoeba. We know how each other person feels because we share humanness. We want to understand our feelings and emotions because we want to understand ourselves. As we come to understand how they are products of the evolution of consciousness, we are all the more amazed by them.

Our brains combine senses, remember, learn, understand, and decide using nothing but chemistry and electricity. Our neurons store the moment-by-moment collections of sensory information and search for cause and effect relationships between moments. An animal remembers the experiences it has had with the rest of the world because it will live longer if each experience does not continue to be its first and if its understandings of past events can be used to predict what is about to happen in a new situation.

Every human being that has ever lived, anywhere on the planet, shares these feelings and emotions. Others are not “toy people,” but thinking and feeling human individuals who are just like you and me in that they share the same desires and concerns for love and family and for community and justice. Each of us hopes for a pleasant future. We simply want to laugh and joke with our spouse, family, friends, and neighbors, raise children, and pursue life and the limits of our individual and combined talents and passions. We expect our society to be mutually beneficial for all of us and we will react against any unfairness or injustice in any interaction within our community. We all agree that the proper behavior between the family, friends, and neighbors of our society is to do as the other did, and to expect the other to do what you did.

## Summarized books

*Why We Feel, The Science of Human Emotions*, Victor S Johnston, 1999, Perseus Books, Reading MA.

*Journey to the Centers of the Mind*, Susan A. Greenfield, 1995, W.H. Freeman and Company.

Pride and its facial expression is described at

<https://www.psychologicalscience.org/onlyhuman/2007/06/two-face-of-pride.cfm>

All facial expressions are described at

<http://refdoc-info.inist.fr/c4/refdoc.html?cpsidt=16305310>

## Questions

1. Are all animals that have a central nervous system aware of their own existence? Are they conscious? Does consciousness arise from the communication between neurons? What is consciousness? Is an amoeba conscious? Is a bush? How about the other types of animals, including clams, fish, bees, frogs, snakes, insects, birds and mice?
2. Which other animals are self-aware? Since our pets learn their name, does it mean they have a sense of self?
3. How does one think? What is happening as you are trying to figure out something? What is the difference in your state of mind while you are talking, singing, writing poetry, thinking, running, or protecting your children?
4. How is thinking different from your response to pull your hand away from a hot object? Is your brain doing anything different when it is adding numbers than when it is deducing cause and effect patterns?
5. Do other animals have the same set of senses as we do? How can we determine what are their senses, especially if they are sensitive to something we humans can not sense?
6. Many emotions are more intense versions of a single, more fundamental emotion. How many independent emotions do we have?
7. Does an animal's self-awareness depend on its intelligence?
8. For how many seconds do you think about one thing? How long does your child do this? Your Pet? At the end of a short walk, write down the series of thoughts that have just gone through your mind. How many seconds did each thought last?
9. How are our innate emotions held within our brains? What is depression? Why do we get depressed? Some of us humans who are depressed have said that "it hurts to smile" in that being forced to smile just reminds us that we don't want to smile. We lose interest in everything and want to just sit alone. Why does a person commit suicide? After attempting suicide, some persons have said that they "just wanted to end the continual pain that has lasted for years." Does this indicate societal problems? Which conditions in life are needed for this to occur? How do suicide rates vary in time and place and by age group? Why do we murder? Are the brains of criminals different? What do drugs do to our brains?
10. Are we able to experience more than one emotion at a time? Can you find a situation where two are mixed?
11. We have few words to describe the things we can taste or smell. Can you describe the taste of an apple? Some foods contain certain chemicals that some of us can or cannot taste. Since we have no way of

accurately discussing tastes, we do not even know that we may not be tasting the same set of chemicals. It's hard to find the exact words to describe your feelings and emotions. We can say "the way you feel when your child is born" but we can't say "joy, happiness, and twenty other emotions in various degrees." Can you describe how certain music makes you feel? Can you come closer to communicating the emotion you felt in a certain situation in terms of music or art? Do different tones express different emotions? The goal of art is to communicate or evoke an emotion. (My friend JQ explains that while one is doing art, emotions are being experienced.) How do music and art express emotions without using any words at all? How does sad music communicate sadness to us without using any words? Can nonspeaking animals agree on an emotion to accompany a certain piece of music? How can you measure this? Is it true that deep voices from large animals and deep sounds from certain instruments—drums for example—are commanding? What internal responses are generated in you when you hear quite sounds?

12. What are moods? Which moods can you have at the same time? Are they formed as a growing gang of neuronal agreement? How are they related to our emotions and to our biological fitness?

13. What feeling do you have when you look at your own image in a mirror?

14. List some of your emotions, behaviors, and thoughts and describe experiments that could determine if another animal experiences these same things.

15. List your pet's actions throughout a thirty minute period of time. Is your pet choosing to take these actions or is it just being robotically controlled by its genes?

16. Why do you get butterflies in your stomach and what are the circumstances that lead to them? Are they social or animal in function?

17. Do we average all other person's behaviors, smells, tastes, sounds, and voices as we do with the visual appearance of their faces? Do we average the spoken grammar we hear or the clothing fashion that we see? What sorts of things would be averaged by the members of another species?

18. Describe the incredible behavior of split-brain people. This shows how unaware we are of the way our own brains operate. We think we know who we are but aren't even aware of what is constantly occurring within ourselves. Would a newborn child show the same unusual behaviors if its brain became split before its brain areas had become specialized?

19. Describe some optical illusions that show how we are not aware of the way that our own brains and eyes are working. Visit [www.michaelbach.de/ot](http://www.michaelbach.de/ot) and [www.ritsumei.ac.jp/~akitaoka/index-e.html](http://www.ritsumei.ac.jp/~akitaoka/index-e.html) to see many such illusions.

20. What does a newborn baby think of its first encounters with each of its senses? What are the differences between taste, smell, touch, hearing, and sight?

21. Why do we get an urge for a certain food? Does the food processing portion of our body detect and remember the chemical contents of each type of food and remind us to obtain that food again whenever we are in need of those same chemicals? Does our body relate changes in our well-being to what we just ate?

22. When someone hates the taste of something that you like, is it because they can detect a chemical that you cannot taste? Find some tastes, odors, or colors that you can detect but that someone else cannot detect.

23. We see that we ignore most elements of the constant barrage of external events—for example, the movements of grass—unless they are of biological importance to us. List some things that are of biological importance to us and some that are not. For example, an infant will pay particular attention to another infant. Are these things innately recognized or do we learn through experience which things to pay attention to and which can be ignored? What does it take for us to develop a specialized processing area in our brain for recognizing a particular event?

24. Do foods having no fat taste bad? Do we like the taste of fat? Does this have anything to do with our possible scavenging lifestyle on the African savannah? Does fat have a nutritional value, as does sugar, so that there is a biological reason for us to desire fat?

25. Are you more likely to live long enough to have children if you communicate your emotions to the other



members of your species? What do tears communicate? Which animals do this? Which emotions do you communicate and how?

26. Our human sense of smell is very sensitive to sulphur, which is the "rotten egg gas." My friend Kelley explains that this indicates we have been eating eggs for millions of years because an egg eater needs to know if an egg is rotten. Do people today pay attention to neighborhood birds and their nesting places? Did your grandparents? Is birdwatching popular today because our ancestors have been watching birds and eating their eggs for millions of years?

## **Chapter 4 Our ancestors have been parenting mammals for 200 million years. Parenting and parental love originate as a pair.**

We human beings are parenting mammals. We live for our children. We first of all strive for happy and healthy children, families, and communities. If you ask 10,000 persons from 10,000 different cultures around the world they would all state that we live for our children. Both parenting behavior and parenting love developed simultaneously. It is not the case that mammals acted as parents for thousands of generations and then later, parenting emotions of love were added. By the way, all mammals are parents but it is the case that only about 5% of mammalian species form monogamous parenting relationships.

We next look at the sequence of species that have occurred on the Earth. Life remained single-cellular until about 750 million years ago. Our limbs and livers developed millions of years ago in ancestral animals.

Paleontologists have found millions of fossilized animal remains. As they first started finding fossils a couple hundred years ago, scientists constantly found new fossil species that had never before been seen. Eventually, new excavations resulted only in additional copies of already-known fossil species. As they stopped encountering previously-unknown fossil species, they knew that they were beginning to have a fairly complete picture of the past. In the last few centuries, about one-million biologists have spent their entire lifetimes studying millions of living and fossilized plant and animal species.

Cecie Starr explains that sponges are ancient and very successful though they have no organs and no body symmetry. The microscopic Mytilina (rotifer) feeds as it uses its appendage to push itself around. Jellyfish are a primitive species that does not have a brain or central nervous system but does have a network of nerves that react to touch. It does not have eyes but some types do have a light sensitive organ that can detect only brightness or darkness. Flatworms have a three-layer tissue that gave rise to muscle tissue in descendant species. Round worms have a complete digestive system. Soft-bodied mollusks, such as a clams, occur when a shell is secreted from the body. Bivalves do not have a head and are filter feeders.

Highly specialized nerve and sensory systems first appear in the Arthropoda animals, which include insects, spiders, crabs and lobsters and such. Insect segmentation favors the evolution of specialized head parts, legs, wings, and other appendages. The centipede was the first to modify an appendage that, in this case, became a venom claw.

Tunicate larvae have a flexible notochord that is bent one way and then the other as muscles are flexed. This flexing propels it forward in a way that might resemble that of the ancestors of fish. Adult tunicate attach themselves to the substrate. The Ausia may be the ancestor of the first backboned animals. A filter feeder that is permanently attached to the ground must wait for food to pass by, an animal that instead moves can go in search of food. This opens up endless, new possibilities. The Arandaspis is a filter-feeding, jawless fish that began to occur almost 500 million years ago. The lamprey is a modern, jawless fish.

An early form of backboned vertebrates had a hollow, central nervous system, gill slits, tail, and a circulatory system with a pumping heart; this is the reason that you have a backbone and a heart. This fish led to all the vertebrates that live in the water and on the land. The gill slits were mainly for filter-feeding but also helped obtain oxygen.

Fish have a rudimentary brain formed from a clump of nerves. This is the reason that you have a brain. The earliest fish had no jaw but soon, some of its gills developed into a jaw, and a gill arch support developed into an ear. They also have a movable tongue. You have eyes because you are the descendent of these earlier species.

The modern, airsac catfish is an air-breathing fish that can move short distances on land and is found in Florida and Indonesia. A few hundred million years ago, the first fish to leave the water likely did so to avoid predators or to move between receding puddles. Fins began to be used as legs. The *Ichthyostega* is an early example. Since these ancestral animals have four limbs, you do also.

Amphibians such as salamanders, frogs, and toads evolved from fish and so are the link between fish and reptiles. It took some 15 million years for amphibians to develop. A number of changes occur as animals adapt from life in the water to life on the land because the two environments are very different. For example, an animal's body can dry up when it is no longer surrounded by water. Also, since the buoyancy of the water is no longer supporting the animal's weight, more supporting bones are needed and an increased metabolism is needed to provide the increased energy requirement that this entails. As plant-eating animals migrate from water onto land, they find that their food is very different, and this requires changes in its digestive system. There is a much wider range between day and night time temperatures on land than occurs in the water. The change in environment required many changes in the body, including the enlargement of lungs and the replacement of gills. Nasal passages became enlarged for better breathing and a better heart, having three chambers, emerged for increased circulation. Eyes were no longer immersed in water so they developed eyelids, glands, and lubrication ducts, all of which keep eyes free of foreign objects and protect them from the glare of the sun. There was pectoral and pelvic strengthening to support the increased body weight and a strengthened attachment of the internal bones that support limbs. A neck developed to allow the independent movement of the skull. The spinal column became sturdy but flexible.

Soon, some land-based reptiles moved back into the sea, looking much like the later mammals who moved back into the sea to develop into whales and dolphins and such. Amphibians lay fish-style eggs in water and their young begin life with gills.

Reptiles developed from amphibians. Dinosaurs are reptiles, as are snakes and lizards. While amphibians lay soft eggs in water, reptiles lay hard-shelled eggs on land. The egg of a reptile contains its own "pond." The egg contains food for the growing creature, and its soft shell allows air to flow in and carbon dioxide to flow out. A reptile's legs are on the side of their body so that they walk by twisting left and right, swinging their legs outwards like oars. In contrast, the legs of a mammal are underneath their bodies, allowing for better support and movement. Both birds and mammals are descendants of the reptiles.

A little while after the dinosaurs became extinct, mammals increased in abundance by out competing the remaining reptiles. They did this by acquiring an improved nervous system and increased speed and agility. The first mammals ate insects, as do today's shrews and moles. We humans are still able to digest insects, though many cultures prefer not to. Except for birds and insects, the animals that we most often see every day are mammals. Every four-legged, furry animal is a mammal, as are we humans.

Mammals differ from reptiles in a number of important ways. Mammals have hair and sweat glands for body-temperature control and a larger portion of their body weight is due to their brains.

All mammals share many things in common. For example, the necks of mammals—from mice to giraffes and whales—have seven cervical vertebrae. Of 6,000 mammal species, only manatees and sloths do not have seven cervical vertebrae. Instead of laying eggs, mammals internally incubate their young and then give birth to live young. Mammals have mammary glands for feeding their young, and, most importantly, they have a parenting reproductive strategy in which they take more personal care of their young than do egg-laying reptiles. This strategy is in contrast to most non-mammals who are not parents in that adults typically leave behind a batch of thousands of eggs to tend for themselves. The adult never knows its offspring, and just a small portion of those thousands of abandoned offspring survive to become adults themselves. Since this attention makes their young more likely to live beyond childhood, mammalian litters contain fewer individuals than do those of non-parenting species. The lack of parenthood among other animals will also mean they have a lack of parenthood instincts; these parents worry only about their own lives.

Mammals have a child rearing strategy in which they protect, teach, and rear their offspring through infancy until they in turn become old enough to have their own children. We have seen that natural selection means that those individuals whose traits are better matched to their environment of climate, predators, and food will be more likely to live long enough to have offspring. For mammals, the most-genetically fit individuals are those who are matched to their environment *and* successfully rear their children to the point that they in turn are prepared to raise their own children. Mammalian parenthood is a large part of the human animal.

Mammals are also much better at communicating than are reptiles. They make it obvious to each other that they are friendly, are going to attack, or that they are happy, sad, or angry. I can understand the face and posture of a growling dog but communicate little with insects or reptiles.

Parental care consists of cleaning and grooming, transporting, retrieving, feeding, defending, babysitting and teaching. Offspring are taught by example. They watch their mother to learn everything needed in life including which foods to eat, how to make nests, and the details of interspecies behaviors. We humans learn most effortlessly simply by watching and then doing. This practice is older than language and it is how we acquire our culture.

General mammalian behaviors include feeding, play, communication, relations with others of the same group and with other groups of the same species, defense against predators, dealing with the climate, reproduction, and child rearing and training. For the last 200 million years, these have been the daily activities of our direct mammalian ancestors, as they are for us human beings still today.

Mammals communicate specific emotional states in various ways, including sight, sound, and touch. Bonding occurs during the touches of grooming and affection. A firm bite gives a warning. Odor indicates membership in a group, an individual's rank within the group, territorial boundaries, or indicates oestrus, which is the time at which a female can conceive. For most mammal species, oestrus occurs during only a handful of days per year but reproduction-related activities often play a large role throughout the year.

Each mammal species uses specific body postures to communicate affection, anger, alertness, the threat of aggression, the intent to defend, submission, play, and courtship. You have likely seen each of these displays in cats and dogs as well as in humans.

Courtship displays can include both sight and touch. These displays must be long enough to display fitness but short enough to be completed before predators arrive. Birds are able to have long

and complicated courtship displays because they can more easily flee. Birds tend to develop bright colors to attract mates, but mammals have a tendency to develop colors that provide camouflage from predators or prey.

Mammals produce sounds of varying pitch and loudness to warn group members of approaching predators or to give a threat to another member of the group. Wolves, who live in small groups, make sounds to bring together the group members and to warn away other groups while coyotes, who mostly live as lone hunters, howl to indicate their territory in order to keep all other coyotes away. Communicating with sound is an option when the sound will not attract predators. Birds and monkeys in the trees are noisy because they can easily flee. Rabbits make very little sound.

A small number of mammalian species sing to keep in contact with other group members and to attract mates. Whales make a repetitive song having a thirty-minute duration. A whale changes its song through the years by changing or adding notes.

Some primate species sing to other group members scattered around the forest. We humans sometimes sing while working or playing in groups and sometimes attract mates by singing. We distinguish happy from sad music. Some Parkinson's patients suddenly begin to dance while listening to a song that had been their favorite before the disease began.

The claws of a squirrel dig into wood well enough to enable it to run through trees. Squirrels are closely related to mice, rats, and beavers. Rather than using digging claws to grasp branches, primates have hands and fingers. The primate's grasping fingers support more weight, allowing them to become larger animals. Larger animals have slower heat rates and metabolisms, resulting in longer lifetimes. For many species, the lifetime of an individual lasts for about one billion heart beats. Those with more slowly beating hearts live for a longer amount of time. Apes typically live fifty years. The development of primates began with the appearance of prosimians some seventy million years ago. One type of prosimian began to dwell in bushes and trees where it ate leaves, berries, and insects.

Birds, reptiles, and fish have better eyesight than most mammals because most mammals are nocturnal creatures who rely more on their senses of smell and hearing than on eyesight. The eyes of nocturnal mammals consists of rod cells that sense light and enable black and white vision in dim light. You see nearly nothing in an unlit room at night but your cat sees just fine and wonders why you are stumbling around. In contrast to most other mammals, monkeys, apes, and humans do have color vision. The visual system of humans separately detects the presence of red, green, and blue light through three types of cone cells. When rods and cones detect light they send electrical signals to the brain, which then has to interpret the pattern of signals. Certain species of birds and fish have four or five types of cones and are able to distinguish many more colors than can humans. Mantis shrimp have sixteen type of cones in their eyes.

The pupil is that opening in our eyes. It widens and narrows as the brightness of the scene increases or decreases. All light that passes through the pupil came from the forward direction. We have a pupil to select light from one direction, otherwise our rods and cones would detect light from all directions at once.

For primates, their lives in trees require better vision than that of the nocturnal mammals. For an early prosimian, vision became more important. Its eyes moved forward to enable stereoscopic, three-dimensional vision that could better determine depth and distance, making it easier to move among the branches. Since grasping fingers are more individually operated than is a digging claw,

there is an accompanying change in the brain of this animal. This line of prosimians had become primates.

There are some 6,000 species of mammals. Since the number 6,000 is not all that large, we don't want our industrial civilization to cause the extinction of even one—yet alone 60 or 600 mammal species—or we will be gambling with our own future.

#### Summarized sources

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#### Questions

1. Are all animals that have a central nervous system aware of their own existence? Are they conscious? Does consciousness arise from the communication between neurons? What is consciousness? Is an amoeba conscious? Is a bush? How about the other types of animals, including clams, fish, bees, frogs, snakes, insects, birds and mice?
2. Do other animals have the same set of senses as we do? How can we determine what are their senses, especially if they are sensitive to something we humans can not sense?
3. List some emotions and discuss their biological purpose. Do reptiles, insects, or fish have these emotions? Do other mammals or primates?
4. Many emotions are more intense versions of a single, more fundamental emotion. How many independent emotions do we have?
5. Birds and mammals are both descendants of reptiles. Are the behaviors of birds more varied than those of reptiles. Compare bird behavior with mammal, primate, and human behavior.
6. Why can't you tickle yourself? Since other apes have the same tickle spot, it must have originated in a common ancestor. What was society like for this ancestor? When did the tickle spot develop? Why?
7. Our memory involves all of our senses in some funny way that involves records of our entire mental state. What is occurring in our brains as an old song puts us back to a particular moment in time? Those of us who have Parkinson's Disease cannot control our muscles due to an impairment of our neuronal activity. The physician Oliver Sachs has found that some Parkinson's patients suddenly begin to dance while listening to a song that had been their favorite before the disease began. How does this occur?
8. What clues about our brain's operation do we get from the funny effects of hypnosis? For example, when discussing a particular time in our past while under hypnosis, it is found that the style of our handwritten signature also returns to that same time in the past. How does this occur?
9. At birth, do our brains know that we have arms and legs or does it find out by operating muscles in a trial and error manner? Would our brain be able to figure out how to operate twelve arms if we had that many?
10. During the sequence of the Earth's animal forms, which was the earliest animal needing to recognize the

faces of several individuals? Would the same part of the brain recognizing landscape also recognize faces? How do birds navigate as they migrate those long distances each year? Could this be done by merely recognizing landscapes? (Many times I have suddenly noticed as I approached a country highway intersection that I recognized this visual area by the shape and lay of its land even though I had approached from the north this time but from the west two years before. This occurred only if during the previous trip I had stopped for ten minutes in this area. Was I "navigating" by landscape?)

11. Most mammalian youngsters learn only from their mothers. Do you feel any predisposition to preferentially turn to your mother or to your father to learn about the basic skills of life?

12. We see that we ignore most elements of the constant barrage of external events—for example, the movements of grass—unless they are of biological importance to us. List some things that are of biological importance to us and some that are not. For example, an infant will pay particular attention to another infant. Are these things innately recognized or do we learn through experience which things to pay attention to and which can be ignored? What does it take for us to develop a specialized processing area in our brain for recognizing a particular event?

13. Do you believe the rumor that the dinosaurs were wiped out by alien sports hunters using iridium bullets? Do alien zoos still contain any of the Earth's dinosaurs? Do aliens have movies of the dinosaurs? Will we be able to clone dinosaurs? Would a pair of cloned dinosaurs know how to behave if they had no parents to teach them how to be dinosaurs? Were dinosaurs raised by their parents? Are reptiles raised by their parents?

14. What sort of plants and animals existed in your area one million years ago? 50? 500? 1,000?

15. Each sudden extinction of most of the Earth's species has been followed by an increase in the variations of the remaining species. If we humans are currently causing such an extinction, what sort of species will replace those that will become extinct? How will we live if it occurs that we are the only remaining species?

16. If each species is well-matched to just one climate, what is the climatic range of our crops? How quickly can this be changed?

17. What has enabled us humans to live in each of the Earth's climatic regions?

18. What is the difference between living matter and nonliving matter?

19. Is life more than atoms and molecules?

20. Is a human more than atoms? More than an amoeba? More than a fish, a frog, a mouse, or a monkey?

21. If combinations of electrically bound atoms produce life—where "life" is self-duplicating and self-directing combinations of atoms—can combinations of particles that are bound by gravity or by the nuclear force result in life? (There are science fiction books containing these possibilities.)

22. If a robot monitors its surroundings, records its experiences, finds cause and effect patterns from its experiences, and chemically processes iron and sand and such to make copies of itself, is it then alive? If mistakes occasionally occur during the duplication process, what is the chance that they will improve the robot's operation? Would it then be evolving? What else could cause an evolution in this robot?

23. How does your set of emotions compare with those of reptiles, birds, worms, or mice?

24. How are we related to chimps, whales, algae, worms, insects, and birds?

25. If people's knees bent the other way what would chairs look like?

26. Can a life form be created by designing its DNA?

27. Silicon is chemically similar to carbon. Are there any silicon-based life-forms?

28. How has it occurred that so many different animals sneeze, yawn, and close their eyes while taking a bite out of their food? Which types of animals do this and when did it begin?

29. Find an example where one species has split into two different species due to a change in the environment. Find a split that occurred as one species expanded beyond the edge of its home environment. Before this expansion occurred, were some members of that species already matched to that differing environment beyond the edge?

30. Describe the evolution of the horse or the whale.

31. For a typical species, what percentage of its genetic code becomes mutated with each generation? If the genetic code of humans and chimpanzees differs by 2%, how many generations have elapsed since they took separate paths?
32. How many chemical reactions occur per hour in your liver, your brain, and your body? How many atoms are involved in these processes? How many illnesses have been identified to be caused by genetic defects that result in incorrect chemical processes?
33. Find a case where a change in the source of food of a species led to a change in that species.
34. Find a case where a change in the predators of a species led to a change in that species.
35. Find a case where a mutation (error) caused a change in a species.
36. Which rules of nature result in life?
37. Find the range in a few human traits.
38. Describe a relationship between humans and another species.
39. Algae, bacteria, worms, and fish are very old. Why haven't they all evolved into something else?
40. Do you have any actions or behaviors that you inherited from your reptilian or amphibian ancestors? When you enjoy basking in the sun are you repeating a behavior passed down from your reptilian ancestors? Is this more than a coincidence?
41. Did the number of atoms contained in an early, developing life-form grow linearly in time? Would this number grow in proportion to its width, surface area, or volume? What is the fractal dimension of a protein? (This dimension gives an easy but approximate way to calculate growth.)
42. Does a fish taste salt water? Do we taste water or smell air? Does our inability to taste water remain from our sea-life ancestry? Why can we taste salt? Does a horse or a cow taste dirt? Since they eat the adjacent material, do monkeys sense tree limbs to be neutral, bad, or good tasting?
43. Compare the mechanical efficiency of crocodile and snake motion.
44. Create a piece of art that explains how you feel about the types and sequence of animals in the world.
45. Does DNA continually test wide extremes? Has DNA incorporated a search algorithm to find the best of  $2^n$  possible solutions in just  $n$  generations? For example, does it employ a binary search which first tests the extremities of a wide range of possibilities, then tests the midpoints of that range, and after gauging success it repeatedly cuts the remaining range in half. This would accomplish in twenty generations what an exhaustive search would take one million generations to do. The available range is continually cut in half as illustrated in the following guessing game. Think of a number between one and one-million, say 314,152. Another person, the "guesser," then asks if your number is one-half million, which is the midpoint of the available range. You answer that your number is below that guess. The guesser now knows that the answer is greater than zero but less than one-half million. This means that the search area has been cut in half. The guesser then asks is your number 250,000, which is at the midpoint of the remaining search region, and you answer it is above that number. The guesser has once again cut the search area in half and knows your number is between 250,000 and 500,000. The number will be found within twenty such guess-and-replies because a search range of one million when chopped in half twenty times results in one possible value.
46. What would you say if you looked at a drop of water in a microscope and saw a group of one hundred bacteria cells lined up to form the letters of the message "Hello"? Have aliens ever lined up our electromagnetic radiations to "spell" something that amused them though we didn't know it had happened?
47. Are organic compounds and amino acids forming in the ocean today? Are they continually being eaten?
48. Should we humans design viruses meant to cure our diseases? Should we replace misbehaving genes with properly functioning copies?
49. Should we conduct research into altering our own genetic makeup?
50. Is a brain a generic device that would learn to operate the body of whatever species in which it finds itself? At birth, if you switched brains between two species, what would happen?
51. What does it mean that we are animals? List your daily behaviors and indicate which of them are



common either to mammals, all animals, or only to humans. Which of your general behaviors are missing from the above list of mammalian behaviors? Do they involve your extended family or your culture? Compare your list with those from other persons. Which items were included on the lists of most everyone?

52. Compare your daily behaviors with that of a reptile or your pet.

53. Compare the ways we humans cooperate with the ways other animals cooperate.

54. Compare your parenting behaviors with those of another mammal. How about other types of animals like birds, insects, or fish..

55. Compare your human mate selection criteria with those of another mammal.

56. Compare your communication techniques involving odors, sights, and sounds with those of another animal.

57. List some human body postures that mean the same thing to all the members of a single culture. Can you find some that mean the same thing to every person on the planet?

58. Describe funny, suspenseful, happy, and sad music. Does every human agree with your description or just those who are members of your culture? Are you attracted to musicians? When you hear a song from your past, how does it transport your mind and emotions to that past time?

59. When and why did we begin forming monogamous parenting relationships that last for a lifetime? Is this behavior genetic or learned? What would have to change in our biology before this system could change? What is the "divorce rate" of other monogamous species? How does the divorce rate vary among human cultures? Is every human culture strictly monogamous? What role did language play in choosing our lifelong mates? How many words and gestures were we making one million years ago?

60. How would our society and civilization be different if we formed harems? What if we produced batches of one hundred children that we then left to grow on their own?

61. Do we have a dominance hierarchy? Why do you form friendships with others? Do you ever form friendships to plot the overthrow of the leader of your group? Do you have a group leader? If so, why is that person the leader? Under what circumstances do you have a leader?

62. Do gazelles recognize their siblings and the other members of their extended family? Will two gazelles that are brothers generally compete for the same female within the herd? Do human brothers do this?

63. Is our rectangular cross section related to our universal idea of dividing directions into the four box-parts: north, south, east, and west? If this is true then what sorts of directions would differently shaped animals use? Would an eight-legged octopus use up, down and then an angle all around since its body is round, or would it have eight directions? How about worms, snakes, and spiders?

64. Why do adolescent mammals play? Do young reptiles play? Do fully-grown individuals play?

65. In their book *The Dog Who Would be King, Tales and Surprising Lessons from a Pet Psychologist*, John C. Wright and Judi Wright Lashnits describe how two strangers will approach each other without staring directly into each other's eyes so as not to provoke a challenge. They will look at each other and say a greeting only at the moment of passing. He describes how two dogs do the same thing. When they meet, the first to sniff is likely to end up being the dominant one but sometimes both allow the sniff. Compare your techniques for determining friend or foe with that of some other animals. He also says adult dogs ask their friends to play using the same body language that they learned to use while they were puppies. What sort of interactions did you learn as a child? What sort of childhood body language do you use as an adult?

66. What is the benefit for mammals to communicate their inner emotional state—through postures, facial expressions, and vocalizations and such—to other members of their own species and to members of other species? Does it clarify intentions? Is it just to avoid fighting to the death—usually with an animal you cannot even eat—for no good reason? What is the benefit to a rattlesnake when it rattles its tail to give a warning to an approaching animal?

67. Describe the parenting behaviors of rattlesnakes, seahorses, and the Central American Cinote fish, each of which are atypical non-mammalian animals in that they give birth to live young. Compare the number of

offspring they have, and the number that survive to adulthood, to those of a related egg-laying species.

68. Describe the reproductive strategies of flat worms, as each individual has both male and female organs.

69. Which emotions do reptiles have even though they do not display them?

70. Can you describe how our lives would be if we didn't have our parent-and-child arrangement? We sometimes hear reports of the breakdown of the nuclear family. Is this happening? Does the nuclear family serve a different purpose today than it had in the past one million years? If so, then why is it occurring and should we do something about it? Is likely that our ancient, biological ancestors first took to forming monogamous parenting relations because the life of their children depended on it. The efforts of both parents were needed or the child would too often die before reaching adulthood. The lives of our children today are at stake only if they take up a life of drugs or crime, but the quality of their lives can be affected by having a single parent. If their lives are no longer at stake, as was the case one million years ago, why do today's children need two parents?

71. Describe motherhood and fatherhood. Explain why the parents of a murderer still love their child.

72. Do parents from every culture act in the same way toward their children? If so then how do they differ, and do the differences amount to 50% or is it about one part in a thousand?

73. How has parenting changed in the last few generations?

74. How do the religions, governments, and businesses of the world view parenthood?

75. Can you make an experiment to see if you can create the circumstances to get a monogamous or harem-forming species to switch its tactics? Is it genetic or learned behavior? Do you want a single spouse because you learned this behavior from your parents or because that behavior is part of your genetic heritage? Do you feel any inkling within you to form a harem? As you fall in love with one person, do you stop noticing all others?

76. A nuclear family of humans simultaneously includes children of various ages. Which other mammalian species have nuclear families or families consisting of siblings, which are children of various ages? How many years does it usually take for mammalian offspring to mature and separate from their parent(s)? What role did language play in our initial development of the nuclear family? How many words and gestures could we make one million years ago?

77. Some species form social groups. How does being social make an individual more likely to live long enough to have offspring?

78. Create a piece of art that explains how you feel about being a mammal or a parent.

79. Which characteristics do you look for in a spouse? Do many persons agree with you? Have people preferred these characteristics through the generations? If so, have the average levels of these characteristics been increasing through the generations? How do we choose preferences? Which characteristics did our *Homo habilis* ancestors prefer?

80. What do animals do to reduce their population growth when it becomes necessary? How could these measures be useful to individuals and to the species?

81. Do insects sleep? Why do animals sleep? What tells you that it is time to sleep. What happens to our sleeping patterns when we live near in the polar regions of the Earth and have months in which the sun never sets followed by months in which the sun never rises? If you lived for days in a room that had no windows or clock, how would you decide when to sleep? (Studies have found that in this situation, some people will stay awake for three hours and then sleep for one, while others stay awake for two hours every six, and yet others sleep sixteen hours after being awake for forty-eight.)

82. How does the rate of genetic change per generation compare among harem holders, monogamous groups, promiscuous groups, and territorial species who have little choice in mates? How does the level of genetic variability compare among practitioners of these reproductive strategies?

83. How would human mate selection differ if it was based largely on singing and dancing, as it is for birds?

## **Chapter 5 For 20 million years, our ancestors have been social primates. Society and the Golden Social Rule originate as a pair.**

Some 25 million years ago, primates diverged into monkeys and apes. After that, apes diverged into gorillas, chimpanzees, orangutans and humans. This occurred at the rate of about one divergence every few million years. Within each of these divergences, finer divergences occur about every one million years, and there are yet finer divergences within those.

Today's mountain gorillas live in small groups. Females have their first child around age thirteen, and then carry another child every three or four years after that. When males reach the age of sexual maturity, they will leave their original group and move off to join another. Within each group, sexually mature males compete for females and so have come to be twice the size of females. Such a size difference occurs in each species that has physical competition. For us human beings, males are only 20% larger than females. Scientists look for the appearance of this reduced size difference in the ancestral species of humans.

Mammals learn by watching their mother, but in humans, teaching and learning is done more-intently and for several years rather than several months. Human children have to learn 40,000 cultural details, so childhood is lengthened, and this results in a delayed and pronounced growth spurt at the age of sexual maturity. Scientists look for a delayed growth spurt in the ancestral species of humans because this indicates the extent of culture.

It is important to understand that humans did not evolve from today's monkeys and chimpanzees, but that humans and these other primates share a common ancestor. We are not the offspring of today's monkeys but are their "cousins" in the sequence of the Earth's animals. More distantly, we are also the cousins of whales and birds and the offspring of reptiles, amphibians, fish, worms, and bacteria. Every species that has ever existed, is a direct descendent of the first self-duplicating molecule.

Macaque monkeys are our primate cousins. Just as did our mutual ancestors several million years ago, they form a mutually beneficial social group to better accomplish any task that is larger than a single individual can do alone. The earliest tasks are to watch for predators, warn others, and to look for food. Since food is found in group-sized bundles, it is best for a group to search for it together and then share it when it is found.

This also means that the lives of our newly-social ancestors literally depended on the community's continued existence. They developed social behaviors that kept it functioning in order to secure its continued existence—and hence their own. Social individuals understand that their own behavior is not good for themselves if it damages the community because there would then be no community. They would again be "going it alone" and find themselves less likely to survive. Our notions of right and wrong stems from our innate understanding that something isn't good for me if it is not good for another member of my community. A few million years ago, social systems and social behaviors developed simultaneously. It is not the case that we lived in a social group for hundreds of generations and then added a Golden Rule at a later time. The Golden Rule is innate to a social species. The social rule and the social system are one and the same.

We all agree about the proper behavior between the family, friends, and neighbors forming our society. This proper behavior is often described as the predisposition to do as the other did and

to expect the other to do what you did. This agreement is synonymous with our primate social system because it is the social glue that creates that system. With each generation, it creates anew the social group.

We expect our society to be mutually beneficial for all of us. We react to anything less as an injustice. We expect this of every interaction within our community. Our governments legally define this notion, and our religions remind us that it is the most important aspect of our mutual lives. Society developed simultaneously with our Golden Rule.

Whenever we have a feeling that we are doing something wrong, our actions are involving other persons. We have an innate feeling that "it isn't right for me if it's wrong for someone else." This feeling is exactly as old as the first social system. Today, those of us who are Christians say "Do unto others as you would have them do unto you." Those of us who are Buddhists say "Treat everyone as if they are you," and that "The group is important, not one individual." Islam teaches one to "Love for your brother what you would love for yourself," and Confucianists say "Before you act you should apply the personal test: how would you feel yourself?—you can find the answer in yourself."

If you asked all eight billion of us to state our guiding social principle, we would simultaneously answer "The Golden Rule." No matter which religion a person follows, or even if a person chooses not to follow any particular religion. This rule has been innate to our species for a few million years. We would not otherwise be a social group.

We form a community or society because of the unspoken certainty we have that the mutually beneficial exchange of help makes for a better life than going it alone. It is unspoken because it is innate. We don't have to think about it first and then decide to be a member of society: this is what we do naturally. You can choose to be a hermit on a mountain but you do not have to choose to live in a group of people.

We next discuss the social systems of today's common chimpanzees and of Bonobo chimpanzees. Genetic studies find that six million years ago, a common ancestral animal diverged into the three lines that would become today's chimpanzee, bonobo chimpanzee, and human beings. The pre-human line lived on the drying East African savannah while the pre-chimpanzee line continued to live in the rainy forest. As mentioned above, any two persons share 99.9% of their genes, humans and chimpanzees share 98%, and humans and mice share 85%. The social life of each primate species includes differing levels of bonding, altruism, alliance formation, power struggles, disputes, and reconciliations.

Looking face-to-face into the eye of an ape, we see another rational being with a full personality as complicated as our own. Scientists observe apes in their natural settings and following them through their daily movements, recording their minute-by-minute social interactions through many generations. The scientists distinguish each individual, get to know their personalities, and know which individuals are related to which others. Thousands of interactions between them are recorded. The amount of data collected for each individual is enough to write complete biographies. It's what your own daily diary would be if you described each minute-by-minute social interaction.

Many chimpanzee behaviors are like our own. Infants suck their thumbs, and they merely have to hold out their hand to bring mom back to them. Youngsters are seen to pout, whimper, and yelp. If these tactics don't work they might try throwing a temper tantrum. They laugh when tickled. They hold out their hand to ask for food, and they kiss.

They use our own familiar facial expressions to communicate happiness, play, disappointment, frustration, or the desire for contact. They have a friendly smile and a fearful grin that shows lots of teeth, sort of the way Daffy Duck does it when he is in trouble. Young chimps like to make funny faces.

There is not much difference between the playful behavior of juvenile apes and of our own children at the playground. They each will laugh, tease, squabble, get their mothers involved, and then reconcile.

Chimpanzees make and use tools. They strip the leaves from a twig and then insert it into a termite nest. Termites walk onto this twig, and then the chimp pulls out the twig and eats those termites. Chimps use leaves as sponges to absorb water to drink from tree-holes. They crack nuts with rocks and they teach this technique to their infants. These are examples of culture in chimpanzee society. Another example is given by the fact that chimpanzees do not know how to climb trees unless taught by example while young. In some chimpanzee groups, no one knows how to climb a tree.

Chimpanzees form a dominance hierarchy in which the alpha male is the only one to mate with any female. Chimpanzees engage in elaborate power struggles. The key to becoming the alpha male is to form an alliance with one or two other males and then challenge the current leader. (Notice that this is done without the use of spoken language.) A male will challenge the alpha by dramatically dragging a leafy branch, shaking it, and slapping it against the ground while making lots of noise. (We throw things, too.) The challenger gets his friends to join in while the alpha male is busy getting his own friends to join in. There is screaming and barking and shifting alliances in a spectacle that might last thirty minutes. It is not over until one assumes a submissive posture toward the other. Now that they agree on rank they will make up by hugging and grooming. There can be internal competition but there must also be unity in the community because the lives of each group member depends on its continued existence. A new alpha male might kill infants so that their mothers will more-quickly return to oestrus. He will then impregnate these females with his own offspring. Females with new infants will avoid the group for a while to avoid this potential danger. (Some 70% of species are candidates for infanticide but fewer have adopted this behavior.)

Chimpanzee males cooperate in hunting small monkeys. To catch their prey, some of the hunters drive a monkey group in a desired direction while others block the prey from taking escape routes and still others wait ahead in ambush. When a monkey is caught, the meat is divided between the participating males and the non hunting females. The males also cooperate in defending their territory against neighboring communities.

Females raise their young with little assistance from the males whose only contribution is to occasionally play with the youngsters. When chimpanzees find food, it is shared by all members of the group, but the most dominant male gets the first portion. He then shares first with his male allies and next with the females who are currently in oestrus.

Scientists also study chimpanzees living in large groups within zoos. Their social behavior is much the same as in the wild. Scientists find that chimpanzee society will change sufficiently to get through a sudden crowding in population. For example, dominant individuals will allow others to approach more closely than usual. Humans experience a similar crowding while living in submarine vessels. It has been found that the social system of rats is greatly stressed by crowding but the social system of primates is sufficiently flexible to handle crowding.

There is another species that is slightly more closely related to us humans than are chimpanzees. These are the bonobos, who are distinguished from the more common chimpanzees by the part in their hairdo. They are found only in the thick forests of the Congo. Bonobos live in communities of 20 to 120 individuals, who might nest together at night and separate by day into many smaller groups to search for food.

A particular individual spends a little time first with one small group and then switches to another. Only mothers and dependent children remain together always as they form the core of society. There are other neighboring communities but none of them mix by day or by night. As females reach puberty, they will leave their original community and move (emigrate) into a neighboring one to avoid inbreeding.

Before scientists could understand this arrangement of many groups within a community and of females emigrating to other neighboring communities, they had to know and track many individual chimpanzees for many years. All that was seen at first were hundreds of nearly identical looking chimpanzees within a region. It is like trying to make sense out of the collection of individual squirrels or birds in your neighborhood.

Many bonobo actions show empathy and sympathy. Group members will help an old member get to another place. When one bonobo saw that an infant was thirsty, it filled its own mouth with water and then walked over to the infant to give it the water. One bonobo surprised a bird and caught it. He then carried it to the top of a tree, held out its wings, and tossed it up to fly away.

Bonobos easily walk upright, often while carrying food. This has made their legs larger than their arms, like ours, and their backs straighter and more human-like. In contrast, chimpanzee arms and legs are more-equal sized because they are more-equal used.

Bonobos communicate more vocally than do chimpanzees, who will call only to intimidate, when seriously alarmed, or when aroused by food. Bonobos vocalize constantly and for the slightest reason. They vocalize back and forth as rapidly as ping pong—in turn, and without interrupting each other. Bonobo voices are more highly pitched than are those of chimpanzees. In the attempts of scientists to teach human language to various species, Bonobos have done the best in listening to our voice and learning to use language. Kanzi is a bonobo.

Each individual forms a nightly nest up in a tree by pulling together some leafy branches. An individual does not disturb others who are nesting.

Bonobos are among the three mammal species that do not have a system of male dominance. The other two are Lemurs and spotted hyenas. Bonobo society is female-centered, with smaller females dominating males. When food is found, females share it first to cement relationships. When a chimpanzee female is placed with a male bonobo in a zoo, she quickly learns that she can try to dominate him, but she knows not to try this with a chimpanzee male. (We too learn very quickly what each and every individual will or will not allow during our interactions, we customize our behavior with each individual, and with the presence of each particular, third person.)

Bonobo males do compete over status but lack any formalized ritual of dominance and submission. Every group member knows for certain which male is the alpha but the other positions are more vague. An aggressive encounter between two bonobo males isn't at all like the lengthy and noisy spectacles of chimpanzees. These encounters end as the two make up, which they do by rubbing their scrotums together for about fifteen seconds. Male alliance formation is barely visible. Bonobos have no hunting parties so the males do not have this reason to bond. A new alpha takes

over with the help of his mother. During the contest, the most critical confrontation is not between the two males but between their mothers. Sons of healthy females go far in bonobo society while orphans and sons of weak mothers do not. Females form bonds and alliances to control the alpha male. In bonobo society, males rule the world but females rule the males.

Bonobos substitute sex for aggression. Sex is the glue of their society. Social greeting, bonding, food sharing, and reconciliation is done by having sex for about fifteen seconds. Sex is initiated about once every ninety minutes, and occurs in a gymnastic fashion. In most animal species, females are in oestrus for just a few days per year. The alpha male has to guard over just those females who are in oestrus. Bonobos share with us an extended sexual receptivity. There is reduced male competition because one male cannot simultaneously guard half the group's adult females. Since bonobo females mate with every male there is no harem for the males to compete over. When a new alpha male takes over the group, there is no infanticide because he is as likely to be the father of the group's infants as is any other male in the community.

Bonobos are sensitive, lively, gentle, nervous, and are rarely violent. Chimpanzees are more hot tempered and are often violent. Compared to human interactions between pairs of persons, chimpanzee interactions result in a physical slap about one-hundred times more often. While Chimpanzees want to be more independent, bonobos instead want to sit together and coordinate activities. Chimpanzees "resolve sexual issues with power" in that the alpha is the only male to have sex. In contrast, bonobos "resolve power issues with sex" in that the use of sex in every aspect of society has drastically reduced aggressive conflicts.

What do these primate social systems tell us about ourselves? Primates have an innate urge to form social systems: we humans cannot live without social interaction. Our recent understandings of the social systems of other primates have given us profound insight into that of our own. Primate social systems share much in common but also show great flexibility in adapting to the environment of each species.

The most unique aspect of the human social system is our monogamous parenting relationship. Our nuclear family includes the full-time presence of the father. Both parents contribute in raising offspring. For all other ape species, child-rearing is done by females. Our monogamous parenting strategy makes for less male competition over females than seen in chimpanzees. We saw that chimpanzee males bond but females don't, while bonobos do just the opposite. In humans, men become good friends with other men, and women become good friends with other women. For chimps, bonobos, and humans, friends typically have the same age.

Our big brains and slow maturation rate cause other differences between us and the other primates. For big-brained humans, pregnancy lasts as long as possible so that the baby's brain can develop as much as possible. The female pelvic area has changed such that the baby can be born with its brain as fully developed and as large as possible. However, this big-brained baby cannot be so large that it will harm its mother during birth. A nine-month pregnancy results in the best balance between these two requirements. No other animal has as much difficulty during childbirth as do we humans. Our babies emerge as late as possible but are still not fully developed. They are especially helpless for a few years while their brains and bodies grow. We also have the most prolonged adolescence of any animal. An infant on the open savanna is more likely to survive when both parents nurture and care for it. If a male abandons his children before age ten, they are more likely to die. To stay with them, our ancestral males needed to know that the infants were his own children.

Because of our especially helpless children, it is beneficial to form nuclear families with monogamous parenting relations rather than having the more typical mammalian parenting system.

Our monogamous parenting system not only produces children, it also bonds mates. The nuclear family, consisting of children and parents, forms the basis of our world.

For our primate ancestors some twenty million years ago in Africa, a continental rift developed and built a north-south mountain chain. All of the rain is squeezed out of the air as it moves up the western side of these mountains, leaving a rain shadow region on the eastern, downwind side. The forests of the eastern side dried up, resulting in the East African savannah. We humans developed from ancestors who were forced to change with this drying climate and changing food supply. This climate change played a large role in our past in that it promoted shifts in our anatomy and in our behavior.

Today's meat eating baboons thrive in the savannah. Gorillas and chimps live in regions of abundant food. How would their social systems change if their food sources declined. The modern Paiute and Shoshone tribes split into single family groups to search for widely scattered foods. Several families will meet to socialize. Did our primate ancestors adjust to the drying climate in this way?

We also began walking upright. Some six million years ago there were one dozen species of bi-pedal apes in Africa, and this occurred a few million years before the use of Oldowan stone tools. Walking also heats us and this may have caused our decrease in hair. Our ancestors lost body hair three million years ago. This is known because the divergence in the DNA of head lice and pubic lice occurred three million years ago. The bipedal species that survived to become us had the uniquely, huge advantage of opposable thumbs. No other ape species has opposable thumbs. Chimps try to pick up a small item by squeezing it between the two pointer-fingers of both hands.

Today, we human beings are among the few species that are long-distance runners. Nearly every other mammal overheats after running for several minutes. If you run toward today's deer, it will run away at high speed but only for a sort distance. If you keep running, you will again catch up to it, and it will again run away at high speed but only for a short distance. After repeating this for some hours, the deer will become over-heated and exhausted, and will no longer be able to run away. You can then catch the deer. Which of our hominid ancestors were the first to do this?

North and South America were not connected by central America until about three million years ago. The joining of North and South America blocked an east-west flowing ocean current. Ocean currents took some time to reset and this may be what caused the climate in Africa to fluctuate so wildly that locations alternated between desert and deep lake in a series that repeated every thousand years or so. It is not a mere coincidence that this is the time at which the brain size of our ancestors doubled.

By the way, when glaciers melt, a lot of water is temporarily held in many lakes. These lakes occasionally burst free, releasing huge torrents that create instant canyons. About 8,000 years ago, a single Canadian lake-burst released enough water to raise the level of the ocean by 20 to 40 cm (4 to 8 inches). When future global warming melts the ice of Greenland, the rush of fresh water into the ocean might disrupt the ocean currents that have been keeping the winters of Northern Europe more mild than they should be at their latitude. Ocean currents would take hundreds of years to reset.

About four million years ago, the *Australopithecus afarensis* species of ape appeared. Since males were much larger than females, they were physically competing for mates. The skeletons of



thirteen family members buried together shows an apelike adolescent growth spurt. One fairly complete skeleton is that of a three-million-year-old female, who was named Lucy by her discoverers. The shape of her pelvis, the angle between her thigh bone and knee, and her slightly curve feet, her two, enlarged, vertical inner ear tubes, and her knee shape indicates that she could move through the trees but also walk upright on the ground. She was a bi-pedal individual. The *afarensis* diverged into two lines, one of which, about two and one half million years ago, became *Homo habilis*.

The 800 cc brain of *Homo habilis* was nearly double the 500 cc brain of *Australopithecus*. *Homo habilis* were the first to make stone tools. Stone tools were made to cut and scrape animal hide and to sharpen sticks to be used as spears and to dig in the ground for edible roots. A natural stone was simply broken to give a sharp edge; no additional modification was done to change the shape of the fragments. About one million years would elapse before it occurred to an individual to make additional, smaller breaks to refine that first edge. There was little change in their tools until *homo habilis* went extinct some 1.4 million years ago.

*Homo habilis* may have been our first ancestor to develop monogamous parenting relations—and private relations. This may be the time in which our menstrual cycle become more hidden than, for example, the four-inch swelling that occurs in chimpanzees. In other mammals, breasts are only temporarily enlarged while feeding babies and then they return to their initial size after weaning occurs. We human beings are unique, and this may be the time at which women's breasts became permanently enlarged.

*Homo habilis* were the first to use base camps. Daily gathering and hunting trips could be made from these temporary spots that also serve as a place for mother and newborn to stay and grow. A division of labor develops with camp life.

*Homo habilis* were the first of our ancestors to eat meat. This is seen fossil teeth. At first, they may have simply thrown rocks to drive away the carnivore from the prey that it had just killed. A lone hominid could get killed while attempting this but a cooperating social group would be in less danger. After learning to drive a carnivore away from its kill, the group could next learn to cooperate in killing that carnivore. Through time and trial-and-error, they could learn how to kill other types of even larger animals through ambush, by trapping it in muddy spots, or driving it over cliffs. Most of its food was obtained by gathering, not by hunting.

The increased brain size of *Homo habilis* allowed them to build culture and their delayed growth spurt gave children time to learn it. This ancestor could not live without its culture. Culture is our collection of recipes for how to do everything in life. Today, our culture consists of 40,000 things, including the way we cook, make clothes, greet people, conduct weddings and funerals, and operate vending machines. An animal needs much brain capacity to learn thousands of such details. Can your pet learn this number of details?

Beginning with the *Homo habilis* period in our past, we were no longer just molecule-machines but instead began to create our own culture. The evolution of life naturally leads to brain cells that remember, learn, and predict and that also develop culture. But what *is* learned and the culture that *is* developed is not so highly determined by physics, chemistry, and biology. From this point on, we begin to choose the details of our own way of life.

Two million years ago, the species *Homo erectus* emerged and lived alongside *Homo habilis* for a while. Scientists find that whenever two species compete for the same food sources, the one

having just a 1% advantage will greatly outnumber the other after just a dozen generations have passed.

The brain of *Homo erectus* ranges from 800 to 1200 cubic centimeters, which is the size of modern humans. They were as tall as six feet (200 cm) and looked much like modern humans. It is often said that if you shave a *Homo erectus* man, dress him up in a nice suit, and put him on the subway, then he would be unnoticed and fit right in with the crowd.

The culture of *Homo erectus* enabled them to spread from Africa into the Europe, India, and China. In the archaeological record, the earliest use of fire dates back some 750,000 years, but campfires may have kept night-time predators away even a few million years ago. Cooking kills germs, makes food easier to chew, and causes big changes in the daily way of life. Cooked meat provides a greater, daily calorie intake, and this enables larger brains. The brain of a gorilla is as large as possible from a diet obtained by eating leaves for eight hours per day. Human beings can get 2,000 Calories from a single meal. Excavations find that *Homo erectus* ate animals of every size, including rodents, birds, pigs, elephants, and hippos. Being able to kill the larger of these animals indicates that they used cooperative tactics. They used stone tools and wooden spears.

Acheulean stone technology was used from 1.4 million to 50,000 years ago and was made by the hominid *Homo erectus*. Since these stone tools were made by right- or left-handers, it suggests that *Homo erectus* had an increased language ability. The right- and left-handedness of humans is due to the division of our brains that is associated with speech. Other animals do not favor a hand: they are neither right-handed nor left-handed.

Acheulean tools were more varied, harder to make, and more useful than were the previous tools of *homo habilis*. If you try to make these stone tools at home then you will find that it is not as simple as it sounds. You must know which type of rock to use and exactly how to hold and strike them. Many specialized tools were made, for example, to scrape the insides of animal skins or to drill holes into hides. For the first time, our ancestors could cut through tough hide and form strips and sheets that could be used to make string and clothing. Cooking and clothing both caused big changes in our daily way of life and made us unlike any other animal on the planet.

Some 800,000 years ago, *Homo erectus* (or one of its ancestors) diverged into lines that would become Neanderthal, Denisovan, and *Homo sapiens sapiens*, which is the scientific name for our own species. Genetic studies have found that all three of these interbred. Depending on which continent you live on today, 3% to 6% of your genes were obtained from Denisovans, who lived in Asia, and between 1% and 4% of your genes were obtained from Neanderthals, who had obtained 17% of their genes from Denisovans and 2% of their genes from human beings. Those of us human beings who live on the African continent today obtained 1% of our genes from Neanderthals, who lived in Europe and Southwest Asia.

*Homo sapiens sapiens* first appeared some 200,000 years ago. Gene studies have found that every human alive today shares a common grandmother who lived in Africa some 150,000 years ago, which is about 8,000 generations ago. Our species spread outward from Africa by following game to the grasslands of central Asia. After staying there for hundreds of generations, our ancestors spread to China, Europe, and Southeastern Asia. We reached Australia about 50,000 years ago, and we reached the New World some 20,000 years ago.

Culture becomes very complex with the arrival of *Homo sapiens*. From this time on, humans show innovation and constant change whereas *habilis* and *erectus* cultures had each been static for

a one-million-year time-span. Not only does culture give us a way of changing as rapidly as the environment without having to change physically, it also gives us a way of changing as rapidly as we can migrate to differing climates. The success of culture allowed humans to spread into every region of the Earth even though we were not physically matched to the extremes of climate that we encountered. This is in contrast to the Neanderthal who did not spread outside of their single climate of more-glacial Europe and Southwest Asia. By 1,000 years ago, we had spread to most every island throughout the ocean.

*Homo sapiens* show concern about the death of loved ones by burying them in the ground along with flowers; this was a worldwide custom. This indicates that the most amazing things to these ancestors were life and death, just as we still marvel about these events today. It means that you have the same thoughts as they did and that in some basic ways it is possible for you to put yourself in their place. Around the world today, about half of us bury and half of us burn our beloved deceased. Our distant ancestors first began to bury or burn loved ones rather than suffer the agony of seeing them lie on the ground for days or weeks.

In the archaeological record, art objects appear suddenly and everything is decorated from then on. We make art on bones, beads, and clothing. Flutes and other musical instruments are used. Objects are traded for distances of hundreds of miles or kilometers beyond their geological origins. Cave paintings begin to appear throughout the world. They depict animals, the hands of the painters, and many other items. What would be the first things you would depict as drawing was first invented? What things would have been most important to our ancestors? Try to imagine the first time a person was shown a drawing of an animal. The drawing could be seen to actually *be* this animal. If an ancestor painted an item onto their home or utensil, it could be seen to represent the essence of the depicted item—just as you feel today about a religious painting hanging on your wall at home. Do you have a special feeling toward a picture of your spouse or child? An ancestor would have felt the same way 35,000 years ago.

It is likely that culture blossomed at this time because of a large increase in language ability. Why did this occur? We may have physically changed with the descent of our larynx, or, our spoken grammar may have developed. A couple hundred words—like big, small, blue, red, close, and far and such—is enough for *Homo erectus* to communicate basic needs but no real discussion is possible. A variety of words and a syntax is needed for *Homo sapiens* to discuss institutions and ideas—for example, that “reality is only a dream.” Notice that facial expressions are biologically older than words and can still convey more than words.

The climate was again warming from 11,000 to 7,000 years ago, and this caused many changes. As glaciers retreated, human beings began to occupy Northern Europe, where the lack of sunshine caused skin to pale. The European region changed from tundra-covered to forested, its residents became forest dwellers, and the large cold-adapted mammals began to disappear. Instead of hunting herds of large animals, we humans begin to hunt single deer, pig, and antelope. The bow and arrow is developed for this reason. Fishing, trapping, and trade increase. The first dugout canoes, paddles, skis, and sleds appear. From a piece of flint that fits in a hand, we obtain many meters of cutting edge. Flint arrows were hafted in grooves that are cut into bones, wood, or antler. A row of such arrows produced a wood saw that is used to make all sorts of everyday objects.

From the time of the first humans until about 10,000 years ago, all of us were living as gatherer-hunters. What was daily life like during this stretch of time? We were usually part of a

group of a few extended families who spent a couple hours per day collecting food from nearby streams, lakes, forests, hills, and mountains. We preferred to live near such a variety of food sources. A range in elevations provides food that ripens over a range in time. As still occurs today, a person eats only about ten handfuls of food per day. It is surprising to us modern people that gatherer-hunters had to spend only a couple hours per day obtaining food, but in just a few minutes, you could pick ten handfuls of food, which would be a full-day's supply of food. Today, each of us instead works eight hours per day at our job. But we have gained many other benefits.

We can imagine that each morning, family heads would decide which sort of food to eat that day and then head off in its direction. We can hear a child ask if we can go see if her favorite fruit trees in the valley has ripened yet. Just as you talk with your children about what, why, how, and proper behavior, the same conversations occur between parents and children in gatherer-hunter families. Which other conversation topics do you share with your gatherer-hunter ancestors?

Notice that gatherer-hunters are as happy as any other human from any other time or place. We did not have to wait for the invention of a particular machine before any person was ever happy.

Imagine that you could transport a newborn baby girl from 20,000 years ago and plop her right into your own family in your home-town today. You would teach your own daily way of life to her. She would take on today's way of life as well as she would have learned her 20,000-year-old way of life. She is as likely to be an artist, brain surgeon, engineer as is any other child today. Notice that we have built today's technology using nothing but our animal minds.

Kanzi gives us invaluable clues to our own nature, see the videos *Kanzi: an Ape of Genius*, and the documentaries made by NHK, Japan.

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See

<https://en.wikipedia.org/wiki/Denisovan>

and

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### Questions

1. Can you find some situations where your behavior depends on whether you are among family, friends, neighbors, and strangers?
2. In what way do you feel differently for family members than you do for friends, neighbors, or strangers?
3. Is the family any different today than it was for your grandparents?
4. How much do family relations vary around the world?
5. Is our idea of a family unit due to our genes or is it learned behavior passed from one generation to the next?
6. Do house cats, lions, wolves, deer, fish, or giraffes recognize the members of their extended family? Do they exchange help with them? Do they compete with them? Do they act differently toward them than they do with unrelated individuals?
7. When ants and bees cooperate to build structures, is this different from humans cooperating to build a city?
8. Will dolphins build civilization? Will bees, birds, or bonobos?
9. Do you see within our species any hint of male dominance hierarchies controlling access to a harem?
10. Describe the sequence of changes in our ancestor's behavior as our language ability increased from a few primate vocalizations to the usage of hundreds of words. If we did not obtain our ability to speak, would we have been able to build our civilization?
11. Compare your group's dominance hierarchies of individuals and of families with those of macaque monkeys, wolves, and of a grazing animal, like gazelles.
12. Birds and mammals are both descendants of reptiles. Are the behaviors of birds more varied than those of reptiles. Compare bird behavior with mammal, primate, and human behavior.
13. Why can't you tickle yourself? Since other apes have the same tickle spot, it must have originated in a common ancestor. What was society like for this ancestor? When did the tickle spot develop? Why?
14. In what order did the following events occur? The reduced food supply of the drying East African savanna, our big brained and long-term helpless infants, our decrease in body hair, our nuclear family, our bands of nuclear families, our monogamous parenting strategy, our bipedal adaption, our language, our culture, and our use of tools. Its hard for us to imagine how any animal can think or make decisions without using language. Which of these things did we do without using language? What role did language play in each of these? How many words and gestures could we make one million years ago?
15. Compare the food density for humans living in Nevada three centuries ago with that of the drying East African savanna. The Nevada Paiute forage as individual nuclear families. Do you think our ancestors did the same on the drying East African savanna?
16. In your own life, do you see any hint of human male alliance formation for the purpose of choosing or defeating the current dominant male or family? Do you see any hint of human female alliance formation for

choosing or defeating the dominant female or family? Do you see a human mother or father try to socially push others out of the way to improve their own child's social rank?

17. Is human war related to the form of aggression seen in everyday social disputes? Is aggression related to hunting or to contests over territorial mating areas? Is it related to a struggle within the dominance hierarchy? Is aggression related to the lust for power? Or is war ideological and different from these things? What would it take to make us go to war if we had as little aggression as Bonobos? Do we have more or less aggression than Bonobos? Are war and murder the same thing?

18. Design an experiment to see if Kanzi can relate planting with soon-to-appear plants. Do nonhuman apes relate copulation with soon-to-appear infants?

19. Does your cat get a pleasant, happy feeling when it goes off on its own since it is in its nature to be a lone hunter? Which of our pleasant little feelings occur because we are doing something that is appropriate for our survival?

20. Do all people have humor? Are the same things that are funny to you also funny to an individual who lives in the Brazilian rain forest?

21. Compare humans with another monogamous species.

22. How are men and women different? (Comics tell us about such things and are a good source for topics to discuss in your answer to this question.) Which of these "differences" are innate and which are a learned part of culture? Do these differences exist? Are the differences between the men and women of your continent the same as the differences between the men and women of other continents? Are these differences shared among gatherer-hunter, village farmers, and wage earners? De Waal asks, "Does society emphasize innate predispositions or does it just find it convenient to have men and women occupy their respective roles?" Both sexes can do everything the other does, except birth and nurse. One male chimp was seen to adopt and raise an orphan, and sometimes a female chimp will make a noisy branch-dragging display. Do men really have an aversion to stop while traveling, to ask for directions, or to go back along a wrongly-attempted path? Do women really travel in a more-prepared fashion by carrying food? Do these alleged behaviors truly occur? Would these behaviors help our ancestors to disperse around the entire surface of the planet? The more we perform a certain task, the more brain cells are recruited to perform that task. This occurs, for example, when we learn to dance or to play a musical instrument. Our color vision may have developed to better distinguish the proper ripeness of fruit. Women are measurably better than are men at distinguishing grades of color—for example, between light blue and sky blue. Does this mean that women, more than men, have been selecting fruit within gatherer-hunter society, or does it mean that women develop this ability more than do men in today's culture, or is there another reason?

23. For some species, the hierarchy results in food moving from the top down. For chimpanzees, the food flows in both directions. Can this instill a sense of fairness and justice in a chimpanzee? How is our habit of sharing daily food and having ritual feasts related to our idea of justice?

24. Describe a social situation that causes you to temporarily adapt the way you interact with other individuals.

25. How do you act differently with your family than you do with other members of the community? Compare your behavior while among friends to that while among other community members. Compare your behavior while among friends to that while among family members.

26. Some people describe our current big-city business and lifestyle to be driven by a dog-eat-dog state of mind. Is this genetic or cultural? Are we genetically driven to outdo our neighbors?

27. Describe some situations that show that you continually learn to be better at handling social interactions throughout life. (Luckily that last few times I acted socially incorrect it was toward older individuals who handled it like nothing too important had happened.)

28. Can you trace the origins of a particular rule of etiquette—for example, how long to keep a birthday card—to our fundamental capacities for empathy, sympathy, and moral learning of right and wrong for you,

me, and the community? Which behaviors are not traceable to these fundamental capacities?

29. List some of your emotions, behaviors, and thoughts and describe experiments that could determine if another animal experiences these same things.

30. List and describe the social interactions that you have in a typical day.

31. At birth, do our brains know that we have arms and legs or does it find out by operating muscles in a trial and error manner? Would our brain be able to figure out how to operate twelve arms if we had that many? My friend's housecat-Lynx mix has opposable thumbs and uses them just as do you.

32. During the sequence of the Earth's animal forms, which was the earliest animal needing to recognize the faces of several individuals? Would the same part of the brain recognizing landscape also recognize faces? How do birds navigate as they migrate those long distances each year? Could this be done by merely recognizing landscapes? (Many times I have suddenly noticed as I approached a country highway intersection by driving over a hill or around a bend in the road that I recognized this visual area by the shape and lay of its land even though I had approached from the north this time but from the west two years before. This occurred only if during the previous trip I had stopped for ten minutes in this area. For example, I might have spent ten minutes at a phone booth that was not visible as I re-approached the area. Was I "navigating" by landscape?)

33. Can you discern "stratigraphic" layers in human behavior? Are there behaviors that came first and were modified but not fully replaced by others that came later? Are there behavioral layers involving self, family, and society? Bonobos solve political power issues with sex. Does this mean their political power hierarchy is older or newer than their sexual solutions for conflict reduction? What clues do we get about our own layers by comparing behaviors of bonobos and common chimps? Which of our own behavioral layers are older or newer than our monogamous parenting strategy?

34. Does your mother seem to be much better than your father at tracking complicated family relationships, such as who is whose grandniece on one family side or the other, or is it your father who is better at tracking these relations? Is neither one better than the other? Does this suggest that our ancestors formed matrilineages, patrilineages, or neither? Are most of today's groups matrilineal or patrilineal? Does it depend whether a group's way of life is that of gatherer-hunters, village farmers, or city dwellers?

35. Do we get better at being social as we age?

36. How does our brain produce each of our innate behaviors?

37. Describe some ways in which we act differently when in a crowd than while being with one person. Can you explain these differences in terms of the requirements of a social species?

38. Last night while sleeping my hand suddenly lifted on its own to catch and hold a bug (*Gigantus gigapodus*) that was crawling on me. A few seconds later I began to emerge from a dream about ice-cream and its loss of momentum and had then to decide what to do with this bug I found to be held between my fingers. I am sure this reaction has been occurring in sleeping hominids for millions of years and was just sitting there inside me waiting for its chance to be used in my own lifetime. Can you find other examples of reactions that would have occurred in ancient times?

39. List your pet's actions throughout a thirty minute period of time. Is your pet choosing to take these actions or is it just being robotically controlled by its genes?

40. Describe some complicated mental tasks that are easy for you to do—memorizing the layout of a store or town for example. Describe some that are difficult.

41. Does every person that you know "give and take" equally from you? Are they members of your nuclear family, extended family, friends, neighbors, or strangers?

42. How many ways do we exchange help with the other members of our social system today? Compare this number with those from a society of gatherer-hunters, a community of farmers, and groups of monkeys, grazing horses, and wolves.

43. Describe a social situation in which you would wonder if you were being socially cheated.

44. Is our social system innate or learned? How much does it vary between cultures?
45. What are some possible reasons for a species of lone individuals to begin forming social groups? When would this have happened in our past?
46. Compare a primate social system with that of another mammal species that searches as a group for group-sized pockets of food—for example, wolves or lions.
47. Why does sharing food or giving gifts form a fast road to friendship?
48. The mental states, behaviors, and motivations of us humans are difficult to study in a scientifically repeatable and unambiguously interpreted manner—and that of the other primates even more so. Design an experiment that uses no language but can still prove that other people besides yourself have emotions or that they show altruism.
49. The egg-hatching strategy of ostriches is to have one bird simultaneously sit on a group of eggs from many different individuals. When there are more eggs than fit, the sitter will nudge one out, which then does not hatch. The sitter has become able to distinguish which egg is its own. Most other birds cannot do this. In fact, they'll raise a smuggled-in stranger's egg even after it has hatched and pushed the original babies out of the nest. Does this give a clue that there was an important reason for primates to begin being able to recognize the member's of their extended family? What might that reason have been? Has the ostrich brain grown in size as it became able to recognize the appearance of its own eggs? Has a section of its brain become specialized for this task?
50. Is it in our nature to look around for something to fashion into a tool when unequipped for the task at hand?
51. Most mammalian youngsters learn only from their mothers. Do you feel any predisposition to preferentially turn to your mother or to your father to learn about the basic skills of life?
52. Which animal harvesting techniques of the Amahuaca would have been known by their *Homo habilis* and *Australopithecus* predecessors?
53. Does chimpanzee society have business, governmental, or religious aspects? Compare their commercial, governmental, and religious practices to those of your own.
54. Are there differences between the reasoning used in social situations, finding cause and effect patterns in nature, recognizing faces, noting the habits of the animals, logic, and mathematics?
55. List the reasons that our ancestors needed an increased reasoning ability. Which aspects of reasoning are involved in recognizing the members of the extended family? We saw that humans make tools and use their brains to obtain food while most other mammals use their nose, legs, and teeth. Did these two particular things provide a drive toward larger brains in humans or were they side benefits of having already had larger brains?
56. We feel respect. Do we have a single feeling of respect that is manifested in different situations or are there differences in our respect for parents and elders or in society and nation? (In Chapter 8, we will see that one goal of Confucianism is to extend respect for our elders into respect for our political structures.)
57. Describe the feeling of an archaeologist who un-buries a 5,000-year-old musical pipe and then blows into it to make music for the first time since its previous owner left it there. Are the brains of these two persons doing or feeling similar things while making and enjoying music? In what ways have our brains changed in the last 5,000 years?
58. Create a piece of art that explains how you feel about being human.
59. Can the morality of humans be scientifically studied? How about that of other animals? Describe a repeatable experiment involving the morality of humans.
60. The food of primates occurs in group-sized bundles. What role has this played in our development of a social group, a hierarchy within our group, and our nuclear and extended family?
61. Do squirrels or chimpanzees notice the cycle of moon phases or seasons?
62. How do we know that humans had emotions one thousand years ago? 20,000? 100,000? One million?



When did each of our emotions first appear?

63. Describe a thought that happened today for which you could or could not determine that you formed the word after having finished the thought.

64. Chimpanzees have trouble manually manipulating small objects because they do not have an opposable thumb. They instead try to use fingers from each hand. Could the members of a fingerless species learn to combine efforts to manipulate small objects? What sort of society, technology, and civilization would result from such cooperation?

65. Do you perceive a person to be more beautiful when he or she is performing an action that particularly benefits the group? Are brides, grooms, soldiers, priests, politicians, or musicians and other entertainers more attractive while they are in the spotlight?

66. How do we end racism?

67. Do you experience a mood change when you buy something? Does it depend on whether you are buying something for yourself or for another person? Can you relate this effect to a core aspect of animal nature, such as seeking food or caring for children or yourself?

68. Only stone tools have survived through time. Were they our first tools? What other tools did Homo habilis use and for what purpose?

69. Compare the animal hunting tactics of lions, gatherer-hunters, and hawks.

70. Have several persons rate the ease with which they learn and perform various tasks. Can you find those which we are biologically prepared to do?

71. Could a brain operate through the exchange of purely chemical rather than electrical signals? Could a much larger- or smaller-scale brain operate through gravitational or nuclear signals? Would that brain be conscious? Is consciousness simply the exchange of signals? What is consciousness? Electrical signals propagate more quickly than do chemical signals. What is the speed of gravitational or nuclear signals? Can we build a computer that operates via the strong nuclear force among protons and neutrons or via the gravitational force among planet-sized masses? Since nuclear interactions take place in the time needed for light to cross quarks, which is at most  $10^{-26}$  seconds, would this computer operate billions of times faster than today's large-scale computers? Could we manipulate small-scale quarks or large-scale stars and galaxies into self-duplicating and self-directing combinations? Would the resulting creatures soon experimentally deduce the laws of nature? Would they know that we existed? Making them is different from making the laws of nature. Did God make us or make the laws of nature that made us? What made God? Did the laws of nature make us? If the exchange of signals is consciousness, is an atom conscious? A solar system or galaxy? Is the universe conscious? In what way does living matter differ from non-living matter? What is the universe? What is life?

72. Did one group of humans invent good social behavior and then spread throughout the world? If it enabled them to spread then it was advantageous behavior, so why didn't nature stumble across this behavior?

73. Describe some things that show our similarly functioning brains. For example, after listening to the lyrics of a song but one time, most of us agree on the three words that serve as the title of the song.

74. Are humans altruistic or self-serving and greedy? Are our leaders altruistic or self-serving and greedy?

73. Do chimpanzees or gorillas make and enjoy art (see [www.koko.org](http://www.koko.org))? At which age did your child begin to make and enjoy art? What sort of things have chimpanzees painted?

74. Is there a biological reason for the teenager's "rebellious" move to become independent of their parents? At what age would this have happened 30,000 years ago? How did the process unfold 200 years ago, when we lived on the family farm?

75. The ancestors of today's humans, gorillas, chimps, and orangutans began to follow separate evolutionary paths between five and fifteen million years ago. In what ways are today's ape species similar to the fossil apes described in this chapter? For example, today we observe chimps throwing rocks to ward off snakes. In what other ways are today's chimpanzees similar to the Australopithecus.

77. Do chimpanzees have culture that is learned from their parents?
78. Instead of the East-African forests becoming dry savanna, how would we humans be different if the forest had instead become wetter swamp lands?
79. Could you catch a Rhino? Could you and twenty other persons catch it?
80. How many years did it take you to learn all the details of your culture? About how many details do you think there are? Is it 1,000 or 10,000 or 100,000 or even more?
81. How does the intelligence of dolphins and humans compare? In the future, will other species become intelligent?
82. How would our civilization be different if we each lived for just ten years? 1000 years?
84. What interactions would we have with other animals if we were 100 feet (30 meters) tall? One inch (2.5 cm) tall?
85. Describe the ten most important aspects of your biological inheritance found by timing those things that makeup the largest portion of your daily life.
86. If we were still plant-eaters, how would our civilization be different? For example, during the lunch break would we could all climb trees to sit and eat leaves. Would we have made stone tools? If we didn't make stone tools would we have ever made any tools? Do farmers use any stone tools?
87. When did we first begin to use clothing? When did we begin to make fashion rules? Are these rules universal or culturally local? When did we first use fashion to make statements about our lifestyle—for example, rebellious, classy, conservative, or sloppy? List ten clothing styles that portray a lifestyle. Are these genetic and universal or are they culturally chosen? How do we form an agreement about the type of clothes that a rebellious or conservative person wears?
88. What possible changes might occur in the anatomy and physiology of our species? Will our species become extinct?
89. Why do we like music? When did we first make music? In which situations do you most feel like singing? Which animal species sing? Why do they sing? In which situations do they most feel like singing?
90. Why did we start using fire? Why did we start cooking? Did both happen on the same day? When we eat spicy food, we perceive a "hot" sensation because the chemicals of the spicy food evoke the same response from the chemical-detectors of our tongues as does high-temperature food. Why should our million-year-old tongues be sensitive to hot materials? Did this sensitivity develop before after our habit of cooking food appeared?
91. Describe how our ancestors might have accidentally discovered they could make sharp rocks—for example, by throwing rocks. Could it be that one rickety hominid named Clack was walking down a dry river bed one day, tripped on a log and fell and cut his hand on a sharp rock. He was then throwing rocks with the group in the river bed because they liked to see the sparks of light that would occur as the thrown rocks hit the rocks on the ground. They would jump up and down and shriek like graduate students when they threw these sparker-rocks. Then Clack noticed that one thrown rock had broken such that it produced a sharp edged stone just like the one that had cut him earlier. Clack used the rock to cut an animal carcass and from then on the group would spend many hours per week searching for the best way to produce more sharp rocks. The neighboring group saw how their sharp rocks could cut a carcass and began doing this also.
92. How does an infant learn which objects are friendly and which are an enemy? Four-year-olds do not know to stay out of the street. They can not imagine that a car would hurt them because they have not experienced an injury.
93. Can you wiggle your ears as some people do? When you begin to fall, or see someone else begin to fall, do you feel yourself attempting to raise your tail to regain your balance?
94. What is the preferred climate for a human and when did this become part of our nature?
95. We sometimes talk about the animal nature of our past. If human biology has not changed in 50,000 years then we still contain the same animal nature as always. In what ways do we act differently today than we did

50,000 years ago? Why? Are there differences in the past and present personal relations between parents and their children, or between extended family members, or within intergroup relations?

96. Make a note of your animal responses for the day, for example, catching your balance, smelling fire, seeing or hearing an object of biological importance, experiencing taste and hunger.

97. Keep track of your conversations for a day. How many sorts of ideas do you communicate? Which words do you use most frequently? If you had just twenty five words today, they would have to communicate the just of your most important messages. Which things would be both in our own and in our ancestor's twenty-five-word lists and which would not? Some of the words common to both lists are likely to be among the first words of our ancestors. If you were our ancestor and had only one hundred words, which words would they be? You might be able to communicate basic needs while in a foreign country if you learn just one hundred words, including such things as far, close, big, small, one, two, three, and several.

98. One friend's cat has a mutation that has given it an opposable thumb, which it has learned to use in appropriate ways. Our babies flail their arms and legs around as if their brains are trying out available nerves and circuits just to see what happens. If we were born with eight arms, would we learn to use all of them?

99. If improvements in nutrition are making our children reach the height of an adult in fewer years, what effects might occur on an adult's teaching relationship with not-so-small or subordinate children?

100. Why did we begin to bury the bodies of our deceased family members and friends? If you saw the body of a dead loved one being eaten by scavengers you would feel sharp pains (most of us were all living as nomads just 10,000 years ago). One way to avoid such an incident would be to place the body on an erected platform or to bury it below ground. When did we begin to care for our family and friends and when did we begin to bury their dead bodies? Did we first need to possess complex language abilities before we could perform burials? You might like to read how the ancient Hittites constructed homes, lived in villages, and carried the dead bodies of their relatives some distance away from their village to be left until just the bones remained. The bones were then carried back to be placed under their beds so that the deceased relative remained with the family.

101. Do you agree that people today and people 30,000 years ago both use tools mostly for the same purposes—to make utensils, food, and clothing? What do factories mostly make today? Why do both groups make art? Are both groups of the same mind? In which ways are they the same and in which ways do they differ? What are the most important things in the life of a person from each of the two groups? Do you believe that if one could take a newborn baby from each time-group and plop it into the other group, both would grow up to fit into the other's group just fine and think that their world was natural and right? In what ways do babies from different groups grow up to be different? Do they have different thoughts, actions, behaviors, concerns, desires, interests, or goals?

102. Which of our hominid ancestors were the first to have war? What would be a reason for them to go to war? What would the spoils of war have been? What percentage of our ancestors have been killed in war? We often hear about "cavemen." Did "cavemen" have wars? Do gatherer-hunters go to war with neighboring groups? Why? Did we have war 30,000 years ago? What would they fight about? Was there any booty to attract invaders? Was there poverty or famine 30,000 years ago? What is the percentage of people who died of poverty or famine rather than from natural causes?

103. Did we have religion 30,000 years ago? Why?

104. Do you believe that if one could take two newborn babies from opposite ends of the earth today and plop them into each other's group both would grow up to fit into the other's group just fine and think that their world was natural and right?

105. In what ways would two-year-olds behave the same 30,000 years ago as they do today? How and why would they behave differently? In what ways do two-year-olds behave the same, and differently, when growing up on opposite ends of the earth today?

106. When were we able to stop worrying about being eaten by a predator every day? When you see a

chicken in the field, do you lick your lips with thoughts of tastes to come? Do you do this when you see a packaged chicken in the grocery store?

107. Why were humans decorating our tools 30,000 years ago? While taking the time to shape rock, wood, and bone tools you might as well decorate them while you're at it. Wouldn't you do that today? Why didn't we decorate our tools 500,000 years ago?

108. Imagine going on a permanent "camping trip" with all the members of five of your neighboring households. Try to decide how you would agree on the details of daily activities like food collection, fire building, and choosing the night's camping spot. What would daily life be like? Which daily chores would you assign to each of your children?

109. Is it in our nature to look around for something to fashion into a tool when unequipped for the task at hand?

110. It is often said that we invent stuff whenever a need arises. What was the initial need that was solved with stone tools? Did we begin to use stone tools to obtain meat simply because our usual sources of plant-food were dwindling? Did this dwindling occur at the same time that the *Homo habilis* began to modify rocks? What was the initial need that was solved with the use of fire? If we weren't already using base camps would we use fire as a tool? About 2.5 million years ago, our *Homo habilis* ancestors started modifying rocks to get food but our modern ape relatives still do not do this. Is this because they have not had to? Can they be taught to do so? About 750,000 years ago, our not-yet-fully-human ancestors began using fire but our nearest relatives have not done so still to this day. Why not? How many tools did our ancestors develop during each one-million-year interval of our past? Which tools are common to *Australopithecus afarensis*, *Australopithecus robustus*, *Homo habilis*, *Homo erectus*, *Homo neanderthals*, and modern humans? Did each of these ancestral species mostly use tools to make clothing, utensils, and prepare food? Are those the main reasons we still make tools today? For what other reasons do we make tools today? What sorts of things are made in today's factories?

111. Do *Australopithecus*, *habilis*, Denisovan, or Neanderthal individuals have an innate talent to become engineers, artists, or doctors? Would *Homo sapiens* individuals have these innate talents if they were born 100,000 years ago? 50,000 years ago? 10,000 years ago?

112. If you lived in a gatherer-hunter group 25,000 years ago, what sort of things would you paint on a cave wall? What things would your siblings and three best friends paint? Why do we make art today? Why did our ancestors make art?

113. Create a piece of art describing our human ancestors.

114. Whom do you aid first during an argument, your spouse or a member of your extended family? Describe some situations in which one or the other gets your assistance.

115. Do you think that if you took a newborn child from a family of "cavemen" and raised it within your own city today that this child would want to become a rock star? Would it adopt those "funny teenage fashions?" Is there any way that this child would be a different person than your own children?

116. What was the number of words in use one million years ago? 100,000? 10,000? 1,000? 100?

## Chapter 6 Exchanging help everyday in farming villages

Throughout the last 10,000 years of farming villages, core aspects of social life are common throughout all villages. Here are some details from one time and place.

In the early 1800s, as the Industrial Revolution was developing in England and Europe, in New England, we were living in communities of single-family farms. A typical family lived in a small house located on their own farm land, not in town. Each farmhouse was within sight of those of a number of other family's because the farmhouses were separated by the lengths of the farmland. You could see the candlelight of your neighbor's homes from your own front door. Nylander explains that as you approached your neighbor's doorway you would likely hear the whir of the spinning wheel and the thump of the butter churn. Dwellings were more scattered in the less-populated South, and along the Western Frontier, a family might go weeks without seeing another person because homes were very widely scattered.

Most homes obtain light by burning one candle. A well-off home is distinguished simply by lighting six candles instead of one, having a complete set of dishes, having glass windows, and maybe even having a pianoforte. The same set of daily chores are done in both homes.

Nylander explains that in the evening, the family and guests gather around the snug fireside to sing, play music, sew, knit, make buttons, whittle clothes pins and such, repair harnesses or furnishings, and to listen while one person reads aloud from a book of fiction, poetry, dramatic plays, philosophy, theology, or even chemistry. There are no idle hands. Children sew rags into door mats, make fans out of feathers, and whittle and such.

In New England, it takes the combined efforts of many persons working all day long just to maintain the household. The well-working home was said to be "a well regulated home." A lone person can not do all that is needed. When one woman becomes ill, the other women of the house must fill in for her by working extra hours, and there is extra help from women of neighboring homes. Similarly, a neighbor might have to plow for a sick man. To repay for the knitting help done by a neighboring woman today, a man might go to her house tomorrow to chop wood. He will be fed while he is working there until evening. A woman might sew a shirt for a man who is helping thresh wheat at her house.

Nylander explains that relatives and neighbors enter households freely in an active coming and going to share joys and sorrows and to offer assistance, advice, and support. The same girls who work together as adolescents spinning thread and husking corn, will soon fit each others wedding gown, run their own hospitable kitchens, encourage each other during labor, and have established places in the community. The community has its sages, high spirits, willing helpers, and busybodies.

The household feeds any friend or relative who happens to be in the area at mealtime, and will put them up for the night when overtaken by darkness or weather. Refreshments are given to any neighbor or stranger who walks by, or asks for information, or is chasing an errant animal, or looking for berries to gather. Food and a bed is given to traveling peddlers and those who repair shoes, baskets, or tinware and such. They might sleep in the barn, by the fireplace, or even in bed with everyone else.

In one week, a house might receive visits from brothers, aunts, cousins, cousins of cousins, and friends. Most would be fed and some would spend the night. A visiting woman might share the bed with the wife and husband of the house. Visitors often bring their sewing and such so that they

can work while chatting and sharing news. A shopkeeper's home is especially busy. In one month, the household might make one hundred extra meals and have seventy overnight guests who have come to conduct business and will join in whatever work is being done.

Hawke explains that the farmhouse was not an isolated entity but a focal point of the neighborhood, which extends outward in a radius of about one-day's travel. The extended family members and their wards living in this area cooperate as a unit. A call for help from a faraway relative is answered. This unit performs all the functions that the Medieval European village had done, including the care of sick, indigent, orphaned, decrepit, and senile.

### Daily chores

Each day was filled with hard physical exertion for all, but no one complained of the work because they had no idea there could be any other way. In 1800, a single person alone could not handle all the duties needed to make a home function. Meals were prepared from scratch, clothing was kept in repair, the house and farm needed repair, crops and animals were tended, a few surplus items were made for sale, and socializing was done. Until the twentieth century, all of these chores were done by hand as it was a hand-made world. How many hours per week does your family spend doing these things today, and what sort of things do you now do with your "spare time"?

A child went to work young. Daniel Drake of Mayslick Kentucky described his childhood chores. At the age of eight he rode on the horse to steady it while his father plowed. He planted seeds as his father covered them. He weeded. He stood guard over the crops by throwing rocks at squirrels and crows. He cared for stock, and he chopped and hauled wood. At eleven he was given an old gun to scare pests from the field. At twelve he held the plow and guided the horse, himself. At thirteen he split rails and built fences. By sixteen he was doing a full man's work in the fields. Daniel's sister Lizzy at the age of ten was sent to a farm one mile away to watch over twins and their aged father for an entire week. She had complete charge of the house. She woke up at five o'clock in the morning, walked a distance to get water, made breakfast, and got the children ready for school. She then cleaned the dishes and began preparing dinner.

All but the wealthiest families sew their own clothes. It takes many hours of work to sew the entire family's wardrobe so we usually have only two sets of work clothes and a third set used only on special occasions. Since clothes are not easily replaced, we keep them in a functioning condition for as long as possible by mending them often. We buy children's shoes oversized and stuff them with rags while the child grows into them. We might also sew a rag doll.

Laundry was usually done on Monday, after Sunday's rest. We first boil clothing in a large pot, chop a lot of firewood to keep the water boiling, use a stick to pull clothing from the boiling water, and then scrub and pound the clothing in tubs. Two hundred years ago, each item had to be scrubbed for several minutes just to remove dirt, making this into a day-long chore. And after the laundry was done, mom made the family's meal from scratch. The time consuming laundry task had to be done once every week throughout the year, even when the weather was cold enough to freeze water. One day when the temperature was twenty-degrees below zero, a girl wrote in her diary "It is the coldest day I have ever known: Mother is doing the laundry." Harriet Beecher Stowe said that this day-long chore resulted in "bleached, par-boiled fingers." Clothing is hung on a clothesline if the family has one, otherwise clothes are thrown onto bushes to dry. During rainy weather, clothes

take one week to dry indoors.

Most homes had a spinning wheel used to twist fibers into thread. We spent many hours spinning thread, day after day. The mother of a household would delegate spinning to their daughters, hired help, or to an older unmarried woman who lived in the house, hence the term "old spinster." Thread and clothing was also made from flax plants, though it required extra effort. (Flax was picked in midsummer, allowed to partially rot in water, fragmented, had its splinters removed, and then spun into thread.) Usually, spun thread was taken to town to trade for cloth but some of us had looms to make our own cloth. This cloth could also be traded in town. Many households exchanged goods or labor with a not too distant family that did have a loom.

Urban women had much the same chores as had rural women, but those of us poorer urban women struggled ever harder to scratch out a living. The most-leisured women were those who presided over a wealthy home. She might have only to make pastries between social visits while her live-in help prepared and served meals. She might also choose to wash the delicate China cups herself. Her day was less wearing than for the vast majority of women in the United States.

The work of us men involved the barn, gates, fields, pastures, and woodlands. It included such things as cleaning cow stalls, maintaining gates and fences, and working the crops. During the cold Northern winters there was no work to do in the fields. We then chopped wood, repaired harnesses, and took long social visits.

People of the community share in completing large tasks

A large hay field is best cut and harvested on a singularly appropriate day. The help of many persons from the community is beneficial in accomplishing this chore. To do it in one day, the neighboring families combine efforts and the nearby town is emptied as its merchants close shop to join in the project. Haying is handled with the excitement of a battle. Lines of people with long-handled scythes work across the field. A slow cutter would receive friendly insults. Young men consider haying to be a physical challenge and a contest and strive to be considered the best mower or to be assigned head of a group. This work lasted fourteen to sixteen hours through the long summer day, from dawn until dusk—even later during the bright light of a full moon. Cutting hay required the most work of all.

Potatoes, oats, rye, corn, and wheat were harvested later in the year and did not require such a frantic rush as did haying. Threshing grain was done in the 10,000-year-old labor-intensive fashion. Since cotton was hard to pick, only the most dexterous avoided cuts and bleeding fingers and hands. While picking cotton, those of us who were slaves were driven, sometimes to exhaustion, by the threat of the ever-present whip.

Harvested corn is stacked into a number of high piles. Neighboring families come to help remove the corn husk from each ear. Groups were assigned to each pile and then races would occur. Finding a lucky red ear meant pending courtship. Shucking corn was an occasion for celebration, and every celebration involved heavy drinking and dancing.

Alice Morse Earle explains that after a heavy snow, community members used oxen-powered plows to push the snow off the roads. Everyone joined in to clear the roads because everyone needed to go to the school, church, post office, and town and be able to make social visits. Plowing began with those living farthest out of town. As they traveled inward, they were joined by others and their

oxen. A tired ox would be left in someone's barn to be retrieved later. All raced toward the center of town where the roads converged. There would be dozens of oxen and sleighs parked at the tavern. Toboggans were first used by Native Americans to transport heavy loads across the snow.

Community members would walk as far as ten miles to meet at a homestead that needed trees to be cut down or needed rocks to be cleared from a field. Cut trees are left to dry for several months before everyone gathers again to drag away and pile up the logs. Accidents and injuries might occur while working, as men would drink much rum. Everyone helped, including the Supreme Court Justice who lived in the area. Neighbors also worked the crop field of a sick person.

People would meet to raise up a building, which might be a barn, church, or school. They might break a bottle of rum over the central, ridge pole. While we observe this modern day, barn raising by an Amish community, we'll discuss the aspect of human nature that is the exchange of mutual assistance.

We see that a few days help in harvesting might be traded for help in spinning thread, shucking corn, peeling apples, or tailoring a shirt. Some firewood or meat might be traded for the loan of a horse or wagon or maybe for a few weeks' pasturing of a cow. Neighboring families exchanged goods, utensils, and the help of themselves and their children. No money was paid in these help-exchanges but mental balances were kept. Neighbors exchanged help in doing many chores, but especially in those that were large or had to be done quickly, such as in cutting the hay field. Soon after new families moved into a New England community, they would quickly become entangled in the local system of exchanging goods and help. Everyone gave and received strength, time, and goodwill. The community was a social contract.

These agricultural examples of mutual aid among neighbors have occurred throughout the farming world for the last 10,000 years. A group of Yoruba farming families work one farmland at a time, and Medieval European villagers would work the entire crop field as a community.

Our biological ancestors first formed societies because a lone ancestor would not survive for long. They found it mutually beneficial to exchange assistance in looking for food and watching for predators because these two chores were larger than could be handled by one individual. We can now see that the farming families of 1820 New England were simply doing the same thing driven by our innate Golden Social Rule.

During the switch from farming to factory work through the 1800s, there was much contemporary discussion about the readily apparent lessening in community ties since factory workers were finding fewer reasons to exchange help with their neighbors than had their farming parents. Those of us human beings who are Amish, prefer to pool efforts as a community rather than work alone using a machine that does the work of many persons but breaks the ties among community members.

Still today, we innately exchange assistance in any task that is larger than could be handled by one individual. If we see that a task requires the combined efforts of several persons then we combine efforts and expect continued exchanges. We are adept at determining which chores are large. In today's push-button, big city, we have fewer reasons to exchange assistance with our neighbors because very few chores require the efforts of more than one person or more than a few moments of time. Moving day is one of our largest chores and might evoke an exchange of assistance.

Because we are a social species, some of us who live in the big city today *naturally* get an



ill feeling in our stomach about our seemingly insufficiently-connected society. Neighbors still help each other the instant a need arises but it often requires a natural disaster to produce a visible need to which we then innately respond. We are then relieved to see the exchange of help because it makes us feel that we are members of a society after all. The innate feeling that is propelling you to exchange help with other people is the same feeling and drive that was experienced by our distant, biological ancestors, beginning several million years ago. This urge to exchange assistance creates a social species. Without this urge, a species does not become social. Social systems and the Golden Social Rule necessarily occur as a pair. As Johnston explains, that feeling is like a little emotional packet that has traveled through time connecting you to the first humans and even to your more-remote, social primate ancestors. The urge we feel to exchange help and to pool resources today is the same feeling and mental state experienced by our first social-primate ancestors whether exchanging help in the search for food and warning of predators or in the nineteenth-century chore of harvesting the hay crop. Today's individual acts of mutual assistance are due to the same innate drive to cooperate that has existed since we first became social primates.

Our mutually beneficial exchange of help today merely occurs in a less directly-visible manner as each of us contributes to the operation of our society by working our daily job.

Some of our daily jobs today include the farming and processing of cotton into clothing or metal mining and its processing into machinery, including the machinery used to harvest and process cotton into clothing. Some of us are clothing designers, distributors, or retailers, while others are machinery builders, operators, or repairers. Many of us work to feed, house, transport, cure, and govern other persons. Not only cotton, but each of our tools, utensils, and decorations have similarly intertwined backgrounds. So we see that it takes the combined efforts of all of us doing our daily job to operate today's civilization.

The pooling of our efforts is visible as the resulting civilization and also as the simple traffic that occurs as everyone goes about their daily job and business. Our civilization is the sum of the efforts of each of us. Each of us contributes our lifetime's effort in keeping our mutual civilization going and in pushing its progress. On the surface, our daily lives today seem more independent of the other members of our community than occurred in the early 1800s, but our mix of specialized occupations actually makes us more interdependent today than we have ever been in the past. It is not everyone for themselves in our society today. We are pooling efforts everyday. From a band of a few extended families, our social community has grown to consist of the people of the city, nation, and of the entire world. We are all in this together.

Recall that the food packet-size of a species determines its social system. The standard food of a species will occur in packets that feed either one, ten, or hundreds of individuals at a time. For example, one mouse feeds one cat, which is a necessarily a lone hunter. Grass is widespread and available to hundreds of individuals, resulting in herds of grazers like gazelles. The meals of chimpanzees occurs in group-sized bundles, so the group of dozens of individuals searches together for food and then shares it when it is found. We saw also that a mammal species typically forms a hierarchy of individuals, but primates form a hierarchy of extended families who cooperate as a unit. We human beings have a monogamous, parenting strategy.

Imagine yourself as member of a species of solitary, wandering animals who always avoids others. Some generations later, a changing environment of food, predators, and climate has the effect that those individuals who instead choose to cooperate and share with others—for example, in the

search for food and the avoidance of predators—become more likely to live long enough to have children. This predisposition to socially cooperate is a foundation of our biological heritage, it remains with us today, and it binds a-new, each generation. We also have predispositions that make us social primates and parenting mammals who have both extended and nuclear family systems. Without having to first think about it, we have spouses, cooperate with the extended family, raise children until they in turn have their own children, and we live in social groups whose members exchange assistance on any chore requiring more than the efforts of a single individual. We are adept at recognizing which chores qualify.

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#### Questions

1. Today, are we more or are we less dependent on the other members of our society? Describe how we are mutually dependent on each other and how our society is mutually beneficial to all of us today. In which ways is it not mutually beneficial?
2. Do you see any manifestations of the primate social system in the 1820 U.S. society? Do you see the Golden Rule at work in that society?
3. In *Life in a medieval village*, the Gies describe how the village farmland was worked as a whole by the entire population. Compare the way this village exchanged help in farming with that of the Northeastern U.S. community described above.

## Chapter 7 Daily life consists of 40,000 cultural details

What is daily life like for those of us human beings who are gatherer-hunters? A description of the joys and concerns of daily life for Nisa, who is a !Kung woman living in the Kalahari desert, is given in the book *Nisa: The Life and Words of a !Kung Woman* by Marjorie Shostak. (When you pull your tongue away from the roof of your mouth, you produce a clack, which is written with the exclamation mark, !.)

For a couple million years, or 100,000 generations, each and every one of our biological ancestors were gatherer-hunters who each lived just as did their previous generation. We do not change our way of life, which has worked for countless generations, unless we are forced to adopt a farming lifestyle due to either downturns in climate or cultural invasions. Still today, some of us human beings who live in the Brazilian rainforest, the densest forests of Papua New Guinea, or the Kalahari desert have had the nearly undisturbed privilege of living as gatherer-hunters—until a few decades ago. The small number of remaining gatherer-hunters live in the worst deserts where farming is hardly possible or in the densest forests that are so full of food that farming is hardly needed.

Gatherer-hunters live in small groups of one-to-several-dozen persons, consisting of a few extended families. Each group member knows each person well enough to be able to predict his or her behavior in various circumstances. Still today, our brain has the capacity to know well this number of persons because that has been the number of persons forming our society for one-hundred-thousand generations. For gatherer-hunters, happiness occurs from food, love, children, extended family, friends, and the group and such. Still today, these few things are the source of our greatest joy. Notice that happiness has always been obtained from the love of others and not from electronics and machinery. In a gatherer-hunter group, we celebrate the milestones of life, including birth, puberty, marriage, and death through ceremonies that have been handed down and slowly changed through countless generations. Group decisions are made by consensus of family heads. It is important to find a consensus to avoid the risk of splitting the group whose members share mutually dependent lives. At night, gatherer-hunters might see the glowing eyes of a lion just outside the light of the fireplace, and know that they can not live alone. They worry about predators but do not know or worry of careers and such.

Notice that you eat only ten handfuls of food per day. It surprises us to learn that gatherer-hunters spend only one or two hours per day collecting food, but they have only to collect ten handfuls of food, mostly fruits, nuts, insects, and potatoes and such. Hunting usually accounts for a smaller portion of everyday food. When hunters return with meat, we shout with happy joy that we will eat meat today. The entire group may begin dancing. Honey can also revoke such a response. A small portion of the food that you collect or hunt today is shared with other group members. This ensures that you eat even on those days that you had no luck gathering and hunting. This is mutually beneficial exchange. It is not everyone for themselves.

Daily conversation mostly concerns each other, just as it does today. The spoken grammar of gatherer-hunters is as complex as that of any so-called modern language. Today's neuroscientists have found that the part of our brain that processes word order also processes sequences of steps in tool usage and other procedures.

What is life like for gatherer-hunters? There is lots of spare time spent singing, dancing, and

enjoying the company of extended family members and friends.

Each gatherer-hunter group lives within a few day's walk of other gatherer-hunter groups. Groups meet frequently or seasonally to visit, celebrate, and conduct ceremonies, and all this gives young people a chance to fall in love. Marriage is what happens when young people are within a tens day's walk of each other. For example, it is common for the members of group A to always choose spouses from group B who in turn, must always choose spouses from group C. This means that, through 100,000 generations, we were marrying our neighbors, not murdering them as today's warring peoples might assume. If two families have too much of a fight, they might pick two of their young adults to be married because, as soon as the precious baby arrives, joy causes all arguments to be forgotten. Nisa says that when your newborn is lying next to you, your heart is very happy, and it is a wonderful thing because you love your children and talk with them. Gatherer-hunter mothers are the kind, loving persons who have nurtured every person who has ever lived. Mom is aware, twenty-four hours per day, of each and every emotion being felt by her children and everyone around her. We are each here because of mom and dad's relentless care. For millions of years, the first priority of every day has been to feed the youngsters. Adults are very persistent at this and feel that all is right in the universe when they see youngsters eating. What is the meaning of life for those of us human beings who are gatherer-hunters? Here she is. We'll call her Mollie.

Mollie spends her first few years in constant contact with her mother, receives the devotion of her father, receives song and praise and teasing from her siblings, and the adoring attention of her extended family and community. Every toddler knows that he or she is the center of the universe. Mollie brings joy to everyone as she runs to greet them. When Mollie misbehaves during her childhood, adults will say that her intelligence hasn't come to her yet or that children have no sense. Today, we might say that she does not know to stay out of the roadway. Mollie's group members know that she will acquire sense as she matures into a social adult by her later teens. Children are discouraged from fighting, and we are all told to hug and makeup because we innately know that our lives depend on the smoothly-functioning society. Adults know that anger is something that a person must ultimately learn to control themselves, and that this is difficult. When two persons have an argument that is too great, other persons end it before it jeopardizes the society on which everyone's life depends. Fights that result in the loss of blood are taken very seriously. If Mollie is so upset that she sleeps away from camp, risking the predators alone, then every group member will be upset the next day and the causal situation will be addressed. Mollie will be in her teens before she learns most of the thousands of cultural details of daily life in the community. Mollie, the meaning of life, will grow into a valued and contributing member of her community and become the mother of the continuing Mollie. The !Kung say that she will "live and live and live" through the decades. The gather-hunter world is a world of people within the shared community, and there is equality between the sexes. This has been the way of life for our ancestors for 100,000 generations, and it results from our innate predispositions. We are parenting mammals and social primates and we human beings invent cultural details by the thousands.

When un-equipped for the task at hand, we innately look around for something to fashion into a tool. We invent a tool or procedure for every need, and with each new tool that we invent, our daily life changes a little. Notice that we never invent a tool to solve a problem before the problem exists.

The gatherer-hunter Ishi, was found in 1911 in remote California, and was taken to Berkeley.

He was more amazed by the great numbers of persons than by their magical technology because people mattered to him, not their machines. Ishi revealed to anthropologists the secret of how to make flint arrows.

Culture consists of our procedures for how to do everything in life, and it consists of tens of thousands of details. For example, if you ask a person how you should fold a cloth the night before your wedding, someone will think of an answer that will be repeated for centuries. As we grow, we learn culture with fierce conviction, insult or ostracize any person who differs in the slightest way, and are deeply upset if it is too greatly changed later in life.

Every gatherer-hunter on the planet had the same set of ten handmade possessions that can all be carried at once, including baskets, bags, and stone tools. When every person has the same set of possessions it also means that there can be no “war to acquire the spoils of war” as sought by more modern emperors and other raiders. In more-recent centuries, kings went to war to gain territory, ports, and taxes.

Anthropologists always cringe to see gatherer-hunter children playing with sharp objects but the gatherer-hunter has known few mishaps. Numerically, if the chance of being injured by mishandling sharp hunting tools is one in one-thousand per year then a group of one-hundred persons will have such an injury only once every ten years. Numerically, if one in 100,000 modern persons murder another, then a group of one-hundred gatherer-hunters might have to wait one-thousand years for a murder to occur.

We get sick dozens of times in our lifetime, but our innate immune system cures each bout with illness—except for the last one. This gives our immune system a 95% success rate. When gatherer-hunters are sick, a shaman or even the entire group sings and dances in the right way, passed down through the generations, to “chase away the illness.” The secret to the shaman’s 95% success rate is our innate immune system that has evolved over millions of years. About half of us !Kung gatherer-hunters die before reaching the age of twenty, and 20% of us live to age sixty. Those of us who live to sixty will likely live to age 70, compared to living to age 83 in the U.S. today.

The death of a child has always caused tremendous sorrow to his or her parents and family, who cry for hours and days. Around the world, about half of us bury and half of us burn our beloved deceased.

## Amahuaca

A couple million years ago, our ancestors began to use stone tools to hunt other animals for food. While a lion hunts mostly with its feet and teeth, our ancestors used their increased intelligence to find exploitable behaviors in the prey. Here is a description of the approach used by those of us humans who are Amahuaca and live in the Amazonian forest.

Before leaving camp to pursue a specific animal, hunters mask their own odors by rubbing their bodies with some roots; when hunting a specific animal, they cover their bodies with the scent of that animal. Next they do a dance, consume a potion, and then off they go. The hunter does not wander aimlessly in search of animals but instead *harvests* animals from the neighborhood. The hunter knows the sounds, footprints, activities, nesting habits, and favorite foods of each species of local animals he wants to eat. The hunter knows that if the leader of certain animal packs is stabbed or darted then there will be a few moments of confusion, giving time to shoot more. After spotting

a monkey band in a distant tree top, the hunter will make the sound of a fallen baby monkey. This may bring the monkey troop close enough to be able to dart one. Lions never make the sound of human infants to trick people into coming near. The hunter also knows to be aware of the seasonal condition of the monkey troop's favorite fruit trees and will wait near a just-ripening fruit tree for the arrival of the monkeys. Since jaguars are known to eat a certain bird, the hunter will sometimes attract a jaguar by making the sound of that bird. Fawns like to hide in a particular type of bush. When hunters see tracks around one of these bushes, they will wait nearby until the fawn returns. The hunter then shoots the fawn but leaves the mother unharmed so she can continue to produce more fawns in the future. Hunters also note the location of each hunted animal's favorite food source. Whenever they then hear a certain animal they want to catch, the hunters have only to walk toward that animal's nearest food source. Similarly, the hunter will notice the favorite tree-stump of a local owl.

Upon return to the village, hunters discuss the amount of game and collectible food, any animal gathering or nest sites, the movements of the local bands of monkeys and of pigs, and any sightings of the neighboring peoples or strangers they've encountered. They then know which areas have more game and which have less. If one person is having bad luck at hunting or fishing, the others will examine and discuss that person's equipment and techniques. Youngsters are being trained as they listen to the daily discussions of hunting techniques and results and of animal tracks, behavior, and sounds. (It does not happen very often that these forest dwellers hear a sound that they cannot identify. An unidentifiable sound is assumed to come from a spirit.)

Similarly detailed knowledge is used in gathering edible plants from a region. The plant and animal contents within every footstep of the entire gathering and hunting area is mapped in this way. We also observe plant cycles, environments, and seasons. The food collectors do this for several hours per week throughout their lifetimes. Whenever you hear the word gatherer-hunter, you should think of the intelligence and the mass of knowledge of plants and of animal habits that the group uses in harvesting food along with the customs used to find, prepare, and to share that food. Those of us humans living as gatherer-hunters today make and use nets, hooks, rope, spears, and bowls and such and have complicated procedures to handle hundreds of daily needs. There are complicated procedures just to prepare otherwise inedible varieties of roots, nuts, and poisonous animals.

The techniques of the Amahuaca hunter illustrate what is meant by hunting with our brains rather than with our feet and teeth. Living by our wits in this way shows why so much intelligence was needed by our gatherer-hunter ancestors and what they were doing with it—even one million years ago. Plant and animal harvesting are tasks that our brains are made to do.

How many days would it take for you to become very familiar with the plant and animal layout of your own neighborhood? You easily memorize the layouts of many streets and the aisle-by-aisle contents of many stores. Learning a layout is another of our effortless mental tasks. We have developed this ability because its need consistently existed through the generations and proved to be useful in the survival of our ancestors. A recent report found that brain-sizes are doubled in those monkey species that memorize the locations of fruit trees and repeatedly return to those trees rather than randomly wandering the forest as do smaller-brained species.

When we humans see animals, we naturally and effortlessly analyze their actions—we'll say, "Look at what that squirrel is doing." Amahuaca hunters study mainly those aspects of animal behavior that enable them to be more skillful at animal harvesting, while modern biologists study

every aspect of each animal—for example, its biochemistry.

## Canela

Those of us humans who are Canela live in Northeastern Brazil at the edge of the Amazonian forest. During the 1970s, the Canela lived in a few villages, each having a few hundred residents. Homes are placed along the outer edge of a circular area that is about 300 meters or yards wide. Its central fifty meters or yards are used for socializing and for ceremonies. Group members meet in the center to sing for hours every day. Following the Canela sense of symmetry, the homes of certain pairs of persons are placed on opposite sides of the circle, and through the generations, names bounce back-and-forth across the circle. A Canela person would be surprised that you live in square blocks, and that the names of newborns do not pass from one side of the street to the other.

The village has jokesters, storytellers, gymnasts, slow-movers, pleasant, unpleasant, grumpy, and happy smiling people.

There are morning and afternoon men's councils, and there is daily work, siesta, swimming and bathing, football, and log racing. Women nurture children, farm, and collect firewood and water. Every morning, men work together to repair roads, maintain village boundaries, harvest rice, or help on someone's farm.

All the peoples of the world agree that proper behavior is to do as the other does. Each culture differs only in the details. Proper behavior for the Canela include being open, not being egotistical or arrogant, sharing freely, being generous not stingy, not being mean or angry, not talking bad of others or verbally abusing a person to decrease his or her self-image, avoiding actions that might start rumors, maintaining peace and harmony, and striving for the approval of others—especially those of your own age group. The Canela say that shame keeps a person from acting contrary to tradition. Canela do not want to be shamed or to lose face by lying or stealing and believe that it is evil to seek revenge against another member of the group. Do you agree that these are proper behaviors? The Canela value peace-making and problem-solving within the group.

Rather than self-gratification, Canela individuals live more for the good of the society through the available social activities. Nimuendaju and Crocker explain that the Canela maintain peace and harmony through singing, sports, dancing, constant joking, and sharing the fun of the moment. They walk away from confrontation, refrain from extremes of behavior, and avoid public display of affection. Jealousy or anger are soon forgotten because opponents will be singing and dancing together that same day. Older generations have much influence over the younger ones, and each person strives for the approval of the members of his or her own age group. Canela adhere to tradition and believe that performing a task in a unique manner is considered egotistical and evil because it might unravel society. People obey family heads, elders, group leaders, and the chief. To feel that he or she has the support of the group, a person will not perform a duty until the proper leader orders it to be done.

Unresolved arguments are settled through meetings of elders, trials between families, and interventions by ceremonial chiefs. Aggression is not permitted. Boys are not allowed to fight nor are larger boys allowed to bully smaller boys. If a fight results in a broken bone, eye damage, or the loss of blood then a penalty is imposed on the man causing the damage and his entire family will be shamed. The anthropologist Crocker did not see a serious fight in twenty years. In fact, parents do

not strike their children except as punishment for repeating the most extreme behavior. They are then struck on the palm. At least 124 years had elapsed since a murder occurred in the region.

A Canela is firstly a member of the nuclear and of the matrilineally extended family. The brother-sister bond comprises “the most serious interpersonal loyalty.” During one ceremony, sisters hold their younger brothers to protect them from mystical “soul snatchers.” Uncles particularly help nephews, and aunts particularly help nieces, and one’s extended family assists whenever the need arises, for example, when short on food or during a squabble with others. When threatened, a person might point out to the offender that he or she has many relatives. We saw earlier that primate societies consist of cooperating extended families.

Each of the world’s farming cultures conduct ceremonies to accompany the planting, protecting, and harvesting of crops. We humans naturally accumulate ceremonies because they combine our cultural and social natures. Ceremonies bind together the people of a culture, as does, for example, Independence Day, and ceremonies are of the utmost importance. Ceremonies consist of detailed actions and statements that are very meaningful to the practitioners.

These are the corn planting, protecting, and harvesting ceremonies. They are lead by a man, whose maternal home must be located on the east side of the village circle. In the planting ceremony, he places a painted gourd bowl filled with maize kernels in the center of the plaza and then people dance around it. After those seeds are planted in his wife’s field, other families begin planting their own fields. When maize has grown to a height of one meter or yard, a ceremony is held to induce the moon to keep parasites away from the crop. Everyone claps and sings the proper phrase and then dances from north to south across the plaza at night under the full moon.

Uncles sponsor the ear-piercing ritual for their nephews, and they teach nephews during the Pepye festival. This challenging ritual matures a young man and builds self-control. The young men are secluded for days in a room within their own house and rarely talk with anyone except their uncles who lecture them on traditions. Throughout this time, the youths must never walk in the yard lit by sunlight or moonlight unless they cover themselves with mats or cloth, they must not step on twigs or dead leaves, and they must not eat meat or drink certain vegetable juices. Why do you suppose the Canela do these things? They will answer “Because it has always been so.” The Canela firmly believe that a young man becomes an adult only by following these procedures and they firmly believe that breaking these rules causes the youth to be a poor hunter, to be unable to withstand the midday sun, and that he will not be able to speak with ghosts as would be required for him to be a shaman.

We will always be amazed by the process of birth. For the Canela, childbirth occurs indoors with the help of an elderly matrilineal relative, who ties the umbilical cord with cotton, cuts it with an iron knife, paints the cord with red urucu juice, and places araca bark juice on the cut.

The child’s mouth is cleaned and the mother is taken outside and washed but she is not to be painted. The afterbirth is buried at the inside corner of the house and the mats on which the mother had lain while birthing are taken by her own mother and jammed into the fork of a nearby tree, where they are left to be consumed by the next wildfire. As she puts the mats in the tree, she asks the sun to keep the baby from harm. A Canela mother rarely lets go of her new child for the first few months of its life.

The father waits outside during the delivery because men must not see a birth. After the birth, his wife lies on her side while he sits on her hip to “press back together her pelvic bones.” During



the pregnancy, he prepared the birthing mats and placed other mats around the bed to create a seclusion space in which the couple will remain, except for bathroom breaks, with their newborn separated from everyone else until about one month after the child's navel string falls off. Until it falls, the mother wears a red urucu painted burity belt. The navel string is saved to be given to the child when he or she reaches the age of four. The child places it into a hole of a sucupira tree and then grows to be as strong as that tree.

During the pregnancy, both parents do the things believed to ensure the health of the child. During seclusion, the parents are not to paint or decorate themselves, cut their hair, eat any of several, specific types of meat, scratch themselves with their fingers, instead using small sticks. When eating sweet potatoes, they must save the skins in a basket carried behind the house. They must not gnaw on leg bones or the child's umbilical cord might rupture. They must not eat parrots, doves, armadillos, or sarimas. The mother must not eat the honey of tiuba bees unless it is mixed with manioc flour, otherwise she might have a miscarriage. They must not kill a snake if they encounter one. The father must avoid singeing a paca or he might cause a miscarriage. Do you suppose that these sad coincidences occurred once in the past and caused the origins of these taboos? (By the way, a woman might induce an abortion by eating certain plants if the father abandons her during pregnancy.) Many of a child's problems are fully believed to be caused by things they parents have or have not eaten, and corrective dietary steps are taken. Why do you suppose the Canela do these things? They will answer "Because it has always been so" and to do otherwise, risks everything. Cultural details vary but people do not: A Canela mother's primary goal is to take care of her children, feed them, socialize them, and keep them happy. We can be sure that a Canela parent often tells the spouse "Well it's you she takes after."

We humans have a tendency to attribute events and misfortunes to food recently eaten or to actions recently taken. This results in taboos concerning things that one can or can not eat or do at certain times. Taboos are unique to each culture. The origin of such a cultural detail might happen in the following way. Suppose a groom fell out of his hammock the night before his wedding, and then one week later he found out that his new mother-in-law was a nag. This might influence others to begin sleeping on the ground the night before their wedding in order to avoid a similar fate. If one recently married man breaks his favorite bow then this might be blamed on a sneeze during the wedding ceremony. If a sneeze or cough occurs during a wedding ceremony in your culture, what does it mean for the future of the newlyweds? Our animal brains have accumulated the ability to relate cause and effect, but we are not always right. You might have noticed a coincidence between two events in your own life. How many such events do you think you could recognize during your entire life, and how many cultural details could be produced at this rate by a group of one hundred persons throughout a one thousand year span?

Every culture recognizes puberty to be one of life's major steps and feels that both seminal and menstrual fluids are special. Blood from within our bodies is usually seen in only the most dramatic of life's events. When the biological reasons for menstrual fluid are not fully understood by a cultural group of persons then this event is often considered to be among the most amazing of phenomenon. In most of the world's cultures, adolescents are secluded from the rest of society for several days or weeks, during which they are given lessons and must obey food taboos. The seclusion period is a time of transition from which an adult emerges. Life distinctly changes as adolescents leave behind carefree play. Most every culture celebrates this transition with some sort of ceremony.

The Canela believe that marriage builds relationships between extended families. About 5% of boys and one-quarter of girls marry between the ages of ten and fourteen. By age twenty-nine, 90% of men are married, while 90% of women marry by age twenty. Offspring usually do not occur until a young woman reaches her later teens. For humans, the biological chances of conceiving are very low until the later teens, highest during the mid twenties, and impossible after menopause. After marriage, the groom moves into his wife's house that also holds the families of her sisters. The sisters of the house are related by blood and so dominate daily happenings while newly arrived husbands have a small influence. He helps feed his new household. In this matrilineal residence, wives are safe from a tyrannous husband and husbands organize against henpecking. The marriage becomes a complete relationship when children are born, and then it lasts at least until the youngest offspring is mid-adolescent. Couples who grow old together are role models esteemed by the community.

The eldest men and women are esteemed. They are not addressed by their name but are always called grandfather or grandmother. Young people show respect by giving way and by waiting to speak. Nobody ridicules an old person's frailty. We all know that death is part of life. A Canela person will die surrounded by family and friends in mom's house. A widow will not cut her hair, put on makeup or wear decorations. She speaks only with the members of her own house, remains in bed, and laments daily for her lost husband. Men running a log race will drop the log mid-step to join in the cries of others who are lamenting a lost one.

The dying person lies on mats in the middle of the house, feet toward the door, while the next of kin gather around. A female relative says a few words at the moment of death. Then relatives sit next to the deceased and lament the loss. The body of the deceased is prepared by cutting the hair, plucking eyebrows, smoothing the features, and putting on decorations. If the deceased is a child, then he or she is held in the lap of each of the nearest relatives, who cry. The room fills with blubbering and people say "When you were still alive, I was very fond of you." The deceased is wrapped in the mats on which he or she had been lying. The mats are then tied around and suspended from two poles to carry the deceased to the cemetery, 1,500 to 2,000 meters (yards) away. No belongings are placed in the grave. If the deceased is a woman, then on top of her grave are placed objects such as her carrying basket and a gourd bowl.

The Canela believe that if the deceased had not eaten during his or her last days then the shadow of the deceased will go once more to his or her mother's house for food. A meat pie and a gourd of water are placed behind the mother's house. An old man watches the pie until he hears a rustling of its leaves and then announces: "He has eaten." The councilors then have the pie taken to the plaza where they eat it.

By the way, if aliens from outer space came to you and asked "What are you?" When you answer that "we are people," then the aliens would refer to you as "people." The same thing has often occurred in history as one group of people first encounter a second group of people. For example, the first group uses the local word "glaker" to mean "people, and the second group begins referring to them as "glakers." Both groups don't know it, but they are referring to each other in the local word for "people." In Medieval English, a person would say "Hu-man of the Earth" to mean "you farmer." Today, we still say human (e.g., you-man) and Earthling.

Nature deities and myths explain aspects of nature and society

The purpose of religion is described in the forward and the first chapter of *Magic, Witchcraft, and Religion An Anthropological Study of the Supernatural* Edited by Arthur C. Lehmann and James E. Myers. A summary of their presentation is given in this chapter.

The oldest aspect of our religion emphasizes our sense of awe and amazement in the powers of nature and society, including the sun, sky, earth, wind, rainbow, thunderstorm, birth, puberty, marriage, death, fire, homes, hunting, the origins of ourselves and our tools and procedures, and the power that enables a bush to just grow out of the ground where before there was nothing. Some peoples attach human characteristics and personalities onto these deities.

These deities are not worshiped nor do people devote their life to them. They never ask, order, or demand anything of anyone. Instead, they are just representations of the powers of nature and of society. We encourage the presence of the those deities believed to be helpful, such as the sun and health. Before collecting a particular type of food we speak to that food deity, ask for its cooperation, and then pay respect for its life-giving gift. We hope that the harmful deities stay away because we want to keep disease and death away from us.

None of these spirits are involved in moral behavior, which is the main concern of many of our modern religions. Even our monotheistic religions retain many aspects of the earlier religious forms, including the belief in spirits, angels, and demons. Morals do not form the main point of the gatherer-hunter's religion of deities because such small groups of persons keep the behavior of group members in close check.

A deity is a name that represents a particular power. Consider a hunting bow. There is "something" that enables it to function: there is a "power" in the bow. When you hear a particular group of people say that "Ullr is the god of the bow," then you should think to yourself that Ullr is the power of the bow and that Ullr is the name for the thing that makes the bow function.

The Ifugao people believe that there is a deity for every step of every activity. One anthropologist counted 1,250 Ifugao deities. For example, while hunting there is a deity for the level spot where one looks for the game, another deity for avoiding the snakes that lie along the path, and another deity for the moment of sicking the dogs.

The meaning of myth and deity is well presented by Thorkild Jacobsen in *The Treasures of Darkness, A History of Mesopotamian Religion*. Before I read his book, I mistakenly thought that myths were soap-opera-like stories that gave a funny explanation of nature or society in terms of gods having random attributes. By telling a myth once and then repeating the story again while explaining what it meant to the Mesopotamians, he made me realize how mythical stories represent the powers of nature. Here is a summary of his description of one myth.

One ancient Mesopotamian deity was Dumuzi—the god of grain, beer, springtime, newborn lambs, and fertility. Inanna, also known as Ishtar, is the goddess of the storage house. She meets Dumuzi one day and it's love at first sight, so they decide to get married right away.

That night, Dumuzi has a bad dream about being attacked and killed. To be safe, he tells Inanna that he will hide in the small pastures in the desert and in the last remaining grassy spots of early summer. Dumuzi hides but a circling bird and a buzzing fly reveal his location to his attackers and he is killed.

Inanna decides that she will go to the underworld and attempt to become its ruler so she can

release Dumuzi. (The underworld is not "hell;" it is the place where the buried dead go.) Inanna is allowed to pass through the gates of the underworld but the gatekeeper tells her that she must be naked and crouched when she meets the underworld's ruler. Unfortunately, Inanna dies and so cannot overthrow that ruler. She is turned into a piece of green, decayed meat and hung on a peg on the wall.

Dumuzi's sister Geshtinanna, who is the goddess of wine, then goes to the underworld to search for her brother's fiancée. Inanna is told she will be released from the underworld only if she agrees that Dumuzi and his sister take turns replacing her throughout the seasons of the year. Dumuzi must stay in the underworld during the fall, Inanna must stay during the winter, and Dumuzi's sister Geshtinanna must stay during the spring.

In fact, this is not a purely fictional soap opera but a story that was taken literally by Mesopotamians, just as was the power that enables a bush to just grow out of the ground where before there was nothing. As we human beings began to be full-time farmers and depend on a single source—our crops—for most of our food, our survival became more dependent on the "whims" of the weather and insects. We began to give human form and personalities to our deities.

The three ancient deities of this mythical tale were the humanized representations of the powers in wine, the spring, and the storehouse. They were not worshiped. People did not give lifelong devotion to them. They were not Creators. These deities never ask, order, or demand anything of anyone. They have nothing to do with moral rules of behavior. They were not worshiped in the same way that modern Jews, Christians, and Muslims worship the single omnipotent god.

Dumuzi never demands anything of anyone. He is simply the power in the spring. He is there during the spring and then he is not there. He is not "everywhere." Dumuzi represents fertility as it occurs in the blossoming spring. In the shepherding areas he is the newborn sheep, while in the farming areas he is the grain and the beer. The grain used to make beer dies when it is harvested. Dumuzi, the blossoming spring, dies as summer develops. Mesopotamia's green, winter-grass turns brown by the end of spring. The last signs of spring will be the little sections of green grass that haven't yet died. Dumuzi said he would hide there from his attacker: the coming summer. (We can imagine an ancient Mesopotamian walk past the last small patch of green grass and say "Dumuzi is hiding there.") As the desert summer arrives, some animals begin to die. The location of their bodies is revealed by flies and circling birds, as occurred in the story.

The food in the storehouse enables people to eat throughout the winter. Inanna embodies the sense of awe people feel as they gaze at the life-preserving storehouse that is full of food. The storehouse begins to be filled when spring arrives. The storehouse dies—that is, it becomes empty—near the end of the winter. Inanna thinks she can trick the ruler of the underworld and take it over but instead she is tricked. The ancient Mesopotamian people buried their dead naked and on their side in a crouched position. When she was told to meet the underworld ruler in this manner, it meant to the Mesopotamians that she was already dead. The storehouse dies in the late winter when it becomes empty—that is, when the wall pegs hold just one last piece of green, decayed meat. As the newborn lambs are killed and grain is harvested—this is Dumuzi dying—the storehouse becomes full again—is alive again—and Inanna has returned from the underworld of the dead.

The myth is a logical description of the flow and exchange of the seasons. For Dumuzi and Inanna, there is love at first sight because that is all they have time for. They pass each other at the simultaneous moment in which Inanna is reborn and Dumuzi is dying. Geshtinanna is the goddess of wine. Wine grapes are harvested—that is, they die—during late autumn. This story is about three

deities taking turns dying and reliving as the cycle of the seasons repeatedly occurs. The deities represent the powers in the seasons and in the storehouse.

Dumuzi's seemingly random list of attributes accumulated through time as sheep herders and grain-growers were merged under one social and political system and so combined their ideas of fertility and of springtime. Whenever we see a list of the major gods of a particular community, we are seeing a list of the aspects of nature and society most important to that community. The most important phenomena are those that provide life—for example, the rain and the sun—and those that provide the area's economic basis, such as herding, farming, or fishing. Myths describe specific aspects of nature, and there was a sacred myth to explain each aspect of life and society, each tool and procedure, and the origins of each of these things—including the origin of the group.

### Summarized sources

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### Questions

1. How many facts do you think you had to learn in order to know "how to live" as a member of your culture? How many years ago did your culture originate? By what percentage has your culture changed during each of the last few generations?
2. Is there anything you want to do besides laugh and joke with your spouse, family, friends, and neighbors, pursue life, and raise children?
3. Is there any large way in which two different groups of people have different views of the proper behavior between family, friends, neighbors, and strangers?
4. Each culture has different tools for daily life. How many utensils does each Canela family own? Does this number affect their happiness? How has the number of tools and the level of happiness increased in the last

few generations for your family?

5. List some details of your culture that are different from those of another culture? How would you describe your daily life to a Canela person? Can you describe the largest aspects of your life in ten sentences? How many sentences would be needed to describe the details of your way-of-life?

6. Was your group's language different one thousand years ago?

7. When you answer "Because it has always been so" to a question of why your culture does a particular thing, how long does "always" mean?

8. Each of us has trouble understanding the cause of unusual things so that it's easy to lay blame on a "witch." When a Canela and a seventeenth-century resident of Massachusetts blames a witch, is there any difference in their state of mind?

9. Write down your favorite stereotype for any particular group of people. List the things you would have to measure to determine the truth of this stereotype. How many persons would you have to involve in the study? What would be the range in this attribute for that group of persons? What would be the range in this attribute for your own group of persons?

10. Compare your own way of life to that of the Canela. Compare methods of obtaining food for the family. Do the Canela have occupations? Do they have a system of commerce? Do they have government? Do they practice democracy? Can you guess which things in life might make a Canela person happy? What are the ten most important things to a Canela? What are the ten most important things to you?

11. Compare your hunting techniques with that of the Amahuaca.

12. Is it true that all persons from the United States smell like the hamburgers they eat?

13. Do the members of every group of persons laugh at the same things?

14. Is it your genes or your culture that produces that urge in you to say hello and goodbye as you meet your friend? For your family to eat together as a group?

15. To see yourself from the view of others, compare some of your own views and habits to creatures of another age, gender, culture, religion, government, species, or planet.

16. Does your parent or grandparent ever summon together several relatives to pool efforts and accomplish a particular task?

17. Each Canela person makes their own utensils and decorations from the raw materials that are readily available in their surroundings. Who makes yours? Where do the raw materials come from? Where are they made? What do you trade for them?

18. What can you say about the levels of social and economic equality among the Canela? Are some persons richer or poorer? Can some impose their views or preferences on others? Compare the health of Canela infants with those of your own group, today? Does each Canela individual have equal access to education and the benefits of society? Do the Canela have a sense of belonging to a community? Do they have a feeling of control over their own lives and over their own continued well-being?

19. Do you see any manifestations of the primate social system in the Canela? Do you see the Golden Rule at work in Canela society? In what ways do the Canela behave as mammals and as primates?

20. Does Canela society have business, governmental, or religious aspects? If so, compare their commercial, governmental, and religious practices to those of your own culture.

21. Do Canela persons have innate talents for becoming engineers, artists, or doctors? Do Canela persons pursue the limits of their talents and interests?

22. What can you say about crime among the Canela? Can you compare reasons for crime, amount of crime, and deterrents against crime between the Canela and your own people?

23. What can you say about poverty among the Canela? Can you compare reasons for poverty and the amount of poverty between the Canela and your own people?

24. Do Canela persons care for their family, friends, and society? For a Canela person, what are the most important things in life? What are the most important things in your own life?

25. Create a piece of art that communicates how the Canela view life.
26. Do you think that if you took a newborn child from a Canela family and raised it within your own city today that this child would want to become a rock star or would adopt those "funny teenage fashions?" Is there any way that this child would be a different person than are your own children?
27. Describe some item or procedure of your daily life and then find out when and where it was invented.
28. Do language differences act as a barrier to the diffusion of knowledge, techniques, and procedures?
29. Take one hundred Canela newborns and measure each person's talent for doing mathematics, medical surgery, athletics, playing the guitar, growing edible plants, killing animals for food, singing, raising children, and being a valued and contributing member of society. If one talent is taken at a time, a plot of everyone's talent level will produce a bell-shaped, Gaussian distribution. Will this distribution in any way differ from that of any other group of one hundred newborns living anywhere else on the planet?
30. How many genes differ between Canela individuals and yourself?
31. Do Canela men refuse to ask for travel directions or to back-track? Do Canela women carry food while traveling?
32. Is it in our nature to look around for something to fashion into a tool when unequipped for the task at hand?
33. To put yourself in the place of a problem-solving gatherer-hunter, consider the following. Most of us city folks don't know much about any animal. When we hear that those of us who are gatherer-hunters utilize most every part of an animal we can't really understand what that means or how it shows the process of human creativity in problem-solving. Since we city-folks are more familiar with a car and its pieces we can begin to put ourselves in the place of a gatherer-hunter who has daily problems to solve by thinking of one hundred uses for various portions of an automobile. For example, we might make a blanket out of its upholstery, create body decorations from its shiniest pieces, or make a hammer from a metal piece. If you melt together the wire coverings, hoses, foam cushions, and the headliner, does the mix turn into a sort of glue? We reach for a tool every few minutes. For the next week of your daily life, make a list of situations that call for a tool and then list the part of the car you could use to solve that problem. Could you use a piece of a car to make such things as clothing, string, glue, hammers, poker, and bowls? If you had your entire lifetime to find uses for car parts, what portion of the car would you find to be usable? After a community of fifty persons worked at this through ten generations, would they be using every part of the car? How many different types of material can be found in a car? How many parts has a water-buffalo?
34. What are the dynamics of a group of one hundred humans? Have you been a member of a group consisting of about one hundred persons? Does the personality or character of that group change every few years as members of differing personalities come and go? How changeable would be the ways of a group of one hundred gatherer-hunters or village farmers? What if the group consists of ten or of one thousand persons? How many personality types occur in a group of one hundred persons? Could the interaction between, for example, a brand new groom and his in-laws change with each successive generation? If twenty of those one hundred members were, for example, extra loving or extra violent, could they shift the ways of the entire group for the next few generations before another sufficiently common characteristic came along to once again alter the character of the group? How many members have to be involved to produce such a shift? How often is there a shift in a culture's "tradition" in the number of years in which breast feeding occurs or of spanking or not spanking their misbehaving children?

## **Chapter 8 The Golden Rule is the crucial point of each of the world's religions, onto that is tacked thousands of cultural details**

Religion forms a large part of what it is that makes us human. Religion is universal because all humans share the same feelings, emotions, needs, desires, appetites, satisfactions, and mental states. Humans around the world are nearly identical genetically. We have nearly identical bodies and brains but differing personalities and cultural details. The form of religious expression is as diverse as the number of peoples. Because your own religious views are of the upmost importance to you, you know that the religious views of each and every person are equally important to them. This is significant: it is the reason that all persons should take the religion of others to be a serious and sacred part of life. No group should view another group as "toy people" and insult their religion or way of life. Remember that a newborn baby would become equally at home with any group of people, anywhere on the planet, past or present.

We all experience awe when we ponder things that seem larger than human existence. Our religions are those aspects of our culture that are our answers to questions involving the most awe inspiring elements in our lives and surroundings, including love and family and community and justice.

Each of us knows that we are born, age, and die and are subject to hunger and illness and malice from others. Many of us believe that we share the world with invisible, superhuman, spiritual beings. Religion's most important function is to explain cause and effect relationships between these beings and humans and to explain natural phenomena, illness, and the mysterious things that seem to be not-of-this-world or seem to be unexplainable in ordinary terms. Religion satisfies the human desire for food, health, and success, and it provides comforting explanations.

For thousands of generations, our ancestors lived in mutually beneficial, egalitarian bands containing a handful of extended families. Each person uses readily available materials to make the tools and decorations needed in daily life. Group decisions are made through consensus. Religion involves the awesome power of such things as the thunderstorm and the mysterious "power in the bush" which enables it to just grow out of the ground where nothing before existed. Band members agree about the proper behavior between family, friends, and neighbors and live by our biologically innate Social Rule, which DeWaal says is to do as the other did, and to expect the other to do what you did. Group members would quickly correct any offender's disruptive behavior because each person's life literally depended on the continued functioning and existence of the group. Life would be short for a lone person in the wild. In a group numbering one hundred persons, many generations will pass between murders because it is only one in 10,000 or 100,000 persons who commit murder. If every dispute resulted in the death of half of those involved, then we would all be gone within days. Our behavior is genetically constrained.

Our earliest agricultural villages began 10,000 years ago, and by 5,000 years ago, had grown into stranger-filled cities of 100,000 persons. People may feel less impelled to behave properly with strangers than with band-mates. In the city, social and economic stratification or injustice begins to be a part of daily life.

Our most important moral leaders and teachers, include Zoaster, Plato, Aristotle, Moses, Jesus, Confucius, Buddha, and Muhammad. For the rest of time, we will refer to their teachings. They institutionalized our innate Golden Rule soon after our cities grew to contain many thousands



of persons or strangers and had an evident level of economic and social stratification or injustice and our first empires were directing mass murder. Today's religions began as our responses to the troubles of big cities and warring empires. Each of our religions today satisfies our need for security and protection and provide guides for moral behavior.

All of the peoples of the earth agree on the ideals of behavior. Every youngster knows what is right and wrong and how to behave, but even an old person will have trouble living in a perfectly proper manner. Each of today's major world religions agrees that people should not lie, cheat, steal, or kill and that it is sometimes hard not to stray even from the simplest rules. Do you suppose that 1 in 100 of us adults will cheat, 1 in 1000 will steal, and that 1 in 100,000 of us will kill? Today's religions agree on moral behavior, and differ only in the details of the suggested *road* to proper behavior in life and its situations. Some religions strive to keep a well-functioning society and believe that society is more important the religion, while other religion's believe that society should serve the purpose of religion. Some of us try to separate religion from government while others feel that these two activities are not separate aspects of life.

Science and religion both celebrate life and differ in the following ways. Scientists measure the workings and behavior of people and do not instruct people on how to choose the proper behavior in each of the countless social situations in which we find ourselves. Religion doesn't investigate the details of the chemical reactions among the atoms and molecules that influence our behaviors but does give recommendations for behaviors under differing social situations. Scientists want to understand how the universe operates because part of being human is attempting to understand the world. This understanding also allows us to build useful machines and medicines. Religion is not concerned with machines or medicines: our ancient and sacred documents are not engineering texts. For example, they do not contain blueprints for medical x-ray devices.

Some views of those of us humans who are Christian

Those of us humans who are Christian believe that people should not lie, cheat, steal, or kill. Christians state the Golden Rule as "Do unto others as you would have them do unto you." Christianity developed from Judaism and continues the belief that God is the all-knowing and all-powerful deity who created the universe. In addition, Christians believe that Jesus Christ is the son of God. Some Christians believe that Christ was God taken human form. In the Old Testament, God told the Jews that He will send a messiah to establish God's kingdom on Earth. Rather than a political kingdom, Jesus came to build a spiritual kingdom—to show us how to behave. He suffered, died on the cross, and was resurrected. In his suffering, he atoned for the sins of mankind. He came to save sinners and to give eternal life to believers. One achieves salvation by having faith in Jesus; after death, your soul will then go to heaven. The souls of bad people go to hell. Some Christians believe that God is at once the Trinity of Father, Son, and Holy Spirit. The Holy spirit is experienced as the spiritual power of God within oneself. (*See 101 Key Ideas, World Religions* by Paul Oliver.)

(In *Guide to Cults, Religions, & Spiritual Beliefs, A User-Friendly Approach*, Bruce Bickel and Stan Jantz explain that) Christians take truth from the Bible, which is God's Eternal Word, and they have a personal relationship with Jesus. Christians believe in the equality of humans and emphasize the importance of family relations. The apostle Paul explained Christianity to Greek Philosophers by saying that God is the infinite, self-existent Creator of everything, and He is Lord

over all. He has always existed, and He will exist forever without changing. God does not live in man-made temples; buildings can not contain Him. God is the source of all life, giving it breath. He doesn't need anything from us but we need everything from Him. God knows everything that is going on. He is involved with His creation and directs the affairs of people and nations. He wants to have a relationship with the beings that He created, and He wants us to seek Him—not an idol of Him. He is personally interested in you and knows you intimately. God is transcendent in that He exists apart from His creation, which is the universe, but he is near to us. We know that He exists because we see His creation along with evidence of His involvement through His son and through His Word given in the Bible. One day God will bring everything to conclusion by sending Jesus back to Earth to Judge everyone. He proved this by resurrecting Jesus from the dead. God's judgement will be fair and unbiased.

Christians believe that God is love and that He loves every person, good or bad. Accept it and let it flow through you to others. He has shown how much He loves us by sending His only son, Jesus Christ, to die for our sins. He did that to reestablish His relationship with sinful people who had rebelled against Him and to save humanity from spiritual death. Salvation is God's gift to humanity. Those who accept salvation through Jesus become a member of the spiritual body of Christ that is the Church. Members unite to worship and follow God.

Jesus said that a relationship with God happens within one's heart not in outward, public performance meant to impress others. Don't pray or fast in public just to be seen doing so. Don't brag when giving to the poor. Jesus had a few insults for the hypocrites but mostly he taught of love for others. To understand something of the teachings of Jesus, we'll next quote several of His comments given in the *Holman Christian Standard Bible*.

Jesus said that what ever you want others to do for you, you should do for them. Have compassion for others and help those who need it. Give them as much help as they need, not as much as they can repay. Feed those who cannot feed you. Give to those who ask and forgive debts owed to you. Lend to those who cannot repay.

Love everyone, including social outcasts—even the tax collector. It is easy to love those who love you, but you should also love your enemies. Do good to those who hate you. If someone sins against you, rebuke them in private. If someone attacks you, do not resist their attack. If someone slaps you, do not slap them back; instead, let them slap your other cheek. If they take your shirt, give them your coat, too. You should pray for those who persecute you. If you love only your family, you are not doing anything unusual. Be as perfect as your heavenly Father. Forgive people and people will forgive you. Do not judge and you will not be judged. Correct your own shortcomings before pointing out the lesser flaws of others. Do not insult others. Do not harm another person or even be angry at them. Reconcile immediately. The gentle will inherit the Earth. Be merciful and you will be shown mercy. Blessed are the peacemakers because they will be called sons of God. God knows your heart. Be humble. Ask for the least of what is available.

Don't collect treasures; you cannot be the slave of both God and money. What will benefit a person who gains the whole world yet losses his or her life? There is no material item worth so much to you that you would purchase it with your life. Don't worry about what you will wear, eat, or drink or about your body or continued life. Don't worry about tomorrow. Life is more than what you eat, drink, and wear. There is no need for anxiety. Seek first the kingdom of God and He will provide these things for you.

Do not break these rules, practice and teach them. And practice what you preach. Don't be a hypocrite. Be a light so others can see your good works. You will then enter the kingdom of heaven. Hunger for righteousness and you will be filled. Those who are persecuted for their righteousness will enter the kingdom of heaven. The road of life is broad and full of destruction but the gate into heaven is narrow. Give glory to your father in heaven. Have faith and you can do anything.

In his book, *The World's Religions*, Huston Smith says that faith in the resurrection of Jesus is a powerful belief that does not merely concern the fate of a worthy man but extends to the status of goodness in the universe—contending that it is all powerful. In the first century bc, outsiders said that Christ's disciples showed an immense love for each other and that there was a total absence of social barriers. The conventional barriers of race, gender, and status meant nothing to them. They were equals and lived as though they meant it. They possessed an inner peace radiantly expressed in an exuberant joy. They said of their own radiant joy: "God who commanded the light to shine out of darkness has shined in our hearts."

The love and joy they had were desired by everyone. They achieved it because the burden of fear, including the fear of death, had been lifted off their shoulders. They were relieved of guilt for their shortcomings because they knew that God loved them anyway, and they were relieved of their self-serving ego. These three reliefs came about because they knew they were loved. Within every human is a store of love that partakes of the divine and is activated through the love received from others. This can be described in terms of the love between mother and child: at birth, as we begin receiving the love contained in our mother's smile; in turn, it awakens the love within ourselves. Love is a response. When we feel love, the world is beautiful and we will give anything to anyone without wanting something in return. We ache to give to the world that has given so much. If one feels love, not abstractly but vividly and personally, from the One who unites all power and perfection, then we are relieved of fear, guilt, and self-serving ego. *Jesus taught people of this love.* Jesus taught more than just of the greatness of God. Christians feel God's love and know that Jesus is God incarnate. The love they receive from Christ cultivates their own love for others.

The apostle Paul said that this love was patient and kind, not envious, arrogant, rude, irritable, or resentful. It never insists on its own way. It rejoices in truth not in wrong doing. It bears all things, believes all things, hopes all things, and endures all things. Love never ends.

Some views of those of us humans who are Jewish people

Those of us humans who are Jewish believe that people should not lie, cheat, steal, or kill. Jewish state the Golden Rule as "What is hateful to you, do not do to others." In *What Jews Believe? The Spiritual Foundations of Judaism*, David S. Ariel, explains that Judaism is an evolving, adaptable, continuous tradition of shared values and rituals that mark the celebrations and tragedies of life. It emphasizes ethics, justice, and the community. A recent example of the way in which Judaism changes with the changing world is that they used to emphasize self-denial but now esteem self-fulfillment. In fact, belief in ourselves is becoming important, just as the belief in God has been important. Ariel points out that each person's religion used to be an inherited tradition but is now becoming a matter of personal choice.

Judaism is not a religion of fixed doctrine or dogma but a complex of evolving beliefs that

are not dictated by authorities, instead each member is allowed to come to their own conclusions. Each Jew can define Jewish belief as he or she sees fit within the framework of Judaism. In the past, the institution commanded loyalty but now Jews are skeptical of institutions, authority, dogmas, and claims about the possession of exclusive truth. Judaism is the longest tradition in Western civilization to ask fundamental questions about life, its purpose, and human destiny. It is a spiritual process that attempts to find answers to the perennial questions of human life.

The sacred myths of Judaism form the framework for each Jew's ongoing search for personal meaning in his or her own life and in the life of the Jewish community and society. For each group of people, sacred myths tell of their most deeply held beliefs and are truths not subject to verification. The myths are not fairy tales, no matter how literally or metaphorically we choose to interpret them. Every generation retells the sacred myths and has many personal interpretations of each story. For example, one recent view of the Jewish story of the Exodus sees it as a statement about universal human freedom and equality, while another view sees it to mean that Jews must defend against the Pharaohs and Hitlers of each generation. Each culture presents its understanding of the world in the language of its sacred myths, which might not instantly make sense to an outsider. Religion can be viewed as a formal set of beliefs and behaviors one follows as part of one's attachment to a particular tradition.

Judaism teaches that humans are created in the image of God and that God is within each of us. Everything has a purpose: the purpose of human life is to refine the image of God that is within us. God has also given us the freedom to choose right or wrong. Our fate is not predetermined from birth but is affected through our actions. This implies that suffering is the result of our own wrong actions and choices. God has not revealed the answer to the question of why the innocent are sometimes made to suffer. Some Christian sects say that humans are sinful by nature and cannot change their fate except through faith in Jesus. Some Christian sects believe that sin is a fact of birth, whereas in Judaism, sin is a matter of choice.

Jews have spent more than 3,000 years continually debating and refining the idea of God, the Supreme Being. Judaism began "during an age of disregard for human life." God does not change through time but our idea of God does change through time. The older idea of God becomes more elaborate, more than a "strawman of a simplistic idea." Our view of God is still changing today in view of the new scientific explanations of the world that no longer require heavenly metaphors.

Different Jews have different ideas of God. Each person's idea of God is due to their own life experiences: beginning in childhood, we hear of God and then throughout life we ask questions, experience religious moments, and think about our own beliefs. The common idea of God is that He created and presides over everything in the universe and that He is a benign, moral, watchful ruler. Like a good parent, He provides reassurance and comfort and can be called upon during times of distress. Some say God is a transcendent, otherworldly being, while others say that He is everywhere. Some are more concerned to *feel* God's presence in their daily lives.

Ariel explains that the Jewish belief in God is far more spiritually compelling than the generic idea of God. God tries to avoid interfering in the daily affairs of His people, just as a good parent tries to intervene minimally and only when necessary in the life of a maturing child. He lets His children direct their own affairs and fulfill their father's wishes as best as they can. They are responsible for their own actions and their destiny is in their own hands.

Ariel says that the Gods of the Greeks were indifferent creators who did not monitor or care

about the universe after having created it. The Biblical God causes the rains and seasons and causes crops to grow. Medieval Jewish thinkers tried to reconcile the Jewish moral God with the indifferent God of Plato and Aristotle. They decided that God does not have the same feelings or emotions as does a human. Maimonides concluded that we can know only that God exists and not anything else about Him.

In the thirteenth century, Kabbalah again emphasized that God is a personal deity who is knowable and comprehensible by a mere person. Scholars then distinguished between the unknowable and the revealed aspects of God. The knowable aspects are those that He chose to reveal in the Bible. The Bible did not try to explain His infinite and unknowable aspects, only those that are knowable. The unknowable and the personal God are two portions of His whole. God's infinity resides within His knowable personal nature, just as our unknowable soul resides within our body.

Baruch or Benedict Spinoza lived during the years 1632-1677 ad and said that God is the source of all reality: God is identical with nature. God is all, and the universe is one living being.

He took the God of Aristotle and Maimonides to its logical conclusion. From that time on, Judaism tolerated a wide range of beliefs in God's attributes. The idea of the unknowable God made agnosticism intellectually respectable. If God is so infinite that you cannot know or understand anything about "Him" then it is ok to decide that you cannot know if He even exists. Since we know nothing but the characteristics of mere humans, how can we extrapolate any of this knowledge to the divine?

In the Ukraine in 1735 ad, Eliezer said that you could achieve oneness with God through ecstatic prayer and transcendence of the material world. You will then become intoxicated with God. The world is not a separate reality; it exists only within God. Only God is real; the world is an illusion. Everything you see contains the divine light but has no reality of its own. Zalman said that nothing exists except as a thought in God's mind. The world is nothing and is meaningless in relation to God. Our meager view of the world is based on our limited understanding and perception of God. Their goal is to see the divine in everything and to recognize the difference between illusion and reality. When we see the world, we are seeing a tiny fraction of the infinity of God; we do not understand or perceive the entire thing. It is also their goal to transcend the limits of human existence by annihilating our sense of self and separateness from God.

This can be accomplished through a meditative process in which you consciously concentrate your mind on your insignificance in relation to God. In 1988, the conservative Jewish movement issued a statement of principles. Instead of presenting a specific notion of God, they described Him as the act of asking the right questions: does God exist? If so, what sort of being is He? Does God have a plan for the universe? Does God care about me? Does He hear prayer? Does God allow the suffering of the innocent? Conservative Judaism affirms the critical importance of the belief in God but does not specify all the particulars of that belief. For the conservative, belief in God means faith that a supreme, supernatural being exists and has the power to command and to control the world through His will. God's existence can be known through the testimony of Scripture and the fact that there is something rather than nothing.

Some other modern Jewish ideas of God include the following. Mordecai Kaplan views God not as a being or entity but as a power and a process. God is the impulse for goodness that exists within human beings. This inclination to do good, justice, and peace is God itself. God is that which generates the discoveries and creativity that give rise to human meaning. This is not a supernatural

power but a natural power that literally exists. Buber says that God is the thing that gives meaning to each personal encounter between two humans. When two persons experience each other, God is there. God is the wholly other and is present in the experience of human relationships. He can be experienced only through other persons.

You cannot reach the divine by reaching beyond the human. He is the eternally present being who invokes awe and love in those who experience Him. God does not watch over individuals or command them. He is not sought through ritual. God does not reveal a message or law to humanity, only a presence.

Ariel further explains that, in Judaism, the endeavor to understand God is never finished. The search for the answer to the question "What is God" produces answers but the answers are never final. What matters is the search itself and the struggle to understand His place in our lives. Each person and each generation will have new views. Most importantly, each of us must arrive at our own answers, just as did those who came before us and those who will come after us.

Some views of those of us humans who are Muslim

As described by Suzanne Haneef in *What Everyone Should Know About Islam and Muslims*, those of us humans who are Muslims believe that people should not lie, cheat, steal, or kill. Islam teaches one to "Love for your brother what you would love for yourself." Suzanne Haneef explains that both Christians and Muslims believe in the God originally described in the Jewish faith and that these three religions are closely related.

Muhammad was born in the year 570 ad., which is year zero in the Islamic calendar. He was born in Mecca, which was already a large, commercial city. As was customary for nobles during childhood, he lived for a year or two with a Bedouin family. During his twenties, he worked as a merchant trading with caravans, and he married and had two boys and four girls. In his forties, he began to go meditate in a cave on Mount Hira outside of Mecca. There, the angel Gabriel first began to recite the Koran to Muhammad. For the next decade, Muhammad preached publicly about his message from God.

We will go into more detail about the Muslim view of the world to help Westerners have an accurate understanding of Islam. After carefully comparing your own views with those given here, you will better understand your own views and those of others.

Islam means "submission and peace." Submission to the will of God means obeying His commands concerning moral and spiritual behavior and results in a life of inner-peace. A Muslim is one who believes in God, that God is the only deity, and that Muhammad was His Messenger. God does not appear in front of mere humans because His infiniteness would overwhelm their senses. Instead, he has made His wishes known through a series of messengers that included Abraham, Moses, and Jesus and ended with Muhammad, who is the last messenger and who God caused to write the Koran (or Quran), which means "recitation." It contains the final and complete message for us. Ali explains that the chapters of Quran speak to both men and women.

The details of Muhammad's life were recorded while he was alive. He lived from 570-632 ad. He was a father, husband, friend, ruler, statesman, and was a descendant of Abraham.

The Quran expressly forbids certain things, and anything that leads to a forbidden thing is also forbidden. If something is not expressly forbidden then it is allowed. The Quran is also a source

of Islamic legislation. The Quran is still written in its original Arabic language; it has not been repeatedly translated or altered through time. The message from the prophets was that God created the universe and made laws that govern our conduct and that we are accountable to Him for the way in which we live our lives. Muhammad also gave practical examples of how to behave and interact with family, friends, and neighbors in a book of his own writings called the Hadith.

Islam teaches that mere beliefs will not change a person: for a religion to be effective it must demand something of you. Your daily life must be affected by its obligations. Islam strives to instill an attitude toward life, family, manners, and worship and thus free a human from domination by his or her animal aspects. Islam governs the total person and the community of persons. Islam says that there is another realm that you cannot perceive. You came from this realm and you will return to it when you die. God is that other realm. You are in this world to be tested.

Islam believes that God is the supreme being who created and sustains the universe. He made the laws that govern the way the universe functions. He created humans to acknowledge, worship, and obey Him and to take care of our society in His just and righteous manner. He also made permanent laws for the moral and spiritual guidance of humans. People cannot change these laws, only God can. He knows what is good for his creatures. The laws apply to each individual and to society as a whole. There is no separation of church and state because you cannot separate a person into two pieces.

God didn't create the world and then simply leave it to function on its own. He watches over each minute portion of His world and over each person, too. He decides what will happen to you from moment to moment. He likes to see you striving to do your best—this is your duty—rather than sitting back and letting "fate take its own course." Humans do not know their own destiny; they must strive to attempt all possibilities. After you have made all efforts then God will decide what to send for you. A Muslim has belief in the meaningfulness and purposefulness of all that God decides to make happen and has trust, dependence, and submission to the creator.

Even if you find your life being threatened by another person, you do not have to worry. That person is not going to harm you unless God decides you should be harmed and causes that person to harm you. The decision will be God's, not that other person's, and you should submit to His decision. Each person has the free will to submit to God. Muslims have inner peace, certainty, and confidence even in the face of affliction because they know that God controls everything. Muslims are constantly aware that God is watching in judgement of their actions. This also means that they do not have to be concerned with any lesser authority.

When people obey and serve God then they are freed from obeying and serving anything less than God... God gave us freedom of choice, judgement of right and wrong, an immortal soul, and the abilities to feel, think, and act. He did not give these things to the other creatures. He wants us to pass knowledge to others. God wants humans to use the minds that He gave them, and He wants people to use the freedom of choice that He gave them to choose voluntarily to act in the manner that He has instructed. People will then fulfill the entrusted responsibilities and will choose not to follow random desires.

A mere human cannot figure out God's purpose for humankind, the reason that humans have been placed on this Earth, the role and destiny of humans, the meaning of life, the reasons for pain and suffering, nor God's nature, attributes, and relation with humans. These things can only be revealed to humans by God, as He did for Muhammad. A significant part of Islamic faith has to do

with the acknowledgment that Muhammad is the Messenger of God.

In the past, we were mainly farmers who were more directly dependent on God's sun and rain and such. There had been less range in our goals for life. With today's technology we feel farther removed from the natural world so that it is harder to see that God is directly involved in each moment of our life. Remember that no one but God controls your heart, lungs, aging, and even your career. We see the utter powerlessness of humans and our machines when faced with a crises that only God controls. In fact, He controls every atom within your body and within your machinery. At the moment of death, each person realizes that no one but God is in control of his or her destiny. Death is the return of the soul to the One who gave it.

The Muslim must worship and pray at least five times per day: at sunrise when you would like to be sleeping, at noon and again in the afternoon while you would rather be concentrating on work, and at sunset and nighttime while you would be preparing for sleep. This act of worship is more than a prayer in the Christian sense because it includes supplication to God and glorification of Him. God does not need your worship; prayers are meant to keep you in contact with God, to strengthen your submission to Him, and to solidify your character. The timing of daily worship is meant to build discipline and to mold you into a faithful servant who lives according to God's prescribed manner. Daily worship is done in large groups to reinforce the ties of fellowship and affection among Muslims. At any moment of the day, the time of worship and prayer will be occurring in some region of the world.

For one month per year—the Ramadan month—the Muslim must fast from food, water, and marital sex during the daylight hours. This is also a time for reading the entire Quran, restraining the tongue and temper, and for doing other devotional exercises. The lunar-based Ramadan month cycles throughout the twelve-month year.

Once per year you must donate about 2.5% of your assets either to help the poor or to further the cause of Islam. You should donate the things that are a source of your profit and are not needed for your immediate needs. You might choose to donate to church construction or operation. You can also give a meal to another person or forgive a debt. Do not brag about your gifts. The wealth belongs to God, not to you. God has temporarily entrusted it with you to share with your family and others. You should give whatever is beyond your needs. This helps to eliminate the bitterness between rich and poor and equalizes wealth without banning private property or requiring that all persons have equal wealth.

Do not spend for luxury or to impress others: materialism is to be avoided. If you managed to obtain every material possession then what would you do. People need something more significant with which to be concerned. The most precious things are never material things. The dog-eat-dog pursuit of self-interests, as is occurring in many parts of the world today, has no real benefit. It is all right to spend a reasonable amount of money on yourself and your family but love of wealth and luxuries is forbidden. Material things should never become the primary goal of your life.

It is a sin to be lazy and to ask for a handout. Instead of simply giving a handout to a person, it is better to pay them to work. God likes for everyone to strive to do their best and to utilize all of their talents. God will judge you by how much you accomplish with your talents. Muslims must strive for self-improvement, to fulfill their obligations, and to utilize their talents.

Muslims have a responsibility to improve society and must also strive to end injustice and to fight tyranny, corruption, and evil. You must help others against injustice and refrain others from



doing injustice.

Striving is the path to God. The word Jihad means "a striving" and is often mistranslated as "Holy War." Throughout the world, we all strive to end poverty, hunger, and hopelessness: this striving is a jihad.

It is a religious duty to seek knowledge, including knowledge of Islam, secular knowledge, and the knowledge of other cultures. You should seek knowledge for its own sake, and you have an obligation to teach your knowledge to others. There is a religious obligation to improve and administer society and to develop science, industry, technology, and human potential.

Muslims must also strive to make a pilgrimage to Mecca at least once in their lives. Everyone dresses alike during the pilgrimage and while at Mecca. This means that you bring just your own character and personality and not your trappings of wealth and social position. This makes everyone feel as Muslim fellows.

The five acts of worship, described in the previous paragraphs, must be performed by every Muslim. The Muslim must declare faith in the one God and acknowledge that Muhammad was His final messenger. The Muslim must worship and pray five times per day, pay the annual poor-due donation, fast during daylight hours one month per year, and have a pilgrimage to Mecca at least once in his or her lifetime. These five acts of worship strengthen your sense of submission to God and require your soul, mind, feelings, body needs and appetites along with your time, energy, and possessions. In this way Islam demands something of you and strives to improve your behavior.

Ownership of property and engagement in trade and business are encouraged but it is prohibited to gain wealth by charging interest. You must directly work for your income; you cannot make a living off the efforts of others. Since it is forbidden to act in any manner that harms people or society, a business cannot manufacture things that are harmful to society, harmful things include alcohol, drugs, or the promotion of non-marital sex. Advertising that promotes excessive materialism is not allowed.

Society is to prosper by cooperation and mutual assistance—not by the exploitation of one group by another. Whenever there is a group of two or more persons, they should select one to function as the leader. The leader has no special privileges and is accountable to God. He is not in office for his own interests but to serve the people. He must consult the people.

The State guarantees the right of protection of your person, property, honor, business, travel, and education. Justice must be impartial and blind to race, religion, wealth, social status, and governmental position. Islam does not force anyone to follow Islam: only God can grant or deny this choice. A person cannot promote atheism, violence, or communism because these things are harmful to society.

There has been some recent tension between Muslims and Western nations. Islamic peoples object to the injustice of those Western governments and corporations who interfere within Muslim lands in an attempt to control their assets and economic activities. Whenever people argue, each should ask the other to explain the injustice that has caused their anger. Each will learn something about themselves and perhaps become more just in their actions.

All peoples agree on the sorts of things that make for good personal character. These things are often summarized by our Golden Rule. The following statements contain a list of specific character traits that Islam views to be representative of a good person.

Treat others as you would want to be treated. This includes family, friends, other Muslims,

non-Muslims and enemies, too. Love for your brother what you would love for yourself. If you help or forgive another person, then God will help and forgive you, especially on resurrection day. These guidelines include your daily behavior with others, your daily business relations with others, and the behavior of every organization, including the State.

Life is sacred: do not kill except in self-defense, in a righteous war, or for the State after due process. Resist injustice, tyranny, and oppression by all means, even when it is done by the State. If your brother acts with injustice then stop him from doing that. Have respect for property: do not steal. If you are starving then it is ok to steal, but with widespread charity, stealing due to starvation will not occur.

Avoid hypocrisy, greed, selfishness, envy, and the desire for reputation and power. Be sincere, and be open and straight forward by expressing complaints directly to the offender's face rather than by talking behind this person's back. Have integrity, be truthful, and honest. Keep your commitments and practice fair-dealing. Control your temper. Exercise self-control by not indulging in excessive pleasure or luxury. Make allowances for the faults of others. Retaliation in kind is allowed but you are urged to forgive and to show mercy and compassion. Islam discourages asceticism and excess. Practice humility, patience, endurance, courage, dignity, honor, respect, and thankfulness. Wealth and social status are not as important as are faith and god-consciousness. Don't gossip, pry, be suspicious, or interfere in the lives of others. Ali states that we are also to exercise purity, modesty, and chastity.

In the culture of Islamic nations, womens' dress follows the Islamic concept of womanhood just as Western womens' dress follows the Western concept of womanhood. Do not dress to attract attention to yourself because your character is more important than your dress. A woman's beauty and sexual attributes are not for public display; they are reserved for her husband. She should dress such that only her hands and face are visible. Western flaunting and sexual innuendo are shocking to Muslims. When a woman dresses modestly then her interactions with men will remain with the business at hand. If she dresses for show then every interaction with men is reduced to attempts at sexuality. A Western ideal states that one should love a person for their internal beauty because outer beauty is only skin deep. If one can see nothing except the eyes of a woman, then a man's love for her can be based on nothing but her internal beauty. Keep men and women apart—in schools, hospitals and such—to avoid temptation.

The aging Muslim woman becomes increasingly respected instead of being treated as a person of decreasing beauty and sexuality. Sex dominates Western life; this blind physical desire disrupts society.

A marriage is based on the common belief in God and in Islamic ways, not on romance. Premarital dating is prohibited. This provides a strong foundation for building together the lives of two spouses. We strive to maintain harmony with our spouse and to show proper care and training for our children. Babies sleep with their parents. Parents should show their children that the rules were not invented by them but are God's rules and that parents, and society as a whole, follow the same rules, too. A child should be praying five times per day by the age of ten. By their middle teens they should be aware of their future roles and responsible for their own actions. (This is the reason that Iranians vote at age fifteen.)

Do not show cruelty or irresponsibility toward family members. Show obedience and respect to your parents and relatives. Family members can never break their ties. Take care of all family

members, especially your aged parents. No aged family member should live alone. Marriage, building a home, and raising a family is the completion of your faith. God does not like divorce but He will allow it after the other family members have been unsuccessful in their attempts to reconcile the two spouses. Orphans are to be raised by family members instead of being adopted to strangers. Ali explains that it is not stated in the Koran but it is cultural practice for babysitters to be other family members, not strangers.

Be helpful and kind to everyone, even to non-Muslims, because all persons are equally God's creations. Be charitable, generous, and show hospitality. Be polite, considerate, and well mannered. Tell visitors that your home is their home. Ali explains that it is part of cultural manners to understand that while visiting, it is impolite to stay longer than three days.

Eat in moderation. The food meant for one group of persons can easily feed twice that number. Since it is rewarding to share food, give left over food to someone else rather than throw it away.

Islam is a way of life involving the entire person. It demands effort from you rather than just asking you to behave properly. A person will have respect only that for which they strive. Seek knowledge and develop your skills and talents.

Show children love, security, warmth, and affection so that they will become cheerful, good-humored persons with loyalty in relationships. They will then be able to develop their own warm ties with family and friends.

Muslims believe that Jesus was the son of the virgin Mary and that God can cause a person to be born in any manner that He chooses. God is infinite. Because He is much more than a mere person, He cannot have a son who is a mere person. For this reason, Muslims do not believe that Jesus was the son of God. The Quran has an entire chapter on Mary.

Muslims believe that Jesus never said that he was the son of God and that he didn't want to become the basis of a new religion; he thought that he was just one in a series of messengers. Jesus wrote about God's revelations. After he had died, the later prophets began to write more about Jesus than about the revelations of Jesus. Muslims say that after Jesus had died, the new Christian Church decided that he was divine. Muslims believe in one God, not two. They feel that in some ways they have remained closer to the teachings of Jesus than have the Christians.

Muslims do not believe in the Catholic idea of original sin: that you must be saved from eternal damnation by accepting Jesus as your savior. Instead, Islam teaches that we are born innocent and sinless and that we are responsible for our own actions through which we add to our character. Islam does not have an equivalent of the Papal authority. Muslims share much in common with Christians and Jews. Some Muslims feel that Jewish Zionists are acting in an unjust manner.

My friend Ali explains that Islam consists of Quran, Sunnah, Hadith, Fiqh, Kalam, and Sharia, which most Islamic countries are not using anymore. Although there are disagreements about which to apply in Muslim societies, there is one thing that is certain for every society, and it is the Quran. The Mu'tazila and Ash'ari schools of Islamic theology have had a huge impact on Muslims. To further understand Islam, these should be your next researches.

Some views of those of us humans who are Hindu

Those of us humans who are Hindus believe that people should not lie, cheat, steal, or kill. Here are some representations of Vishnu, who is the Hindu Supreme being or soul, the essence of all beings, and the creator, sustainer, and destroyer of all beings and of everything in the universe. In his book *Our Religions*, Arvind Sharma describes Hinduism as a philosophical, spiritual, and experiential system. It is a method for discovering spiritual truths. Hinduism is more a way of ethical life than a school of thought. It gives no restrictions on thought but has a strict code of behavior. Hinduism is tolerant and accepts all other religions as true; there is no heresy hunting in Hinduism. Hindus believe that religion is universal and are displeased when another religion tries to make its particular brand of religion universal. Hindus believe that religion is not correct belief but correct behavior. Hinduism is also separate from a state; Hindus wonder how a religion could use a state as an instrument of its expansion. Hinduism does not want to convert all humanity to a single belief; instead it wants to convert everyone's conduct into proper form.

Hindu religion consists of daily behaviors, and is practiced during interactions with family, friends, neighbors, and strangers. Hindus do not congregate in a public, church building. Instead, each home has a shrine and there are small shrines in every neighborhood.

In *The Hindu Religious Tradition*, Thomas Hopkins explains that within one Hindu family, mom might be a devout worshiper of Shiva, a son is equally devout but follows the teachings of Ramakrishna, and dad worships Krishna. It is ok for each person to choose his or her own method of worship and path to moral life. (This is like one nuclear family in the U.S. having one Baptist son, one Catholic daughter, a Muslim mother, and a Sikh father.) The family visits a temple of the goddess Durga, they visit a temple and teaching center dedicated to Vishnu, and they sing devotionals to Krishna. Similarly, every other family has its own mixture of practices. The collection varies throughout Hindu lands and through the centuries. There are many, equally valid paths to reach the same goal. Each person chooses the path that best suits themselves at each point in life. No one thinks that there is only one correct path that must be learned verbatim and followed by all.

The milestones of life ends with death and begins with birth. Puberty transforms a young person into an adult and a Hindu as seen in this ceremony. Marriage is a milestone in life.

Each person is living in one of life's stages, has a certain place in family and society, and has duties to fulfill in everyday life. This is dharma or the proper way in life, and it differs somewhat from one person to another. It is all of those things that ought to be done to maintain the order and harmony of the universe (p73). There is a parallelism between ritual order, cosmic order, and the order of society. Actions in society are also ritual and cosmic actions. Ritual actions can be done mentally. The primary responsibility of most persons is to raise a family and maintain a household within society. The preservation of society greatly depends on the householders.

There are several incarnations of Vishnu, including Krishna and Buddha, who arrive when needed to restore failing righteousness. For many Hindus, the supreme being is Vishnu, or Brahma, who is the creation, or Shiva, or Krishna, or all of them, or these plus Devi, who is the female aspect of the divine, and Surya, who is light and the Sun. Other deities include Ganesha, who is the beginning of a new enterprise or undertaking and the removal of obstacles. Durga is the invincible, warrior goddess. Saraswati is learning, academic and divine knowledge, arts, and the sacredness of the river. Lakshmi is food, royal power, universal sovereignty, knowledge, power, holy luster,

kingdom, fortune, bounteousness, and beauty. Kali is eternal energy and the force of time. Vayu is breath. Indra is rainfall, storm, and war. Agni is the power in fire, who also exists within objects until released in a ritual fire. A few thousand years ago, it was noticed that people can make fire but not earth, water, air, or heavens. A priest's use of fire can influence the cosmos. Hopkins explains that the syllable om represents all sounds and thus the entire universe.

In *The Hindu View of Life*, Radhakrishnan explains that each Hindu is free to make his or her own conclusions about deities, deciding for themselves the number and reality of the Gods. He or she may decide there is one supreme God, many gods, or no gods at all. There is no limit on intellectual beliefs for the simple reason that there is only one reality; it just has many names and faces. (Notice that no two Christians have an identical idea of Christianity.) Each Hindu chooses the kind of God or gods that he or she wants to worship along with the spiritual method they think is appropriate for that worship. Hindus are not the "chosen people" but the "choosing people."

One Hindu scholar said there are 3,306 Hindu deities, but they are all one Brahman or universal substrate. The representations of God do not tell us what God is, they only tell us what God is to us. The infinite, supreme being cannot be described in everyday terms. It is beyond our imagination. Our world does not exist independently of its ultimate cause: the Supreme being. Hindu scholars debate whether God is separate from the universe, if the universe is a part of God, if God chose to be transformed into the universe, or if God is more than the universe. Samkara scholars deny the reality of our temporary and finite world because it is not independent of its ultimate cause. That is, it does not independently exist on its own but is a collection of other parts. Since each possible answer about God brings many other questions, it is unlikely that we can logically deduce the answer. Radhakrishnan says that, since each postulate about His characteristics leads to logical inconsistencies, agnosticism would be wiser. We cannot rest in the idea that the Absolute is incomprehensible, but the Supreme being cannot be both infinite and comprehensible.

Some Hindus believe in an infinite God while others believe in a personal God, some worship ancestors and deities, while others worship forces and spirits. (This covers the entire spectrum, from the power in the bush to the power of the sun and of the Supreme Being.) Some Hindus believe that the deities live in the water and sacred rivers, others see them in the heavens, and still others see them inside themselves.

Hinduism has been developing and adding new doctrines for 3,000 years. It has no single historical founder but many prophets and a mosaic of doctrines. Hindus work, worship, pray, and seek well-being in this world and the next for themselves and for their family and friends. Hinduism is an array of techniques for establishing links between the human world and the transcendental world beyond it. The path to the realm is characterized by the reasons behind your actions rather than the benefits of your actions and is rooted in ego-lessness.

Radhakrishnan explains that the sacred, epic tales or Vedas describe proper moral conduct. They contain the spiritual experiences of historical persons whose souls were more-strongly endowed with the sense of reality. There are three parts to the Vedas: the Upanishads tell the experiences of the sages, the Brahma Sutra's logically interpret the conclusions of the Upanishads, and the Bhagavad-gita describes how to attain the truly religious way of life. The Hindu attitude toward the Vedas is trust with criticism. They trust that what was useful for their parents will also be useful for themselves. They are critical because all generations must ask their own questions and make their own conclusions. Hindus feel that if a religion stops growing then its adherents have

become spiritually dead.

Dogma is subordinate to experience, and outer expression is less important than inward realization. Hinduism is a kind of life experience and an insight into the nature of reality. It is not an emotional thrill or an acceptance of academic abstractions. It relies on the labor of being religious rather than on a mechanical acceptance of an authority's version of religion. Blind belief in dogma is not faith. Two important Hindu principles are respect for all humans and devotion to truth.

All of the people of the planet are God's offspring. They all have the same religious goal but achieve God-realization in different ways. For this reason, Hindus recognize all religions to be valid. This has been part of their tradition since its early days. About 3,000 years ago, Hinduism united the many peoples of the Indian subcontinent. (It also kept peace by assigning each new group a place in the caste hierarchy.) It united many different tribes of peoples, each having their own ancient deities. It also united tribes who believe in a single, omnipotent God.

Radhakrishnan explains that in feudal society, warriors are the most important persons while in capitalistic society it is the money makers. In Hindu society, cultural artists and spiritual persons are more important than those who pursue economic matters. The persons of highest regard are those of self-sacrifice and devotion to the world; they are called Brahmin. The Brahmins see themselves as a part of the whole and would rather die than act against others. You become a Brahmin by doing good deeds.

There are divine potentialities in even the worst persons and we retain the power within us to raise ourselves. We are born with a large number of characteristics but choose which ones to use. Karma is the idea that many of our characteristics can be traced to our past. The worst sinner has a future just as the greatest saint has had a past. The past does not determine the future but only conditions its development. God has not planned the details of our future. Show charity for sinners because they are merely weak; they are not evil or wicked of heart. The descent into hell is easier than the steep ascent into heaven. (Hindus do not believe in a hell because there cannot be a place where God is not.)

It doesn't matter if you have this view or that. It only matters that you perform good by being kind, honest grateful, and sympathetic. Wealth and power are natural desires but must be obtained righteously. Fulfilling the spirit is more satisfactory than fulfilling the desires for wealth and power. The fact that the goals of our hearts do not perish with this body inspires one to live with a present sense of eternity.

Each individual possesses knowing, feeling, and willing. Each of our acts is weighed by God's justice. The day of judgement is not in the future but in the present. God put natural laws into the universe and moral laws into our soul. Sin is a denial of soul not a defiance of God. God also expresses His justice with forgiveness. Guilt is atoned by sorrow. Prayer cannot be used to obtain your every desire.

Humans have four goals: a moral life, the earning of wealth, enjoyment of the pleasures of the senses, and the seeking of liberation. In, for example, a 100-year life span we should spend the first twenty-five years learning morality and vocation. During this time, a plastic youth becomes molded into a person capable of duty. During the next twenty-five years we earn wealth and enjoy sensuous pleasures. We create the perfect marriage through hard work. Divorce is a confession of defeat and is done too often in today's hurried life.

Through the next twenty-five-year portion of life, we should live a virtuous and pious manner

while we slow down to ponder higher problems and our own soul. Our soul makes us more than our possessions and social position. What do we gain if we own the entire world but lose our soul. Materialism falsely claims to bring a better life. We seek liberation in the remaining twenty-five years while we attain a state of spiritual freedom, un-tempted by riches or honors. At any moment in a person's life, he or she is in one of these stages of life, pursuing a particular goal consistent with one's humanity as expressed in universal values such as charity, purity, and virtue. Devotion through prayer, petition, fasting, sacrifice, communion, and self-examination along with wisdom obtained through realized experience are concurrent paths to God.

Radhakrishnan described that thanks to science, the world was becoming a much smaller place and that we are realizing that everyone in the world is a member of a single cooperating group. He wonders how some religions will be able to live together and says that we cannot have religious unity as long as some assert sole possession of truth. The political ideal of the world is not one empire with a homogeneous society and a single communal will; it is a fellowship of free nations that differ profoundly in life and mind. The just organization of the world's societies will be based on political equality, economic fraternity, and spiritual liberty.

There is no hope for our world unless there is a fellowship of our religions. As in Hinduism, the religions of the world should seek unity in moral conduct rather than unity in sect. The world would be much poorer if one sect absorbed the rest. God wants diverse harmony not colorless uniformity. All religions curb excess and promote ethics. Radhakrishnan is confident that Hinduism's tolerance of others is the answer to the conflict of religions. He points out that Jesus did not say that it is wicked to be Jewish, and that he didn't tell other people to drop their bad religion and accept his.

In 1927, Radhakrishnan says that government was made to protect us from the overly-greedy business person but today's money making obsession has erupted into an uncontrolled greed that has never before been seen. The love of wealth is disrupting social life and suppressing the spiritual. Greed is the cause of much of the world's meanness and cruelty. Working people deserve more comfort for their role in providing both the labor and the market for the industrialists. He says that workers should receive the highest wages because their work is their only reward. Thinkers and advisors should be paid the least because these actions are reward enough.

Radhakrishnan also warns nations not to view others as inferior. Julius Caesar had such insults for the uncivilized, animal-skin-dressed savages of Europe and then four hundred years later they sacked his capital. The political and military leadership of a region is always temporary. All peoples contribute to our thought, moral advancement, and spiritual growth. All peoples will develop to their full potential in due course. All peoples show considerable ingenuity when pressed by external forces. Today's less industrialized nations will choose to create capitalistic industries and economies whenever they have a need to do so. These things do not make people any happier. The industrialized nations can't see how others can be different from themselves.

Even in the last two hundred years, the "superior" nations have performed a long list of atrocities in Asia, Africa, and America. Civilization is not the suppression of less industrialized peoples. God does not give any group the right to destroy or enslave others. Our highest ideals require that we give every group its own future. The greatest Hindu heroes are those who tried to bring together the different peoples of India into a more-just society. It is much more difficult to fight injustice than it is to fight soldiers. (This is the reason that Gandhi and Martin Luther King are great heroes in world today.)

Some views of those of us humans who are Buddhists

Those of us humans who are Buddhists believe that people should not lie, cheat, steal, or kill. Buddhists state the Golden Rule as Buddhists say "Treat everyone as if they are you." Buddhists acknowledge that it is hard not to be selfish, not to be angered when slighted, and not to abuse one's authority. Buddhists believe that suffering occurs and that it is common and that selfishness and ignorance are the roots of every person's troubles. When we mistakenly believe that the universe is something it is not then our resulting expectations cannot be fulfilled and we will cause our own suffering.

In *Zen for Americans*, Soyen Shaku explains Buddhism to a Christian audience. At the heart of Buddhism is the story of Buddha's realization. Buddha is a teacher not a prophet. The teachings of Buddhism are those of a human being who speaks not for God but out of his own experience. Buddhism offers teachings and instructions; it does not proclaim dogma. A statement derives its value from the help it provides in attaining enlightenment, not from its source. Buddhists believe conduct counts for more than belief. Buddhism emphasizes proper behavior and salvation here and now, not in an afterlife.

The Buddhist does not say God but instead says Oneness. Buddhists believe in the Oneness of things—that there is a unifying principle in all phenomena. Buddhists also believe that all things are different and that all things work on all other things. This is karma. In *How to Practice, the Way to a Meaningful Life* the Dalai Lama says that karma is a tendency created by previous actions.

Buddhists do not believe that there is a supernatural deity but will talk of persons of extremely virtuous behavior as if they are gods. This is done as a tool to teach moral excellence. Buddhists reject the idea of an omnipotent being. On a first reading of this section, Christians might choose to replace the word Oneness with God. Where some of us say nature, others say God, love, Oneness, Allah, Jehovah, or Jesus. We are all really talking about much the same thing: the idea of a unifying love between all of us. These approaches differ in whether or not this is deified.

Oneness is the highest reality and truth. Oneness abides in all things and is infinite. Oneness is in all of us and is the world. We are one with all, not separate from each other. Oneness is within each of us. Everyone is within everyone else; there is universal Oneness. We are all together. Since every person is within each of us, you should treat everyone as if they were you—because they are. I am within you and you are within me. Seeing that we are all basically the same may help you feel oneness with every member of humankind, and help you see that the group is what is important, not one individual. We should all work to improve the group. If you regulate your thoughts and deeds according to the feeling of Oneness then a wondrous spiritual truth will be in your heart and you will then treat all others as family and friends, not as strangers.

When you see Oneness in everyone and in everything then you have attained Nirvana. A person who has attained Nirvana will know truth. The heart is then cleansed of all egoistic impurities and will practice loving kindness to all. This will be your reward on earth; there is no heaven. You will be a good person who is above bigotry, intolerance, hate, vanity, and conceit. You will be humble, practice forgiveness, and have compassion for others. Your spiritual insight will penetrate into the depths of your existence. Attaining Nirvana means becoming a good person because you have realized that Oneness is everything and that everyone is one in the same.

Buddhists say there is no heaven nor is there a coming reward in heaven, so do not sit in



tranquility of mind relying on God. You will not sit in happy, inexpressible bliss forever at the side of the creator. Instead, you will be reborn, not as another person but within another person who is taking up where you left off. Your life's deeds and your contributions to the world's understandings are their own reward and are what will live on after you have left. Let your life's work make you live forever. Just as a house is composed of its pieces and does not have a soul, when you gather the pieces of a person then it is a person and does not have a soul. The body turns to dust.

Buddhists see that ignorance is the root of all evil. We are selfish only because we are ignorant of the true nature of the universe. Perfect peace occurs when egoism goes away; egoism goes away when I recognize myself in you because I have come to understand that we are all one—that we are each a part of each other. I then will love you and treat you right. The divine love in our hearts is now unobstructed. When this truth becomes understood then we are enlightened. This is why Buddhism is called the religion of enlightenment. The Dalai Lama says that enlightenment is a state in which mind and body are fully developed to be of service to others.

Buddhism recognizes the reality of the phenomena of the world, the existence of ultimate reason, and the imminence of this reason in the universe. The universe is this ultimate reason. Oneness is this universe and is this ultimate reason. Within each of us is the indwelling reason for the universe.

The Dalai Lama explains that a coiled rope looks like a snake but it is not. It is a snake only while it is supposed to be one by a person who is ignorant of its true nature. One may think that a piece of furniture is real but that too is just a mental construct. That piece of furniture consists of a tree and the labor of a carpenter. In fact, it also consists of atoms, nuclei, and elementary particles. It does not exist independently of its components. It is a mental construct just as is the coiled-rope “snake.” Those things that do not independently exist, they are not permanent, they are not real, they are mental constructs. You are also a mental construct in that you do not exist independently of your parts, which include limbs, liver, mind, and atoms and such. What you construe to be “you” at this moment is different than “you” of the past or future. The “wisdom of emptiness” is the knowledge that things do not exist independently of their parts. We exist but do not independently exist. Other things exist, but everything is a construct and so do not independently exist. Hate and greed and such do not exist because they too are constructs. Misconceiving the independent existence of phenomena, including ourselves, is what allows hatred and greed and such to occur. Understanding the true nature of reality removes suffering. Between the two extremes of thinking that everything exists or that nothing exists is the truth of the Middle Way, that the existence of everything depends on its parts and on other items.

The practical part of the religion is its efforts to stop wrongdoing. You must start being a good person, promote goodness, and enlighten the ignorant. This is a simple faith. There are no mysterious superstitions nor supernatural deities, just good behavior toward all. It is said that every three-year-old knows how to behave but even a silver-haired person still has trouble living that way. However, life as a saint is not enough: the mind must also know the meaning of life and the true significance of existence.

Life has good and bad things but we should be above both. Life is worth living because it gives us a chance to work, to apply ourselves, and to realize moral and spiritual aspirations. Life is not meant just to enjoy passing pleasures while we are here.

There are both natural laws and spiritual laws in the universe. When an evil act is committed,

the entire universe is sorrowful because the act slows both progress and the attainment of goodness. Life is not for mere living but is the path that leads to goodness and oneness. When you feel a noble feeling or do a self-sacrificing deed then you'll see that the spirit of oneness is making itself felt within you, including the spirit of all who have come before us and have contributed to the goodness of the world. Reincarnation means that your life's contributions are reused forever.

The Fourfold Noble Truth is that life is suffering, that ignorance causes suffering, that nirvana transcends pleasure and pain and is the goal of our life, and that moral laws must be put into practice to reach Nirvana. Truth isn't revealed to us by a supernatural force but is discovered ourselves through a faculty that can be acquired by all beings. Buddhism is not to be believed blindly but to be believed rationally. It is to be believed because it is true not simply because a mystical person has proclaimed it to be true.

Buddhists are tolerant of other religions and do not have the bloody past of some of the others. There was no holy war nor an inquisition. Truth is universal and the same for all races and nations. Buddhists believe that Christ's words are truths. In fact, Buddhists and Christians—and the followers of every other religion, too—agree that each person must love all other persons. Christ and Buddha taught the same things. The Dalai Lama says that as long as hatred dwells in our minds there will not be peace among peoples and that the weapons-backed attempts of one nation to dominate another is counterproductive. Our common humanity must call us to action in ridding the world of weapons and armies.

To describe something of the daily practice of Buddhism, I next summarize *The Art of Happiness, A Handbook for Living* by His Holiness the Dalai Lama and Howard C. Cutler. Cutler, who is a psychiatrist, interviewed the Dalai Lama extensively about the steps needed to obtain personal happiness and then compared the Buddhist approach with that of Western psychiatric practices. Their discussion makes it clear that Buddhism is a lifelong internal reflection rather than a faith in an external agent. Cutler explains that many of the observations, conclusions, and personal improvement techniques of Buddhists are well matched to those of psychiatrists that resulted from scientific studies of human behavior. Cutler and the Dalai Lama's book has been aptly described as "An intriguing encounter between East and West."

The Dalai Lama says that the meaning of life is to seek happiness. The level of our happiness is not genetically preset but is to be pursued. It can be obtained through years of concerted mental effort by cultivating positive mental states and rejecting negative mental states. When you are unhappy, identify what has caused your unhappiness and don't do that again; avoid the situation that caused your suffering. Similarly identify and repeat those things that make you happy. Each night you might evaluate the actions you took that day to decide if they did or did not make you more happy. Repeat often, those thoughts and actions that made you happy, and avoid those that did not. With each passing day, you will become more happy. Do not rate an action to be positive or negative based on an immediate feeling of satisfaction but on its long-term consequences. The temporary pleasure of food or sex is not happiness. Don't ask if this feels good, ask if it makes you happy. For example, consuming to satisfy instead leads to greed and unhappiness, especially when you find you don't have enough money to buy everything. In the long run, consuming leaves you depressed, not happy. The true antidote to greed is a commitment to appreciate what we have.

Our happiness level is closely related to our perception of our current situation and how satisfied we are with what we have. Some feel happy while having wealth but we all agree that love,

health, friendship, affection, closeness, and compassion bring much happiness. Various things make us unhappy. For example, we might be unhappy if we think others are better off. If you look inside yourself, you might agree that we are most unhappy when we are not moving toward our goals. But our general mental attitude takes precedence over these things because one might be unhappy even while having plenty of money and being surrounded by friends.

The Dalai Lama says that we are happiest when our actions are socially accepted; this is not a self-centered happiness. We are fundamentally nurtured by the affection of others. Each person needs to feel a sense of dignity and a sense of worth to the other members of the community. Just relating to fellow humans and feeling a mutual bond satisfies that sense of worth. A despot can own everything and rule the world but will feel that life is lacking if he or she does not have affection for other humans or feel a connection with them. We are happiest with ourselves when others like us.

Suffering is universal and begins on the day you are born. It enters every person's life—and it enters often. Do not take the view that bad situations are rare and are due to “bad luck.” Instead, expect bad times to occur—and to occur often—for it is a natural part of your existence. Be tolerant of its occurrence because everyone suffers bad times. You are not alone in your suffering nor are you a special target of suffering “because you deserve it.” Many others are going through the same situation, and some have it far worse than you. You gain nothing by thinking your troubles are unfair to you. Face your troubles head on and tackle them by spending your efforts on the solution, not the problem that has already occurred and cannot be undone. The Dalai Lama says that he personally uses the following approach to deal with excessive concern about a problem itself. If a situation can be remedied then there's no need to worry about it. If the problem has no solution at all then you can't do anything about and so again, there's no reason to worry about it.

While feeling pain say to yourself “May I help others not to experience this pain and not to be in the same situation that caused the pain.” Be grateful for the privilege of pain because you'll then know what to help others avoid and you'll be better able to empathize with others having pain. Cutler explains that biologically, pain effectively alerts us when something to avoid is happening. Without pain, harm would grow because we wouldn't end the cause of the pain.

Hard times build determination and inner strength. Without hard times, our character would only maintain its level. We may feel we are suffering during hard times but they rarely bring failure. Failure is caused only by hopelessness.

Notice that the best time to prepare oneself for bad times is during the good times, while being satisfied with your situation and condition. We get through tough times by developing and maintaining a steady, even-keeled attitude toward life. One should strive to restrain all mental extremes. Developing a calmness of mind is a Buddhist's goal. Such peace of mind is rooted in compassion and affection for others.

Don't cause your own suffering by dwelling on a bad event or by trying to ignore the fact that a change has occurred. Life is change, so expect it to occur. Do not think you can stop change from occurring. For example, you will only make yourself unhappy if you do not accept the fact that you will grow old and have less beauty and ability. As another example, do not divorce at the first sign of change in your relationship with your spouse. Initially, you might feel that the most important element of your relationship is your shared passion but, in time, find that true love is being committed to the change and growth of your spouse.

Don't cause your own suffering by having an excessive ego. Notice that worry and pessimism

are fought with reasoned and positive thoughts and attitudes. You might overcome anxiety about a past action by reminding yourself of your compassionate motive and your tremendous personal talents, accomplishments, and potential. For example, after losing a job or failing a class you might feel you are worthless unless you remind yourself of the difficult jobs and courses in which you have done well, plus you have a nice singing voice and have been a good friend to others.

How do you achieve liberation from suffering? Upon reflection, you will see that you have caused much of your own suffering through craving, ignorance, or hatred. This means that you can liberate yourself from suffering by liberating your mind from those thoughts.

Compassion is a state of mind that is nonviolent, non-harming, and nonaggressive. Most of all, compassion is a deep sensitivity to the feelings of others—especially to the suffering of others, be it another person or any other sentient being. You'll agree that you are a human being who wants to be happy and does not want to suffer. Recognize that all others are also human beings who want to be happy and do not want to suffer.

To cultivate your compassion, you might practice mentally envisioning someone in pain or in a bad situation. Reflect on that person's suffering for a few moments and then remind yourself that that person has the same capacity for experiencing pain, joy, happiness, and suffering as do you. Do you then feel compassion for that person and wish strongly for the suffering of that person to end? Now resolve yourself to help end that person's suffering. For a few moments, try to hold your mind in a state of compassion. Imagine being surrounded by the suffering people of the world and then try to move their suffering to yourself. Imagine all eight billion persons on the planet thinking simultaneously about ending each other's pain. This would soon put an end to war. Isn't it part of our nature to care about our fellow beings. Without compassion, one is not human.

Have a feeling of compassion and loving kindness for fellow humans. Your warmth will be both received and returned. Possess a spirit of openness and friendship and others will trust you. Anger, jealousy, and hatred are harmful. Be patient. Even when pushed, yelled at, hit, embarrassed, or insulted do not return that action.

The Dalai Lama describes other specific, mental exercises to help you cultivate your own character. Imagine an egotistical version of yourself who is ignoring a group of people in need. You know that both you and the members of this group want to be happy and do not want to suffer. It is simply not good to be egotistical. Since all persons have an equal right to be happy, you can see that the needs of a group of many persons has priority over the needs of a single person. Since you will make temporary sacrifices in hopes of obtaining a greatly improved future for yourself, notice that it makes perfect sense for you to make sacrifices in order to help a group of persons. You must serve and help others. Further imagine a field of all the people in the past who have done good. Tell them of your bad deeds and then restrain from repeating those deeds as if they were poison. From the depths of your heart, admire your own good deeds. Take joy in the knowledge of the good deeds of others. Think again and again and again: "May I become able to help all beings."

A moral authority is not required to teach you right from wrong; you naturally feel good or bad while doing things. You know which things make you happy and which do not. We don't have to be trained to know right and wrong but with experience become better at pursuing wholesome behavior. The resulting inner peace is well worth striving for. It also takes some experience to learn that small acts can have large consequences.

Parents who control their emotions, model caring behavior, and set limits on the behavior

of their children often produce caring and compassionate children. Help your child see the consequences of their behavior by discussing their effect on other people, and ask your child to reflect on how they feel when another person is kind to them.

During a dispute, reduce your own anger toward others by taking the viewpoint of every involved person. Patience and tolerance are the antidotes for anger and hatred. Have love and kindness for everyone. Be grateful for the occasional person who acts against you because they give you a chance to put yourself in their place and to see the situation from the viewpoint of an antagonist. Without enemies, we would not get the opportunity to better ourselves. Enemies give us a chance to practice patience, tolerance, compassion, and our calmness of mind. If you build and maintain a calmness of mind, even your enemies cannot disturb you.

Our life is meaningful, peaceful, and happy when we practice warmth, kindness, and compassion. We live for only a few decades. If you cannot serve other human beings then at least refrain from harming them.

We are linked to the efforts, cooperation, and compassion of others. Everything you use, from pencils to cars, is made by somebody else. The efforts of numerous persons went into making your shirt. We are not self-reliant but are interdependent and interconnected. We require others. If a person feels he or she is self-sufficient and does not need or care about others then he or she does not understand our actual interdependence.

Do not cloud your good nature with the negative emotions of conceit, arrogance, jealousy, desire, lust, closed mindedness, anger, or hatred. These are not overcome by simply suppressing them. Beware of them as they are developing within yourself during the moments in which some situation is unfolding and you will be better able to thwart them at their onset by combating them with the suggested antidotes. Analyze your behaviors later to decide if they were appropriate and if they were constructive or destructive.

If you become angry, it will diminish your ability to distinguish right from wrong. This ability is one of the highest human attributes. While being angry, you'll experience a "temporary insanity" and even look ugly. People—even your own pets—will avoid you. You will lose sleep and your appetite will be gone. Anger and hatred arise from dissatisfaction and discontent and are combated by building inner contentment and cultivating kindness, patience, and tolerance. To meditate on anger, you might imagine an angry person's physical ugliness and choose not to be that person again. Say to yourself: "I will never do that again."

Notice that it takes a strong, self-disciplined mind to respond with patience and tolerance while someone is harming you. Humility is having the capacity to take a more confrontational response but deliberately deciding not to do so. Forgiveness results from patience and tolerance.

Cutler and the Dalai Lama say that bringing about discipline within one's mind to do wholesome things is the essence of Buddhist teaching. Human nature is fundamentally good, gentle, and compassionate. We are like clear water occasionally muddied by bad thoughts that soon settle out to again leave the water clear. This is referred to as our "Buddha Nature." We are fundamentally good but must strive to obtain a calm, affectionate, and wholesome mind. A concerted and prolonged internal evaluation of oneself—meditation—develops this inner state and also helps to change the way we conduct our daily life and interact with others. See others as fellow human beings. Each of us has the marvelous gift of human intelligence and a capacity to develop determination and to use it in positive ways. A warm heart respects the views and rights of others. Seeing others as basically good

and compassionate instead of hostile and selfish allows us to relax, trust, and live at ease. For example, approach strangers assuming that they are good people; you will then be happier.

It has been mentioned in previous chapters that scientists will first try to guess how nature behaves in a specific circumstance and then are often surprised when their measurements reveal how nature actually does behave. For centuries, Buddhists have been looking internally at the state of mind of a person having relationships with other human beings. Cutler makes numerous and fascinating comparisons between the practices of Buddhism and psychiatry. Psychiatrists conduct scientific studies of people, including such things as the chemical basis of behavior, the effects of mental health on physical health, and the interactions of pairs of individuals forming a social system. They test methods in which unhealthy behavior can be altered to regain one's mental and physical health. Buddhists have looked inside themselves and correctly identified naturally healthy behavior and ways to correct unhealthy behavior. People have trouble correctly guessing the behavior of nature but are able to look inside themselves and see their own nature. We know what makes us happy or sad and we know what sort of interactions with others will make us feel good. We just aren't good at guessing specific aspects of nature—for example, whether or not ashes will float on water.

We see that the daily practice of religion for a Buddhist does not involve deity worship. Buddhism is a lifelong, internal evaluation of one's outlook, efforts, and actions in order to feel compassion and loving kindness toward others, obtain internal peace, maintain a calmness of mind free of extremes, keep a positive outlook even during the times of suffering that will occur, face trouble head on, acknowledge and accept change, have caring relations with others, receive approval from others, and have a sense of commonality with and respect for all other living creatures. Have a belief in the goodness of all human beings because we share much in common; don't instead search for and emphasize our fewer differences.

Some views of those of us humans who are Confucianists

Those of us humans who are Confucianists believe that people should not lie, cheat, steal, or kill. Confucianists state the Golden Rule as "Before you act you should apply the personal test: how would you feel yourself?" In *The Wisdom of Confucius*, Lin Yutang explains that the strongest doctrine of Confucianism is that the measure of people is people. It is a humanist system that believes in the good of each human being, and it has a certain viewpoint concerning the conduct of life and of society.

Our human nature includes right and wrong, respect and piety, righteousness, wisdom, and moral consciousness. Sometimes we ignore or neglect them but if you look inside yourself you will see them. A great person is one who has not lost the heart of a child. Each person can begin to be a moral person by simply following the instincts of his or her own innate human nature because people are moral by nature. You do not have to look for perfection in divine ideals: it is within yourself. Confucianism is interested in human relationships, not in mysticism nor spirits.

The love of humanity is a state of mind that, when attained, makes one feel at peace. All persons are created equal in goodness of heart. The Golden Rule is to put yourself in the place of others. You will not act badly toward others if you first imagine this act being done to yourself. Confucius explained that this was the definition of a true person. He said that before you act you

should apply the personal test: "How would you feel yourself? You can find the answer within yourself." Everyone knows these rules because they are within each of us, but it is still difficult to live a totally pure life.

Confucius was the founder who lived in China 2,500 years ago. During his lifetime, the empire was collapsing and many small states were warring. It was a period of moral and political chaos, but it was also a time of great intellectual freedom of thought. Many persons were thinking of a way to bring peace and order to the chaos. Some thinkers, like Laotse and Chuangtse, suggested that we abandon civilization completely while others, like Buddha, taught the oneness of the universe.

A child learns to be humble by having respect and courtesy for its older siblings and parents and learns to be a good citizen by obeying its father. While we are children, if we acquire a habit of love and respect for our parents then we will extend this mental attitude toward the authority of the state. Good sons, daughters, brothers, and sisters cannot help but comprise an orderly and peaceful nation. When the family knows kindness then the nation will too. Being a kind parent is preparation for being a kind ruler. In *Watching the Tree, A Chinese Daughter Reflects on Happiness, Tradition, and Spiritual Wisdom*, Adeline Yen Mah explains that for the last 750 years, school children have been learning respect for elders by reading the very same book.

In this way, political and social order develop naturally from the proper behavior of the family. Confucius taught that society consists of fathers, brothers, friends, and the sovereign. Confucianism seeks to build a rationalized social and political order by duplicating the order of the family. The nation is ordered by the family and the family is ordered by a proper personal life. Do you think that this outlook would improve your own life and government, today? It is a positive outlook with a sense of responsibility toward all other humans and toward society in general. The teachings of Confucius are most comparable to the teachings of Moses. Each considered their teachings to be both religious and civil and that both these things are aspects of a whole life. (We saw above that religion and the state are inseparable in Islam, also.)

In the fullest realization of Confucianism no laws or government would be necessary because everyone would be living in moral harmony. If you threaten people with laws and punishment then they will stay out of jail but they will have no sense of honor, only shame. If you govern people by virtue and propriety then they will have honor and respect. Propriety, respect for elders and for authority, love for other humans, and a daily practice of simple good manners will result in social and political order. Still today, this philosophy of essential human relationships is the foundation of the Chinese ethos.

Confucius believed that authorities should govern by example and that moral people make moral government. He said that emperors are human and that anyone can be an emperor. The emperor must rule by virtue not by force. The authorities must be kind and gentle, possess moral principles, love learning, be calm and at ease, have contempt for material luxuries, and be careful of their own conduct because they know that they provide an example to others. He said that the sovereign should be a cultivated gentle person—like Plato's philosopher-king. The power of moral example is illustrated by giving money to thieves so that they don't have to steal it. If the authorities choose what is good for humans then there will be general confidence and peace. Choosing what is bad for a human results in a struggle for profit, robbery, or murder. The character of the ruler determines the fate of the nation. Poverty and suffering should be avoided.

The Analects is a collection of moral maxims. Some of us who live in the Western world have a mistaken idea that Confucianism is a collection of little sayings. A Christian is most concerned with Jesus and God and has many sayings to develop this concern; a Confucian is most concerned with behaving right so that the nation will be right and has many sayings to develop this concern. The sayings of the Analects are properly read at a rate of about one per day to allow one time to ponder its truth and to see its application in daily life.

Education civilizes the people, establishes good social customs, and brings order to the country. People have a good nature; a force is needed to make it otherwise. Education and culture prevent a clouding of our good nature. Confucianism understands the crucial role of the teacher and has many guidelines for schools and teachers. People have a small self-concern for food and material possessions but a great self-concern for ideas. When we nourish our ideas then we lose interest in material possessions.

Confucius knew that rituals have a unifying and respect-generating effect on participants. Music comes from the heart and produces a sense of joy. Ritual and music set the heart straight. Everywhere on the planet, at all times and places, all of us humans agree with this.

In China today, it is still the case that harmony in the community is considered to be crucial in that the lives of everyone depends on the continued existence of the mutual society. Disharmony means an end to the mutual society. It is more important to maintain harmony than to make a disturbance over an imperfection, though it is also one's duty to publicly announce the misconduct of a superior, even if this puts your career at risk.

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## Questions

1. Make up a mythic story that explains something in terms of deities. Explain a natural phenomenon in terms of deities and in terms of scientific principles.
2. How many persons have to live in a city before each resident encounters mostly strangers during daily activities? How many persons were killed in the first wars of our earliest empire-builders?
3. Describe good and bad behavior and then compare your description with those from other persons. List the most important aspects of good and bad behavior among family, friends, neighbors, and strangers.
4. To help decide what is a human, compare each of primate, human, and nonprimate views of good and bad behavior. For example, consider the mutually agreed upon behavior—that which is common to most of the group's individuals—of a collection of gazelles on the African grasslands. What might be good and bad behavior for a gazelle? Is their behavior genetic or learned? Do gazelles recognize their siblings, aunts, uncles, cousins, and grandparents?
5. How would the social system of an intelligent creature from another planet affect their view of good and bad behavior?
6. Compare your religion with those described in this chapter.
7. What does each of the above religious views have to say about government, teaching, science, business practices, stealing, society, and medical x-ray devices?
8. Attend Buddhist, Hindu, Jewish, Humanist (Universalist Unitarian for example), Christian, and Muslim churches and then compare them with your own.
9. Can you compare the Caste system of the Hindu hierarchy with the general mammalian hierarchy? Do the castes do more than simply reduce conflict?
10. Can you separate your daily life into fully-independent religious and nonreligious parts?
11. Arrange the following occupations from most important to least important in your society: soldier, priest, legislator, student, laborer, engineer, business owner, CEO, teacher, scientist, and doctor. Compare what each

of the above religious views has to say about each of these occupations.

12. Can you find some elements of each of the above religious views in the way of daily life of the Canela, Mesopotamians, Yorubans, Cahokians, and of your own society? Are any elements visible in a primate social system, such as that of the bonobos or chimpanzees?

13. Since an infinite God is beyond the imagination of any one of us, all we can do is combine everyone's ideas. Describe God and compare your description with those of other persons. You might find it interesting to compare the details of your view with that of your spouse and of some of your other acquaintances. List the attributes of God that were pointed out by each of the above religious views so we can combine the views of all of us. Is the universe separate from God? Is the universe God? Is God the natural laws of the universe? Is God made of molecules? Is God everywhere?

14. How is God related to the sense of awe you feel when you ponder the immensity of the Universe, the orderliness of its workings, or love? How is it different from the sense of awe we feel when we ponder the power in the bush, the volcano, the edge of the universe, the beginning of time, the accomplishments of Albert Einstein, our ability to build a skyscraper, the feeling you get when you hug your family or ponder the strong feeling you have "to do as the other did, and to expect the other to do what you did," or the feeling you get when your group of persons cooperates to perform a task or see us humans cooperating to build our civilization?

15. Researchers have found a circuit within our brain that produces a religious experience of awe. What might be the evolutionary value of this response? Is it related to our curiosity? To our respect for parents and leaders? Which of our hominid ancestors was the first to feel awe as they pondered the things that were larger than themselves? Did we need language before we could have this feeling? Does a mouse have a feeling of awe when it ponders a large obstacle?

16. Do the other religions have a hierarchy similar to the Papal Authority of Christianity? How many sects exist for each of these religions?

17. Create a piece of religious art.

18. Describe the mixing of gatherer-hunter and Christian religions as occurred in, for example, Ethiopia, the Pueblos of New Mexico, or the islands of the South Pacific. The blending of Mayan and Catholic ritual is portrayed in *Balancing the Cosmos* at [www.archaeologychannel.org/content/video/cosmos\\_300kW.html](http://www.archaeologychannel.org/content/video/cosmos_300kW.html).

19. Some young persons assume they will become millionaires or political leaders while others do not expect such a rare situation for their own future. Some believe the commercials telling them that happiness is obtained by purchasing the advertised product. What effect do such things have on one's happiness?

20. Describe your own religion and state how it benefits your life. You might like to take the spiritual and Belief-O-Matic quizzes at [www.beliefnet.com](http://www.beliefnet.com).

21. List some items or phenomenon that seem to you to have a greater-than-human power.

22. What is the purpose of religion in your life?

23. Compare respect for, or awe of, nature, parents, your group, your leaders, and god or gods. Is the feeling of respect just a lesser version of awe? Is the feeling of awe 10,000 times more intensive than the feeling we call respect? Are these two variations in quantity or quality, or are they unrelated?

24. How is the form of a group's religion related to their culture?

25. Do you get a sense of awe when you ponder human civilization and our accomplishments?

26. What does your religion say about the powers of nature and society?

27. Humans are curious about the world and require answers to their questions. Do our religions provide answers to our questions? Why do we have religion? Which human need is being satisfied by our religion?

28. Create a piece of art that communicates the idea of a particular deity or of our relationship with it.

29. Describe similar deities from a variety of cultures. For example, most every culture has a wind deity.

## **Chapter 9 Our earliest forms of government were the organization of our mutual efforts**

In previous chapters, we saw that we human beings are social primates. This means that we innately congregate into groups containing a number of extended families. We live longer together than if we try to go it alone in the wild. We innately cooperate on any task deemed to be larger than one person can do alone. These innate behaviors became part of our DNA as they proved to be useful through thousands of generations, and they are innate in the same way that a toddler innately follows mom wherever she goes. We group members naturally settle quarrels before they threaten to tear apart the very society on which our mutual lives depend.

The political system of each culture has unique elements but some generalizations can be made about the progression from bands to tribes and then to chiefdoms and to states.

Bands contain a few extended families

For us human beings, the band is the naturally occurring group. A band is an association of extended families, such as that of the Canela, and contains from twenty to two hundred persons. The band is held together by strong family ties. Members know each other well enough to predict their behavior in many situations. Band decisions are made through the consensus of family heads. Bands are egalitarian and have no economic institutions, markets, or consumer classes. The plant and rock materials needed to make the tools of daily life are readily available to everyone. For example, each person makes clothes, baskets, and bows and such for themselves. Projects such as house building require the combined efforts of several persons. The band moves around within a home territory that might be either strictly or barely defined. The band often has a strong feeling for its home territory.

A band is not cutoff from the rest of the world but interacts with its neighbors. Bands from neighboring regions occasionally meet for ceremonies, to search for spouses, and to trade goods. A trading circle can extend for 1,600 km or 1,000 miles. It takes but one or two dozen of such circles to cover the entire world. We humans are in close touch with each other, enabling the diffusion of inventions described by Ralph Linton.

News, techniques, genes, and diseases cross a continent in a short time by traveling from one group of people to the next. For example, as sixteenth-century Spanish explorers arrived in Florida, they brought watermelon that did not exist in the new world. Twenty years later, when other Spanish explorers arrived in New Mexico, which is two thousand miles (3,200 km) away from Florida, watermelon was there already. The particular news of contact with Europeans was also known to have been spread by natives at a rate of about three hundred miles (five hundred kilometers) per month. When you went to the next trading place, you too would be anxious to tell others about these strangers. Those of us humans who are Lakota have a special person, called a KImani or news-walker, whose job is to travel between villages gathering and passing news of births, deaths, weddings, and feasts and such.

Often, neighboring bands have an exogamous arrangement where spouses are obtained from each other's band. When three bands are involved then the members from band A must marry people from band B, band B members must marry persons from band C, and band C members marry persons from band A. These exogamous relationships are what occurs whenever young men and

women live within a ten-day walk of each other.

Still today, we tend not to marry those persons with whom we grew and attended grade school together. This also means that gatherer-hunter groups marry their neighbors, not murder them as some of today's warring peoples might assume.

In Chapter 7, we had a detailed look at the daily life of the Canela Indians who live in the forest of Brazil. We saw that Canela chiefs are selected, and they can be unselected, because of the personal character they have demonstrated through the decades. They have earned respect through their maturity, conciliatory nature, and oratorical ability. The Canella village has one to three chiefs who each serve a different set of functions. They are always male and do not seek personal power. Essentially, they are peacemakers who settle disputes so that harmony is maintained in the village. The chief does not rule, command, punish, assert, invent new rules, exercise political control, wear a badge, receive extra food, or interfere in private affairs because the proper ways of life—tradition, culture, and ceremony—dictate all activity and behavior. When a dispute between two individuals occurs and escalates, the extended families of both persons become involved. If their differences can not be settled during an inter-family meeting, then a chief becomes involved. He will engage either a recognized mediator or a person with special ties to both families to find a solution that satisfies everyone lest the mutually beneficial village split. If the chief's decision is requested then it is held binding because, to do otherwise would bring the disapproval of everyone.

Each morning, the council of elders, consisting of one or two dozen older men, meet with the chiefs to plan the events of the day. A Canela chief can do nothing without the approval of the council of elders. Together they might decide that today, the two halves of an age-group will go hunting in two separate areas, harvest rice on two separate family farms, or work on two separate sections of a road; they might decide that everyone should instead work with their families on their own farms or in their own houses; or they might decide that the entire village should go work a few days for nearby Brazilians or prepare for a festival by disbanding and hunting for a couple weeks. The elder, leading members of Canela society meet each day to decide which village chores need to be done and what should be done to prepare for future events. Is that how you and ten or twenty other families living together would cooperate? How does your society choose priorities and plan actions?

Daily meetings begin with discussions of such things as hunting, love affairs, a young man trying to leave his wife, cattle breaking into a farm, or a Canela being harmed while traveling in a city. When facts are sought during a formal discussion, rumors are often found to be groundless. The leader of the meeting then summarizes the discussion and conclusions. To show agreement, everyone calls in unison in a voice that rises for four seconds and then falls sharply for two seconds. The town crier then sings out to the village the decisions that were made at the meeting.

By 10,000 years ago, the planet was covered by hundreds of thousands of bands. As the bands of a region switch to full-time agriculture, their population greatly increases. In response, we had to invent ways of organizing ourselves into structures larger than that of our innate band of a few persons glued together by family ties.

Tribes contain hundreds of people

A tribe is a collection of bands who know each other before joining together. These bands are not held together by family ties but by clanship or some other association. About five hundred persons make a tribe. A tribe consists of persons who share language and culture to the extent that they have a feeling of unity.

Tribes often form to coordinate the agricultural surplus that occurs when full-time farming first begins to be practiced in an area. Tribal society largely emerged with the first farmers. Like bands, tribal peoples are egalitarian.

It has a structure of government surmounted by a leader who embodies the people's will. No office with real power exists. The chief is chosen because of personal charisma, and this leader can also be unchosen. Often the tribe varies in time, space, and season, and is an unstable shifting alignment of clans. Every tribe has been different but they always form to manage a surplus or are an ad-hoc response to an external pressure.

Tribes sometimes form in response to an invasion by a large, imperial kingdom or state, and then last only as long as that invasion lasts. The tribes of Europe often appeared 2,000 years ago in response to the invasions of Caesar and Rome. Some 1500 years later, the tribes of North America often appeared in response to invading Europeans. The tribe does not have the means to conduct an all-out campaign, instead it ambushes with small hit-and-run raids. Their objectives are cattle, horses, to drive the enemy out of a favored zone, or to prevent an enemy from expanding into their home area. Tribes appear today in response to outsiders forcing the bands of a region to form into a more-formal government. A politician or leader doesn't bring the tribe together: instead, an outside force brings it together.

The tribe is more than a collection of bands, but it is a fragile structure. It can be a temporary pause between the lesser-complex band and the more-complex chiefdom or state. It has the potential to become a more complicated form of government.

Chiefdoms contain thousands of people

A chiefdom differs from a tribe in that it has a population of a few thousand persons and it has a city that serves as an economic, social, and religious center. Most every chiefdom formed as farming brought food surpluses that required organization and management. For the first time, food collection and redistribution became a part of society. The people of the chiefdom might live both in high and low elevations, or in high and low rainfall regions, so that a range in crops is available. Instead of people moving from area to area, these sedentary farmers now move their crops. They might also move wood, fish, game, nuts, and roots. A chiefdom might develop to organize the existing trade between neighboring pastoral and farming groups.

The accumulation, trade, and redistribution of payment requires organization, and organization implies leadership. A bureaucracy is always needed to manage large scale irrigation. An important leader, such as an irrigation manager, might become the leader of an emerging chiefdom. The chief organizes labor into public works, such as the construction of irrigation works, the terracing of slopes, or the building of governmental palaces or religious temples.

As tribes grow into chiefdoms, specialized occupations develop for the first time ever. The

quality of work of a full-time craft specialist is greater than that of a "jack of all trades." When some members of society are able to spend their entire lifetimes producing a single item, they will then gain the expertise necessary to create a higher caliber of finished work. The specialists are paid in food distributed by the chief.

The chief's post might become hereditary, and soon after that, the chief's family and children, and children's children, form a nobility. Genealogical lists become longer and more important in inherited chiefdoms. This is done to help legitimize the position of the current chief. A band is egalitarian—chiefdoms are not. The office makes the chief who then makes the nobility that results in social stratification. After a few generations, the chief's position becomes sanctified by custom and mythology. Exogamy can be replaced with endogamy by social rank, where nobles marry other nobles from the same village.

The religion of a chiefdom begins with its shamanism and life-cycle rituals and then adds ceremonies of a wider social purpose. Ancestor worship often increases. Some groups of people begin to consider their ancestors to be supernatural beings. A priesthood emerges as permanent professionals begin to officiate over ceremonies. Chiefs and priests often arise together, and often both become inherited offices. Sometimes the same person holds both offices in a theocracy.

The redistributive economy of a chiefdom has potential for expanding its population or its borders—tribes and bands do not. When the chiefdom brings together diverse regions, it can be beneficial to all of its members.

Each society has prestigious positions. A ranked society has fewer positions than talented persons. Soon after ranking has occurred, the members of a society will no longer have equal access to the raw materials needed to make the items of daily life. This is a stratified society. To continue to exist, this unequal access requires powerful institutions of political control. Once stratification occurs, a state quickly follows. The maintenance of stratification demands sanctions that must be commanded by a level of power beyond the resources of a chiefdom. Archaeological evidence of stratification includes differences in burial goods, house types, health, and height, which are affected by the quantity and quality of food that a person eats.]

States contain tens of thousands of persons

The public works of a chiefdom are usually confined to one valley, but in the valleys of Mexico, Mesopotamia, and the Indus and Yellow Rivers, water control projects built canals connecting many valleys and lead to the formation of state governments.

States do not develop in regions where food is easily obtained, such as in the jungle, Hawaii, parts of California, or the northwestern coast of the United States. The political organization of these regions never became more complex than that of a chiefdom.

The pristine state develops with no knowledge of constitutions, legislatures, bureaucracies, or armies—only lineage heads and temporary chiefs. Most emerging states were surrounded by, and interacting with, other emerging states.

Irrigation systems requires bureaucrats and administrators to direct the number of persons needed to build, clean, and repair the canals. Hierarchies of priest-astronomers decide the proper day to plant, when to begin and stop watering, and when to harvest. They also oversee the construction of the large-scale temples that are used in worshiping the agricultural gods. With continued growth,

managers of managers are needed. When there are about three hierarchical levels of managers then the system might be seen to be complex enough to call it a state, and this hierarchy becomes the state. A single leader might occur at the top of the hierarchy, and this single leader might be elected or the position may become hereditary. This is an example of the "integration" origin of a state that develops to coordinate and regulate the different parts of a society that is becoming larger and more complex.

Other political systems develop through what is termed the "conflict" origin of a state. Before this state forms, a wealthier class already exists. The haves may control the irrigation apparatus or the trade materials and its network, and in turn, might form a state government to legitimize and perpetuate their privileged position. State government is often begun by, and is composed of, those persons who control the assets and wealth of a group. In this case the state *is* these persons of greater assets and wealth. That is, the owner and controller of the assets, the state leader, and the state government, are all one and the same person or group. It is rarely the case that the state leader has no assets but tells the asset-holders what to do with their wealth; sometimes this leader becomes a tyrant. A state and its unequal access cannot be held together by family and kinship ties alone.

The ruler of a state maintains the people's consent and obedience by promoting an ideological basis of rule such as a "mandate from heaven," a state religion, or a belief that the leader has the status of a god or is a descendant from the god who founded the state. No state ever lacked an ideology that legitimized its power and sanctioned its use of force, and every state has had a physical apparatus for removing those who didn't cooperate.

The chiefdom doesn't have the state's monopoly of force and does not have a police force with a "license to kill."

States often conduct a census for taxation purposes and require that a tax be paid in materials or labor. This leads to problems of record keeping that are solved by the inventions of arithmetic and writing. Writing and arithmetic never occurred before states existed because a band of fifty persons would have little need for such records.

Through time, we have had to invent ways of organizing ourselves into structures larger than that of our innate band of a few extended families. This size of our political structure grew from bands to tribes, to chiefdoms, and to states.

A band consists of twenty to two hundred or so persons glued together by family ties. The tribe is a collection of bands containing hundreds of persons tied together by clans that unite in response to something. A chiefdom has permanent leaders who collect and share goods and services from a central urban center comprised of thousands of persons. A state has tens of thousands of persons and these members have unequal access to goods and tools. The state has permanent leaders and priests, and monumental architecture built by the public.

We humans have an innate, biological predisposition to form social groups, but the exact form of that social group is not genetically pre-programmed.

Five hundred years ago, the planet was covered by thousands of kingdoms. There were no nations or nationalism. Most everyone considered themselves a member of a kingdom, not a nation. The kingdoms merged into today's 200 nations. It's a safe bet that within a few decades, we will have some sort of global structure in which we will consider ourselves members of the global human effort.

## Summarized sources

*The Evolution of Political Society* by Morton H. Fried, 1967, Random House, New York.

*The Formation of the State*, Lawrence Krader, 1968, Prentice-Hall New Jersey.

*The Evolution of the Prehistoric State* by Jonathan Haas, 1982, Columbia University Press, New York.

## Questions

1. Give examples of groups of us humans who live in bands, tribes, or chiefdoms.
2. Is there any relation between a particular group's political form and its culture?
3. Will a person's daily activities change as his or her band organizes into a tribe? How about the transition from tribe to chiefdom? From chiefdom to state?
4. If your family and one hundred other families went to an island to start a community, what sort of government would you choose to form?
5. Will there be a single world government in the future? Are there any reasons to create such a thing? What would its purpose be? What would hold together all of the people of the world?
6. What is the purpose of having bands? How about tribes, chiefdoms, and states? What is the purpose of government?
7. How is a band of human families different from a macaque matriline?
8. Is your leader's position legitimized by an ideological view?
9. Do the members of your society have equal access to the items necessary for daily life?
10. Are there any relationships between the leaders of your state and the holders of wealth?
11. How many persons would be needed to build a ten yard or meter tall hill out of dirt?
12. What is feudalism? How is it related to bands, tribes, chiefs, or states?
13. What holds together the people of your city? Your nation? How would your feeling of attachment for your city or nation change if you were related to every member? What would be the goals and priorities of your city's government if every person in town were members of a single extended family?
14. What are the characteristics of a good chief, king, or queen?
15. Does chimpanzee society have anything in common with human bands, tribes, chiefdoms, or states?
16. How is a group's form of religion related to its form of government?
17. Create a piece of art that explains how you feel about political systems.
18. Did feuds develop within bands, tribes, or chiefdoms?
19. What are the priorities of the leaders of a band? Of a tribe, chiefdom, and state? What are the priorities of the leaders of your nation? What do you feel should be the priorities of your city and nation? What are the priorities of your family?
20. How do you blend the differing priorities of persons within your nation?
21. Compare social and economic inequality within bands, tribes, chiefdoms and states. How much inequality is tolerable by group members? Should we strive to minimize inequality? How much should we allow?
22. What is democracy? Compare the democratic elements of bands, tribes, chiefdoms, and states.
23. What is a dictatorship?
24. Which forms of government have been imperialistic?
25. Compare the abilities of bands, tribes, chiefdoms, states, dictatorships, and democracies to choose



priorities and accomplish goals.

26. Which is more important, the individual, the family, or the group?

27. We saw that the dispute settler in primate society could not show favoritism toward family members because the lives of every member of the group depends on the continuation of the group. For a political office holder, does the obligation to all members of society outweigh the obligations to the extended family? Have you seen a situation in which social, economic, or political rank outweighed kinship, or was it the other way around? We humans have an innate predisposition to cooperate as an extended family within a larger social group, but since it is found that a kinship system adequately holds together the members of an egalitarian society but not the members of a ranked society, does society outweigh family? Do siblings ever get on the opposite sides of a political dispute, join opposing armies, and fight one another? What sorts of business transactions occur between members of the nuclear and extended family?

28. Does the political system in place during your childhood seem like the only natural form of government? How does it compare to other types of government?

## **Chapter 10 Humanity's first cities occurred in Ancient Mesopotamia as we switched from gathering and hunting to full-time farming**

As soon as gatherer-hunters began to have seasonal base camps, it was easily noticed that discarded seeds soon grew into edible plants. From then on, a portion of food was obtained from planting and harvesting. The gather-able plants and hunt-able animals can feed only about one person per ten square kilometers, which is said to be the carrying capacity of the land. When the population density was near that value, a drying climate caused there to be more persons than the land could feed. About 500 generations or 10,000 years ago, the climate-forced shift to full-time farming happened first for those of us humans who lived in the foothills of Mesopotamia. The population of farmers increased to a higher level but then remained steady.

Through the next several thousand years, farming spread throughout the planet at the very slow pace of ten miles (16 km) per generation. Nobody ever sat amidst plenty of gatherable and huntable food and planned to become a full-time farmer; we were always forced to do so because of a decreasing climate and a population level that exceeded the carrying capacity of the land.

Within a few generations, this further farming experience allowed us Mesopotamians to move onto the still-rainy plains near the foothills to become full-time farmers along numerous streams. This burst of farming resulted in an increased population who were living in hundreds of small, independent villages. But within a few centuries, the continued drying of the climate caused the number of waterways of the plains to shrink to just the few largest rivers, forcing the people of small villagers to combine into fewer and more-populous "cities" along the remaining waterways. These were humanity's first cities. Those of us humans who lived in these first cities within Mesopotamia began to develop most every aspect of our current civilization. Our large cities today are not all that different from the original Mesopotamian cities. Mesopotamia is the region of ancient Iraq lying between the Tigris and Euphrates rivers.

In Ancient Mesopotamia, writing was done on small clay tablets. Archaeologists find fragments of tablets and their sentences, or sometimes caches of entire documents. For example, one tablet says that "This year a particular person managed one thousand sheep for the king and was paid fifty lambs," another tablet says that "The leader asked the council for approval on the matter." The first sentence tells us that there was a king and that herders were hired and paid in animals. The last sentence tells us that there were both leaders and councils and that the leader had to get approval from the council. Imagine if a description of your way of life was written down in thousands of individual sentences—for example, "Vote Green"—that were then separated and buried in thousands of locations to be recovered later by other persons who would then attempt to reconstruct your way of life.

Generations of historians and archaeologists have spent their entire lifetimes studying millions of individual facts and have pieced together the larger picture of the history of the ancient world. These facts were obtained from excavations of thousands of sites containing millions of artifacts, including hundreds of thousands of tablets that contain written notes describing people, culture, and history *one sentence at a time*.

## Pottery

The seasonal harvest must be stored to provide year-round food. The first storage technique of the earliest stationary settlements was to dig pits into the ground and line them with clay. The clay was meant to keep rodents and insects away from the food. The clay lining was soon improved by fire hardening and evolved into fired clay vessels or pottery by 10,000 years ago.

For the last 10,000 years there has been an evolving pottery technology. Since we decorate everything, an early advance was to place the pot on a rotating table so that the painter wouldn't have to rotate. This soon led to the spinning potter's wheel. Since the properties of pottery depend on the temperature at which the clay is baked, changes continued to occur through the centuries as increasingly higher oven temperatures were obtained. This creates differing qualities of final products. For example earthenware is made with very low firing temperatures. In recent centuries, pottery techniques had been kept as national secrets. For example, Medieval Chinese pottery-makers were able to obtain the world's highest temperatures and create what Europeans called "China."

Endless varieties of pottery can be made that differ in size, shape, color, decoration, and the mixture of earthen materials used in the clay. Pottery fashions are very local and rapidly go through short-lived generations. Archaeologists date a site from its pottery styles. Pottery is easily broken but the resulting fragments—called pottery shards—are nearly indestructible and leave valuable clues for archaeologists. There are hundreds of volumes describing the time sequences of pottery styles for each region of the world.

## Archaeological Evidence of domestication

As plant and animal species are first domesticated, they changed within a few generations. For example, wild sheep have a mixture of long hair and shorter wool-hair. The earliest sheep raisers found that the shorter wool-hair was useful and chose to increase the number of animals having more of that type. A new breed of dog is developed in fifty years or a dozen generations. Farmers sustain mutant plant species having unnatural traits that would not last on their own. Wild barley naturally propagates itself by releasing seeds blown loose by the wind. The first farmers helped to propagate the naturally less-fit variety of barley that doesn't fall apart in the wind and so is less able to scatter across the world and propagate itself. Farmers prefer that type.

Ancient trade is evident as the movement of obsidian and metals and such away from their geographical origins, each of which have distinct chemical fingerprints enabling historians to track their dispersal. Materials are moved from where they naturally occur to places where they do not occur. When an obsidian tool is found in an archaeological site, scientists can determine the geographical source of the obsidian. Throughout the previous 25,000 years, Mesopotamia had already been obtaining such materials through trade with distant regions, including Egypt, Anatolia, and Africa. As Mesopotamian cities grew, they required large amounts of imported materials, and this caused kingdoms to develop in those source locations.

Until recent decades, food could not be transported for long distances because those traders would have had to eat their entire cargo before reaching their destination. Even in the late Roman empire, the price of a wagon-load of wheat doubled every 75 km (45 miles). Food could not be transported for the long distance of 1,000 miles (1,600 km) until about the year 1900 ad. Today, food

can be transported between the northern and southern hemispheres—for example, between South Africa and Norway or Uruguay and Canada—in just ten days.

### From village to city

Through the years 9000 to 6000 bc, Mesopotamians were living in sedentary villages practicing part-time farming while still gathering and hunting. This 3,000-year span of time is also about 150 generations.

Each village contained only a small number of families, and each family lived in a small, mud hut containing a single room. Since the surrounding land is vacant, a family can freely choose its plot, and just as the Canela do, an entire village can easily move every few generations as land becomes worn.

The first permanent villages occurred around 5500 bc and contained 300 persons. Population levels remained steady.

By 5,000 bc, we were building irrigation systems to water crop lands, and this results in a crop surplus. By chance, irrigation turned out to be the key to abundance that allowed our population to increase one-hundred fold. We then had to invent political structures to organize numbers of persons greater than our innate band of a few extended families. A single storage room filled to the top with wheat, rice, or corn feeds thousands of persons for months. The construction and maintenance of irrigation and storage systems requires mutual efforts and the management system that is a chiefdom and then state. From the beginning, the purpose of government has been to organize our mutual efforts.

The number of canals increased until they crisscrossed much of Mesopotamia. These are the canals near the city of Umma. For 1,500 years these farmers lived in abundance and stability and their population grew.

An irrigated plain has many small villages. A village moves to the top of a forming hierarchy because of its location or size. Soon, the top villages of a larger region form a multi-tiered hierarchy. This *is* the more complex political unit of the first chiefdom, and it has a centralized redistribution center controlled by a single ruler. The farming villages of the Mesopotamian foothills region now formed ranked societies with prestigious positions and leaders.

Villages grew into city-sized urban centers containing 3,000 persons by 3,500 bc. The first urban area classifiable as a city may have been Uruk.

The people of the first cities had to invent the urban ways that are still very much the same in any city anywhere around the world today. Brand-new occupations occur, including crafts-persons, carpenters, and shopkeepers. City-dwellers soon learn to locate living areas away from craft and manufacturing areas. The people of the first cities were also the first to encounter disease caused by large populations around waste and decaying food. Until 100 years ago, many cities let freely roaming pigs control the trash problem.

In 3000 bc, Mesopotamia was still the only region of the world to have cities. There were no cities in Egypt, India, China, America, or Africa. Mesopotamia was the only civilized area of the world and so exported the "idea of civilization" to the surrounding areas. The strange sight of a city would have gatherer-hunters spreading rumors from one band to the next, all the way across the continent. By 2800 bc, small villages occur along the equator from the Indus to the Aegean, but

Mesopotamian chiefdoms have become states with monumental architecture, state religions, and labor taxes. There were several independent, city-sized states between the Persian Gulf and modern-day Baghdad. Cities grew in population and area by expanding their irrigation system to increase crop land. Many tablets record the promises of leaders to expand the irrigation works. These states had populations of 30,000 persons by 2700 bc, and 300,000 persons by 2000 bc.

In review

8000 to 6000 bc: Sedentary farming villages of a few families

5500 bc: First permanent villages with 300 persons

3500 bc: City-sized urban areas of 3,000 persons

2700 bc: Cities of 30,000 persons

2000 bc: Cities have 300,000 persons

In the ancient world, royal women were sometimes used as pawns to cement relations through international marriages. For example, the widow of Tutankamen asked the Hittite king to send a royal prince to serve as king of Egypt, but the prince was murdered before he arrived.

The Assyrian Empire attempted to squash a rebellion in Israel by forcibly moving the rebels to Assyria and keeping them there for a few generations. This resulted in the “lost tribes of Israel.” More recently, Stalin used this approach to move Chechnyans away from their homeland for a few generations, and China used the reverse technique in moving millions of people from China into Tibet to outnumber the original people.

City deity

The city was synonymous with its deity, which might also be given nurturing and parental characteristics as it was believed to protect the city. With the development of hierarchies of managers, people began arranging their collection of deities into a hierarchy. Since there were leaders of people, one particular god might be given the additional aspect of serving as a leader of all gods. The concept of leadership itself can be represented by a deity. Soon, the nearby Hebrews would develop the idea of a single God who, all at once, is the leader of people, represents leadership, is a protecting and nurturing parent, and is the power of everything.

Each city built a temple to serve as the home for its god. City's residents believed that the deity would naturally live in its home, thus insuring the beneficial presence of that deity. People felt that there was a mutually beneficial relationship between themselves and the god of their city. They worshiped the god in return for its protection. The god needed the people's worship and punished them if they failed to do so. In later Mesopotamia, each individual came to have a personal protector god that was handed down from parent to offspring. They would say, the god of my fathers.

When the city of Babylon came to control much of Mesopotamia around 1800 bc, it meant that Babylon's god Marduk had demonstrated that he was more powerful than the deities of the other cities. Similarly, the decline of a city was viewed as the abandonment of the city by its deity. An invading army would carry off the conquered city's divine statue to weaken the power of that city. Conquerors might choose to level a city so that its region would be left without its source of power. The city itself. As its former residents moved off to another location, the city was without power, the

city was no more, and its god was no more.

Each city also retained its local pantheon from prehistoric times, but all Mesopotamian gods were now thought to dwell in the various city temples instead of being in their formerly sacred streams, trees, or mountains as occurs in most every culture. When Mesopotamian religious leaders promoted crop fertility, they went to the temple, not to the crop field; this was in contrast to what been done through previous centuries and in other places around the world. For example, before Mayans planted corn in a field, they build an altar there and then said a prayer. They believed that the corn god received nourishment from the prayer and ritual and rewarded the Mayans with corn. It was a reciprocal arrangement between the Mayan and the god. The Hopi people of the deserts of the Southwest believe that crops want to grow and are happy only when they are growing, but are unable to grow unless people perform the right rituals. It is the role and the duty of people to perform the rituals so that corn can grow.

### Priests live in the temples

By 3500 bc in Mesopotamia, temples were 30 by 80 meters or yards in size and were placed on hilltops for increased effects. Typically, each person worked a few months per year to build religious temples. After finishing the construction, everyone in the community stood back and admired the results of their mutual efforts.

The redistribution of the surplus is controlled by temple priests who form the upper class and take hold of city administration. They justified their leadership through religion. The earliest cults were based on fertility, and the priest's duty was to guarantee fertility by performing the correct rites.

### Writing

Writing and arithmetic were developed in the religious temple and in the governmental palace and were used to count quantities and to record contracts and payments. As people delivered crops or animals, a record keeper or scribe had to count them and make a note of who had delivered them. (This means that for the last 5,000 years, a common conversation in every office has been "Who brought in those four items yesterday? Nobody wrote it down.") Still today, you write words and add numbers for much the same reasons as required the invention of these tools—for example, to make grocery lists and to balance your bank account.

When trying to count dozens or hundreds of animals, it's easy to lose track midway and have to start over. We do better if we instead drop a rock after counting each group of ten animals and, when finished enumerating the herd, count how many rocks have been dropped. In Mesopotamia, stones such as these began to be used around 9,000 bc. Different shapes of clay were used to indicate different types and numbers of animals. Soon, people began to instead draw pictures of animals and mark numerical symbols onto soft pieces of clay tablet. The figures were drawn using a sharp object that scraped lines into the soft clay. It took some time and effort to scrape out sections of clay.

The first form of writing used pictographs, which are picture-symbols that portray meaning. Can you think of a small picture that can represent the ideas paid, one hundred due, or "the king is great." Forms of writing that use picture-symbols can often be read by people everywhere. For example, if the word "dog" is represent by a picture of a dog then everyone can read this symbol no

matter which language they speak. Still today, Chinese writing uses symbols developed 2,500 years ago that are as much art as they are symbols. The spoken language has changed since then, but since many written symbols have not, people today can still read ancient documents.

The people of each of the world's regions have found a local material along with suitable writing utensils and symbol shapes for making records. For example, Northern Europeans sliced straight lines into available twigs, while North American Indians painted on buffalo hide, and Ancient Mesopotamians wrote on soft clay tablets using symbol shapes that clay could hold.

An early improvement in Mesopotamian writing was to press wedge-shaped marks into the clay rather than having to gouge lines onto the clay; that is, a pressing motion rather than a scraping motion made the process of writing much faster.

Our oldest writing systems employed a unique symbol for each word, resulting in thousands of symbols, such as occurs on Kanzi's lexigram board. The oldest forms of writing were so difficult to use that it took students many years to learn. A few centuries later, a different symbol was instead used only for each syllable. For example, one might represent the word "Neilson" with "kneel" plus "sun." Using the sound of "sun" in many words reduces the number of symbols needed in a system of writing. The fewest number of symbols occurred as we learned to represent each spoken sound by a single character. Less than fifty symbols are needed in these systems that appeared about 1000 bc. Some of us use a 26-letter alphabet, certain Polynesian systems use just thirteen. When archaeologists discover an ancient, previously unknown form of writing, they simply count the number of different symbols to quickly classify the type of writing system.

Scholars reconstruct the evolution of writing systems in each region of the world. Each state adopts and improves the system obtained from a predecessor beginning with Akkadian cuneiform and the Hieratic or cursive version of ancient Egyptian writing which was altered in the Sinai Peninsula and by the Phoenicians.

When we speak, we use our lips and tongue to alter puffs of air into the alternating series of consonants then vowels that comprises the words of a thought. The oldest alphabet, which is the Phoenician alphabet, has symbols for consonants but not for the vowels between the consonants. This alphabet became widely used in business throughout the Middle East and Mediterranean. Aramaic, which was spoken by Jesus, uses 22 symbols in its alphabet, which was a derivative of the Phoenician alphabet and the precursor to the Arabic and to the Hebrew alphabet.

The Phoenician alphabet modified older symbols from Ancient Egyptian writing and its Proto-semitic script. For example, alpu was the word for ox in ancient Egypt. The two horns are still seen in the Phoenician symbol. The Ancient Greeks eventually adopted and modified the Phoenician alphabet. The alpu symbol became alpha, drawn with two curly, ox horns. The Greeks put the alphabet into its finished form of consonants and vowels. The alpha became the Latin A. [Several](#) Latin letters can be [traced](#) back to Egyptian hieroglyphs. The Egyptian Hieroglyph baytu or house became the Greek beta and the Latin letter B. The Egyptian Hieroglyph gamlu or throw became the Greek gamma and the Latin g. The Egyptian Hieroglyph dag or fish became the Greek delta and the Latin d.

After starting with the first and most cumbersome writing system in Mesopotamia, many generations passed before we had found easier forms. Each region of the Middle East, including Ugarit, Crete, Palestine, Syria, the Canaanite Hebrews, Phoenicia, and Greece, took turns inheriting and then improving the system. Each time a group of previously illiterate people adopted the writing

system of their neighbors, they were quick to make improvements. And as is human nature, those originating neighbors would insist on continuing to use their older, more difficult system. The so-called Latin system of writing was essentially put into its current form by the Ancient Greeks. By the way, you might like to know that one ancient Greek was quoted to say that writing would mean the end of civilization because we would no longer have to memorize. There are similar histories for the writing systems of India, China, Southeastern Asia, and the Americas.

We humans invented writing as a tool to solve certain problems. We then modified it through the next several centuries as we learned by trial-and-error how to make it simpler to learn and to use. Writing, as for any other part of our civilization, was not a gift from the gods but was invented by us human beings for our own use. Each generation inherits all of the tools and procedures that the previous generations have produced, and then makes them even better. Right now, you are reading the current form of our system of writing. This connects you to the humans of the first cities, as do the roads and buildings that you use and the domesticated food that you eat.

For some persons, writing seemed like magic in that it could be seen to actually represent the object that was written about, in the same way that art works could be seen to represent the essence of the depicted object. Literate crafts-persons might write the name of a deity on a plaque which they then sold to an illiterate customer. Imagine that you could purchase such a plaque to hang in your home; you would then have the continued presence of that deity looking over your home. If your own name was written on a plaque, your name would last forever. Throughout history, many kings and queens have boasted wildly about their power, feats, and accomplishments as if they had only to be written down to be believed.

Literacy was as highly a respected skill then as it is today; in fact, it is still used as a measure of the social progress of a nation. Many ancient kings and queens boasted that they could read and write but the literacy rate of the general population was usually a few percent. Ancient Athens was a rare exception. During the fourth and fifth centuries bc, about half its male citizens were able to read and write. Such a high literacy level was not again reached until the last two centuries.

Tablets were sometimes signed by being marked with a so-called cylinder seal which has a unique design embossed onto its surface. To transfer that design onto a piece of soft clay, the cylinder seal would be pressed onto the tablet and then rolled through one complete revolution, producing the "signature" much as we sign a document today. Notice that it would have been the job of certain persons to make these seals, while others made the material used in clay tablets. Society invented the rules that required these "signatures" and the occupations needed for their creation and use.

## Scribe

To learn to write, scribes began school at the age of four, five, or six. Most often, they were the children of the highest officials, such as governors, temple administrators, army officers, tax officials, and priests. Some young children were sent to live with foreigners to become bilingual scribes. Students memorized ancient literary works by reciting them aloud in outdoor classrooms that everyone in town could hear as they walked past.

Scribes felt they had the best jobs in the city because a scribe had the opportunity to advance through the hierarchy. The scribe of a food storage facility could become the chief scribe and then



progress through junior judge, town ruler, district ruler, and then regional ruler. The city has a stratified and complex society unlike that of any gatherer-hunter group—and not very different from our own, today.

Scribes learned arithmetic and geometry also. They would calculate the amount of earth to be removed, the amount of stone to be cut, and the labor needed for a public works project. They handled business contracts, court decisions, and the written communications between royals and officials along with hymns to the gods, prayers and laments, and spells and rituals. We see that the administrators of the city were collecting, counting, and redistributing a variety of items and paying salaries in food and in material goods.

Babylonian arithmetic used base sixty. We continue using this today in the divisions of time and angles.

Numbers and arithmetic seemed like magic to some ancient persons—and to some people today, too. For example, some people feel that the number seven is lucky but thirteen is not. How about 7 times 13? Would that result be lucky or unlucky? In China, 13 is considered to be a lucky number.

We humans naturally count only in terms of one, two, three and many, and research shows that some other animals do the same. Before the surplus of the farming villages, we had no reason to count much higher than the number of persons in our band. We then invented arithmetic so that we could count sheep, baskets of grain, and buckets of earth and such. Such arithmetic built ancient cities and their buildings. Some people wondered what sorts of things could be done with their new numbers and tried to find new ways of combining them—into fractions, for example. We continue to this day to expand the fields of mathematics. As our civilization has become more complex, we require increasingly complex mathematics. We use calculus, differential equations, and computer techniques and such to build our modern civilization. Today, our children learn to do arithmetic while still in elementary school. Arithmetic would enable them to count sheep and such, if there were any around, but it does not enable them to understand or to extend modern civilization. Calculus is the daily tool used to operate today's civilization.

## Daily life

As you approached an Ancient Mesopotamian city, you would encounter cultivated fields and the villages of the farmers, and then gardens, date palm orchards, and large but distant temples and palaces. The city consisted of citizens, bureaucrats, entrepreneurs, temple priests, and the king and queen with their palace. Different city sections were used to produce and sell each of pottery, clay figures, stone amulets, jewels, and cylinder seals and such. The tanning area was easily identified by its smell and was located away from the living quarters.

Homes had stone walls, small rooms, no windows, and were often built around a central courtyard. People slept on the roof when the weather was suitable.

In the earliest villages, an extended family lived together and acted as a single economic unit—just as the previous gatherer-hunter bands had done. The sale of land required the approval of every family member. As villages grew into cities, nuclear families instead began to pursue individual economies—just as do ours today. As cities grew, tribal membership became forgotten

also.

Childhood was short before work began. Girls were married around age twelve to an older man of their family's choosing. Arranged marriages are done to create a bond between a pair of extended families. Divorced, abandoned, or widowed women could next marry whomever they wanted. Women usually had two or three children and would breast feed each child for three years. Women wove, owned taverns, lent money, were priestesses, bought and sold land, made legal contracts and claims, and went to court—in later Greece and Rome they could not. The government had a propaganda concern for widows and orphans but no aid system existed. People were buried either underneath their house or in a cemetery, and the inheritance was divided between all the male and some of the female children.

Land was cheap because so much was available. Its price remained stable for many centuries. Typically, one hectare (one-half acre) sold for the price of one cow.

A wide variety of food was farmed or gathered, including fish, birds, eggs, crabs, turtles, gazelles, mountain goats, wild pigs, berries, date palms, pomegranates, figs, grapes, wine, apples, nuts, honey, onion, garlic, lettuces, cucumbers, lentils, and peas.

Cattle, sheep, and goats were raised for their milk, wool, and hair but not for their meat. The domesticated pig was eaten until a later religious taboo forbid the practice. The city was filled with the exchanges of goods between farmers, fishers, herders, and shopkeepers.

Barley and wheat formed the major part of the family's daily meal. They bought grain at a shop and then ground it with pestle and mortar. Each family spent hours every day laboriously grinding enough grain to produce ten liters or quarts of flour and then baking it into bread. Bread was baked into unleavened loaves using clay ovens. They also made fancier breads and cakes having dates and such added. When archaeologists excavate such an ancient loaf, they find that it tastes just like my sister's apple pie.

Barley flour or dates was made into beer by brewers able to carefully control the temperature and humidity throughout the process. Most brewers were women, as was their deity Ninkasi, until men took over the process around 1500 bc. In every city throughout history, processed beer and wine have always been safer to drink than water, and so more commonly consumed.

Household water was carried from wells or canals that were a ten-minute walk from the home. Some homes had interior, private wells. It took no extra thought to bring water into the city because they were already building canals to bring water from rivers to farmlands.

## Commerce

Grain was planted, irrigated, harvested, threshed, winnowed, sieved, and stored. In each city, a large portion of farmland was owned by either the palace or the temple. Urban residents often owned farm land too but might contract tenants to work the land. The tenant, who received more than half the harvest, and the landowner each took their share the moment the entire crop was placed onto the threshing floor.

Threshing floors were owned by the largest organizations who charged a fee for their use. The grain was then transported to the city storage silos, sometimes using chariots or pack animals but most was taken by canal in boats. Canals connected farmlands directly to the city and led right to the doors of the palace and temple silos.

A typical grain silo would be eight by four meters and could feed 20,000 persons for six months. The silo was lined with two layers of bricks to protect the enclosed grain from moisture, insects, and rodents. The silo doors had no locks; instead, a clay band was pressed with a cylinder seal. The storage official was the only person who was allowed to break the seal and open the door.

Temple and palace workers were given a monthly ration of grain. Each man received sixty liters (or quarts) per month, each woman received thirty, and some older persons may have received a ration without having to work. Workers were also given rations of wool and other goods, some of which were bartered at the market for other items. Temples and palaces were the largest landholders. Some of the temple's land was farmed by its own staff, while other plots were lent as payment to workers and the remainder rented to others. Some persons performed their labor-tax in the great temple households.

Craft specialists worked with pottery, reeds, wool, leather, stone, metal, felt, jewelry, and made cloth, clothing, boats, utensils, engravings, perfume, and glass. Children either learned the specialty of their parents or became apprentices in which they learned a craft by trading their labor for lessons from an expert. An apprentice weaver would be trained for five years, cooks for sixteen months, but bleachers, carpenters, seal engravers, leather workers, shoemakers, and builders were each trained for eight years. Documents show that trainees were legally bound to their trainer. This sort of contract between trainer and trainee remained the same until after the origin of the factory in the year 1760 ad.

A group of craft-workers could hire out to any institution but would sometimes sign a contract to work for just one institution for a certain period of time. Craftspeople would be paid the standard, legal ration of food. Legal codes sometimes regulated the fees paid to specific craft-workers and also the wages paid to forced laborers, but other workers, such as those in the agricultural fields, were usually hired for an agreed upon wage.

If the king and queen wanted a new chariot then all the required craft-workers would work together in one shop combining wood, leather, felt, metal parts, and inlaid, semiprecious stones to build the chariot. A contractor might be paid a one-time, up-front, lump sum to dig canals and hope to obtain a profit.

The wool industry involved many persons and enormous numbers of sheep and goats. The animals were brought once a year into the village for shearing. This filled the streets with sheep. Wool was stored until it could be washed, combed, spun, and then woven into cloth. These steps remain the same today except that they were combined into a single water-powered factory during the Industrial Revolution that began in the year 1760 ad. There were 13,000 weavers in the city of Ur by the year 2200 bc. Each woman would weave about 30 cm (12 inches) of cloth per day and was paid in food and cloth rations. The palace and the temple were the largest consumers of finished cloth because they used them as wages to pay their enormous staffs. The wool, leather, reed, and clay industries involved rural producers, village processors, and urban consumers. In contrast, the hardwood, stone, ore, gold, silver, and gem industries involved trade with foreign sources for materials processed with local labor.

Thousands of tablets record loan contracts between individuals, groups of persons, or institutions. Gold or silver, or crops were loaned for a period of days or sometimes years. Interest was not always charged. Some legal codes prescribed a 20% interest rate for silver and 33% for grain. In one transaction, fourteen persons loaned fifteen kg (seven pounds) of gold to one person

who then bought tin and textiles to take to Anatolia (which is modern Turkey). The borrower kept one-third while the lenders each made one-third on their investments.

A person could receive a loan in return for working for the lender for a period of ten years. At the end of this time, the borrower might take a spouse from the lender's household and once again be a free person, as happened to the Biblical Jacob.

When farmers bought land, they might contract to pay a price of one cow per hectare or half-acre after the first harvest was sold. Farmers contracted with produce merchants who would retail the farmer's newly harvested crops, but the merchants didn't pay the farmer until after the crop was sold to the customer.

A farmer's loan was due at harvest time. To guarantee the loan, the farmer might pledge the use of a tool or boat or the labor of a spouse or child for a specified period of time. Today we wonder, who was the first person greedy enough to require that a loan be guaranteed with a child's labor. Farmers sometimes paid so much interest that they could not pay taxes. The king and queen might then cancel the farmer's outstanding debts to free up tax money, but they didn't have the ability to correct permanently the injustice of the system.

Around 2000 bc, palaces, temples, and urban landowners began selling to entrepreneurs the rights to collect and market the harvests from their land holdings. Before harvest, the entrepreneur paid one-third of the crops estimated value, paid another third after selling the produce, and hoped to have the remaining third as profit. Since grain, fish, and milk have short shelf-lives, the palace and temple wanted instead to have easily-storable silver and let the entrepreneur worry about collecting, preserving, storing, and selling the perishable crops.

Sheep, oxen, cows, donkeys, and pigs were each managed through contracts in which the palace or temple would consign animals to a herder who kept 20% of the newborns as payment of wages. The contract specified the division of milk, wool, and hides between the herder and the palace or temple and it specified the percentage of newborn male animals to be eaten and the percentage of newborn female animals that would be allowed to mature and bear further generations (recall the animal harvesting techniques of the Amahuaca).

Mesopotamia exported grain and wool and imported honey, raisins, bitumes, precious metals, gypsum for constructing buildings and boats, resin and spices from Iran and Syria, cedar wood from Lebanon, gold from southern Egypt, stone from Turkey, blue lapis-lazuli stone from Afghanistan, and various goods from India. By 2000 bc, there was plenty of trade between these distant regions.

Trade moved mainly by water until the domestication of camels in the twelfth century bc. One merchant took Mesopotamian textiles to the Hittite Kingdom in Turkey and exchanged them for tin. The merchant made this two-month journey on many occasions, sometimes making a 100% profit, and sometimes losing everything.

Prices were usually given in terms of weights of grain or silver but any sort of goods might be exchanged in the bartering process. Since silver had to be weighed during each transaction, cities eventually began to make "pre-weighed coins" in standardized sizes to speed up transactions. These first coins were made in Lydia around 640 bc. Forgeries quickly followed, but cities continued to mint coins because of the prestige it brought. Barter remains in practice to this day in many parts of the world.

The Arabian kingdom of Saba (Sheba in the Bible) exported frankincense and myrrh as far north as Mesopotamia and the Mediterranean. To protect their monopoly of these products, they

spread rumors that the sources were guarded by monsters and flying serpents.

The king and queen live in the palace

Other than sometimes forcing people to kill and be killed, emperors mostly left their followers alone. Royal power had become absolute but did not interfere with people's daily lives. For example, citizens could freely congregate and debate.

The king and queen held political power, sometimes shared with a council and assembly of sorts, and they tried to satisfy the needs of the people and the concerns of the gods. Since everyone knew that farming formed the basis and enabled the existence of the city, city rulers always write about their desire to irrigate and cultivate as much land as possible and to open up new land to agriculture. The city ruler was the head of the redistribution system.

Around 2500 bc, a text from the city-governor of Largs-Girsu promised to alleviate oppressive taxation and extensive government supervision and to return the fields that his predecessor had taken from the temple. This was more a promise to the gods than to the people and reveals that government burdens had already increased to unwelcome levels, that the government thought it was ok to tinker with the economy, and that tinkering was an old practice.

Often, a people view their relation with their king and queen as that between a caring parent and children or between a shepherd and a flock of sheep. The king and queen had to ensure that the people were fed and that they were protected from enemies. The king and queen knew that their subjects expected them to deal with every crises. The king led in war, guaranteed the fertility of the land by digging and maintaining canals, provided justice in disputes, and averted divine wrath against the people by promoting the religious cult. Kings and queens acknowledged the influence of the gods who had selected them for leadership. They made decisions about general policies, security, the cult, and agricultural conditions but never considered the opinions of the citizens. They were the head of the palace organization, which might incorporate a large portion of the city's population. In this role they were like the head of a large household in that, when needed, they would even take care of petty matters occurring in the lives of their dependents.

The palace was a major landholder, owned large herds, and consumed and produced much to feed, clothe, and equip its large staff. Many scribes conducted a careful accounting of all that was involved. For every aspect of palace operation, they knew how much there was and how much would be needed.

A governmental palace might have as many as 75,000 sheep. Some of these animals were eaten by the king and queen and staff and their families, but most were used to produce wool for sale. The palace staff processed the animal products from its own herd into the leather items and such that were needed in daily operations.

The palace purchased other raw materials for its staff to process. To obtain these specific materials and supplies, the palace contracted with agents who would twice a year be sent with cart loads of silver, grain, and wool to buy them from sources at home and abroad.

Much effort was spent in the palace attempting to predict the future. For example, a network of scouts were posted throughout Mesopotamia to watch for omens that might help the royal court predict the future. If a scout learned of the birth of a two headed goat then a report would be sent to the court for interpretation. Mesopotamians began to record the positions of the moon and planets

along with observations of the weather and the level of the Euphrates river and such.

People built their city with their own hands.

Ever since the first redistributive chiefdoms, city leaders have collected taxes from the residents. Taxes might be paid in grain, animals, or labor. Only in recent centuries have business and taxes been conducted in cash. Typically, each person gave one week's labor per month working the palace or temple crop fields or helping to build large public works such as canals, religious temples, and governmental palaces; the Egyptian pyramids were built this way.

When needed, the government might hire additional persons and pay them in grain or silver, but every worker was fed the legal ration of about 3,000 calories per day while on the job. A labor tax was used by every state throughout the world to build large structures. Governmental administrators also monitored the herd levels of the residents and collected a portion of each herd in taxes.

Those of us who have no empathy for others, can enslave fellow human beings. Slaves were not common because they were too expensive, costing as much as ten hectares (five acres) of land. One document tells of slaves sold in 2430 bc. Slaves were foreigners who had been captured in war, mainly from the northeast, and were allowed to marry and to have families. They were mostly used for household labor because it was too difficult to supervise slaves in the fields. To combat defections, those of us who were slaves had to wear identifying metal arm bands and were given a haircut in the style of a knob of top-hair. One king might give another the names of escaped slaves, asking him to watch out for them.

The people of the city's bureaucracy carried many titles including mayor, chair of the assembly, overseer of the merchants, governor, bailiff, barbers, overseer of the barbers, gatekeeper, doorkeeper, and the one who hires contracts for harvest labor. There were also weavers, launderers, butchers, sun-dried brick makers, ferry operators, gardeners, and orchard tenders. These titles give us a glimpse into the occupations and operation of the city. Which of these jobs would you prefer?

One king reminded a mayor of his duty to keep the city free of robbery, murder, and foreign invaders seeking plunder. The mayor was also responsible for the territory surrounding the city and for any fortified settlement in the countryside. If any runaway left the city, if a robbery or a murder occurred, or if any of those fortified settlements became abandoned, then the mayor would be fined. Another mayor was caught keeping some of the collected taxes instead of sending them on to the higher, central authority.

### Court system

Each city and each district within each city had its own court, and everyone received a trial by a jury of their peers. If cases involved persons from two different cities, each person brought judges from their own city. The courts saw fewer criminal cases than civil cases, which usually involved property disputes or divorces. Many smaller problems were handled in a personal manner by the neighborhood's family heads, as had been done since the first bands of gatherer-hunters. No city had a sizeable police force until the Industrial Revolution funded them and caused their need during the nineteenth century ad.

The courts were called "assemblies," but it isn't clear if every citizen could speak in the assembly. An assembly would sometimes be a meeting of citizens discussing many topics, including lawsuits and town business. (Does your neighborhood have such meetings?) The occupations of each assembly speaker was recorded in the tablets and typically included gardeners, bird-catchers, potters, commoners, and soldiers, and such. This shows that a wide range of persons had the right and the time to attend the assembly. It isn't known if the assembly consisted of open debate or if participation was meant to bring public prominence. The assembly may have remained from earlier tribal or village days. (You might like to compare this assembly with that of the Canela and with your own, too.)

The basic goal of the court was to obtain a settlement satisfying both parties and to allow each party to relieve their minds by saying what they came to say. At the end of the discussion, both parties had to swear to having been satisfied. The court procedure consisted of examining documents and hearing statements made by both sides and by any witnesses. Before making a statement, each person took an oath by the gods. A conflict of statements was resolved by ordeal. It was hoped that the fear of certain death during an ordeal would cause people to tell the truth. Legal documents show that prisons did not exist and that penalties were usually paid in monetary form but sometimes in labor. For example, two persons who were found to have stolen two ducks from outside a temple were each required to repay thirty ducks.

Hammarubi's legal code appeared around 1750 bc and is typical of many others throughout the world. It contained specific penalties, such as property offenses or the number of years that a debtor should serve in the home of the loaner. It also had descriptions of land tenure, trade agreements, adultery, marriage rules, divorce rules, adoptions, inheritance, wages for services, slavery, planting or flooding another's field, and the failure to cultivate or to harvest a leased field. (You might like to compare this code with the sixteenth-century Constitution of the Iroquois Nations.)

## Conclusion about Mesopotamia

The city and civilization came about because a room filled with grain can feed thousands of persons for months. We invented civilization to coordinate groups of persons larger than our innate band of fifty or so persons. The first cities had to invent everything that a city is and solve every problem that came up, usually after some fumbling around in the dark. Notice that we never solve a problem before it occurs.

We see that the Mesopotamian city-state, and its many levels and occupations, was a more complex structure than that of a group of gatherer-hunters and that it was about as complex as your own, today. With their big buildings, tangled systems, and fast pace, every big city on the planet looks much the same, and looks much like the cities of Ancient Mesopotamia.

## Worldwide spread of farming

Ten thousand years ago, the ways of the Mesopotamian farmers were known by their non-farming neighbors but by the time they realized, a few thousand later, that full-time farming also had benefits for them, Mesopotamia was filled with large cities. By a few thousand years ago, farming had spread

throughout much of the planet. The surface of the Earth has room for the people of only about five different regions to independently invent farming. This is likely to have occurred in the Middle-East, India, China, South America, and in Central America. For example, farming is known to have spread along the Mediterranean shores and inland along the rivers and lakes of Europe and Africa. It is also informative that it took about three thousand years for farming to spread from the Middle East to northern Europe. This is a time-span of 150 generations and means that farming spread south to north across Europe at the slow rate of ten miles (sixteen kilometers) per generation.

Farming and urbanization do not always occur together. There are examples of sedentary communities that had no farming, and there are yet other examples of farming communities that had no urbanized city centers. For example, in *Prehistoric-Britain* Darvill explains that farming didn't lead to urbanization in pre-Roman Europe because its climate allowed for multiple crops per year and so required less stockpiling of food. (We have seen that much of an animal's way of life can be understood by "following the food.") The more northerly Europeans knew of the urbanized ways of the Mediterranean peoples because they traded goods with them but chose not to adopt their urban ways.

The large population increase within a newly-farming region sometimes resulted in a mass migration of farmers into nearby areas where they had archaeologically noticeable effects on the previous residents. The intermittent waves of immigrants often mixed their culture and language with those of the previous residents, but sometimes one group's culture instead submerged that of the other group.

We humans first migrated out of Africa to spread throughout the Earth. Countless migrations have occurred since then. Several thousand years ago, an Indo-European speaking group moved into both Greece and India. The many languages spoken in these two regions today share roots. Many groups from the Asian steppes moved into Europe; one moved into both Finland and Hungary so that still today, the people of these two nations speak a similar language. The Germanic peoples moved into Europe, the Spaniards moved into Spain and then on to Ireland, and some of the resulting Europeans eventually migrated to the Americas. During the eighteenth century, typically 2% of Europeans were moving to the New World. Still today, about 1% of the world's population is currently migrating, as people seek employment and a better life in today's continuing Industrial Revolution. We are not migrating from the poorest to the richest nations but are leaving the most newly industrializing nations and moving to a nearby nation that has been industrializing for a longer time. Only 5% of those of us who are migrating are choosing to move to the U.S.

There are numerous examples of farming villages and city-states around the world—both recent and ancient. The culture and history of each group of people includes unique details. For example, since Ancient Egypt consisted of a single strip of land that was often just a few thousand meters (yards) wide along the Nile river, this region was easier to subjugate and became militarize earlier than did Mesopotamia. You might like to read a few examples of farming and village life from each continent, including the Maya, Aztec, Zapotec, Olmec, and Inca in Central and South America, the Mahenjo Daro of the Indus river valley in India (2500 bc to 1500 bc), Zimbabwe in Africa, the Hittite in Turkey, and Angkor Wat in Cambodia (1000 ad.).

Each region of the world has had political structures containing elements common to many other regions and each region also has many unique details. For example, China has usually had a single, strong national government throughout its entire area, which is larger than that of the United



States, while Europe was always divided into many separate cities and kingdoms. In the following sections we will have a look at the Yoruba of Nigeria and the Cahokians in North America.

## Yoruba

Those of us humans who are Yoruba have lived in an urban, tribal government for centuries in what is now the nation of Nigeria. The following description of the Yoruba is a summary of William Bascom's *The Yoruba of Southwestern Nigeria*. The region of today's Nigeria includes many different cultures. Bascom mainly describes the way of life of the Yoruba who were living in the city of Ife during the years 1937 and 1938. The people he talked with could remember events that occurred since the year 1850.

For centuries, the Yoruba had been living an urban lifestyle, commuting out to their farmlands, making earthenware pottery, making grass and reed baskets and mats, collecting herbal medicines, making granite or quartz monoliths, making blue-colored glass-beads, and making terra-cotta or lost-wax brass figures and heads, some of which are life-size. The Yoruba have a hierarchical court system and use credit and money within their trading market. Many Yorubans raise herds, sometimes using territorial crocodiles to guard their livestock. Chickens and other farm animals are kept but meat is eaten only on special occasions or when it dies of natural causes. Some men fish or hunt but game is scarce.

In Yoruba society, men do the farming (we saw that women do the farming in Canela society). A farmer uses leaves and wood ash for fertilizer and might plant alternating rows of corn, yams, and beans. The most common crops include cocoa (which is Nigeria's export cash crop today but grosses only 10% as much as does petroleum), yams, tubers, grains, plantains, vegetables, fruits, rice, cassava, beets, taro, corn, cotton, indigo, tobacco, calabash, sorghum, millet, bananas, sugar cane, bamboo trees, and oil palms. Oil palms are used for many things, including wine. Beer is made from corn. Just as did the Mesopotamians, Yoruba farmers commute daily from the city out to their farmland and might remain there in a hut for a few weeks during the peak of the farming season. Cities are farming centers, with surrounding farmlands extending out up to fifteen miles (twenty-four km).

A farmer is helped by his sons and might join a work-club whose members jointly work the field of one member at a time while cycling through the fields of every member. When occasion warrants, a Yoruba man might invite friends, relatives, and club-members to perform a large task. The women of his family provide food and drink for the group. He is then obligated to return the favor when asked by one of his helpers. No strict accounting is kept but his absence would be noted. As currency and wage-labor emerged, this system of exchange began to disappear. In Chapter 6, we saw that the farmers of the early nineteenth-century northeastern United States would similarly cooperate to harvest and process crops, and we'll see how these social exchanges similarly decreased with the emergence of wage-labor during industrialization.

A man does not own his farmland but does own the crops obtained from anything he plants there. If his farmland is assigned to another person he will continue to have the rights to the produce of the long-lived cocoa and palm trees which he had earlier planted. His heirs will continue to own these crops. One man might own a kola tree and its produce while another person farms right under it and cannot collect those kola nuts.

Yoruba men sometimes make specialty craft products. Specialties include wood carving, drumming, divining, circumcising, brass casting or working iron, bead, pottery, or leather. Some men are brickmakers, bricklayers, or tailors. The secrets of charm-making and medicine-making are known by just a few persons who protect their knowledge with religious sanctions. Craft specialization, trade, and town markets grew together and made every person economically interdependent.

Women trade the produce and products of their husband at the city market. Sometimes women will buy items from other men to sell. For example, she may contract with a cloth or wine maker to sell his product at his requested price and receive a portion in return. She will return any unsold items to him.

Thousands of people go to the city's market everyday but every fourth or fifth day there is a larger market with much larger crowds. Some Yoruban towns name the days of the week after the market held on them. The busiest time of the market day occurs just before sunset. A traveler describing these busy markets in 1850 said that after nightfall, the lamps of the traders appear as innumerable stars from a distance.

A man might obtain a loan to pay bride wealth by becoming an indentured servant. He would agree to work the farmland of the loaner for a certain number of days per week for so many years. We can imagine the resulting mutual teasing that would occur between spouses every time he left to do that work. Much of colonial America involved indentured servants who promised to work seven years for the person who paid for their transportation from Europe to America.

Savings clubs are another way to finance large transactions. Twenty persons might form a savings club in which each person contributes equal shares of money every month. Each month the entire pot is given to one member. This means that once every twenty months you'll receive the entire pot, which might be used to pay a large expense.

The Yoruba people consist of many clans and sub-clans, which typically include seven hundred persons and are based on patrilineal descent. Children belong to the clan of their father. When born, the sons of his children will also belong to his clan but the daughters of his children will belong to their own father's clan because people marry only someone from outside their own clan. Throughout their lifetimes, clan males generally live together within a neighborhood. The clan can be more important than the nuclear family.

The people of a clan cooperate for the common good and will communally own property, including living quarters and farmlands, and will communally own specific political and religious offices. A clan leader is chosen who administers and assigns living quarters and farmlands to each person or family. The leader sees to the upkeep of the living area, sacrifices to the clan founder, makes atonements to keep the members healthy and at peace, and settles disputes between families within the clan. A clan leader or chief can be asked to help collect a debt by placing certain symbols on the home of the debtor. The debtor must pay the outstanding debt that same day, perhaps by obtaining loans from his or her family. The chief then keeps a portion.

If a fight results in blood touching the earth then the parties are taken to a chief for reconciliation. If the chief is not able to resolve the dispute to the satisfaction of both parties then the case is taken to the so-called Ogboni house. It consists of several concealed members who vote in secret, allowing them to be impartial. The case can be further appealed to a joint meeting of the chiefs, Ogboni, and the king or queen. Contradictory claims are tested by oath or ordeal. British

colonialists imposed their own criminal laws and court system but allowed civil matters to continue to be handled in the traditional way.

Simple disputes can be solved on the spot by members of the neighborhood and their chief. For example, as one woman walked past a tailor shop, the shopkeeper ran out with his assistants to ask her to pay the three pence she owed him. The assistants began clapping and chanting. An elderly man got between the woman and the tailor and called for a nearby chief. The chief arrived and told both to stop talking. If either did not they would lose the case. Each was asked to speak in turn. Any onlooker may ask questions and nearby witnesses might be called. Any person can give their opinion about the matter, going in order from youngest person to oldest. A solution is sought which is agreeable to both combatants so that the fight ends. Otherwise, the appeal process begins. It turns out that the woman had had the tailor repair a small cloth for her, but when she returned to pick it up he made advances to her in an attempt to hurt her husband. The judgement went against the tailor, who was told that further trouble would result in his being called before a higher court.

Yoruban cities were often surrounded by defensive earthen banks. (The Yoruba-Dahomey wars fed the slave trade). For example, the bank surrounding the city of Ijebu-Ode was eighty miles (125 km) long, fifteen to twenty feet high (five to seven meters), and is fifty feet (17 meters) wide at its base. It is surrounded by a ditch twenty to twenty-five feet (seven to eight meters) deep and forty feet (13 meters) wide. This mound surrounds the city at a distance of five to fifteen miles (eight to twenty-four kilometers) out from its center and is shown on a Portuguese map from the year 1500.

Each Yoruban city and region has its own political system. Since these systems range from dictatorships to democracies and theocracies, Bascom says one might write a comparative political science textbook and take every example from the Yoruba.

The people of the city of Ife choose a king or queen (there have been two queens in the recent history of Ife) by considering his or her character, generosity, and willingness to listen to advice. The age of the candidate is not too critical but the person is usually over thirty. The candidate must be married. Yoruba bow to their father; since the king or queen should not have to bow to anyone, the father of a candidate cannot be living. The selected person is simply notified without prior warning or campaigning. The new ruler is responsible for the spouse or spouses of the former ruler, who continue to live in their quarters within the palace. An unpopular king or queen will be removed by the request of a mob who send their chiefs in with a suicide potion. Sometimes the ousted ruler is allowed to live in exile at the home of the head diviner.

The king or queen of Ife lives in seclusion, is responsible for the good of the people, and performs the proper sacrifices that promote the well-being of the people. The ruler assigns land to each clan, which in turn assigns plots and rooms to its members. The king or queen also helps decide any issue not settled in the lower courts and approves or vetoes proposed changes in law. For example, the chiefs might suggest a new ceiling on the price of palm wine. If approved, a gong-beater will walk around town to announce the change.

The palace is financed by taking a share from the city's toll-gates. Each farmer pays a toll as they bring crops into the city for sale. Palace financing also occurs as the women of the palace go to the market each day to collect a little food—without having to pay—from each of several merchants. There are many palace officials who have specific jobs. For example, one gathers able-bodied men from a neighborhood to thatch the walls and roof of the ruler's home or to weed its grounds. There are many public works projects to build and maintain structures.

Women are marriageable between the ages of twenty and thirty-five. She must marry a man who is older than thirty-five years in age because younger men do not have the means to pay bride wealth. There is a larger number of women aged twenty to thirty-five than men aged over thirty-five, so about half the marriages are polygamous in which an older man has multiple younger wives.

In 1950, Nigeria was 40% Muslim, 40% Catholic, and 20% traditional—making a good mix of rituals and customs. By law, Catholic marriages must be monogamous. Bascom describes one man who tried a Christian church wedding for his sixth marriage. His fifth wife, inherited levirately from his brother, had died. His first and third wives had left him, and he had left his second and fourth wives. He next was monogamous, but his new wife turned out to be unfaithful, so he then married seven additional wives.

During childbirth, no person younger than the mother should be present. The newborn is sprinkled with water to make it cry; nobody speaks until then or it might become impotent. If it is the mother's first child, then it is taken into the backyard where its umbilical cord is tied with a thread and cut by a woman using a knife from the midrib of a leaf from the bamboo palm. A glass knife can be used but not one made from metal because that might cause stomach ache. The mother is not to speak while this is being done. Men dig a hole in which a woman places the placenta. The hole is filled and on that very spot the child is bathed with a loofah sponge and rubbed with palm oil. The child is then held by the feet and given three shakes to make it strong and brave; it then won't be afraid of noises or have spasms. Its head is gently touched to the ground so that it won't be hurt in later falls. The child is then carried back to the mother while saying the mother's name three times. These actions can be performed in the house for the mother's later children, and she is allowed to speak as they are being done. Many persons then come by to give congratulations and to see the new baby. Why do we Yoruba do these things? Because it has always been so.

Special names are given to children born in certain circumstances. For example, certain names are given when a child is born face down or with its umbilical cord around its neck. Each of two twins are given traditional names indicating the order in which they were born. Normally, names are suggested during a ceremony six days after the birth. Mom and dad are first to give a suggestion, then relatives and friends will do so. Everyone uses their favorite name until one takes hold—usually the name earlier suggested by mom and dad. During the naming ceremony, the child is given some yams to eat. A parent might scold the child later in life by asking "Did you help plant the yams you ate on the day you were named?" Circumcision of both boys and girls is done within a month but without the group ritual of other cultures.

Children are nursed until they are two to four years old. It is believed that a child will die if weaned before the age of two. (Around the year 1800, infants in the Southern United States would not be weaned until after the second, infection-prone hot summer had finished.) A Yoruba mother avoids sex until the child is weaned so as not to spoil her milk. Infants are given a purgative to drink each morning.

Youngsters are soon imaginatively imitating the activities of their parents. By age six, girls are encouraged to participate in the chores of their mother, and boys with those of their father. Education stresses social interdependence but psychological and economic independence.

If a child dies, it is said to be "one born to die" and is buried in the backyard without the ritual given to adults. Normally, funerals cannot be attended by anyone older than the deceased. Albinos and other special persons, such as someone killed by lightning, are buried in places sacred to the

related deity. Everyone else is buried in a grave dug in the floor of their own room. Before being buried, the corpse is cleaned and washed and then her or his clothes are put on inside out so the soul will know its way back to earth when reborn.

Hull explains that Yoruba cities were unlike the big cities of the Western world today that are collections of strangers who don't know or even speak to each other. A Yoruba person was born, raised, married, raised children, and then died within the same town. Extended families lived together within the section of town that belonged to their clan. Each person and family knew most every other person and family—and their personal properties—from nearby homes. A best friend is the person with whom you confide; funeral plans and last wills are told to the best friend, who is sought when death occurs.

Townpeople had a sense of being cooperative and responsible members of the community. They combined efforts in any situation requiring such efforts. For example, when the town walls needed to be expanded everyone met to do the work. Men, women, and children hauled water, mixed mud, and raised walls. The extent of area to be enclosed by the new walls was decided by the town council. Many community decisions were made as talk among family heads in turn involved extended family heads, ward leaders, urban chiefs, the town council, and then the king or queen. People felt they were members of the town because each person had a voice in its affairs. Voices were not equal because of age, gender, wealth, and the number of generations in which the speaker's lineage had lived within the city.

Many of the aspects of Yoruba life described above are very similar to those of the other people discussed in this book. Other aspects are very different. If such cultural details seem incredible to you, then you might like to read several ethnographic studies.

We will see in Chapter 13 that Europeans colonized and despotically ruled Africa during the years 1850 through 1950, and then left randomly-bordered nations, each containing many cultures, to build new national governments and identities.

## Cahokia

Many North and South American Indians were living sedentary lives in farming villages before the Europeans began arriving around the year 1500. European explorers also brought many Old World diseases that had been unknown in the New World. (In the same way, the unfamiliar diseases of Africa kept the Europeans out of that continent until the nineteenth century.) European diseases killed 50% to 90% of the Native American population as they spread across the continent. The effects of these continent-wide plagues drastically altered the societies and the way of life of all Native Americans. There were no horses in America until they too arrived with the Europeans, but the horse soon became an integral part of American life. European diseases and horses had tremendous effects on American peoples. In the reverse direction, many American crops—including potatoes, tomatoes, and tobacco—had large effects on the way of life of Europeans. These plants did not exist in the Old World.

During the years 800 ad. to 1300 ad, those of us humans who lived along the Mississippi river just across from present-day St. Louis, built the town of Cahokia. Its population reached a peak of 20,000 persons around the year 1150 ad. This was a large city with a long life-span. The 500-year life-span of this city is more than twice the length of time in which the nation of the U.S. has existed.

It would not be until the year 1800 that any U.S. city had become as populous as Cahokia had been.

About 10,000 years ago, the first culture in the area of Cahokia consisted of nomadic bands of twenty to thirty persons who followed the now-extinct, glacially-adapted mega-fauna. Anthropologists refer to this as the archaic period. Throughout most of Eastern North America, nomads were becoming sedentary villagers by about 1000 bc and were beginning to farm in what anthropologists call the Woodland culture. (For more details on the Woodland culture you might like to read *Ancient North America, The Archaeology of a Continent* by Brain Fagan.) The Woodland culture in Cahokia lasted from 600 bc through 800 ad, which is a 1,400 year span of time. As population grew through the centuries, social organization became more-complex.

The people of the woodlands culture built about 200,000 earthen mounds throughout the eastern United States. The mounds were built by carrying millions of basket-loads of dirt and piling them into a large structure as much as thirty meters or yards in height. Today, archaeologists can still distinguish individual basket loads within those structures. We have seen that the peoples of various regions of the world had passions for different structures, including giant blocks and pyramids of stone. Mound building was an obsession for centuries all over Eastern North America. Your community might want to build a larger mound than that made by your neighbors. We can guess that this fashion of building mounds spread from one community to another, just as fashions spread today. There is a serpent-shaped mound in Ohio that is four feet high, twenty feet wide, and one-quarter mile long (1.3 x 7 x 400 m).

Mounds of various shapes and sizes are found from Florida to Oklahoma, Wisconsin, and Ohio and are sometimes as high as the treetops. Since this entire area is very flat, with almost no hills, the treetops are the highest objects nature built in this area, and this may have something to do with the decision of us humans to build mounds to that height. Climbing a mound raises you above the treetops and takes you to the sky. It is awe inspiring for a people of a community to have the home of their leader placed on top of such a mound. One mound at Poverty Point in Northeastern Louisiana was built in the year 1800 bc and is twenty-five yards or meters high on a base 200 by 270 yards or meters. It is built in the shape of an eagle, and from its summit, gives an eagle's-eye view of the treetops.

Three very large rivers—the Mississippi, Missouri, and Illinois—meet in the vicinity of Cahokia to create a fertile flood plain covering an area 12 by 70 miles (20 by 110 km). The people of Cahokia obtained most of their food by farming corn. They raised corn, and used rock grinding stones to process it into daily food. The corn diet was high in carbohydrates and low in protein, and teeth were heavily worn by the pieces of rock that remained in the food. The domestication of corn had originated in Mexico 4,000 years earlier and had spread throughout the New World. In the Americas today, corn fields extend for thousands of miles, and in the world today, corn, wheat, and rice still provide two-thirds of the world's food supply.

Those three rivers provided a means for long-distance trade. Copper was obtained from the Upper Great Lakes area, mica from the Appalachians, and more-precious seashells from the Gulf of Mexico. Cahokia had much commerce. There were specialized crafts makers, large-scale public works, and stratified social levels. We see that life in Cahokia included many of the elements in the archaeologist's definition of advanced civilization described earlier in this chapter, including stratified social, political, and religious organizations.

Cahokia was located near a variety of food and material sources. (We have seen that humans

prefer to live near a variety of food sources.) The Ozark mountains to the southwest provided both stone for tools and deer for meat and clothing. The forests to the east provided wood for buildings, tools, arrows, spears, canoes, and firewood. These forests also contained many types of food, including nuts, berries, salt, and several kinds of animals and birds. The plains to the north and west were the source of grass for homes. The rivers provided fish, shellfish, beavers, and birds. This region was naturally well suited to provide for a large population and a complex society.

Large-scale public buildings occurred in the form of 120 earthen mounds. The most important mound in Cahokia was thirty yards or meters tall and had a base area of fourteen acres (six hectares). This mound contained 22 million cubic feet (630,000 cubic meters) of hand-piled dirt. It had been repeatedly enlarged through the years 900 ad. to 1200 ad. The building placed on top of the mound measured 50 by 100 feet and may have been 50 feet high (17 x 33 x 17 meters).

Cahokia had a circle of wooden posts, nicknamed "Woodhenge," that served an astronomical, religious, and political purpose and had a diameter of 130 yards or meters. From within Woodhenge, the equinox Sun appeared to rise out of Cahokia's largest mound. The chief lived on top of this mound and was considered to be the brother of the Sun. We can guess that it was a pretty awe-inspiring event to see the sun rising out of the chief's hilltop home. A few thousand persons crammed into the 12,000 square foot (1,100 square meter) Woodhenge circle on these mornings. On that day, we might guess that some families preferred to be near the center but others instead choose to avoid the crush and watch from the edge of the circle.

The communities surrounding Cahokia came in four different sizes, consisting of sixty-five small villages, eight larger communities, four others that were still-larger, and then the main city of Cahokia. This hierarchy is similar to what we saw had occurred in Ancient Mesopotamia. There were small, moundless farmsteads that consisted of a few structures surrounding a court yard; these farmsteads occurred in clusters around larger communities. There were also villages of a few hundred persons that were often located near lakes or side-rivers. (We can guess that some families liked to live in the center of activities while others preferred the "suburbs".) In these outlying villages, homes were built around a small plaza that often had one mound. Family heads interacted with a clan leader. The village's clan leaders in turn had a leader who may have lived on top of the village mound. This leader would have interacted directly with the Brother of the Sun and his close relatives and associates. There were also temple-towns that had populations of thousands of persons who built an impressive plaza and several mounds.

The largest community was Cahokia itself. Cahokia was the capital of the area's politics, religion, commerce, and art. The central part of Cahokia was enclosed by a wall that was two-miles (3.2 km) in length. Since no evidence of invasion has been found, the wall may have had a non-defensive purpose. The entire city covered an area of seven square miles (seventeen square kilometers) and had a population density of 4,000 persons per square mile (6,500 per square km). A region having 250 persons per square mile is considered to be a city. Communal buildings included elevated grain storage structures, menstrual-seclusion huts, sauna-like sweat lodges, and a neighborhood meeting house. Within the city of Cahokia, individual neighborhoods often contained an occupational specialty, as is commonly done in cities throughout the world. Specialists included priests, astronomers, merchants, and various crafts persons.

Cahokians made tools, performed strenuous work, hunted, set governmental and religious policy, made beads and necklaces and art, raised children, loved, grew crops, gathered plants,

processed animal skins, and made pottery. During ceremonies and festivals they played music, sang, and danced. Archaeologists obtain clues about the ways of Cahokians through the scenes of daily-life depicted on pottery. These show the faces of people, their manner of dress, and their style of body tattoos and paint. Many pots were given human or animal shape. To build further understanding of the Cahokian way of life, archaeologists combine these pictorial clues with the physical artifacts left behind, including tools, walls, and homes.

The homes of related families were often clustered together. Each home was about twenty by twenty feet (seven by seven meters) and had a doorway covered by a mat or an animal skin. The homes did not have windows. Homes were constructed by first digging trenches along their perimeter, standing vertical poles into the trench, and then refilling the trench. Next, horizontal poles were tied to those vertical poles to create the skeletal structure of the walls and roof. Tall prairie grass was tied into bundles to make the roof, and it was also combined with clay to fill the gaps between the poles.

The city wall was similarly constructed. A trench, four or five feet (1.3 to 1.6 meters) deep, was dug and then refilled after standing about 17,000 vertical oak logs within the trench. Each of these logs was one foot (25 cm) in diameter and 15 feet (4m) high. The logs were packed together so that each was touching its two neighbors, and then the entire wall was covered with clay. The wall had periodically-spaced projections.

The funerals of the most important persons were held on top of conically shaped mounds while other persons were buried in a communal cemetery. A funeral structure was built on top of the mound to hold this person and then the structure was set on fire during the ceremony. Additional layers would be added to the mound as new funeral structures were built on top of the previous. Items made from distant and exotic materials were found only in the burials of the leaders, not in the burials of the communal cemetery. There is evidence of a high infant mortality rate and of some wintertime starvation.

Tools were made from many different materials: needles were made from catfish spines, beads from river and ocean shells, bowls from turtle shells, fabric from plant fibers, bow-strings from strips of rawhide, and rope from inner tree-bark. Shrink-drying sinew was used as string for binding, and hooves were made into rattles, glue, and medicine. A stump-shaped pot has been found that may have been used to hold other pots over the cooking fire. Canoes ranged in length from twelve to seventy feet (4 to 23m) and were made by repeatedly scraping, burning, and chopping one side of a single log.

Cahokians enjoyed games of skill and chance. A hollow bone was tethered to a stick by a long string. A person would hold the stick to swing the bone, trying to catch the bone on the end of the stick. They also played hoop-and-pole, and La Crosse. The favored pastime was to roll a stone disk along the ground and try to throw a spear into the ground at the point where the disk was predicted to stop. Some persons were buried with their favorite disks.

The beliefs and organization of the people of Cahokia provided for the physical, social, emotional, religious, political, and economic needs of each individual and for the society as a whole. Their beliefs gave life meaning and balanced perfection and confusion, light and dark. They divided the universe into an upper and a lower world and had characteristic plants and animals for each division. For example, falcons and eagles represented the upper world while frogs, fish, and lizards represented the lower world. Beaver, owl, and cougar had characteristics of both divisions. They



would certainly explain specific aspects of the world in terms of the interplay between these two divisions and their intermingling boundaries.

The people of Cahokia had to continue obtaining their food from the surrounding area even as their population grew. The nearby forests and grasslands needed to provide the materials for an increasing population. In such a densely populated area, just the smoke from all the family's fires must have been enormous. How did they dispose of waste? It is not yet known why people began to move away from the city after 1250 ad. Since only 1% of the site has been excavated, archaeologists may later find evidence of disease, war, or long-term famine. As the population exceeded the area's food and resource capacities, there would likely have been tightened political controls and increasingly limited access to goods and services. Individual families would begin to move away when they saw that the city was losing the "favor of the gods." From measurements of chemical levels in the bones of the deceased, archaeologists know that the people of Cahokia suffered from periodic malnutrition. Most every densely populated group of us humans has suffered periodic malnutrition because of farming cycles. Long after the city had been abandoned, the area of Cahokia was successively occupied by the Oneota, the Kawa, the Missouri, the Oto, the Winnebago, and then a mixture of people from most every region of the world.

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#### Questions

1. How is your city life different from that of the Mesopotamians?
2. Compare a Mesopotamian's pride for their city with your pride for your own social structures. Is your city or nation sacred to you?
3. Your city contains roads and sewers and such things. List several of these things and describe how they are maintained and managed. Would the list of city things have been different in Mesopotamia?
4. Do you have any pottery or dishes?

5. How often do you eat wheat, corn, or rice?
6. Make a list of the twenty most-common foods that you eat and then find out which region of the world they come from. How much of your food comes from the surrounding area? How is the food surplus handled today? How many day's supply of food does your society keep on hand? What are the geographic limits of your society? Do you get any food from the other side of the planet?
7. To make and sell items such as pottery or clothing today, one needs materials, a person to prepare the item, and stores for selling the finished item. Was the manufacturing and marketing procedure different in ancient Mesopotamia? If very few persons could read words, what sorts of signs were placed in front of Mesopotamian stores?
8. If you were raised in a gatherer-hunter band in Mesopotamia and then moved into a city and began having children, would your children think that the old ways of the band or the new ways of the city were "right." What would your grandchildren think?
9. Do you know of a nearby area that has many different food sources because it contains mountains, valleys, rivers, and lakes?
10. What were some similarities and differences in the daily life of Mesopotamian, Yoruban, Cahokian and Canela people?
11. What do you use writing and arithmetic for today? Are these uses different from those of a Mesopotamian?
12. How many different writing systems are being used today?
13. Which occupations have replaced that of the scribe's in today's cities?
14. Name some persons from ancient times. Why are they still known today?
15. Compare the legal status of Yoruba, Canela, and Mesopotamian women with that of your own people today.
16. Why do farmers use plows and when did they learn to do this?
17. How is the craft industry in your city different from that of Mesopotamia, Yoruba, and Cahokia? Compare their agriculture, cloth making, and money lending activities.
18. In what way does your extended family cooperate economically?
19. How is kingship different today than it was in Mesopotamia, Yoruba, and in Medieval Europe? How do king-citizen relations compare then and now?
20. Would neighborhood courts serve any purpose in your city?
21. Why do regions go to war today? (Typically, there are about fifty wars occurring at any moment in today's world of two hundred nations.) Do gatherer-hunters have wars? As the population levels of our gatherer-hunter ancestors began to reach the carrying capacity of their regions, did some groups begin to live by attacking other people to plunder their food? Do gatherer-hunters have plunderable surpluses? How far can plundered food and other items be transported? Are the weapons of plunderers found in the archaeological record?
22. Was the industry of Ancient Mesopotamia producing goods for the general population or just for the temple and the King? Did the producers make goods only as they were ordered by the King or were consumers driving production levels?
23. Is Mesopotamian government a form of band, tribe, chiefdom, or state? How about those of Cahokia and of the Yoruba?
24. Is the Mesopotamian form of religion related to its form of government? Are Yoruban or Cahokian religious and governmental forms related?
25. Compare your own way of life with those of Mesopotamia, Yoruba, Cahokia, and the Canela. Compare the societies of these peoples with your own.
26. What can you say about the levels of social and economic equality in Mesopotamian, Yoruban, Cahokian and Canelaan society? Are some persons richer or poorer? Can some impose their views or preferences on

others? Compare the health of Mesopotamian, Yoruban, and Cahokian infants and those of your own group, today? Does each Mesopotamian, Yoruban, and Cahokian individual have equal access to education and the benefits of society? Do the Mesopotamians, Yorubans, or Cahokians have a sense of belonging to a community? Do they have a feeling of control over their own lives and over their own continued well-being?

27. Do you see any manifestations of the primate social system in Mesopotamian, Yoruban, or Cahokian society? Do you see the Golden Rule at work in Mesopotamian, Yoruban, or Cahokian society? In which ways do the Mesopotamians, Yorubans, and Cahokians behave like mammals or primates?

28. Do the Mesopotamian, Yoruban, and Cahokian societies have business, governmental, or religious aspects? Compare their commercial, governmental, and religious practices to those of your own culture.

29. Do Mesopotamian, Yoruban, or Cahokian persons have innate talents for becoming engineers, artists, or doctors? Do Mesopotamian, Yoruban, or Cahokian persons pursue the limits of their talents and interests?

30. What can you say about crime among the Mesopotamians, Yorubans, and Cahokians? Can you compare reasons for crime, amount of crime, and deterrents against crime among the Mesopotamians and your own people?

31. What can you say about poverty among the Mesopotamians, Yorubans, and Cahokians? Can you compare reasons for poverty and the amount of poverty between the Mesopotamians, Yorubans, or Cahokians and your own people?

32. Do Mesopotamian, Yoruban, or Cahokian persons care for their family, friends, and society? For a Mesopotamian, Yoruban, or Cahokian person, what are the most important things in life? What are the most important things in your own life?

33. If farming was our solution to the overcrowding of a gatherer-hunter's region, what will be our solution to an overcrowded planet? Will we farm the entire surface of alien worlds and haul planet-sized harvests to the Earth and other places? Will our population be limited to the number of persons feedable by farming the Earth alone? Will we produce food in chemical factories rather than growing it in fields?

34. Describe the exchange of goods between the Mesopotamian, Yoruban, or Cahokian city residents with neighboring gatherer-hunters and distant, mineral miners.

35. Compare the age of marriage among the Canela, Yorubans, Cahokians, and Mesopotamians with that of your own people today? Also compare the number of children per family and the length of time that children are breast-fed.

36. Compare the functions and cooperations of extended family members among the Canela, Yoruban, Cahokians, and Mesopotamians with that of your own people today?

37. List some aspects of your city-life and of your city, its operation, and occupations that can be represented by a deity.

38. Compare elements of your city-life with those of the Mesopotamians, Yorubans, and Cahokians, including apprenticeship systems, occupations, systems of long-distance trade, courts and legal codes.

39. Compare the worldwide spread of agriculture, democracy, industrialization, Christianity, Islam, cars, and computers. Compare the manner of spread, the driving forces behind the spread, and the speed at which they were spread.

40. A crop field must be harvested on a singularly appropriate day. What sort of cooperation existed among the members of Mesopotamian, Yoruban, and Cahokian villages in harvesting crop fields? Could a single family handle their entire field? What sort of field size and cooperation occurred in a Medieval farming village, or in the U.S. around the year 1800? In various regions of the world today?

41. What can you say about unemployment in Mesopotamian, Yoruban, or Cahokian cities? What portions of the population were involved in farming and commerce? Did Mesopotamian, Yoruban, and Cahokian cities go through economic cycles of boom and bust as occurs today? Can you relate the magnitude of business cycles to the portion of a population involved in commerce?

42. Do you think the elders within an early farming village warned youngsters about the "dire consequences"

of the ongoing loss of knowledge needed for gathering and hunting? Do you think some children complained that they had twice as much to learn as their grandparents because they now had to study farming in addition to gathering and hunting?

43. Describe the history of roads. Who builds them? Who pays for them? Why are they built?

44. How many different peoples have contributed to our knowledge in each of house building, clothing materials, mathematics, and science?

45. How have houses changed during the last 30,000 years? How is a house type related to climate and culture?

46. How much have telephones, cars, radios, televisions, and computers changed our daily life? How are the effects of these inventions different from the effects of the inventions of farming, the city, writing, or the empire? Have any of these inventions changed us biologically into persons that are different from what we were before their invention? Have they made us biologically different from the Canela people? Are you and a Canelan, Yoruban, Cahokian, or Mesopotamian person biologically the same?

47. What sort of products did the Mesopotamians make, sell and buy? List the twenty most commonly owned products in your neighborhood—for example, furniture and clothing. How do you think the list of furnishings, utensils, and decorations found in a typical Mesopotamian home compared with those of your own home? How do the number of these items compare?

48. Was Mesopotamia an industrialized region?

49. List today's forms of activities for "predicting the future." Describe a recent news article about an unusual relation between a pair of different animals, for example between a cat and a mouse or between two zoo animals. Can you explain this event in terms of deities for corporations, governments, or their agencies?

50. Describe the roles of integration and conflict (as described in Chapter 9) in the creation of Mesopotamian farming villages and city-states.

51. Our ancestral species migrated in groups to spread throughout the world's surface. For the last five hundred years we have been migrating as individual persons and families around the world in search of a better life. Compare the reasons for entire groups to migrate to those of a single family.

52. Is it more likely that everyone could watch the equinox sunrise from within Woodhenge or would just a small number of privileged persons be allowed to do this? Describe the scientific centers and religious sanctuaries that are visible near your home today and the influence they have on you.

53. Compare the reasons for the origination of the city of Cahokia with those of Ancient Mesopotamia and the Yoruba. What role did the number and size of the rivers and their change through time play in this process?

54. Could you use a Yoruba style savings-club today?

55. Compare the role and importance of the Yoruba clan to the nuclear and extended family.

56. What portion of human cultures are polygamous? Do they always combine numerous, marriageable young women with fewer marriageable older men because young men are not able to marry?

57. What sorts of simple disputes in your neighborhood could be handled by a Yoruba street-trial? Why do today's nations have legal courts instead of neighborhood settlement courts?

58. Describe the blending of Muslim, Christian, and traditional religious rituals in Nigeria today.

59. Did single, independent families become the first farmers of any of the world's regions or was it always a community of farming families? How many farming families must combine their efforts to be self-sufficient and able to survive off nothing but their own crops? Can a single family farm alone? How frequent are crop failures? Will a single family survive a crop failure? Will several families survive?

60. Create a piece of art involving the origin of farming and civilization.

61. Compare a Mesopotamian canal digger's contract with the government to a similar contract made with your government today.

62. Writing and books were developed with our city-states. What is the history and role of sacred books?

## **Chapter 11 Ancient Athenian democracy involved group decisions not elected officials**

The people of ancient Greece were the first to write down rational explanations of nature not given in terms of deities. This was a major stepping stone in the history of our civilization. For example, before that time we would explain an annual river rise in terms of water and flood gods, but after that time we would explain the rising rivers in terms of the melting snows of nearby mountains. This rational thinking has enabled us to develop more useful machines than would have been possible if we instead explained things in terms of gods. For example, a radio might never have been devised if its operation required interactions among inductor, capacitor, and wave gods. The nature-deities would no longer suffice to explain the world. For example, the geometry of squares has no analogy in myth and indicates that the old deities are somehow lacking. Pythagoras did not explain the properties of triangles in terms of the personalities of deities.

In the sixth-century bc town of Miletus, the three philosophers Anaximander, Anaximenes, and Thales, ushered in a new way of thinking about nature. For them, nature was the object of a detached and systematic investigation free of deities. It began to be believed that the world would be accessible to human intelligence. Before this time, our mythological beginnings explained how today's world came into being; after this time, it was turned around such that the intelligible world of the present provided an explanation of our beginnings.

The origin and operation of nature became an explicitly posed problem in which rational and non-mysterious answers would be sought. Knowledge was de-sacrilized. This was an intellectual revolution. Its light of reason could never be forgotten and will continue to guide the progress of the human mind. This new way of thinking bounced around the planet, from one person to another, and has continued to be improved upon through the centuries.

The people of ancient Greece built upon the mathematics and technology of the previous peoples of the world, and contributed much to our civilization. They improved the alphabetic writing system of the earlier peoples and put it into the form still used today. They developed formal logic. They debated the nature of being and knowing. They asked what is reality and how can we prove that something is real. Is a number a real object? Is an idea real? Is a horse real or does it just represent the idea of horseness? Does mathematics exist on its own or do we invent it? How can we distinguish between the natural and the supernatural? (Until the last few centuries, the distinction was uncertain.) They also made many technological advances, including labor saving machines that multiplied the work one person could do.

Their writings about ethics came to the same conclusions as has each of today's major religions. The Greek classics exhibit the virtues of humans. Their moral principles have justice, sanctity, and truth. At the time that the literature of other ancient states mainly discussed gods and rulers, Greek literature contained many heroes who were not gods but were people who overcame challenging situations. The Greek comedies made fun of everybody, even the wealthy citizen who had financed the play's production.

The philosophers of ancient Greece thought deeply about what can and cannot be known about nature but they did not make measurements or perform experiments. Aristotle gave rational explanations of many phenomena but nobody got around to testing these explanations until twelve-hundred years later. For example, he expected that ash would float on water because it was figured

to consist of more fire than earth, and he incorrectly expected that heavier objects would fall faster than light ones but nobody made measurements to see if they were correctly predicting nature. During the Renaissance and Enlightenment of the fifteenth through eighteenth centuries ad, we found the value of testing explanations by making repeatable measurements. The resulting scientific method has been improving the accuracy of our explanations ever since then.

Half the male citizens of Ancient Athens were literate at a time when literacy rates were more commonly 1% throughout the world. The democratic Athenians openly debated ideas. The uniquely literate, open, and democratic aspects of Ancient Athenian society may have had a lot to do with their being first in many intellectual pursuits—in contrast to many times and places of the world in which our kings and queens and conventions produce centuries-long environments of overly constrained lives and thought.

The Hellenistic culture of ancient Greece greatly influenced the Western world for hundreds of years. We all know of Zeus, Hercules, Plato, Aristotle, philosophy, ethics, and democracy. (Notice that history does not remember as many business or sports people.) Our most important buildings still follow the architecture of Classical Greece and its Doric, Ionic, and Corinthian styles.

Bands of gatherer-hunters often make decisions by forming a consensus among family heads in our most-innate form of societal leadership or “government.” In agricultural societies, there are as many types of political systems as there are groups of peoples. The people of each region of the world have chosen their own system in response to their own history, culture, circumstances, and preferences. Two particularly important, early viewpoints have been voiced by the ancient Israelite distrust of kings and queens and the classical Athenian distrust of power concentrated in the hands of those few persons who own most everything in town.

In classical Athens, democracy meant that the people held power in common and that there was equality under the law for both rich and poor. Democracy was meant to protect the people from laws made by a small, economically privileged portion of society and instead serve the interests of all citizens.

Through the decades, classical Athens contained 25,000 to 40,000 adult males. About 40% of them were defined to be “citizens” because they held a minimal amount of assets and so were allowed to vote and to hold office—females could not. (For comparison, just before England’s Great Reform Act of 1867, only 40% of the adult males in England had been allowed to vote.) Every male citizen was allowed to give his view during official, public meetings; women were not allowed to take part.

Athenian democracy originated in response to the growing oppression of city residents by the rich few. The first step toward citizen-shared power was taken in 594 bc by the leader Solon. He complained that the unrighteous, privileged leaders could not restrain their excesses and grew rich by stealing for themselves. Solon warned that the widespread economic exploitation, discontent, corruption, and indifference of the powerful was in danger of causing civil strife or even tyranny. He said that he wanted to restrain and correct this unjust situation.

A royal palace system had begun to develop in Mycenaen Greece around 2000 bc. This royal system was similar to those of the many city-states throughout the Mediterranean and Middle East. The Mycenaen palace system was destroyed around 1200 bc when the Dorian people migrated into Greece. This was followed by a political Dark Age lasting for several centuries, in which there were no kings and queens. A dramatic change then occurred in Greece as part of society became involved

in overseas trade with the older, Middle Eastern states. This portion of the people began to accumulate and display a great wealth and luxury that was furiously denounced by the people of Athens. The people said those who have the most today want twice as much tomorrow and that wealth makes one mad, has no object but itself, and is insatiable. At the root of wealth is a corrupted disposition—a perverse will. Wealth would bring injustice, oppression, and disorder by enslaving the masses.

The people represented civic values as opposed to rich extravagance. Their new democratic wisdom would bring moderation, proportion, fair limits, the golden mean, and nothing in extreme.

You may have heard of the ancient Greek tyrants. A tyrant was a town-boss who could have his way because he owned much of the town. Foreign trade had brought excessive wealth and social and economic injustice, and in response, the assembly of equal citizens was created. The citizens were equal in that law now applied equally to all. Each citizen could take part in the assembly and each person's vote counted equally. Each person could also take any other person to court.

In several ways, democracy in ancient Athens was more extensive than today's version. For one thing, the daily operations of the city—down to the smallest detail—were discussed in public meetings or assemblies. The entire voting public would meet to decide whether or not to construct a building and who would be paid to do the construction or whether or not to send a cargo ship to a certain port. They would also decide whether their city would go to war with another city. When the citizens voted for war, they knew that they themselves would be the soldiers who would fight and die.

Each citizen was allowed to stand and speak during assembly meetings. While talking, the speaker stood on this platform and faced his fellow citizens and the Acropolis. Each speaker was expected to express his view in a short and to-the-point message. Each man could speak only once per issue and would be ridiculed if he talked too long or strayed from the issue. The leading citizens were those whose advice regularly proved to be good. These men were often expected to speak so that other citizens could know and follow their advised course of action. A person was allowed to speak for only a few minutes, as timed by letting water drain from this upper pot into the lower one. An experienced speaker would talk to the last drop. After this public debate, decisions were obtained by counting votes cast by a show of hands.

The citizens met in an assembly to vote on the issues of the week; there were about forty assembly meetings per year. The nearly-weekly issues were preselected by a council of five hundred citizens, each of whom were selected by lot to serve for one year. Names were placed in the slots of this board and then one name was randomly selected. The city of Athens was divided into ten districts, and to better guarantee a cross section of people throughout the city, the council of five-hundred consisted of fifty persons from each of these ten regions. Before each meeting, the council posted the current issues for all to see and discuss—literacy and public debate were essential. Any citizen could propose a new law or action but if it were shown to be inconsistent with previous laws he would lose his citizenship rights for a few years. Citizens were paid a small fee to attend the assembly meetings so that it would be attended by all, not just those wealthy enough to have free time. (How are new laws proposed, debated, and approved in your nation today?)

Democracy in ancient Athens was also more extensive than today's version in that individual involvement occurred as citizens took turns holding various offices. There were no elected officials in Ancient Athens. Instead, governmental positions, such as those of the councilors, were filled by

random drawings. The selected persons served for about one year, and no person could serve twice in their lifetime. Where the knowledge of professionals was needed, there would be permanent positions but most governmental positions were temporary. Many Athenians felt that the benefits of more-experienced politicians and officials would be spoiled by a growth in corruption. Today we sometimes find that long-term positions for career-politicians leads to aspirations of power and selfish actions.

Today's democracy consists of elections of professional, lifelong politicians who are hired to make our daily decisions for us. Since we have the technology today to make decisions by "a show of hands"—through the internet, for example—it seems to be a safe bet that a change will be coming to today's more-limited form of democracy.

Trials were also decided by the vote of the citizens. Murder trials were held outdoors on the top of this hill so that it was readily seen by all. Before the time of democracy, if one didn't have wealth and influence it was hard to get justice because only wealthy persons were conducting the courts. Athenian democracy placed the administration of the courts into the hands of the citizens. There were no paid professional judges or district attorneys. The judge and jury were amateurs. The jury were judges of facts and law, and they determined verdicts and penalties. The number of jurymen depended on the severity of the charges. Every sixty-year-old citizen was required to be available to serve as a court arbitrator. He was an ordinary person but had considerable experience of life. Each case was randomly assigned to an arbitrator.

Anyone could bring a court charge against any other person. (Do you feel that today you could take court action against any person or corporation, which is organization of persons, that has done you wrong?) A convicted defendant would be fined, lose his civic rights or property, or even his life. The accuser was rewarded if the case was won. However, the accusers would have to pay a fee if they failed to get at least 20% of the jury to agree that the defendant was guilty.

Each year, about 3% of citizens were serving in the government and in each generation, one-in-three citizens had served in their government. Each year, 15 to 20 percent of Athenian citizens were registered to serve in the courts. Today's parliament and assembly members consist of a much smaller portion of the population, and each member tries to serve permanently. It is also true that the today's members are not such a cross section of the people of the nation. Do you think people today would like to be randomly selected and paid to serve a one-year term in an assembly?

More so than it does today, Athenian democracy meant self-government and individual involvement, participation and representation in the daily decision making processes. There was everywhere an ingrained suspicion of the corruptive effects of power. Their system was inefficient in time and labor, unprofessional, cumbersome, uncoordinated, and plagued by annual discontinuity. But never since then have citizens anywhere held full control over the daily operation of their own city and government. The people of Athens had total control over the legislative, executive, and judicial portions of their government because the people of Athens were the government. The citizens felt that they were in charge of their own affairs. There was no feeling of "us versus them" as occurs in some of today's representational governments of career politicians. The Athenians knew that only thirty miles away, government was very different.

Athenians could also vote to expel or ostracize a citizen from town for ten years. Voting to expel a person was done by writing names on broken pieces of pottery, these so-called ostraca.

The Athenian society was open and tolerant of public expression, criticism, and dissent. They



wanted democracy because it protected them from the random laws of a small privileged section of society. Still today, these are the characteristics of a people choosing democracy as their form of government. Legal decisions were no longer made by the upper class who were operating to safeguard their own interests. The people simply wanted freedom and its power along with political equality and freedom from exploitation and injustice. Since we innately react against any interaction that is not mutually beneficial to its participants, we can all sympathize with the desire of the Athenians to protect themselves from the injustice of being overrun by the seekers of wealth and power.

The richest persons of Athens had to pay special taxes for the privilege of being wealthy. They might have to pay the annual expenses of a naval vessel or the costs of a musical presentation or theatrical play—and maybe even be the object of its ridicule. The Athenians later modified this such that the 1,250 richest persons paid for these items in proportion to their wealth.

In his book *The Athenian Constitution*, Aristotle described the following essential features of full democracy. If all citizens are to be equal then the people must be sovereign. The will of the people is determined by majority vote in a popular assembly open to all citizens, regardless of wealth or rank. There should be no governing class, instead all citizens should take turns holding office. The officers of the state should be appointed randomly except where it is clear that some expertise is needed. There should be no property qualifications for office and tenure should be short and infrequent. The citizens should be paid for attending the assembly and for serving as jurors in the court. As an argument against professional politicians, Aristotle said that the combined knowledge of many novices exceeded the knowledge of one experienced person. Which of Aristotle's features of democracy are part of your nation's democracy today?

One group of thirty wealthy persons did manage to take control of Athens for a seven-year period. They wanted to put an end to the egalitarian society so that they could control the wealth of Athens for their own benefit. They managed to do this by pretending that many extreme measures were necessary because of a war that was occurring at that time. For example, instead of all citizens attending the assembly, they "temporarily" restricted its access to just the wealthiest persons, who were then free to act in their own interests. The man Alcibiades of Samos was privy to the real motives of this group and exposed them. Athenian democracy then lasted until Alexander the Great's Macedonians put an end to it by conquering the region. The Athenians enjoyed their full democracy for just a few centuries and then had to wait many more centuries before democracy would return.

Today, Greece is a vibrant, thriving democracy. Citizens are knowledgeable and participate in public debate, for example, through protests for every necessary reason.

In most of our modern democracies, we elect lawmakers from a group of professional politicians. These elected officials take care of the day-to-day business of running the city or state. There are regions, called cantons, today in Switzerland that have assemblies in which citizens meet to decide local issues by a show of hands. Do you think that you would like to be involved in every decision of your local communities' government or would you rather spend your time elsewhere and just leave these things up to an elected official? Can you control every elected official? Will excesses occur if you do not monitor your elected officials? For example, can elected officials take the nation to war on their own whim without needing permission from the general population? If they can then the people are not in control of the members of their government. The Athenian government was a form of democracy that was different from modern forms. If you would like for your city to be totally

governed or operated by the people in the same way as occurred in ancient Athens, all you have to do is raise the issue in your hometown and find out if others agree. Luckily today, we less often have to die while improving our government. Ever since its beginnings among the first farmers of the world, the purpose of government has always been to organize the mutual efforts that comprise society and civilization.

Others of us feel that Athenian democracy would be much more desirable than our current democratic republic but the main obstacle would be to inspire my generation to care about the government, be motivated to work with it and devote time to its many causes considering the great potential that a well run government has for its people, and for our generation to become more inspired to care for their fellow humans.

The Greek empire was soon replaced by the Roman empire, and after the fall of Rome in 450 ad, the region of Europe no longer had a single, central political authority but instead had a feudal and manorial system, which lasted several centuries until being replaced by nation-sized kingdoms. The feudal system was a hierarchy of lords and overlords created from a tangled web of obligations. Lords obtained their income from taxes and fees imposed on the peasants living within their manor. Throughout the feudal age, Europe possessed reduced arts, trade, cooperative activity, and communal projects. (We saw a similar "Dark Age" in Ancient Mesopotamia around the year 1000 bc.)

From the time of the first empires of the Middle-East in 2000 bc until just the last century or two, the concerns and goals of our governments were simply those of the king and queen—usually, the expansion of the territory and power of the king and queen. We'll see that much of the development of European democracy, tolerance, and liberty during the last five hundred years occurred as reactions to the sometimes oppressive manner in which these leaders acted. The concerns of our governments today are more closely aligned with those of the general population: we more often debate health care than the pursuit of foreign conquests.

The U.S. Bill of Rights contains a list of specific oppressions performed by the kings and queens of previous centuries. The Bill of Rights of South Africa was written between 1993 and 1997 and is even more thorough. Democracy is more than voting and rights. It requires a bending of views that partially satisfies everyone or else it ends.

## Summarized Sources

The Origins of Greek Thought, Jean-Pierre Vernant, 1982, Cornell University Press, Ithaca, New York.

The Classical Athenian Democracy, David Stockton, 1990 Oxford University Press, Oxford.

## Questions

1. Compare your nation's democracy with that of ancient Athens.
2. List some recent national decisions made by the people. List some others made by the military, the poor, the artistic, the wealthy, the religious, or by big business.
3. Governmental decisions were made by majority-vote in Ancient Athens. In today's groups of millions of

persons, how do you keep the majority from oppressing a minority view?

4. Would you like to participate in an Athenian style democracy in your city, county, or nation?

5. Why did the Athenians develop democracy?

6. Name some ancient contributors to our idea of civilization. Name some ancient persons who are still known today for their business activities, sports abilities, political views, or religious ways.

7. Why did feudal systems develop in Europe, China, and in Japan? Are there any feudal societies today?

8. Describe democracy, theocracy, oligarchy, dictatorship, republic, monarchy, and anarchy. What are some benefits and drawbacks of each of these? Which do you prefer? Which system is better-able to define and fulfill goals?

9. What percentage of our personality is genetically inherited from our parents? In recent centuries, many groups of like-minded people have formed their own community to live in their chosen manner due to their strong conviction about a particular lifestyle or aspect of life. Some of these are politically motivated and some are socially motivated. Describe the purpose of some of these communities. Since children are a reshuffling of the genes of their parents, do they always choose this one aspect of life as the single most important element of life or does the group often dissolve after one generation? Do their children grow up to have identically strong convictions for the same things? Does this mean these convictions are genetic or learned? Have religiously-based communities been more likely to last longer than a single generation? During the last few centuries, migrations have been composed of independently acting families instead of entire peoples. Do the children of migrants also choose to be migrants and move off to yet another land? Do the children of those who initiate a new democracy in a nation also desire democracy?

10. Why did Europe develop its laws of liberty, tolerance, and democracy?

11. Which is more important, the state, the military, the corporation, the religious organization, or the individual? The majority view or the minority view?

12. What would your daily life be without modern technology? Which lifestyle do you prefer?

13. Where does your government get its money? What does it buy with this money? Who decides what this money should be spent on?

14. How does our civilization change today? What are the roles of politicians, government, religion, people, corporations, criminals, militaries, universities, and the world's nations in changing today's civilization?

15. Instead of defining your nation's wealth in terms of exports and imports, can you define it in terms of individual wealth? Would you define individual wealth in terms of earnings, spending, investing, or by some other measure?

16. Do you prefer a national religion or an independence between church and state? Why did some Europeans begin to think about a separation of church and state? Did the regional mixing of Buddhism and Confucianism, or Hinduism and Islam produce similar political tensions and reactions?

17. Why do persons choose to vote or not to vote in today's democracies?

18. List some good things and some bad things about your government.

19. How do we remove drugs, crime and war from our civilization—or should we? When did these things become part of our civilization? What should be the government's role in removing these things? Design an experiment to test the effects of economic and social injustice on crime rates.

20. What role do you think our wealthiest business owners play in our country's actions and decisions today? Do you feel that the country is run by the people? Do the governmental representatives run the country? Can you take any person or corporation to court when you feel you have been wronged? Can a poor person in your state take a wealthy person or organization to court if they feel they have been wronged?

21. Ancient Athenian democracy consisted of citizens who operated the government. Today's citizens instead elect officials who manage the government and its day-by-day operations for them. Which of these two styles of democracy do you prefer?

22. When did opinion surveys start and what are some uses for these? When did advertising start? What

percent of a company's income is spent on opinion poles and advertising today? Do politicians conduct opinion poles? Do they advertise?

23. Discuss the change in market size and company profit during the last 5,000 years.

24. Can you relate England's population level or density to the need for the origin of the factory? Compare England's population at the time to that of some other nations. (Throughout the world, population levels have been seen to increase dramatically—even to triple—after industrialization.) Did water-wheels, home-production practices, or the number of year-round streams play the largest role in the beginnings of England's Industrial Revolution?

25. List some elements of each of the religious views from Chapter 8 in the societies of Ancient Athens and Medieval China and Europe and give some examples of the Golden Rule at work in these societies.

26. In what ways was Athenian democracy related to our social rule to do as we expect others to do and to react against any contrary behavior?

27. What are the characteristics or cultural aspects of a people who choose democracy as their form of government? Which characteristics make a people instead choose strong kings and queens or an authoritarian leader?

## Chapter 12 Medieval China, Medieval Europe, the Renaissance, and national democracy

This following is a summary of Jacques Gernet's book *Daily Life in China on the Eve of the Mongol Invasion 1250-1276*. Gernet describes the medieval city of Hangzhou just before Kublai Khan's Mongol invasion of the year 1279 ad. At that time, the populations of Paris and London were growing from 10,000 to 100,000 persons but Hangzhou already had one million persons, who had to be fed everyday in a pre-industrial city.

China contains many climates, cultures, and languages and extends across an area that is the same size as Europe. (The nations with the greatest land area today are, in order, Russia, Canada, China, the U.S., and Brazil.)

About 10,000 years ago, settled farming villages began to appear in the region of the world occupied by today's China. For example, the village of Banpo (present-day Xian) was occupied 6,000 years ago. The villagers kept dogs, they domesticated pigs, and water buffalo, and they made clothing from hemp and stored their food in decorated pottery. Around the year 3,000 bc, bronze metalworking first made its way to China from Thailand.

It was about this time that those of us humans living in China figured out how to make silk clothing from hand-raised silkworms. About one hundred pounds (45 kg) of mulberry leaves are fed to silkworms to create fifteen pounds or 7 kg of cocoons that can be unwound to produce one pound or one-half kg of silk. The resulting silk has to be spun into thread and woven into fabric. It is astounding that a people looked at a silkworm cocoon and figured out that it could be turned into clothing. Silk remained a Chinese monopoly until the sixth century ad.

The first three political dynasties in China developed along the Yellow River and were the Xia, Shang, and the feudal-based Zhou. Society was still arranged along kinship lines. The Yellow River was used neither as an irrigation aid nor as a means of transportation because its current was too strong. These were followed by the Qin, Han, Sui, Tang, Song, Yuan, Ming, and Qing dynasties.

While Europe has always been a collection of separate states, China has always been a single society supporting the supremacy of the state over all other activities, including agricultural, technological, commercial, military, religious, and artistic. Nearly from the start, the state was the central power in Chinese society, with morality, rites, indoctrination, military monopoly, and exemplary behavior being the means of government. Until the last few centuries, the monopoly of power held by the Chinese ruler was unknown in other regions of the world.

Zhou leaders believed that a ruling family must be morally worthy to receive the responsibility of rule, while other kingdoms asserted either the divine or inherited right to rule. Order within nature, within society, and within the human body were each given in terms of a dynamical balance among interacting and changing elements. Balance was not due to pre-set, strict laws that dictated the future.

Confucian respect for helpful elders binds families, society, and government. Children obey and respect their benevolent parents who have earned that respect. Citizens obey and respect their benevolent leaders who have earned that respect. Confucian ideals grow children who have respect for parents and elders, and then for bosses, social superiors, officials, and the state. Confucian ideals, morals, and politics were one.

In the ideals of Confucianism, it is believed that people are good by nature and that they

usually conform and behave morally unless they are starving or excessively suffering. People behave badly only when following a bad example shown by an elder or superior. People's belief in the value of social life is synonymous with their faith in human nature and in a tolerance of other people. People want to experience life. A Confucian ideal prefers social harmony over any disruption of tradition.

China is a mixture of religions. We have seen that Confucianism emerged in China around 500 bc at the time that the collapsing empire was being replaced by warring states. Buddhism spread through China during the sixth through tenth centuries ad. Taoism is a later offshoot of Buddhism involving physical and mental asceticism and magic. Taoist monks are sought for exorcism and for amulets that provide protection from demons. Those of us human beings who are Chinese simultaneously practice the ethical and societal guide of Confucianism, the way-of-life and behavioral guide of Buddhism, and the magic of Taoism. These three religions are practiced simultaneously because the three aspects of life that they guide do not overlap. This mixture is explained by Adeline Yen Mah in *Watching the Tree, A Chinese Daughter Reflects on Happiness, Tradition, and Spiritual Wisdom*. She also explains that the I'ching religion involves the divination of change in life. For example, ten coins are stacked in one pile and then the changes between sequences of heads and tails can be read to divine future changes in life. A set of tossed yarrow sticks directs questioners to a numbered answer tabulated in the book of I'ching.

About the same time that the ancient and mythical king Fu Xi was promoting the adoption of agriculture, 5,000 years ago, the I'ching pointed out that the only constant in life is change. In addition, some Chinese are Christian or Muslim; in the year 900 ad, half the people of the province of Canton were Muslim.

Around 200 bc. The Qin Dynasty built the Great Wall of China to keep the northern Mongols at bay. About 700,000 persons built the wall. The Qin ruler also built a mausoleum for himself that housed six thousand, life-sized clay soldiers along with horses and some chariots. This is the so-called terra cotta army. The floor of the mausoleum contained a map of the empire while its roof had a map of the heavens.

During the sixth through tenth centuries ad, the tribal, Mongol nomads of the steppes bordering northern China were organizing into the militaristic system that harassed people as far away as western Europe. This harassment prompted one Chinese official to post notices around town: "If the horsemen from the north arrive, I am prepared to die rather than flee." As everywhere, war meant bloodshed and ruin for the countryside and long sieges of walled cities attacked with ladders, wheeled contraptions, and raised causeways. Some city walls were thirty feet (10 meters) high and ten miles (16 km) long, and were usually white-washed every third month. In the year 893, one city extended its walls by 18 miles (29 km) by combining the efforts of 200,000 residents.

The grandson of Genghis Khan was Kublai Khan, who expanded his kingdom by pillaging countless villages. To keep conquered villagers from revolting at a later time, he killed large portions of the civilian population of each village.

Mongols captured the Song capital of Kaifeng in the year 1126 ad. The Song capital had then to be moved south to Hangzhou, which was called Lin-an at the time. Urbanization increased in the south as people moved away from the border with the northern barbarians. In turn, Hangzhou was sacked by the Mongols in 1276 to end the Song Dynasty and begin the Yuan dynasty (1279-1386). The Mongols allowed the foreigner Marco Polo to take an administrative position. When the

Mongols were ejected by the Ming dynasty in 1368 ad, the Great Wall of China was extended in length to 4000 miles (6400 km).

The medieval city of Hangzhou just before the Mongol invasion

The rulers of China began taking a periodic census in the third century bc and conducted a census every three years during Tang and Song times. The census recorded the location and amount of cultivated land, and the names and ages of family members living within each home. The Mongol invaders required these names to be displayed on each house.

A detailed picture of daily life in thirteenth-century China is obtained from this information along with business records and the descriptions of life made by numerous painters and writers. Documents record such details as the number of stones in the main streets and the shops along each street. Contemporary writing provides rankings of fan shops and restaurants—just as is done today.

Emperor, administration, and a bureaucratic system based on merit

Since the third century bc, China's administrative system was based on individual merit. Advancement was based on accomplishments, reviews and recommendations of supervisors, and a series of competitive exams. In those exams that lasted for three days, test-takers had to bring their own food and chamber pots and were isolated throughout that time. Before the tests, students paid homage to the Taoist culture and language deity Wenchang Wang and to Kui Xing, who was the god of examinations. Tests were first graded by two judges working independently and then by a third judge who had the final decision.

To help guarantee impartiality, the graders did not know which test-taker had submitted which test. Since it was usually only the children of the wealthy who had the opportunity to obtain the education needed to prepare for the exams, the resulting government consisted mostly of people from wealthy families who then fervently supported that government in order to defend their own interests.

Bureaucrats advanced up the ranks from local to regional and then on to national positions. To reduce personal favoritism, promotions were given only by the central office, which maintained folders on each bureaucrat to record his or her achievements, character, morality, and mistakes. An official typically spent two or three years at each level of government before moving up to the next. This merit-based system was unheard of in contemporary Europe. In fact, eighteenth-century Europeans were shocked when they first learned of this ancient and efficient system. Of course the Chinese merit system was not perfect—for example, central officials sometimes promoted family members or friends. At the end of their career, officials typically retired at age sixty-eight but no retirement pension was paid because Confucian tradition said children were to take care of aging parents.

Officials had every tenth day off work plus a fifty-four-day vacation each year. They were also given the day off on the anniversaries of the death of a parent and a few days off for their child's wedding. Once every three years they were given a fifteen- to thirty-day holiday with their family; the number of days depended on the distance one had to travel to reach his or her family's home.

When an official's parent died, he or she was given three years leave. During leave they

would edit literary works, do calligraphy, or paint and such.

Each year, merchants and peddlers had only a few days off work, including New Year's day, the anniversary of the patron of their guild, or when in mourning or attending the weddings of their children. Many officials owned pawn shops, rented apartment rooms, and owned large farms outside town.

Since officials were immune from common offenses, Fan Wei piled up a misdemeanor record of historic proportion. One governmental warehouse was supposed to distribute free medicine to the poor but corrupt officials obtained it all to sell at great profit.

Throughout history, some of the dynasties of the world have been ruined and dissolved by corruption, inefficient bureaucracies, and sticking to outdated methods or outdated taxation systems. Bureaucratic offices that become hereditary are ruined within a few generations because children don't always have the same interests and talents for the same fields as do their parents.

The emperor of China had supreme power and was followed sacredly. He chose ranks and titles for everyone, decried law, and performed rituals maintaining both the empire and his family dynasty along with its ancestral honor. These rituals were simultaneously administrative and sacred acts as there was no distinction between these two aspects of society. Outside the palace, one sign was 50 yards or meters tall and stated "10,000 years for the emperor" while another read "The emperor shares his pleasures with his people."

The emperor had a council of three to five ministers who met daily. Under these ministers were administrative heads and censors who monitored all officials and their procedures and there were academicians who executed imperial decisions and published edicts. Below this group were the heads of the departments of finance, rites, war, justice, civil service, and public works. By the seventh century, there were separate offices for sacrifices, banquets, insignia, stables, currency, agriculture, military equipment, education, canals, foreign relations, special legal decisions, communication between provincial and national levels of government, and the family cult of the Emperor. The empire of the southern Song (1127-1279) divided the nation into sixteen bureaucratic provinces, each having ten prefectures divided into three to five sub-prefectures containing populations of 50,000 to 500,000 persons.

In the year 1046, one hundred million Chinese were being administered by just 18,700 officials—0.02% of the population—including 6,000 military officials who were subordinate to civil authorities. Contemporary Europe had no continent-wide government, only more-localized feudal webs of militaristic obligations. Village peasants funded this web through taxes paid in labor and goods to the local lord but were not personally involved in the web. In comparison, in the year 1860, the U.S. government consisted of 36,000 officials—0.1% of the population—governing 36 million persons.

Other than taxes, there was little governmental intrusion into the everyday lives of the general population of China. Occasionally the government organized labor for public works projects that involved hundreds of thousands of people. Work was organized hierarchically, with supervision for each level. At the lowest level, the members of each family worked together under the supervision of its elders. Groups of families formed the next level, just under that of the entire village. At the top-most level were collections of villages. Sometimes the population was organized to defend against a revolt, which usually occurred in response to widespread famine or injustice. Terrible repression would be used against rebellion. No stirring of trouble was allowed. If even accused of stirring



trouble, a person would be placed in jail for disturbing the peace.

Jail conditions were wretched and sentences were long. Prisoners were given no food except for that brought by their families. In the hope of discouraging everyone from going to court, the entire judicial system was harsh. Defendants were shackled and were sometimes forced to confess by being beaten and whipped. But the courts did require proof: in the case of theft, the stolen item needed to be presented and in a murder case, they expected evidence of violence to be found on the victim.

### Calendars, days, and hours

The calendar consisted of both lunar and solar cycles. The first day of a new year occurs on the second new moon after the winter solstice, which varies between January 16th and February 13th. The year consisted of twelve or sometimes thirteen moons of twenty-nine or thirty days, giving a total of 354 days per year. To keep an average of 365 days per year and to keep the seasons in the right time of the year, seven moons were added per decade. This meant that some years had as many as 384 days.

The emperor was the master and regulator of time and would distribute calendars each year. The calendar was set by court astronomers and used by farmers to choose planting days.

Farmers also used almanacs containing such things as divinations and lists of lucky and unlucky days for taking journeys, conducting business, performing burials, or making buildings. Almanacs also listed the cyclic sign for each day. Signs consisted of sets of ten and twelve symbols combined into sixty different pairs.

Months contained either twenty-nine or thirty days. Thirty-day months were divided into three ten-day periods while twenty-nine day months were divided into two ten-day periods and one nine-day period. The day was divided into twelve parts of 1.5 to 2.5 hours, depending on the length of sunlight, and each division was announced in the city by the beat of a drum. The day also consisted of one hundred quarter-hours of about fifteen minutes each.

People woke at four or five in the morning as bells rang in the Buddhist and Taoist monasteries. Monks would then go through town to receive food from the townspeople. While walking, monks would pound on either iron or fish-shaped resonators. Townspeople also gave alms to monks on the first and fifteenth of the month and on feast days, too. Monks would also announce any court receptions scheduled for the day. Since imperial audiences were held at five or six in the morning—and begun with a drum, gong, or clapper—officials were done with their day's work by the late afternoon.

### Religious festivals, deities, and the ancestor cult

Each festival celebrates a certain aspect of life. The New Year's festival was meant to renew life itself, hence the world was never more than one year old. New clothes would be worn and, within the home, the painted images of Chung K'uei the demon-tamer and of the door gods would be replaced with new ones. Also, new peach-wood amulets were hung on the door along with new red streamers. Each new year began with its own, welcomed and fresh supply of virtues that would be exhausted by the year's-end.

Many things occurred on New Year's Day. Sacrifices were made to the family ancestors and to the deities protecting the home, including the door, courtyard, and well gods. Today, you might make a sacrifice to the cell-phone deity in order to ensure the continued functioning of your phone. The bed god protected the fertility of the parents. Other gods protected against poverty, death, giving birth to only girls, or having clumsy daughters or one who can not embroider.

The gods were offered flowers, incense, and food as they were asked to bring peace and health to the new year. On New Year's Day, the god of the hearth reported to heaven about the past year's conduct of each family member, so this deity was given special attention during the previous days. Popular deities were ancient sages, great poets, warrior heroes, illustrious monks, and great Buddhist saints along with Buddhist and Taoist gods. Many deities were appealed to throughout the year and many had a feast day on which they were celebrated. Each god was considered to be obliging and was spoken to as an equal. No god was considered to be all-powerful and each had no function other than its specific protection. Deities were slightly personified but only a few had been given human or animal form. For example, some were given the form of a dog, pig, fox, or of a beautiful woman, and the collection of deities changed slowly in time. The deities for water and earth were worshiped in many temples and at certain trees, rocks, rivers, and mountains. A uniquely shaped rock at a pool of water might be whipped to end a drought or a flood caused by a divine dragon living in the water. People also threw worn-out women's shoes and dead pigs into these pools. Some deities were associated with the abilities of mediums, visionaries, and prophets. Holiness or prophecy was often incarnate in the most contemptible of persons, including beggars, madmen, idiots, and struggling peddlers. These special persons employed alcohol, fasting, magical sex, or ecstatic dance while doing their work.

The world was also filled with spirits, genies, demons, and ghosts who might take animal form. Some ghosts were thought to be un-avenged murder victims or deceased persons who have not received offerings from their living relatives. These were chased away by loud noises, special potions, or by using written characters believed to be magical.

In addition to virtue, each new year also had evil influences and would experience pestilence. The year consisted of the interplay between temperamental evil and virtue. To ward off pestilence, every family placed willow branches above their door on the first day of the Cold Blood Festival, temporarily making the city much more green. Evil and pestilence would also be chased away with loud noises, drum-banging, and firecrackers that were made by placing a little gunpowder inside bamboo tubes.

The danger coming from solar and lunar eclipses was also fought by loudly banging on pots until the sun or moon returned to its normal shape. Without fail, this worked every time.

Personal festivals were held to inaugurate a lucky period, encourage beneficial influences, conduct merry-making, or to celebrate a promotion. (During the Song dynasty, the role of magic in the festivals was decreasing.) A festival's date was scheduled on either the lunar or solar calendar. City-wide festivals included games, theater, clowns, jugglers, feasts, and drinking. Games included a third-century a.d. version of backgammon, dominos, mahjong (which becomes popular in the U.S. during the 1920s), a chess-like game, and card games having four kings—one for each of the four cardinal directions. The difficult game of narrow-neck involved the attempt to bounce darts off a wall and into a narrow-necked jar. During a festival, the streets were always filled with dancers, acrobats, musicians, and marionette show makers. Long, wicker dragons concealed dancers who

made those dragons appear to fly through the air. Dragon-boat jousts were held on lakes using boats decorated with flowers and flags. As two boats faced each other, men used pikes in an attempt to push their opponents overboard while spectators lined the shore, drinking and cheering. During festival periods, shopkeepers might give paper horses to their customers and pharmacists might give small amulets or bags of evil-fighting powders. To wish many descendants, friends exchanged little bags containing cereal grains along with melon and fruit seeds. Processions of people dressed as gods emerged from the imperial palace wearing masks and carrying staffs, silvered pikes, or wooden swords along with five-colored flags. These flags had the colors of the four cardinal points—green, red, black, and white—along with yellow, which was the color of the point at the center of time and space. Some festival rice was similarly colored, as were glass lanterns, too.

The Feast of Lanterns was held during the first new moon of the year, around February 15th, in which lanterns lit the city all night long. Various scenes were painted on the lanterns, some were one meter or yard in height. Some lanterns were made to rotate by the force of a trickle of running water; others were shaped like boats or chairs or had pendants or feathers suspended from them. Crowds gathered to view the most elaborate lanterns.

The Feast of the Dead was held fifteen days after the spring equinox, which is around April 5th. On this day, many families left the city to visit the graves of deceased relatives in the cemeteries outside town. Family members cleaned the graves, placed food at them, and burned incense. Other families picnicked at a park or lake, and everyone stayed outside to watch the new moon rise at sunset. No new fires were lit during the three days prior to the festival and then an official at the palace bored willow wood to make the first new flame. A new flame still held all of its virtue and so was used to light numerous torches which were then carried around town to light other fires.

Some annual festivals were held on days of numerical importance. People wore charms and amulets on the fifth day of the fifth moon of the year because it was considered to be an unlucky day. The seventh day of the seventh moon was the Festival of Weaving – and on this day, children wore new clothes.

The Che river outside Hangzhou always experiences a particularly high tide during the eighth moon, so in the year 1066, a royal decree forbade daredevils from trying to swim across the Che river during this high tide. (This was the same year that William the Conqueror became king of England.) This river also has a periodically recurring tidal bore that results from ocean tides traveling upriver against the current that is flowing into the sea..

A festival was part of either the Buddhist, Taoist, family ancestral, or official state religion. For example, the birthday of the saint Lao-Tzu was celebrated by Taoists while the day Buddha first obtained nirvana was celebrated by Buddhists by bathing statues or by ceremonially releasing captured animals. There was little overlap between the festivals of these religions but some festivals were common to all of them at once. The official state religion often involved worship of the emperor's ancestry. A family's ancestral worship and the deities of the home were separate from Buddhism and Taoism. Each person simultaneously practiced all of these non-overlapping religions.

The ancestral cult sought to maintain links between the living members of the family, deceased parents, several generations of grandparents, and clan and lineage heads. The ancestral cult was important because each family was seen to have its own past and its own destiny. The name of each deceased ancestor was written on a tablet and placed on the ancestral altar within the home. Small drops of blood were placed on the tablets to signify eyes and ears as the spirit of the deceased

parent was believed to reside in these tablets. Both rich and poor families practiced ancestor worship but wealthy families could be more observant, and the emperor's family was the most observant of all. The emperor built ancestral temples, the wealthy built sanctuaries, and the poor made an altar in the main room of their home.

From these few examples, we can see that there was little overlap in the functions of Confucianism, Buddhism, Taoism, the ancestor cult, and the official state cult. The ethics of Confucianism taught right and wrong and blended everywhere with the proper way of living taught in Buddhist morality. The rituals of the I Ching and of Taoism added other dimensions, including magic and exorcism. Every few centuries, attempts were made to unify Confucianism, Buddhism, and Taoism into a single religious view.

There was a social club for most every interest, including literature, sports, archery, football, and polo (polo came from Iran). The Su family maintained a puppeteer society comprised of many neighbors from their street. There was also the Buddhist society for carrying out pious works. In Hangzhou, one Buddhist society had tens of thousands of members. These also served as mutual aid societies that helped members pay the costs of weddings and funerals. Some of these groups still exist today.

One gained security, dignity, and respect in the community by forging relationships with as many others as possible. Gernet explains that society consisted of a network of individual relationships binding person to person, family to family, and helper to protector. The practice of religion and the building of social prestige were one and the same endeavor.

From birth, children were taught to be polite, good-natured, sociable, gentle, and obedient and to keep good relations with family, to prize self-restraint, to practice the art of give and take, and to be content with one's place in society. Obedience is an especially Confucian attribute. Being content and practicing give and take are especially Buddhist practices. Excessive affection was not to be displayed. Belligerence was discouraged but the ideals of obedience and contentment were not to stifle individuality, ambition, rebellion, or a fighting spirit. Those families who obtained these ideals were the heroes of society and were given public recognition by governmental officials. (What sorts of people are the heroes of your society?) These ideals were more easily attainable by the wealthiest families.

To make ends meet, poorer families could not always adhere to the tradition of having all generations living together in one home. Sons were often forced to setup on their own even while their parents were still alive. On rare occasion, poor families resorted to drowning any newborn who arrived after the distribution of inheritance had been fully allotted.

Parents hoped for boys to carry the family line but girls were more easily employed, often as servants in wealthy homes. Some mothers tried abortive drugs that sometimes left her or her born-anyway child ill for years. Some poor parents resorted to abandoning their infant in the street, hoping that he or she would have a better life in another family, so this practice was outlawed in the year 1138 ad. The king instead funded hospitals to care for these children, who arrived at the rate of 20,000 per year.

Rich families were allowed to adopt as many children as they liked. In wealthy homes, newborn babies were bathed in warm, scented water placed in large silver bowls. The minute, hour, and date of each child's birth was carefully recorded to help soothsayers and astrologers advise them later in life. Parents would sentimentally keep lockets of their baby's hair in boxes.

## Childhood

On the child's first birthday, parents tried to predict the child's future occupation by seeing whether he or she would reach for scales, cloth, knives, Buddhist books, flowers, or thread and such that were placed nearby. Children were rarely spanked. Instead, they would be threatened with visits by either Liv the Barbarian or Big-Eyed Yang "who had a terrifying voice."

On the farm, children collected firewood, fetched water, and took the family's buffalo to water. In town, they helped in the family shop or helped with household chores. Children freely roamed the streets. To mark the coming of age, fifteen-year-old females had their first hairpins placed in their hair and twenty-year-old males received their first cap.

Despite the earlier warning by Confucius against trying to force behavior through decree, Tang law dictated that the child who strikes his or her parent or grandparent would be beheaded. Anyone striking a sibling could be punished with two years in prison. The punishment for striking an older cousin was one hundred cane strikes. If a parent broke the bone of a child while administering guidance then the penalty was less severe than if the bone of a stranger had been broken. Servants who killed their master were to be strangled but a master who killed a servant would be given a one-year prison term.

Marco Polo said that the people of China knew nothing of weapons handling, as was popular in Europe, because law forbid them from owning weapons. He said that neighborhoods were calm and had few quarrels.

Girls were taught little except to spin and embroider and had few career choices. Most became domestic servants. Women had no independence and were considered subordinate to men. But on the farm and in the shop, the efforts of both husband and wife were needed to make ends meet. This resulted in a practical equality between the pair—except for the occasional husband or wife who acted as a tyrant.

There were a few woman poets, like Li Ching-Chao. Empress Wu Tse-tien asked a particular seven year old girl to improvise a poem about her brother's leaving. She expressed her happiness that *"In the pavilion of separation, the leaves suddenly blew away. On the road of farewell, the clouds lifted all of a sudden. Ah! How I regret that men are not like the wild geese who go on their way together."*

Foot binding began in the tenth century. Fairbank describes how boards were used in foot binding to cause toes to painfully curl under a girl's foot as she grows. Mothers helped their daughters get through the pain using tricks passed through the generations. For example, a girl would be told to elevate her feet until they became numb so that the pain would subside. Its practice began to go out of style in the 1930s.

Marriages were arranged to form alliances between families. In the same way, many princesses were married off to barbarian rulers in the attempt to promote friendship. Some wealthy families attempted to arrange marriages between their child and the top scorers in the bureaucratic entrance exams. In addition to the tradition of arranging marriages, there were popular stories of love at first sight and of women who could "overturn a kingdom."

The parents of poor families sometimes married off their children in hopes of gaining another son or daughter to support them in their old age. There was more chance for poor children to choose their own spouse, and marriages among the poor were accomplished with little ceremony.

Marriages among the wealthy were full of ceremony and tradition involving properly-attired go-betweens and the exchange of many symbolically significant gifts. Soothsayers were told the dates and hours of birth of the proposed husband and wife. If favorably "soothed," the two families exchanged brightly-colored cards listing all official functions held by family members through the last three generations. The cards also contained a description of the prospective groom's administrative functions, the numerical order of the bride and groom among their siblings, a list of tabooed names that should never be written, and a list of property to be assigned to the bride and groom on their wedding day, including cultivated land, houses, gold, hairpins, pearls, curtains, and fields.

Promises were then exchanged in person as the groom-to-be drank four cups of rice-wine and the bride-to-be drank two. He then placed a hairpin in her chignon to show acceptance or instead sent two pieces of satin to her home to show his rejection. In some regions, this decision was made by a relative who indicated acceptance by sending cloth, rings, two sticks, two onions, and two bowls with four red fish. The richest families would send sticks and fish made of gold. If the engaged couple were yet children, many years would pass before they were married. Until then, more gifts were exchanged on each anniversary of the agreement and again just before the wedding. Each of these gifts were displayed on the wedding day.

The bride moved into the home of her husband's family, and she rarely saw her own family after that. The bride was carried to her new home by honor maids accompanied by singing girls carrying flowers. The procession was lead by one maid walking backwards with the aid of a mirror. Upon arrival at her new home, the bride was placed on a green mat in the doorway and she then stepped over a horse saddle and a scale, though the symbolic meaning of these items had been forgotten. As she first entered her new home, seeds, fruits, and coins were tossed in the doorway to repel bad influences. Children scrambled to pick up these items.

Wives were usually several years younger than their husbands, but their age difference could not be more than that because the generations were not to be mixed. A wife was to be modest, chaste, devoted to her in-laws, and faithful to her husband. Government officials publicly honored those wives who attained these ideals or those who, for example, stuck by a husband who was gambling drunkard. A bad wife might be returned to her own family for being disobedient, jealous, epileptic, chatterous, or insulting or if she strikes others. If sterile, either she is sent back or her husband might move a concubine into the home to bear children. Of course, he might be the sterile one and the concubine might be impregnated by yet another man. In the city, a wife might have one or more "complimentary husbands." Divorce could occur through the mutual consent of the two spouses.

The funeral ceremony transformed the deceased person into an ancestor. Upon death, the body was washed and dressed as lamentations were said. An expert in geomancy, which is also called Feng Shui (wind and water), was consulted to choose the burial location. When a wealthy person died, paper copies of servants and carriage and horse were buried to accompany him or her into the other world. Surviving relatives wore coarse clothing and avoided enjoyment.

Confucianism believed it was disrespectful to burn the dead unless the body was too far from home. Despite this belief, the poor could afford only to be cremated. In some regions, tradition required the ashes be kept in an urn but in Hangzhou the ashes would be scattered to the wind.

Buddhists viewed the cremation as a kind of regenerating transformation of the body.

Buddhist monks were always cremated. Beginning in the fifth century ad, a few chose to be burned alive. Cremations were done in Buddhist monasteries, within a large oven, and were accompanied by singing and dancing. Paintings would be burned with the body so that the depicted images could be taken on the journey. It was believed that a similar tribute was being performed on the other side to welcome the deceased's arrival in the other world as life was beginning anew.

It was believed that the world of the dead had a bureaucracy similar to that of the living and that sometimes a scribe in the world of the dead incorrectly wrote down a name, causing that person to temporarily die until the mistake was corrected. This explained comas and such. Sometimes a temporarily-dead person had the chance to read a list of names of people who would die soon. There were many such stories of things considered strange and wondrous.

## Education

The children of the poor remained illiterate for life, while rich children attended school from ages seven through thirteen, learning each day to write twenty new characters out of the thousands making up the Chinese writing system. Some parents joined together to employ a teacher for their children. As a person passed a classroom, the children could be heard reciting lessons and playing musical instruments. The emperor's heir had daily lessons in history, astronomy, and the classics while also studying city-plans and layouts.

During the thirteenth century, Hangzhou had four universities: the Imperial Academy, the Military Academy, a medical school with two hundred students, and the National University which had fifteen teachers and two thousand students. Students enjoyed free room and board paid by school foundations and took monthly and semi-annual exams. They performed ceremonies honoring deities, the Earth Mother, great generals, sages, and the heroes of old. They studied the classics, memorizing many parts, and were to be familiar with both modern and ancient poets, but most instruction was geared toward the exams for entrance into the bureaucracy.

In the year 1071, the educational reformer Wong An-shih encouraged additional study of political philosophy and practical administration techniques. Private schools emphasized the culture of the classics. Some students obtained degrees enabling them to become military or medical officials, while other students chose to obtain a doctorate in written works or in history and ritual because this opened the door to the most prestigious careers. Students usually did not setup their own home until they were thirty years old. By the way, a lawyer had already written a textbook explaining chicanery, dishonest tricks, slander, and blackmail.

## Medicine

The philosophy of order through balanced interactions influenced medical practice. The human body was believed to be healthy when its components of yin and yang were in balance and there were proper circulations of the warm, cold, dry, moist, and fiery breaths. Some related the heart, liver, spleen, lungs, and kidneys to the elements water, fire, wood, metal, and earth. Excessive joy, anger, sadness, fear, love, hate, or desire might cause illness.

About 800 different drugs were being used. Patients were given drugs containing mixtures of twenty or so substances, including gems and insect or animals parts, and the patient was warned

to take the drugs at the right astrological moment or his or her symptoms would worsen. Pharmacists hung a dried calabash over their door to indicate their business and sold medicinal plants and herbs and some ready-made mixtures meant for specific illnesses.

It was believed that the patient's pulse rate identified his or her illness. The doctor might massage the top of one of the patient's thumbs or some other small area of the patient's body. Sometimes the patient was cauterized or treated with acupuncture. Acupuncture shops were identified by the sign of a white rabbit hung over their door.

Taoist and Buddhist monks performed ancient exorcisms and treated abscesses. Surgery was a new approach that was performed only for abscesses and fractures. In the year 1080, the emperor asked all doctors to describe their most successful remedies.

Patients often tried several remedies simultaneously and preferred those doctors whose family had been in medicine for at least three generations. Doctors might distribute printed notices describing their services. They specialized in such things as arthritis and paralysis, eyes, obstetrics, teeth and throat, charms and amulets, acupuncture, or moxibustion, which is the technique of burning dried mugwort plants on particular points of the body

Forensic medicine was developed to help courts determine the cause of death. Forensic texts gave first-aid instructions for persons found near death, including the use of artificial respiration for drowning victims. (The first European text of forensic medicine was published by Roderic de Castro around the year 1600.)

## Hangzhou

With a population of one-million persons in the year 1275 ad, Hangzhou was the largest city in the world, and it had a high population density because its land area was limited by the surrounding mountains, rivers, and lakes. Multi-story homes housed the large population while a shop often occupied the lower floor.

Merchants from the suburbs brought their goods into the city each morning and then returned after their evening meal. This flow gave the city a "daily heartbeat." From dawn until the evening meal, there was incessant activity in the city as shopkeepers, peddlers, shoppers, and entertainers carried on their business. Since some shops were open as late as 2 a.m., people carried lanterns to visit taverns, restaurants, singing houses, and tea-houses.

Bamboo and wood buildings were closely packed along narrow alleys that allowed fires to spread as fast as two miles or three kilometers per hour. Fire-spotters were stationed on lookout towers. In the years 1132 and 1137, about ten thousand homes were burned, and 50,000 more were burned in each of 1208, 1237, and 1275. After a fire, displaced families lived in temporary homes on the edge of town or were housed in Buddhist or Taoist monasteries. To help in reconstruction, the sales tax would be suspended on building materials. Valuables could be stored in high-rent storage buildings that were surrounded by water.

There was a network of canals throughout China, linking many towns to the major rivers and carrying much daily traffic in goods and travelers. Hangzhou is located 100 miles or 160 km southwest of Shanghai and south of the Yangtze river. Over this distance, Hangzhou was connected to the Yangtze by a canal that was six yards or meters wide and was built around the year 600 ad.



## Canals

Canals brought food and supplies into Hangzhou from the surrounding areas and were also used to remove the city's trash. Rice came into town by canal and also by ocean from as far away as Canton, which was 1,000 miles (1,600 km) south. Enough rice was brought into Hangzhou to supply each of one million residents with 2.5 pounds or one kilogram per day. About two hundred pigs were brought into town and slaughtered to provide an average of twenty grams, or one ounce, per resident per day.

There were numerous canals within the city of Hangzhou itself. Lotus flowers were placed in them during the springtime and they were lined with colorful plum, pear, apricot, and peach trees. Peach trees are native to China and were taken around the world by travelers.

To keep people from falling into the canals, stone balustrades lined the canal tops. Rainbow shaped bridges allowed traffic over the canals. Canals were seven meters or yards wide to allow two barges to pass each other. Barges carried rice, salt, wood, coal, bricks, and tiles and such. Until sluice gates were built during the years 1086 through 1093, each canal had to be cleared of mud every five years. Hangzhou's canals were connected to the freshwater lake on the edge of town. This lake was three miles or five kilometers wide and was created by damming a number of rivers.

Many boaters provided freight and taxi services throughout the canal system. The boat owner's family lived on the boat and propelled it by pushing a pole against the canal bottom or by raising a sail when out on the open lake. It was easiest to move goods around town on the canals but carters, carriers, and donkeys also used the stone-paved streets.

Hangzhou's main street was three miles, or five km, long, 60 yards (60 meters) wide, and lined with covered shops. Wealthy people rode on horseback, sat in chairs carried on poles by bearers, or rode in six-person, cushioned carts that had curtains.

When canals froze during some winters, merchants would store ice in underground chambers for use in the summer, but every year, the emperor would have northern ice brought to Hangzhou in fast moving boats that traveled night and day.

## Recreation

As still occurs today, there were many public parks and gardens around Hangzhou. Some people went to the park simply to sit and play musical instruments, while other people went to be entertained by the jugglers, acrobats, tight-rope walkers, marionettes, shadow plays, storytellers, acrobats, and theaters presenting acts, dancing, singing, and music. The entertainers earned their living this way. Every social occasion required singing girls, who often played zithers or guitar-like pi-pas as they sang.

People enjoyed sailboat and paddle-boat rides, so hundreds of boats might be on the lake at once. Many boats were ornamented with carvings and brightly colored paint. Some of the boats were 30 to 50 meters or yards in length and carried fifty to one hundred persons who would be fed dinner while on board. Following the Buddhist tradition, passengers might choose to buy and then release a turtle or shellfish.

## Homes and furniture

A home made of bamboo and wood could be erected in a few hours and was light enough to be moved. The roof was the most important component. It usually had two slopes and its timbers might be carved and painted. Stone was used only in building Buddhist towers, street paving, ramparts, dikes, and some bridges – never in homes or governmental buildings.

In 1000 ad, a decree dictated that only government buildings and the homes of high-ranking officials could have upturned edges or terra cotta ornamentation, which usually depicted a dragon or phoenix.

In wealthy homes, scrolls with fine calligraphy were hung on the walls or a landscape scene might be made to cover an entire wall.

Incense, antiques, perfume, mosquito smoke, and terra cotta animal figures were used as home decoration. Decorative flowers included peonies, chrysanthemums, daphne, magnolia, orchids, and blossoms from fruit trees.

The fanciest homes also had pine tree, flower, and rock gardens and had ponds with gold- and silver-colored fish. These decorative fish were raised in commercial quantities on the edge of town. The homeowner might build little hills duplicating the layout of famous mountain sites, complete with winding streams and waterfalls. Some families kept cats and dogs for pets.

The furniture of wealthy people were painted black; only the emperor was allowed to have a red-painted bed. People sat cross-legged in wide armchairs that had heavy backs. Smaller chairs began arriving from India after 1000 ad. Small, rectangular tables were placed low to the ground. Beds were sometimes enclosed on three sides by panels painted with landscape scenery. Bedding consisted of rush mats, screens and a pillow. In some homes, beds were placed on hollow pipes that received heat from the cooking stove.

## Art

During the fifth to ninth centuries ad, art consisted of paintings, scrolls, towers, statues made of bronze or stone, and Buddhist sanctuaries carved out of existing mountains. For example, in the eighth century, a one-hundred meter or yard tall statue of the divine Maitreya was carved out of a single rock.

In more ancient times, art and entertainment had been consumed mainly by the palace, temple, and aristocracy, but the demand for art and entertainment increased with the size of the urban population.

The streets and parks of Hangzhou were filled with entertainment, as was every private celebration. Storytelling expanded as drama and the novel developed. Poetry competitions were held and the best of the entered works were being published. Most popular were poems of failure and disgrace, the passing of time, and the pain of parting.

In China, painting and literature developed together. Since the same brush is used for both painting and calligraphy, which is art in itself, a poet writing in calligraphy was already an artist. Paintings were often accompanied by a poem written in calligraphy.

In previous centuries, art was seen to be magic. Song artists wanted instead to make lifelike representations that almost breathe and live. Artists sought to capture the moment and its mood, even

its temperature—for example, a cat's eye dilated in the midday sun. A painting might simultaneously depict a landscape from several angles to help viewers put themselves into that place. Artists were now making accurate drawings of buildings, palaces, bridges, homes, plants and animals, children at play and other scenes of daily life. Some artists sought to work in an ecstatic state of delirium brought on by abstaining from food and sex.

Both rich and poor bought these paintings but for the most part, the number of professional artists grew with the number of merchants having money to spend and children to teach. People were making, selling, and buying art and new styles were continually developing. There were twenty drama, music, and dance schools in Hangzhou teaching various singing styles, ballet, and puppet and marionette show-making. Musical instruments included Chinese and Central Asian flutes, a xylophone with either six or nine elements, a three- or four-stringed guitar, and reed panpipes made from dried calabash. Puppet shows presented stories of romance, ghosts, history mixed in with fiction, genies, demons, heroes with superhuman strength and skill, social stories denouncing corruption, crime and clever judges resolving difficult cases, stories recounting the life of the Buddha, or stories of strange and wondrous things.

One wondrous story was about family who returned home one day to find their house occupied by a giant. The family tried everything it could to get rid of the giant who simply ignored their efforts. Finally, the giant simply became bored and left. Another story concerned one man's dream of his murderer gaining revenge for having been killed by him in a previous life. A popular story described how one day, a group of ten students sought protection from the rain by huddling together and running while holding a single, large mat over their heads but are mistaken for a twenty-legged monster. And there was a tale of a shipwrecked man who lived on an island for thirteen years before returning with his islander wife.

Block printing had long been used to mass-produce single-page religious tracts, images, and money. The first printed book was made in the year 868 ad. Confucian classics were first printed in the year 832, the Buddhist cannon in the year 960, and then almanacs, astrological works, and dictionaries. Soon, there were books on hygiene, mushrooms, fish, crabs, flowers, calligraphy, geography, rocks, jades, coins, inks, bamboo, plum trees, and Chinese history, and such. There were catalogs of useful or interesting facts. The existence of books meant that whenever a literate person felt like it, he or she could enjoy the old stories that in the past could only be heard whenever a bard was around to tell them. With books came many new stories and topics.

In the year 950, people tried to make movable type from baked clay but this would have required 7,000 different pieces of type for the 7,000 characters used in the Chinese system of writing. The excess of calligraphers meant that mechanized printing was not needed. About five hundred years later, Europeans would get around to mechanized printing that required just twenty-six pieces of type for their twenty-six letter alphabet.

Chu Hsi (1130-1200) and other twelfth-century Song scholars were not satisfied by just repeating old ideas. They were renewing art and thought and were reinterpreting the classics and old ideas. For many centuries, cosmology had been despised by Confucianism but now, the origin and evolution of the universe was being linked with ethics because people were believed to be in harmony with the universe. (Those of us humans who are Hopi state a similar belief.) In Buddhism, world and mind are one and the same.

## Bathing, cosmetics, and clothing

Hangzhou had hundreds of bath houses that also offered tea, alcohol, and massages and were identified by a pot hung over their front door. In the city, bath houses were popular but some people thought it unlucky to bathe on the days of the rat or hare. Locals preferred bathing in cold water and then splashing hot water on their face. Some baths were warmed by immersing hot stone or metal in the water, and these were preferred by visiting Arab merchants who were more accustomed to Turkish steam baths. In country villages, as was the case for most of us humans until the last century or so, bathing occurred only on the day we were born and again on the day we died.

We spent many hours per week washing clothes. Toothbrushes did not yet exist but toilet paper was already in use. Some men used oil to make their hair smooth and shiny, and some women used a vegetable-based ointment to protect their facial skin from the winter cold. Pink nail polish was made from crushed balsam leaves. Eyebrow plucking and penciling had already been popular for 1,000 years. Cosmetics, jewelry, and a metal mirror was kept in a box made of lacquered wood, jade, gold, or silver.

We kept warm by wearing fur-lined coats and layers of quilted clothing. The wealthy wore fine clothing made from silk, while the common people wore clothing made from hemp. Cotton had not yet arrived in China though it was already being grown and used for clothing in Southeast Asia. Many persons wore a waist sash, often decorated with pieces of Indian rhino horn brought by Arab merchants. Footwear consisted of leather shoes, satin slippers, or wooden or hemp sandals. Commoners and soldiers wore trousers, which were first brought to China from Mongolia during the fourth century bc. Marco Polo said there were many elegant dressers in Hangzhou. Clothing styles were used to indicate rank among the upper class, almost as rank is indicated in the military. Imperial decree dictated the shape and type of headgear, who was allowed to carry a parasol, and robe colors, but these rules were being dropped after 1300 ad.

Except for Buddhist monks, every man wore a hat—usually a turban, and occupation-wide hat styles were often adopted by practitioners. Some people wore round, straw hats in the rain. Officials and merchants wore black silk hats, as did the emperor

Men were clean-shaven but might have side whiskers or a goatee, while children's heads were shaven except for a tuft of hair in the front. Women wore hairpins made from fashionable materials, and both men and women carried folded fans brought from Korea.

## Food

There was a great variety of food in China because it is a large land, covering many climates. For example there were already eleven varieties of apricot, eight types of pear, and nine kinds of rice. There were no dairy cows or dairy products in China. Tea originated in China by the third century ad and was widely used by the eighth century. It then slowly made its way west along the Islamic equator and then to Africa, Europe, and America. Tea preparation requires boiled water that becomes safer to drink than stagnant water. Throughout the last few thousand years in much of the world, beer and tea have usually been safer to drink than water. About fifty varieties of spiced rice wine were made. Wine was served at body temperature after being warmed by placing its container in heated water. Drunkenness was a popular diversion.

There were no food taboos but some fervent Taoists abstained from cereals and some Buddhists avoided onions, garlic, meat, and eggs. It is likely that some restaurants in Hangzhou specialized in proper Islamic food for visiting Arab merchants. Dates were a curiosity brought by Arab merchants.

Fritters were common as were cakes made from flour, peas, sugar-beans, and candied fruits. The general population ate rice, salt fish, and pork, including livers, kidneys, and intestines called "offal." Dogs were rarely eaten by anyone. Though water-powered de-husking mortars existed, rice was usually sold with husks still attached. Each family removed them before making meals. Wealthy families ate little of these things. They instead ate mutton, shell fish, deer, rabbit, partridge, pheasant, quail, and francolin along with fowl, geese, and fresh fish obtained from the lake. As in every city of the world, scary tales circulated that donkey and horse meat were sometimes passed off as deer meat.

People ate at dawn, midday, and again at dusk. Wealthy people had servants prepare meals of numerous dishes, each in small quantity, that were served in porcelain bowls and eaten with chopsticks and spoons. Servants were to cut everything into bite-sized pieces, as is still done today—even in restaurants.

### Urban Poor

The daily operations of this hand-operated but massive city were accomplished through its organization. Hangzhou had but a tiny upper class and a huge poor class; most of the residents were living off the bare minimum. A middle class of urban merchants, who emerged during the eleventh through thirteenth centuries, had to overcome barriers erected by the upper and imperial classes. (The same barriers existed for the merchants of Europe.)

The number of persons living in the street increased with the price of rice. The government distributed rice and cash to the homeless during heavy snowfalls, prolonged periods of cold, and festivals. When receiving a promotion, an official traditionally distributed cash to the poor, sometimes by anonymously slipping money under doorways. In the fifth century, Buddhism had introduced charitable institutions, including hospitals, alms-houses, dispensaries, and distribution centers, but the government confiscated many of these in the year 845 and began running its own hospitals for the old, poor, or infirm.

Hangzhou trade occurred in four ways: there were state-controlled portions, large-scale trade on the sea and rivers, some luxury trade, and there was trade in the main food supplies. The size of businesses varied from small grocers to shipbuilders. The state set prices for the main products of consumption, and in turn, this affected the price of many related products.

Fifteen specialized markets were spread around town. There were markets for each of crab, fish, vegetables, cloth, crab, flowers, olives, oranges, oil, pearls and precious stones, medicinal plants, and books. Salted fish was sold in two hundred Hangzhou shops. Restaurants had a variety of hot and cold items that were grilled, roasted, or served raw, including salted fish, and they served noodles with either pork, vegetables, fish, or leeks.

There were numerous varieties of rice. Each day, rice was brought into town and bought by wholesalers who sold it to agents who in turn sold it to shops. The rice shops did not pay for rice at the moment it was delivered to them but contracted instead to pay a few days later. Pork and fish

were similarly handled by systems of farmers and fishers, transporters, wholesalers, and shopkeepers.

Small shops were family owned and had no other employees. Small shops sold for twenty-five strings of cash and earned 1% of that amount each day. If the child of a wealthy family failed the bureaucratic entrance exam then that family might purchase a shop in which that child would sell a certain luxury product to the upper class. That child was called "a shopkeeper by accident" and might become a bookseller, pharmacist, or dentist or sell clothing to the upper class but would not be a noodle maker or butcher because those occupations were considered low class by the wealthy.

Various shops sold cloth, crafts, wares, wicker products, turbans, fans, toys, spices, rice wine, noodles, fruits, thread, incense, candles, oil, soy sauce, salt fish, pork, and rice. Luxury shops sold perfume, eyebrow blackener, fake hair, jewelry, gold or silver hair ornaments, ivory combs, darts, chess games, oiled paper for windows, calligraphy works, paintings, mosquito-fighting powders, and cats along with the fish to feed them. Marco Polo said the wide range of available goods made Hangzhou the greatest city in the world.

## Guilds

There were guilds for each of type of merchant, artisan, and professional, including jewelers, gilders, gluemakers, antique dealers, art dealers, doctors, soothsayers, scavengers, bootmakers, bath house operators and merchants who sold crab, olives, honey, or ginger. Each guild exercised a general control over its members, helped those with no family, and insisted on integrity. A person might get sixty cane strikes for selling substandard goods or for not meeting regulations. Many Arab merchants said that Chinese merchants were scrupulously honest. Guilds had patron saints who were legendary or deified heroes. The state requisitioned goods and services simply by informing the guilds of its needs. There were labor guilds, also.

## Servants, laborers, and peddlers

In the crowded city, labor services were highly specialized. There were gardeners, secretaries, accountants, concubines, singers, travel guards, embroiderers, and lots of household servants each having a specific function. One household servant saw to the furniture or decorations, another kept the fireplace going or the rooms lit or was in charge of tea and alcohol, and yet another sent out invitations to marriages and funerals. There were cooks and various kitchen staff. Wealthy homes might hire their own jewelers, ivory carvers, embroiderers, tutors, storytellers, musicians, chess players, horseman, copyists, messengers, riddlers, insect trainers, and militia. While the largest homes employed dozens of persons, shops and restaurants employed as few as possible.

Servants were to be submissive and show respect for their bosses who in turn were to treat their employees as family members but many servants complained of being at the boss's beck and call for long hours and that the slightest fault was punished. Servants often married a co-worker. Urban workers could have relative security compared to the rural farmer, but not at all times.

There were many street peddlers selling hot water, cooked food, horoscopes, sugarcane, toys, and sweets shaped like animals. Some vendors went door to door visiting his or her set of standard customers—often passing gossip along the way. Peddlers announced their arrival by pounding on wood or metal or using their own personal street call. Those having the best street calls were invited

to the emperor's palace during certain festivals. Peddlers picked up their goods from the wholesaler at dawn and kept 10% of the income from sales.

There were a large number of prostitutes, and they usually had trouble breaking free of their so-called "protectors." Male prostitutes were allowed during some periods and not allowed during others. Crime in the city consisted of the usual bogus good sellers, thieves, swindlers, ruffians, and burglars. Occasionally a gang would block off a street to rob people.

#### State monopolies, taxes, and currency

Taxes were paid in goods during the Tang dynasty but by the Song dynasty, they were being paid in currency. The government collected sales taxes and transport fees in addition to the revenue obtained from its monopolies in salt, tea, liquors, and incense. (Still today, nations in Southeast Asia fund themselves partly through monopolies on a few products.) The state also rented apartments and many state-owned taverns included prostitutes. The state also owned many large farms that grew crops to feed its army.

Coins were made of copper or tin and had square holes in their center so they could be strung together and more-easily carried. Strings of one-hundred coins were commonly exchanged. Paper money first appeared in the year 1000 ad in the form of a receipt for money deposited in one place that was to be collected in another, hence the nickname "flying money." The first state-issued notes were redeemable in salt or tea but silver- or gold-backed notes were soon being block-printed in huge quantities. The paper notes included serial numbers, series numbers, inscriptions, and a warning that counterfeiters would be decapitated and rewards given to reporters. At this time paper currency was unknown in Europe—as was paper, itself. Europe would soon acquire papermaking techniques through trade with Arabs.

#### Overseas trade

Quality porcelain dishware, which later Europeans would call "China," was being exported throughout the world. The quality of clay dishware, from earthenware to porcelain, is determined by the temperature of the oven in which it is made. The technique needed to make porcelain, which requires the highest temperature, was known only in China until a couple centuries ago. The manufacturing of ceramics was the specialty of many Chinese regions, including Kiangsi, Chekiang, and Fukien and there were two ceramics factories in Hangzhou.

Tea, salt, silk, earthenware, and porcelain were traded internally throughout China and also through overseas exports to Japan, India, Persia, the East African coast, Malaysia and southeast Asia, the Philippines, and the islands of the South Pacific. China also exported gold, silver, lead, and tin and it imported coral, agate, pearls, crystals, incense, camphor, cloves, cardamom, rare sandalwood and aloe, rhino horns from Bengal, and ivory from India and Africa. The bookkeeper's phrase "long distance trade" is made more personal by thinking of the persons who grew or crafted the items, the merchants who transported and sold the items, and individual persons who chose to buy these products to satisfy their own taste and sense of fashion.

Chinese vessels, which were called junks, were made with watertight compartments to reduce the risk of sinking. Junks had four-man oars, stone anchors, mat or canvas sails, and usually towed

a smaller boat carrying water and wood. The largest ships of 14<sup>th</sup>-century China, had eight masts, a length of one-hundred yards or meters, carried several hundred passengers, and dwarfed the boats made by anyone else in the world, for example, the one used by Columbus. Each junk had to carry a license describing its cargo and naming each crew member. The compass had long been used to navigate across land. Because of ship-building advances, by the year 1100 the compass was also being used to navigate over the oceans. Through Arab intermediaries, the compass would make its way to Europe in a few centuries.

### Village farmers

The country farmers and laborers were often living a subsistence lifestyle and did not experience the luxuries enjoyed by wealthy persons living in the city. Often a young peasant's only choice was to join the military even though the population mostly disliked soldiers. In the Huai salt marshes there were 280,000 families—about one-million persons—working for subsistence wages in a condition of semi-slavery. (Throughout this book, we gauge our civilization-building efforts in terms of the quality of life that we can – together – achieve for all of us.)

There was a range in the size of farmsteads. There were small, family farms, there were large estates, and there were tenant farmers. Some farmers rented or shared a plowing buffalo; others pulled a plow manually. Oil lamps were used on the farm but not in the fire-prone city.

Bad years meant debt and famine or the sale of the farmer's land, and some suicides. Some farmers had to indenture their children for six year's service in exchange for two hundred bushels of rice or millet; a sibling would have to replace a child who died while indentured. Urban populations continued to increase as peasants moved to the cities in search of a better life.

Loans were made to farmers for either a flat fee of 50% of their next harvest or at an interest rate of 20% per month. A two by forty foot (0.5 x 36 meter) strip of silk would be loaned for a period of six months with an interest charge of forty bushels of rice or millet. If that same quantity of silk was not returned after the six-month period had elapsed then the interest charge was raised to forty bushels of rice or millet per month.

Some laborers signed contracts to do farm work from February to October. They earned a monthly wage of eight bushels of rice or millet plus one shirt and a pair of shoes and trousers and had to replace any baskets, knives, hoes, or spades broken while working. Work was done from dawn until dusk and might be timed with a water clock. Sometimes the pace of work was led by a drummer. Farm workers had a break during winter months and worked hardest from June through September.

On the farm, some men would winnow and some women would weave. Silkworm raising and weaving were time consuming chores. Children tended pigs and chickens, fetched water, collected scarce firewood, and were lucky to attend school as few villages had schools in which arithmetic and writing could be learned.

Gernet explains that people living in Song China were polite, courteous, humorous, kind to foreign merchants, and had a taste for social life and conversation. They loved fashion and display, art and poetry, humorous puns and word-play, and the pursuit of pleasure, alcohol, and sex. They showed self-discipline, gaiety, and charm. They believed that society operated through human warmth and sympathy and through the exchange of gifts and services.



## Medieval Europe

The following description of life in thirteenth-century European farming villages and cities is a summary of the two books by Frances and Joseph Gies: *Life in a Medieval Village* and *Life in a Medieval City*. These describe a commercial village in France and a farming village in England.

No human beings lived in the area of present day England until after 4000 bc because it had been covered by ice for the previous fifty thousand years. Soon after arriving in 4000 bc, people began building Stonehenge by 3100 bc. Large stone monuments were built by prehistoric farmers in many regions of the world. Each group would cheer their mutual accomplishment.

Farming took five-thousand years to slowly spread from Mesopotamia to Northern Europe. European farming villages typically had a head person and a group of elders who made decisions by consensus. The largest villages contained fifty houses and 300 persons who farmed about 400 acres (200 hectares).

From 3,000 bc until 600 bc, European farmers utilized the slash, burn, and abandon system in which land was cleared to be farmed and then abandoned after a few harvests. After 600 bc, farmers began using a two field system in which one field would be planted in alternating years while the other was left unplanted to give it one year to recover. The farmers would stay in one location for several generations, living in wattle-and-daub homes that they might share with their livestock. Wattle sticks comprise this fence. Such sticks are covered in mud when forming the wall of a house. An ox would be used to drag a metal-pointed stick along the ground to allow sowing. Harvested grain was ground between stones and then made into bread.

For those of us humans living in seventh-century Europe, this was our way of life, passed from one generation to the next. Throughout Europe, there was abundant land but few persons, only two to five persons per square kilometer.

By 50 bc, the Romans forcibly expanded into Europe. In his book *The Gallic Wars*, Julius Caesar described his military battles with the native tribes of Europe which you might like to compare to the forcible expansion of the latter European nations into North and South America.

In 50 bc, the Romans introduced peas, the moldboard plow that turned the soil, and built roads between Rome and its outposts in rural, city-less Europe. The Romans also brought 500-acre (200 hectare), serf- or slave-manned manors or plantations. The serfs would work both their own land and that of the plantation lord, too. The lord lived in a stone manor house. Some manor houses had water moats to keep livestock inside and predators outside.

After the Roman Empire dissolved, around 450 ad, European roads, towns, and trade decayed. Many Southern European plantation lords became entangled in a feudal system of mutual aid obligations. (We saw a similar decay in towns and trade producing a feudal system in the Mesopotamian "dark age" after 1,000 bc.)

Christianity arrived in England in the fifth century ad, just as Islam was about to spread across Northern Africa. Christianity and Islam spread more quickly than had farming.

When Atila's Huns swung through Europe, around the year 450 ad, many towns turned to the Catholic Bishops for leadership because the Bishops had filled part of the power vacuum left by the vacating Romans. But then also, some Bishops and manor lords sacked their own neighbors. Various towns tried hiding, bargaining, fighting, or building walls and castles to protect against attackers who at this time had nothing but hand-thrown projectiles. Town-fortresses dotted Europe by 950 ad.

The majority of the manors were not fortified towns or castles but small farming villages. The system of lord's manors spread northward, arriving in France in the ninth century. Invading from Norman France in the year 1066, William the Conqueror imposed the manorial system in England wherever it did not already exist. What did William conquer? England had only eighteen towns having a population of more than two thousand persons. The earlier Anglo-Saxon and Danish invasions of England occurred after Rome's departure, and brought waves of immigrants who left enduring customs. The Roman and Norman conquests instead brought small power groups. These two sorts of invasions of either populations or power groups have occurred throughout the world. The first Norman king mixed manor lands to ensure that no lesser subject held all the land of any region (Text.)

## Villages

The first-to-be-permanent towns of Northwestern Europe were built in the tenth century and consisted of a wooden church and a stone manor house. Through the centuries, the wooden churches were rebuilt in stone. Many of these earliest permanent towns are Europe's largest cities today, some 1,000 years later. Monk's town, or Munich, Germany was first established as a Benedictine monastery, and Dublin, Ireland began as a ninth-century, Viking camp.

Nearly all of the villages had a population under five hundred persons, only 10% were larger. In the year 1086, the King of England ordered a survey, known as the Domesday Book, of the homes and wealth of England so that he could arrange for efficient tax collection when he needed money for war. The survey records 1,300 villages and 275,000 households for a total population of 1.5 to 2 million persons. The population may have previously been higher in late Roman times. Six thousand water mills are listed in the survey. The mills were used to grind grain.

Within the Medieval English village, the lord lived in a stone house, while peasants lived in wattle-and-daub homes. Each house occupied a small plot surrounded by a hedge, fence, or ditch, and had vegetable, herb, and spice gardens. Every village had a communal water well from which each family obtained their daily water, where extra gossiping could occur. To have hot water, one pot-full might be kept heating on the hearth throughout the day. Homes had no privy, instead people would walk a bowshot from the house.

Each home contained a single generation from a single family. Clans had been important in earlier centuries but by now they had dissolved. The "crutch" house frame soon arrived from the Continent but roofs continued to be thatched for centuries, even in London. This roof contained all sorts of insects, birds, and rodents and easily caught fire but was cheap and easy to make. Some people might sleep in the house loft. Houses were usually three by four yards or meters in size but some were fifteen yards or meters in length and had people and their animals staying on opposite ends. Animals and children wandered freely through the home's open door. Homes sometimes had shuttered windows, which might be covered with waxed cloth but not expensive glass, and homes had dirt floors. Its dirt floor would be covered with straw or rushes—and scented flowers during the spring.

Peat or wood was burned on a stone hearth, and the resulting smoke exhausted through a simple hole in the roof. Some hearths were raised. For safety, the fireplace might be covered with a ceramic lid at night. Cooking was done indoors over the open fire. The hearth also provided heat

and most of the light.

People sat on benches and ate on a trestle table dismantled after meals. While eating, pairs of persons shared a soup bowl and drinking cup. Manors dictated that spoons should not be left in the bowl, that soup be eaten without slurping or burping, and that people wipe their mouth—but not their nose—with the tablecloth before drinking out of the shared cup.

In thirteenth-century China, citrus fruits were common food and there were thirteen types of peaches. In thirteenth-century Europe, citrus fruits were a rare treat, and there was no coffee, tea, rice, chocolate, potatoes, tomatoes, spaghetti, noodles, squash, corn, baking powder, or baking soda. These New World and Eastern foods had not yet reached Europe. Nor were there any paper products of any kind in Europe.

Instead of using one name only, people began adding a new and descriptive “last name,” which might indicate their occupation, a personality trait, or the location of their home. For example, a person who lived near the well or the village green might be called John Atwell or Robert Green. Other last names might be Wise, Tanner, Fuller, or Smith.

### Marriage, birth, and childhood

Many couples conceived before marrying in order to know for certain they were both capable of doing so before becoming committed for life to a barren spouse. The manor lord would charge women—but not men—a fine of six pennies when caught having premarital sex. (Yes, they were actually taxing sex.) When persons being married owned land, the lord collected a merchet fee from the newlywed. To be married, a woman was expected to be at least twelve years old and her husband was to be at least fourteen.

Marriage ceremonies often consisted of “a kiss and a promise.” Since this allowed too much room for future debate about that promise, Pope Alexander III set rules for exchanging wedding vows in public. He did this just before the year 1200 ad. These vows were often done at the door of a church and were followed by a feast and a dance. Licenses became mandatory under The Marriage Act of 1753.

Wedding ceremonies became more elaborate through the centuries. The priest would ask if anyone knew a reason that the couple could not be married—for example, due to a blood relationship of less than the fourth degree. The groom counted the bride's first three fingers by saying the Father, Son, and Holy Ghost and then placed a ring on the bride's fourth finger. It was believed that a vein connected that finger with her heart. At the end of the ceremony, the priest would kiss the groom, who in turn would kiss the bride. Wedding vows were beginning to be legally verified by witnesses. In the city, shop owners would have a gargantuan wedding feast with entertainment by magicians, acrobats, jugglers, and musicians. The musicians might be playing the newly invented six-stringed lute or the five-stringed viol, which was the first bowed instrument. Both were tuned in fourths and fifths and accompanied by other instruments.

### Music

The lord also fined persons committing adultery and then sent the case for further prosecution by the court of the church. Divorce was more common among the aristocracy than among the

villagers and was usually due to either barren or "bad" marriages.

Mothers gave birth from a crouching position, as continued to be done in nineteenth-century North America. Childbirth was dangerous for both mother and child, and the infant remained especially vulnerable to disease during its first year of life. While a woman was giving birth, men were excluded from the room (except for the son being born). To "aid" in the delivery, every door and drawer was opened within the house, all knots were untied, and placed nearby, was the foot and dried blood of a so-called crane, which was more likely a Grey heron. Catholic priests discouraged the use of magical incantations. Some believed that twins occurred when their mother had two lovers. One astrologer said that such multiple births were normal and predicted that if a woman gave birth to a set of seven babies, she would have three boys, three girls, and one hermaphrodite. Birth defects were attributed to supernatural causes.

Children were born at home with the aid of a midwife who quickly rubbed the newborn with magic ointments and salt and then wiped its gums with honey. If the mother died before completing the delivery, the midwife was to cut the baby out in an attempt to save its life or at least to baptize it. The newborn was immediately baptized lest it "die in a state of original sin." If nothing but its head emerged during an unsuccessful delivery attempt, it could still be baptized. The newborn was then washed, sometimes swaddled, its godparents were summoned, and it was carried to the church by a female relative for full baptism. The occasion was then celebrated with a feast in which the home's best material possessions were displayed for all to see. Parishes began keeping written birth records in the fifteenth century.

The mother of the newborn was not to make bread, cook food, or touch holy water and she was not to enter the church building for several weeks after giving birth. She was then "churched," as had been Mary, by carrying a lighted candle to church while wearing her wedding clothes. The priest met her at the door and sprinkled holy water on her. If she had died during delivery then her midwife took her place in the churching ceremony. When leaving the church, if she happened to glance at either a small boy, an evil person, or a person with a defect then it was believed that her next child would be a boy, an evil person, or one with that same defect. Why did the Medieval European do these things? They would answer: "Because it has always been so."

In the village, children were nursed by their own mothers, but wet nurses were often used for children born in the city or castle. Wet nurses were sweetened with gifts but might also be blamed for the baby's illness. If the baby became ill, a doctor would give medicine to the wet nurse.

Children were strictly disciplined and given physical punishment but they were also indulged. Dolls were made of wood or baked clay. Tops, horseshoes, and marbles were used for toys. Children played prisoner's base and blind man's bluff and they would bowl, swim, wrestle, and play dice, chess, checkers, and forms of football and tennis. Ice skates were made from horse ribs. Infants under one-year of age were left alone in the home while their parents worked. Toddlers were watched by a neighbor's girl. Small children played while older children worked—teenagers were doing the same work that adults were doing.

In 1486, the Parliament of Scotland required landowners to send their eldest sons to school to study Latin, arts, and law. This was meant to ensure that local government lay in competent hands, and made schooling compulsory for the first time in the world.

## Old age, death, and inheritance

When people became too old to work, their children began supported them by working their parent's land for them. If an aging person had no children to do this, they might contract with someone to work the land, and in this case, the lessee would give a portion of the income to the leaser. Monks received a daily pension of two loaves of bread and two gallons of ale. Lay people might choose to purchase this pension. In the city, some old people died begging in the streets.

A priest would be summoned when death was close. The priest would be proceeded by a person carrying a lantern and ringing a bell. If the priest said the last rites to the dying person and then that person survived after all, he or she would be expected to go barefoot and abstain from sex until death did come. Upon death, the body was washed and sometimes covered with linen and then sewn into a deerskin cover. The door of the deceased's home was draped in black and a town-crier announced the time of the funeral. The deceased was then wrapped in a shroud, covered with a black cloth, and carried to the church on a two-poled bier. At the cemetery, mass was said and a sermon might be given before the person was buried in a plain wooden coffin. Some persons were buried without any coffin. A tombstone was laid flat on the ground. Poor persons attended the funeral with lighted candles and received donations from the loudly mourning family. The funeral would likely be followed by drunken fun—despite complaints from the church. After a few years, bones might be dug up and stacked so the burial plot could be re-used.

Inheritance could be complicated. Land usually passed to the oldest son, or if none then to the oldest daughter or split among multiple daughters. If the oldest son was a minor then the manor took him in until he reached legal age. If no children existed then the land went to brothers, sisters, aunts, uncles, and cousins. If there were none of these then the manor sold the deceased's land to a villager. If the oldest son died still a minor before taking possession of the land then it instead went to his father's brother. A person's best animal had to be given to the lord as an inheritance tax. Widows legally received one-third to one-half the land but often owned all of it. Peasant women inherited, bought, sold, and leased land.

The oldest son had to wait for his father to die before he possessed the assets enabling him to marry. Since younger sons would not be inheriting, they instead became soldiers or paid a fee to the lord to enter the clergy. This single, large fee was meant to make up for the many smaller fees that would have been paid had the person remained on the manor. Some fathers bought small plots for their younger sons, other sons became an apprentice in a city, and the rest became day laborers earning pennies a day.

## Calendars, Holidays, and entertainment

Each season included holidays during which work was suspended, meat and cheese were eaten, stories and music were heard, and games were played. Adult games included plow races, football, wrestling, archery, team games with sticks and balls, cockfighting, bowling, checkers, backgammon, blind man's bluff, prisoner's base, the much favored dice games, and chess. The game of chess was taking on its current form instead of having two kings per side—per feudal ideas. Young women held village men in "prison" until they paid a fine to get out; on the next day men held women prisoner.

Many Christian holidays were essentially unchanged pagan celebrations appropriated by the

church. For example, November first was All Hallows day, which was an old pagan rite meant to propitiate the spirits of the dead. Other celebrations also included older pagan elements. For example, during the Feast of the Circumcision, the minor clergy wore their vestments inside out, held their books upside down, lead an ass into church, interrupted services with shouts of hee haw, and then sang and danced in the streets. During the feast of the Holy Innocents, choir boys exchanged places with bishops and officials and conducted services.

Greek and Roman theater had been completely forgotten. Here is a depiction of Courtly Love from the year 1310.

## Clothing

Through the years 1,000 to 1300 ad, peasant dress changed little. We wore a belted tunic, stockings, hood, gloves, and leather shoes with wooden soles. But the dress of the nobles changed much during this same period, going from loose, long garments to short, tight, skirted jackets, trailing gowns, voluminous sleeves, elaborate head-dresses, and pointed shoes for women. While the clothing of the rich included many articles and accessories, extravagance in peasant clothing consisted of nothing but fur trimmed sleeves.

## Penny coins

Metal coins originated Lydia in the 7th century bc, and paper money already existed in China. Throughout Medieval Europe, coins of various sizes and copper-silver mixtures were minted by various princes and bishops, and each coin had a value of one penny. A penny was called a pence in England, a denier in France, and a pfennig in Germany. Twelve pennies make a shilling and twenty shillings make a pound. These names were given to multiples of pennies but no such higher denominations were actually minted until a twelve-penny shilling or "grosso" was made in Italy. In France, twenty denier was called a livre. England still uses Lb as the abbreviation of the Latin word for pound. Wholesalers were beginning to use cash but the villages of the world operated through the bartering of goods and services for another 500 years.

The office calculating board consisted of lines of counters made of bone. Different lines were used to count each of pennies, shillings, and pounds—that is, multiples of ones, twelves, and twenties. Records were kept on tablets but important correspondence was written on parchment, which was made from sheep skin and sold in eight-inch or 20-cm-wide strips that would be sewn end to end into long strips. Egyptian Papyrus was made from dried grass and leaves, vellum was made from calfskin soaked in lime, and in China, paper was made from cloth. Knowledge of cloth-based paper eventually came to Europe through Arab traders.

## Villeins or serfs

A villein, which is the English word for serf, was classified by the amount of land that he or she owned. Those who owned thirty acres (fifteen hectares), which is enough to feed a family, were called virgaters, while those owning half that much were classified as half-virgaters.

Each villein was required to work many days per year for the lord—virgaters owed 117 days

per year while half-virgaters owed 58.5. A day's work was defined in terms of the harrowing or winnowing of thirty sheaves of barley or twenty-four sheaves of wheat, carting goods or hay, carrying a specific amount of eggs, hay, cheese, hens, or geese collecting a bag of nuts, working in a vineyard, or making a hedge of a specific length in the field.

Land that had no labor tax was owned by a freeholder. About 20% of peasants were virgaters, 33% were half-virgaters, and the remaining 46% held less than ten acres of land, which was too little for subsistence. Typically, 32% of land was held by the lord, 40% by villeins owing labor services, and 28% by freeholders who did not owe labor services.

If the manor lord sold his estate, he also sold the serfs with it. A serf could not move away from the manor unless he or she paid to the lord a large fee meant to replace a lifetime's worth of smaller fees.

The villein or serf was not free but not exactly a slave either. They bequeathed and inherited property and land. They bought and sold land – usually in one-to-ten-acre lots, but often less than an acre, and sometimes more. Some peasants bought land for their children while others sought to acquire land that they could rent out to become a peasant landlord.

The Domesday Book of 1086 lists five categories of peasantry. Though the next few centuries, these categories became more numerous and complex, but mostly, the free became less free. By 1300 ad, it didn't matter so much whether you were free or unfree. A person's social standing was increasingly determined by the amount of land and the number of animals that he or she owned.

## Village farming

The village was surrounded by its farmland which was jointly worked by all the families of the village, but each family owned a strip somewhere within the whole. A typical village would have a few hundred persons working on harvest day. Some villages were now planting two of three fields. The community jointly decided when to plant, weed, plow, and harvest, which fields would be used, and which crops would be planted. Villagers planted mostly wheat because it was the most reliable crop and could readily be sold for cash to the residents of nearby towns. The community also decided when to let the farm animals eat the stubble within the plowed fields and when the animals would be pastured.

The lord typically owned one-third of the farmland, which might also consist of many strips among the whole or might be separate from all the others. Various families owned some, none, or much land.

Yields per acre were one-third to one-half today's values. The use of manure as fertilizer was understood but little was used because few animals could be supported by the available feed. Every cow, horse, and ox eats as much grain as does several persons.

Since wheat sales were used to pay the manor lord, peasants ate little of the wheat they grew. For their own consumption, peasants planted lesser quantities of rye, barley, and oats. This means that the manor lord and the people living in town were eating a better than were the villagers who grew the food. In the thirteenth century, 10% of the population of Europe was living in towns.

Each home had a garden in which they grew beans, peas, and other vegetables, and maybe some herbs and medicine.

To plant crops, a family would walk through the field tossing handfuls of seed from a

bucket. A villager would be fined by the lord for using too much seed. Seed was exchanged between manors in our 10,000-year-old continuing attempt to improve crops. After the villagers harvested a field, the poor were allowed to gather what they could from its stubble. After cutting grain, it then had to be gathered, bound, stacked, carted or carried to the barn, threshed with a flail, and winnowed by tossing in the air—as we saw was done in Ancient Mesopotamia. Gleaning was done by the youngest and oldest villagers. The village church received 10% of each farmer's crops who placed it in the "tithe barn."

All villagers were required to grind their grain in the lord's water-powered grinding mill, bake their bread in the lord's oven, and pay a fee for the monopolized services. Peasants would be fined for grinding their own grain at home. The villagers were also required to repair the lord's mill whenever it broke down.

The lord collected rents, fines, and fees from the people living within his land. Fines were collected for stealing the lord's peas, hay, or crop stubble or for wounding a person. Fees were paid for marriage licenses and inheritance taxes. The lord sold in town the produce collected as rent from the manor peasants. By the year 1300, some lords made an effort to adopt the new, cash manner of doing business and collected half of rents in cash rather than in labor or in battered goods.

### Daily food

The daily diet of every villager included ale, pottage, and numerous four-pound loaves of maslin bread, which is a mixture of rye and either barley or wheat. Pottage was cheaper than bread and required no milling or baking fees. Pottage is made by allowing barley grains to sprout in a warm, damp place, boiling the result along with anything available—including peas, beans, bacon fat, salt pork, onion, garlic, cabbage, lettuce, leeks, spinach, parsley, apples, pears, cherries, nuts, berries, primrose, strawberry leaves, and roots—and then draining and perhaps sweetening the results with honey. The Gies explain that "anything that grew went into the pots." Sometimes pottage would be fermented into beer.

Brewing was done by women in their own home. When a batch of ale was ready to drink, an outdoor sign would be hung and the home would temporarily become a tavern. A favorite pastime of the villagers consisted of meeting and drinking at someone's home. Three gallons of beer sold for one penny. The village ale-taster had to first "verify" the quality of the batch and charge a fee for its sale. The manor held a monopoly on grain grinding and on bread baking—the staples of life—but only collected frequent "fines" for weak or poor quality ale or for selling ale before the village official had tasted it. The manor also placed limits on the price of ale, which varied with the size of the cereal crop.

Most village families owned little more than a standard set of farming tools.

Some owned a wheelbarrow or a cart for carrying tools and such, and some owned a plow or a wooden harrow made from tree branches. The lord's harrow had metal teeth.

Some families owned various animals used to earn money and provide food. Geese could produce five offspring per year. A cow gave 100 to 150 gallons of milk per year, which sold for half a penny per gallon. Sheep were worth one or two shillings each. Each sheep gave fleece, milk,



manure, and might be eaten. A single pig could give birth to fifteen piglets per year, which could be eaten when they were two years old. The pigs of the villagers were allowed to roam the forest to eat nuts and such but only if their owners paid a fee to the lord.

Some families kept chickens and ate their eggs, fewer families had a milking cow. Peasants ate little meat and cheese; more animals were sold for cash to pay rent than were eaten. Dried fish or eels were expensive—or poached from the mill pond. This was a low calorie, low protein diet also lacking in calcium, lipids, and vitamins A, C, and D. Villagers were lean.

In Medieval Europe, as for farmers everywhere throughout the last 10,000 years, people ate a limited variety of food and it became scarce each year in early spring. Still today, grain and rice account for two-thirds of our food supply.

The Gies explain that a Medieval housewife would simmer pottage or milk if it was available. She made soap with ashes and water so she could do laundry with much scrubbing and beating. She might dash outside to tend to her crying child and then return to find the cat at the bacon, the dog at the hide, her cake burning on the hearth, her calf licking the milk, pottage boiling over into the fire, and her husband scolding the churl. Some contemporary writers recommended the life of a nun over that of a housewife.

A home contained the family's twenty possessions. While eating, the family sat on either benches or stools at a trestle table that was dissembled at night. Chairs were rare. A cupboard or hutch held wooden and earthen bowls and jugs. Spoons were usually wooden. Thick slices of day-old bread might be used for plates. A thick chunk of bread with a hole in it could also serve as a salt shaker. Hams, bags, and baskets were hung from the rafters to be kept from rodents. Clothing, tablecloths, bedding, and towels were stored in chests. We slept on straw pallets. Few peasants had silver spoons, brass pots, or pewter dishes. Families would have to wait four more centuries before our Industrial Revolution began, around the year 1760, to fill our homes with cheap utensils and decorations and increase the number of household possessions from twenty up to two hundred, but it also decreased community ties.

#### The lord's manor

The farmers of the village made their own agricultural decisions. The lord did not make these decisions but simply demanded that the peasants produce his share of the village crop. The lord prospered only if the villagers prospered and was the exploiter and beneficiary of the labor of the villagers.

Through the year, two-thirds of the lord's work was performed by hired help. The remainder was done by serfs performing their labor taxes, much of this during harvest. On the singularly-crucial harvesting day, the lord conscripted or hired everyone in sight.

A small staff was regularly employed by the village lord, including plowmen, drivers, cart operators, cow-herders, swine-herders, a cook, a woman who milked ewes, a dairy person, some seasonal help, and day laborers. These laborers were paid double near harvest time, and were usually tenant renters who lived in the village and owned no income-producing land; sometimes, they were itinerant workers. Out in the fields, about one in five sheep would die each year. To keep a close eye on these animals, the cow-herder and swine-herder slept in the barn along with the lord's animals. The plowmen repaired the plow equipment and took care of the plow animals, which consisted of

a mixture of horses and oxen—typically two horses and six oxen. On Saturday, the staff might be allowed to use the lord's plow on their own holdings. If two villagers owned a plow then every other villager would use those also. Other persons "cultivated by foot" using only a spade. A large Abbey might employ eighty persons.

One popular guide book recommended that sick animals be quickly sold while another recommended paying for treatments. An old ox would be eaten, so it could be sold for 90% of its original cost of twelve shillings, but old horses were not eaten and sold for only half their original cost of ten shillings. The guide books contained advice on butter and cheese production, animal husbandry, animal feeding, the early termination of the milking of cows and ewes to encourage early breeding, and the branding of the lord's animals to distinguish them from those of the peasants. A guide book asks the timeless question "How profitable are your plow and stock?"

A single village might be part of one, two, or three different manors. Some villages included a sub-manor in which one person had tenants of his or her own. Sometimes a lord would lease a manor to another person who hoped to receive more income than was paid in lease. Subletting by a peasant was forbidden in some regions.

A tenant paid rent to the lord in some mixture of labor, bread, ale, eggs, cheese, linen, wool, cloth, handicraft items, and cash. Both tenants and lord sold crops for cash in a nearby town. Villager fines were always paid in cash to the lord. A villager could buy an annual license—or pay a fee when caught—to live outside the manor. This is the reason villagers were said to be unable to leave the lord's land. Those who lived for a year within a city were then free of the lord. In Germany the saying went "A year and a day in a city makes one free."

A lord might take advice from one of the popular guidebooks for estate management, such as Walter of Henley's *Husbandry* or *Rules of St. Robert*, by Robert Grosseteste, who also advocated making measurements to test Aristotle's descriptions of nature.

Larger lords held fifty manors and thousands of serfs. Since lords often held several manors and lived away, they needed a good managerial team on site. The lord sent a steward to visit each manor a few days per year to check the accounts. Rents, fees, and labor services were supervised, enforced, and collected by the bailiff and reeve.

Daily operations of the manor were handled by the bailiff, who lived in the stone manor house and reported annual totals of income and expenses along with grain and other inventory figures. Since most bailiffs were illiterate, they tracked manor accounts by making notches in sticks. These sticks would be given to the visiting steward who made detailed, written records on parchment.

The manor was a well-supervised, profit making enterprise.

The bailiff had several duties. He supervised the penning of the lord's livestock, the formation of plow teams, and ordered the repair of the lord's mills and fences. On some manors the bailiff also collected rent from the villagers and tracked totals for labor services performed by each tenant. The bailiff maintained supplies of iron, wood, nails, millstones, horseshoes, carts, cartwheels, axles, iron tires, salt, candles, parchment, cloth, dairy and kitchen utensils, slate, thatch, quicklime, verdigris, tar, quicksilver, baskets, livestock, and the staff's food. Most supplies were obtained from a nearby town. The manor was not self-sufficient.

The bailiff's subordinate was the reeve. (The modern word sheriff derives from "shire reeve.") Reeves were paid in noncash benefits. For example, they might be allowed to eat at the lord's dinner table and graze their animals on the lord's pastures. On some manors, the reeve did not have to perform any of the usual villager farming labors. In the *Canterbury Tales*, one of Chaucer's characters was a reeve who stole from his lord. Each day, the reeve saw that those villagers owing labor service arrived for work and accomplished the necessary tasks.

A villager would be fined for missing a day. A villager might sometimes choose to pay that fine to obtain a day off work. A sick person was allowed to miss work for up to one year, but after that, the sick person had to pay the wages for his or her replacement. The reeve had an assistant called by various names, including beadle, hayward, or messor. This duties of this assistant were to fine villagers whose animals strayed into the lord's pastures, to preserve seed saved from last year's crop, and to help the reeve supervise sowing, plowing, harrowing, mowing, and reaping.

The villagers elected the bailiff's staff, including the reeve, who was always a serf or villein. Members of the few most-respected families were most often elected to these village positions throughout a century. These same families were most often found in court disputes, too.

## Courts

William the Conqueror codified laws "common to all the land" but medieval law existed midway between clan justice and the modern legal system consisting of the precise interpretation and administration of justice. Medieval courts questioned witnesses to determine guilt or innocence but the king and queen maintained certain centuries-old Anglo-Saxon traditions. For example, the king and queen might confiscate the property of a murderer. Medieval law was a mixture of scripture, oral tradition, Roman and Germanic law, church decree, and papal legislation.

The lord, church, and king each held their own profit-seeking courts. Cases involving murderers, professional thieves, and rapist were heard in the royal court, which collected the fines and fees from those proceedings. Minor cases involving serfs and villeins were heard in the court of their local manor. Free persons instead went to the royal court. Cases involving clerics always went to the court of the church. Sometimes an accused person would run to a church to ask for asylum, but when asylum was obtained, it served only as a temporary haven before that accused person would be expelled from the land. Sometimes an accused person would begin study for the clergy just to take advantage of the lighter treatment of the church towards its own clergy.

Peasants convicted of murder would be hanged, which really meant they were slowly strangled under their own weight, but wealthy persons were instead beheaded in a quick death. Tradition called for the principal accuser either to personally carry out the death sentence or to hire another person to do it. Some murderers survived the bungled attempts of novices who were trying to carry out the death sentence. A condemned man was sometimes allowed to fight in the king's war instead of being executed. Occasionally, an influential friend of a condemned person won a royal pardon.

Prisons did not exist. Fines were instead paid either in money or by working a specified period of time. Castle basements and the larger cities did have jails where defendants might be placed while awaiting trial. A poor person convicted of a minor crime might be held there for a short time and then released.

Trial by combat or ordeal was condemned by the church in the year 1215 as being meaningless. Cruel executions were done in cases of heresy, treason, or witchcraft. Mutilations were becoming less frequent but a thief might still be branded or lose a thumb or ear, rapists would be castrated, and harsh assailants might be blinded. Torture would be applied if a defendant wouldn't otherwise speak. A person would be tortured by pulling his or her teeth, by burning, or by being stretched on the rack. Eventually, we would decide that mutilation and public hanging brought the public down to the same level as the criminal.

It was the custom of the land for a person in danger to call out for help; all who heard were required to respond or be fined. For example, one might call for help if being struck or about to be struck. The respondents to that call would take the offender to the bailiff, reeve, or beadle. But this call could not be made lightly, and the caller was expected to have witnesses who could verify the need for the call. If both adversaries called then it was later decided who had been justified.

A meeting was held in the hall of the manor twice each year to conduct the lord's business. Fees and fines were collected, labor dues were enforced, manorial officers were elected, and heirs were granted their property. During these meetings, civil and criminal court was also conducted to hear non-murder cases. Assaults occurring within the victim's home and those that caused bleeding were seen to be especially serious. Cases between villagers might involve public slander or unpaid loans of grain or equipment. Interest was charged despite being discouraged by the Catholic church as usury (Usury is also discouraged in Islam).

In the manor court, the villagers acted as prosecutor, witness, judge, and legal authority. This meant that village tradition would be followed rather than written laws specified from above. A handful of villagers would gather evidence, describe the custom violated, judge the outcome, and then assess fines and damages. The entire village endorsed the findings of the jury, which meant there would be a general feeling that justice had occurred. The villagers personally knew the people involved in the case and the circumstances of the event. In fact, they would have been discussing the case since the moment it had occurred. An accuser was expected to bring a handful of "oath helpers" to swear to the events and to the accuser's trustworthiness. When a case was initiated, both plaintiff and defendant had to find two persons guaranteeing their appearance in court and payment of any fines incurred. A lord's steward oversaw the proceedings. A novice steward may have consulted *The Court Baron*. Court records were written in Latin on parchment. These records were kept because fine amounts formed part of the lord's business enterprise. The lord always received a share of any imposed fines and a share of any confiscated property. One of the two arguing parties would be required to pay the other party and the lord for offenses committed. Accusers who did not prove their case had to pay a fine to the lord. If the two parties settled out of court then the lord would still received the appropriate fee. When settling out of court, the two parties had to decide the fee- portions that each would pay.

Other than rent, fees, and the required labor services, the lord did not interfere with the daily lives of the villagers. The Gies state that the lord was not an omnipotent tyrant exercising the power of life and death over villagers. Mostly, the lord was a person living off the efforts of the villagers, whose lives would otherwise have been much easier. The villagers openly discussed politics, religion, and morality without fear of the lord's wrath.

## The feudal and manorial system, the Baron's revolt and Magna Carta, and the peasant's revolt

The Gies explain that lords relied on the manorial system to get laborers into their fields, money into their pockets, and meat and dairy products onto their tables. The villagers relied on the manorial system to limit their labor and food payments and to guarantee their homes, their grazing rights, and their strips of farmland. This was the European way of life for centuries. But in the manorial system, the lord had the best chance for prosperity. If the lord hadn't taken 117 of 365 day's efforts from each peasant, the lives of those villagers would have been less precarious and more often prosperous.

Feudalism united the elite, or aristocracy, of Europe in a hierarchical, mutual aid society in which a greater lord granted land—a fief or fiefdom—to a lower lord or vassal. The greater lord received loyalty along with military and other services from the vassal, while the vassal received income from the granted land. But this hierarchical, feudal system did not directly involve the peasants who lived on their lord's manor, farming for the lord and themselves. Medieval European society consisted of feudalism of overlords and lords combined with manorialism of lords and peasants. There was a lot of local variation in this system, which lasted about five hundred years, with both farm labor and military service becoming ever more frequently converted into cash payments.

The Magna Carta, or Great Charter, was a feudal document like other lesser charters between lords and vassals, but this document is also considered to be the beginning of modern constitutionalism.

Jill N. Claster explains that the Magna Carta began in 1215, when the nobles of England took advantage of the war-weakened condition of King John to "limit his arbitrary exercise of power in terms of feudal obligations exacted." It asserted that the king and queen were also subject to law, not above it. The king and queen could not go beyond feudal custom without the consent of the royal vassals; if they were to try then the vassals had the right to resist this unjust use of power. The barons were trying only to limit the power of the monarchy, not to do away with it. Claster says that it is significant that the barons acted as a group rather than as competitors, which they might have done a hundred years earlier, but there was not yet a national self-consciousness. Anthony Black points out that the Magna Carta provided a means of redress against bad government without having to resort to violence.

Friedrich Heere explains that the barons were in no way representing the people, only their own interests. Friedrich says the Magna Carta also asserts "No man shall be taken or imprisoned or deprived of his estates or outlawed or exiled or in any way impoverished, nor will we go against him or send anyone against him, except through the legal judgement of his equals or the law of the land." (That such a document was needed tells us that the royals had been doing these very things. We also see such demands are easiest to make when a ruler has just been weakened.) This means that issues were to be decided by written law and not by the whims of the king and queen. In addition the Magna Carta asserted that the rights of London and other cities were to continue, that the magnates had the right to assent to taxation, and that protection of foreign merchants would be provided (we've seen that this same protection was expected in Ancient Mesopotamia). In fact, a standing committee of twenty-five barons was to control the king and queen; any four barons could raise a complaint that must be addressed. In the thirteenth century, similar documents were being forged in Hungary, Spain, and Poland. We see that these grievances were things only lords would complain about, not peasants.

The Magna Carta was not an agreement between “the people” and the king and queen, but between lords and the king and queen.

In the 1240s, these meetings between the ruler—who wanted to use the meetings as an instrument of government—and the barons, knights, burgesses, and boroughs—who wanted to assert their rights—came to be called the Parliament. The word parley had been used to describe any meeting between persons or groups. The king and queen now had to go through Parliament to ask for money or troops. To counteract the constant pressure of the Parliament, the king and queen sought the support of shire knights, burgesses, and town representatives who came to act as a single estate in a lower House of Commons. After a first step had been made in 1295, in 1352 the Parliament was separated into upper and lower houses. It was said that "what touches all must be approved by all" as feudal Europe moved toward democracy.

The feudal and manorial system was fatally stressed by crop failures, like those of the years 1315 through 1317, by the population-decreasing plague of 1345 through 1350, and by the excessive war-funding taxation imposed on the peasants, which resulted in the Peasant Rebellion of 1381. The manorial system of servitude dissolved through the 1400s and disappeared in the 1500s in England and France. The ending of the feudal and manorial system worked its way south and east over the next few centuries. Serfdom was not outlawed until the year 1850 in some Eastern European countries.

The population of Europe doubled during the twelfth and thirteenth centuries but then decreased during the fourteenth century as large plagues and famines occurred. Famines begin with rumors, hoarding, and black-marketing and end with hoards of beggars and widespread disease for the weakened. The Gies state that during the famine of 1315 to 1317, theft of food and livestock rose sharply, cats and dogs disappeared, bodies of the poor were found in the street, and cannibalism was rumored. Around the year 1350, the plague reduced the population of Europe, decimated families and left few laborers to tend to the lord's crops. The lord then enforced labor services with the threat of the stocks and by invoking the Statute of Laborers law that the parliament created in 1351 to prohibit wage increases and to forbid workers from leaving their home areas to search for improved conditions. The price of land dropped and that of labor increased, but the surviving peasants had extra food and were able to once again eat wheat on a daily basis. This made some writers complain that the peasants had forgotten their "well-ordered," lower station!

By the way, today we understand that those persons having received a certain gene from both of their parents were resistant to the plague and that this very same pair of genes now appears to make one resistant to HIV.

When the king and queen needed money, they might impose a tax of one-tenth or one-twentieth the value of each person's assets worth more than a small amount. Only the poorest would be excluded from this tax. During his fifty-six-year reign (1216-1272), Henry III imposed this tax five times. During the next thirty-five years, Edward I and Edward II imposed this tax sixteen times to pay for fighting the Scottish. Edward III (1334-1377) imposed the tax forty-one times while fighting the French. He also required that each village send and equip a number of men to fight against France. In 1377, an extra tax of four pence per person over age fourteen was levied. This was followed in 1379 by another four pence plus two-tenths of assets, and in 1381 by four pence plus 1.5 tenths of assets. Edward III demanded one-third of everyone's wealth as he hoped to expand his own territory and wealth. What portion of your annual income today is spent on the nation's military?

The Peasant Revolt of 1381 was the response of the peasants to the tax levies, labor service laws, and other irritants. This was a continent-wide revolt and was dominated by the better-off peasants because they could see greater liberty within reach of force—the more oppressed peasants could not. The aim of the revolt was the abolition of servitude. It began shifting control of the village economy from the lord to the peasants and allowed peasants to keep more of their own money and efforts for themselves.

In England, John Ball complained that the toil of peasants provided the luxury of the lords. Ball may have been the first person known to write that "All men are created equal" and that "such servitude is against the will of God." Some peasants complained that they wore coarse cloth, ate rye bread, and slept on straw while lords wore velvet and ate spices and wheat bread. The Gies describe an argument between a villager and a knight who was showing little concern that his animals were wrecking about in a graveyard of "lowly peasant bones." The villager pointed out that God made the bones of villagers and knights and they were all indistinguishable after death.

During the revolt, some manorial records were destroyed because they had been used to prove the legality of each person's servitude. Some lawyers were killed. But from then on, records were used to instead prove the sanctity of the family's claim to their land because the records showed they had lived there for generations.

The uprisings were suppressed by the monarchy, nobility, upper clergy, and wealthy townspeople but peasants won an end to the four-pence tax and the Statute of Laborers was from then on ignored. Labor services were relaxed. For example, in Elton, the last fines for skipping the harvest of the lord's crop occurred in 1429. Through the next century, villeins either bought their way free of the lord's fees and fines or simply refused to pay them anymore. The Gies state that the old feudal landlord class was given a devastating blow in 1536 as Henry VIII, fighting with the Catholic church over his divorce problems, issued his Dissolution of the Monastic Orders. He violently suppressed the largest monasteries and seized their manors, which he then conveniently sold for 1.5 million pounds.

Throughout the planet and throughout history, the daily life of every farming villager was filled with laborious chores. This was also true for the Medieval European farmer who had the added burden of the manorial system. Villeins and serfs resented the labor dues mostly because of the time lost from fulfilling their own needs. People always break free of imposed class systems—though it usually takes centuries—because we feel that no person is better than anyone else and we expect our society to be mutually beneficial for everyone – anything less is an injustice.

The villagers paid fees to the lord in goods and labor services while living life with little other intervention, setting their own agricultural schedule and settling their own quarrels. Free and unfree conditions had meaning but not as much as we usually imagine today, being more indicative of the level of obligations. The villagers had poor diet, scant sanitation, simple homes and dress, and life-threatening conditions for children. But they also had lives of love and festival, games and ale, fun and fights, and they had neighbors whom they knew and depended on for plowing, harvesting, helping, and bearing court witness. The pressure to change the Medieval way of life came through the growth in population levels and markets that resulted in some villagers leaving their land for nearby towns. The Gies explain that the peasants were not brutes or dolts but people like us. They were living in an exploitative social system still largely devoid of effective medicine and having a slowly changing technology, but they were becoming modern.

## Church

By the thirteenth century, every village and manor had its own church. Each church district was called a parish. Often, a wealthy and enterprising person would have a church built to fulfill his or her own needs. This person would appoint a priest, pay the priest's salary, and receive the income from the church in the same manner as other private enterprises. Later on, a local villager might run that church and receive its income, which was one-tenth of the village's produce. Sometimes a nobleman would hire a vicar to run the church and expect to receive its profits. One nobleman ran twenty-four churches this way and obtained a total annual profit of 2,200 pounds. In the year 1172, Pope Alexander III decreed that a vicar would receive one-third of the income. By 1300, there were 9,000 parishes in England.

Some rectors were more concerned with income than in giving moral lessons. Some priests understood the teachings of Christ while others were mere parrots. Manuals for priests began to appear listing annual offices and describing ceremonies for baptisms, burials, and marriages. They also provided music, words for mass, and lessons from the lives of the saints. Celibacy was an ideal: priests often had a wife.

Most churches were one-room buildings that had no benches or pews. Some persons brought their own stool while most people sat on the straw-covered floor. A few persons brought hand-warmers consisting of hollow metal spheres containing hot coals. The largest church buildings contained relics from early Christianity, including pieces of stone from the Ten Commandments, the baby teeth of Christ, or the bones and clothes of the Saints. Three different churches displayed a thumb of John the Baptist.

In 1287, Bishop Quinel of Exeter recommended that the minimum church furnishings include a communion bread holder made of pewter, a silver chalice, a holy oil container made of pewter, an incense boat to hold the Kiss of Peace, three cruets, a vessel for holy water, images of the patron saint and the Virgin Mary, and a stone altar that had a canopy and cloth covers. Holy water was to be locked away to prevent it from being stolen for use in witchcraft. Over the next few centuries, many churches would be rebuilt in stone.

Sermons had been given in Latin until the twelfth century but were now being conducted in English. Priests gave lessons about the Articles of Faith, the Creed, the Lord's Prayer, the Seven Deadly Sins, or the Ten Commandments and they described each and every corner of Hell. Morals were illustrated with stories of animals, plants, stars, and body parts. Priest also gave practical advice about nursing, sexual morality, and marriage. They advised against usury and magic. Many lessons were drawn from history, legend, contemporary events, personal memories, the Bible, and the lives of the Saints. Worship of the Virgin Mary began in the fourth century and was soon more popular than all the Saints combined.

Priests gave much instruction during confessions. The priest would ask many questions. Have you played or drank on Sunday? Have you sinned in lechery or tricked women into bed? Have you found and kept or borrowed and not returned something? Have you claimed another's deed, celebrated a neighbors harm or grieved their fortune? Have you ate till you barfed? Have you been late to church or listened to a sermon without devotion? Have you taught shrewish children some manors? Have you destroyed grain or rode through grain rather than having gone around it? The penance was to fit the offense without requiring more than could be accomplished.



The life of the priest was to provide an example for everyone. He should be chaste, honest, mild, shaven, and sober and be hospitable to both rich and poor. He was to avoid gluttony, sloth, pride, envy, taverns, games, dancing, and flashy clothing.

Moral offenses were heard in the church's court. Adultery was the most common case. Those found guilty would be whipped—unless they were wealthy, then they paid a fine. The church also heard cases of marriage separations and proscribed penances for "departing from the traditional posture during intimacy."

Consolidation of beliefs and practices were still occurring in the Christian world. Some sects believed Christ was born through Mary's ear or that an impostor died on the cross in place of Jesus. Heretic variations in belief were fought by members of the inquisition who traveled from town to town looking for informants. The heretics might be whipped but usually were not tortured. Some exceptions include the dramatic, public burning of 183 Cathars in the year 1239 in Montwimer (Marne), France.

### City life

In the city, people had a more varied diet and had a less strenuous life than did the village farmers. In addition, people living in the city ate a more varied diet. Both city and rural homes cultivated gardens providing herbs and medicines along with seasonal vegetables, fruits, and flowers [omit: but in the largest cities, housing was beginning to crowd garden spaces]. The people of the towns and cities obtained their food from the nearby farming villages. We have seen that food had to be obtained locally because it could not be transported over any distance at all—until the last century or so.

Towns contained chandlers, coopers, glaziers, tanners, and tailors and such whose shop was part of their home. They didn't have a separate building that served as a retail store, instead, they might prop open a window shutter to serve as a sales counter. (During subsequent centuries, craftspeople—not farmers—comprised the largest portion of Europeans emigrating to the new world.) Each of these shops was operated by the owner with the help of his wife, one or two male relatives, and an apprentice in training.

Shop signs displayed standard symbols to indicate their goods or services to a largely illiterate public. Apothecaries displayed gilded pills, goldsmiths showed unicorns, harness-makers displayed horse heads, and surgeon-barbers displayed red-striped poles. Wine shops displayed a bush. Wine was sold straight from the barrel because bottles were not yet being made in Europe—neither was champagne. Street peddlers sold such things as fish, chicken, fresh and salt meat, garlic, honey, wine, milk, onions, fruit, eggs, leeks, and pastries that were filled with either fruit, chopped ham, chicken, or cod and were seasoned with pepper, cheese, or egg.

Some craftspeople traveled from village to village selling various goods, or the repair of clothes, kitchen utensils, or furniture, or selling services such as slating, tiling, thatching, animal branding, sheep milking, animal-shoeing, or animal tending. A tinker would repair brass jars and pans. During mowing season, a pair of persons might travel around with their cart offering carting services for hire.

Townpeople paid an annual fee to their lord instead of performing labor services. As a city grew its lord became very rich. The lord of a farming village received much less income. Citizens

typically paid a tax of 2.5% on movable property and 1% on real property, but the wealthiest paid a flat tax of twenty pounds. By the year 1250, a sales tax was added along with a per-person tax. These taxes were paid to the lord of the city, who in turn paid a share to his lord. Such shares were paid all the way to the king and queen at the top of the feudal hierarchy, who were now becoming heads of incipient nation states.

Townspeople collectively defended their rights by writing them down in a charter. A charter might record that the townspeople were to have a mayor and council and hold their own lower court. Some charters stipulated that a man could not own a crossbow unless his property was valued at over twenty pounds. (In the U.S. today there is a bit of debate about the original intent of the writers of their Bill of Rights guaranteeing the "right to bear arms," and this may provide a clue.)

Townspeople were mostly left alone while the lord was prospering. When not prospering, the lord would increase taxation. Many towns were heavily taxed to finance the lord's involvement in a profit-seeking crusade in the holy land. Sometimes those crusading lords paid a city-sized ransom when their armies were captured. One ransom was 300,000 pounds, which was paid to a certain sultan who was surprised by their lack of haggling. Some town merchants expressed their opposition to crusading: "It is a good and holy thing to live quietly at home in friendship with neighbors, taking care of children and goods, going to bed early and sleeping well. They said they would happily pay for defense against a reverse crusade but it is stupid to die at large expense in a foreign land.

Townspeople had general liberty and some self-government but little democracy. Mayors and council members were sometimes elected by guild members, sometimes appointed by outgoing members, and often came from a small number of families managing to monopolize these positions. For example, half the members of Venice's 480-person council came from just twenty-seven families and in Pisa, thirty families monopolized the council throughout the thirteenth century.

The town court heard cases of petty theft, fraud, and assault and disputes involving property or business transactions. The mayor and a handful of council members might act as judges, receiving portions of each fine and settlement. For example, a murderer would have to pay money to the victim's family. Some typical cases include the following. One man found his silver cup in the possession of another man who proved he bought it from a third man. This third man could not readily prove how he got the cup and so was placed in jail until more witnesses could be found. Another case involved a landlord's attempt to sell the doors and shutters of a house to recover rent that was past due from its occupant. In another case, the neighbors of a woman took her to court to force her to clean up the foul smelling pipe she placed between her privy and the street. She was fined six pennies and given forty days to remove the pipe.

Towns were becoming more numerous and their populations were expanding. In the year 1250, the most populous cities in Europe were located in Italy, where several cities had 50,000 persons and Venice had 100,000 persons. The largest cities of Northwest Europe were walled and had ten or twenty thousand persons. The population of Paris was 5,000 persons, Troyes had 10,000, Cork had 10,000, London had 25,000, and Ghent had 40,000. In contrast, we have seen that the population of Hangzhou, capital of the Southern Sung Dynasty of China, was one million persons in the year 1275 ad. It was described by Marco Polo as the greatest city on the Earth.

The population of Western Europe was about sixty million persons: Western France had twenty million while Italy had just ten million; Eastern France, Germany, and Poland had a total of

twelve million persons; Spain and Portugal seven million; Scotland, Ireland, and Switzerland had one-half million each while England, Wales, and the Low Countries had four million each. The Low Countries were already draining marsh lands and building dykes. In the thirteenth century, one dyke-burst in Holland killed 50,000 people.

Since buildings were made of wood, fires spread easily in the city, and attackers would burn everything they couldn't carry. Walled cities, as we saw was the case in Mesopotamia, were still protecting their residents from attack. A siege was often a battle of food supplies as residents tried to hold out longer than their attackers who could be fed in the field for only a couple of months. Catapults had already been used for 1,000 years but were now becoming stronger through the use of counterweights. Attackers often tried to dig wood-supported tunnels under a wall corner. When the supporting wood was burned, the wall might collapse and provide an opening into the city. The city residents dug counter tunnels to fight this tactic.

Towns were filled with shops displaying goods to the people walking past. In contrast to today's cities, most everyone was walking. Few persons rode litters or carriages in town. Only nobles and the wealthiest business persons owned horses, some less-rich persons owned a donkey. Saddles were made from wood and might be ornamented with ivory, metal, or painted leather. Embroidered saddle cloths were used. European horses were being bred for size and so were already larger than those used in Roman times.

Around town, one would see monks and priests wearing brown habits. Artisans wore bright green, red, blue, or yellow tunics and hose while merchants wore fur-trimmed coats. Housewives wore gowns, mantles, and white hats. In a fashion lasting for centuries, some women used face powders to present snow-white skin.

The dirt—or mud—streets were filled with dogs, cats, geese, and pigeons along with odors from trash, animal dung, fish markets, linen makers, butchers, and tanners. Residents were required to clean the street in front of their homes and shops. Each home had its own garbage pit and a privy out back. These were periodically emptied for a large fee.

All buildings looked the same on the outside but the homes of the wealthier contained more floors and were more elaborately furnished. Merchants, now called burghers or sometimes "sire," often had their shops on the ground floor of their three-story home. They lived in the second floor while their servants lived in the third. The merchant might also have a stable or storehouse in the rear. Windows were nothing but oiled parchment that passed little light. An oil lamp might be suspended by a chain and lit after dark. Animal fat was saved for the chandler to turn into candles, or to be mixed with ashes to make laundry soap. Walls were covered with dyed or embroidered cloth. Few homes had a carpet; floors were instead covered with rushes. Beds had a straw-filled mattress, feather-filled pillows, and woolen blankets.

If a family could afford them, expensive spices—including pepper, mustard, ginger, nutmeg, cinnamon, cannal, mace, and cumin—were imported from the orient and kept in locked chests. Some spices were more expensive than gold. Basil, sage, rosemary, thyme, marjoram, and savory might be grown in a house garden and hung inside the house to dry.

Soup was the standard meal and often included meat or fish. Rabbits, geese, capons, ducks, and chickens were bought from a shop live, with their feet tied together. Fish might be kept alive in a leather tank until dinner time. Sauces were thickened with pestle-ground bread crumbs, and stews were decorated with flower petals. Roses and primroses might be stewed for desert. Recipes were

complicated. Servants ate after their employers, and leftovers were taken to the door where one or more poor persons were waiting. In previous centuries, beggars were allowed inside to ask for food directly from the table. Many of these persons had left their farming village. Food was preserved through pickling, salting, or smoking or by being dried in the sun.

For a few pennies, a person could buy chicken, rabbit, vinegar, oils, salt, or pepper. Prices were higher for olive-oil, sugar, or honey, so few homes had any sweeteners.

The price and weight of bread was fixed by law and varied with local crop yields. Loaves were marked to indicate who had baked them. Bakers caught cheating were placed in the pillory with a loaf hung around their necks. While shopping, people took care to avoid being tricked by an unscrupulous business person. Some business people camouflaged stale fish with pig's blood, soaked cheese in broth to make it appear richer, or watered wine, milk, or oil to increase its volume. A standard joke involved a sausage-maker's customer asking for a discount for years of loyalty but instead being asked "and you're still alive?" Social status was just as important to the medieval family and shop-keeper as for humans everywhere today. Each family and each person sought respect in the community.

Women were somewhat oppressed and exploited, as still occurs throughout much of the world. Women had no political voice in local affairs and could not serve in the town council. But there were some prominent women including Eleanor of Aquitaine and Joan of Arc. Unmarried women could inherit, sue, make contracts, buy and sell property, and represent themselves or their husbands in court. The church taught that a woman is subject to her husband but not to his servant. Wife beating was common but women might also dominate their husbands.

Privileged women had tutors and learned to read and write, speak Latin, and play musical instruments. They could have a more rounded education than their brothers who mostly learned to hawk, shoot, ride, and play chess. Women were not allowed to attend the university. They could choose only to enter a convent, such as at Notre Dame Aux Nonnains, which was founded in the sixth century. Women operated the shop of their husbands when he was away or after he had died. Women worked in many occupations, from seamstress to barber and carpenter, but always for a lower wage than men. In fact, guidebooks recommended hiring lower-cost women to increase profits.

A contemporary poet described the characteristics of a lady: she should walk straight saluting everyone she passes, including the poor. She should be careful not to mislead men with a glance or accept their gifts. She should not drink too much nor cuss, scold others, or talk loudly. She may sing when asked. Bad breath should be held and bad teeth should be covered when close to other people. She should knock before entering a home and should not look inside while passing a home. It was bad manners to talk while eating, to take the best pieces of food, or to criticize the food given by your host.

Keep in mind that both Hangzhou in China and Cahokia in North America were contemporary to the thirteenth-century Europe described here. Do you see any similarities and differences in village and city life or in human nature?

## Schools, books, and education

There were no public schools educating the general population. The daughters of the wealthy could be taught only by a private tutor, but their sons could receive primary education from a parish priest and then secondary education at a cathedral school. To train clerics, the church founded cathedral schools in the seventh century. But the instructing priests were simply training their own replacements.

Students sat on the floor during class and used bone, ivory, or metal tools to gouge notes on wax tablets. Pupils repeated the instructor's words in unison until they had memorized a topic. Each morning, students recited what they had learned the previous day. This was followed by a discussion period and then a new lesson.

Students laboriously copied books by hand in a chore that required months of effort. Each piece of parchment was first scraped, smoothed, and clamped and then written on by dripping ink from an animal horn. The copyist often wrote a celebration on the last page: "Finished, thank God" or "May the writer be given a cow, horse, goose, or companion." Etiquette directed that books were too valuable to lay on a straw-covered floor, scratch with fingernails, be pounded on, or used to hit somebody. Ready-to-use books could be rented by a student; rental fees were determined by the number of pages in the book. (The original author of a work wrote drafts on wax tablets and the final version on parchment.)

Students memorized passages from the Roman and Biblical experts—Virgil, Ovid, and the Gospels—that they would frequently quote throughout the remainder of their lives. The points presented in every document and all written correspondence would be given weight by quoting these authorities. The Gies explain that in some letters, as many as half its sentences might contain a quote from the ancient wise, letting them do the arguing for the letter writer.

Universities for the general public began in the eleventh century as priests began taking general students. These “general students” were most often the male sons of wealthy families. No schools yet existed in the villages. Eleven of the twenty-two universities of twelfth-century Europe were in Italy. The university had no buildings of its own; classes were simply held in the homes of their teachers. Students enrolled at age fourteen or fifteen and were unsupervised at night. They would sometimes fight, gamble, drink, and spend their money on ubiquitous prostitutes. Such behavior led to fights with the townspeople—sometimes riots were incited. After six years of study, the student had to pass an exam. Students would then become a church official, receive a license to teach, become a scholar, or go on to study medicine or law. (You might like to compare fields of study, career choices, and educational opportunities among the general population of Ancient Mesopotamia, Medieval Europe, and of your nation today.)

University students learned the three subjects—logic, Latin grammar, and public-speaking or rhetoric—meant to build writing skills. History and literature were not taught but they did learn arithmetic, geometry, astronomy, and music. Until universities began training more than church officials, these humanistic subjects [omit: or non-divine —that is, subjects involving the study of "humans"—] were secondary to theology, canon law, and philosophy. Paul Johnson says the school in Mantua was teaching these humanist subjects by the year 1423. Some humanist pupils went from school to school seeking these new subjects.

European scholars did not speak Greek in Dante's time but by 1450, every respectable

humanist spoke Greek. Some scholars began studying in Constantinople where an evolved Greek was spoken. They often returned to Europe with previously "unknown" Greek works by Plato and others. Following the Reformation, which began in 1517, university subjects expanded to include history and poetry and such. Physical education, art, and the local language were not yet taught in the university, but we would soon begin to write down and study the grammar of the French, English, German, and other languages. As a language is first written down, that is when the sounds of its symbols and the spelling of its words are initially chosen.

No science was taught in Europe until knowledge of it began to arrive from the Islamic world. Arabic numerals, using decimal places and the zero invented in India, began to be used in Europe. As you have experienced, it's much easier to perform arithmetic using decimal rather than Roman numerals. Social science, chemistry, physics, and biology did not yet exist. For example, little was taught about plants and animals other than a few nonsensical rumors: elephants fear mice, hyenas change sex at will, and ostriches eat iron. Sailors were beginning to use astrolabes and the Chinese compass to chart coastlines but university students were still being taught that the Earth's "geography" consists of only the three equally-sized continents of Africa, Asia, and Europe. The scientific method would not begin for a few more centuries.

In *The History of Islam*, Robert Payne says that around the year 800 ad. the Abbasid Caliphs Harun and Al-Mamun established universities and astronomical observatories and had scholars translating Greek, Syrian, Persian, and Sanskrit works. For example, al-Farabi worked to harmonize Aristotle's ideas with the Koran; in turn, St. Thomas Aquinas studied al-Farabi's ideas while attempting to put Christian beliefs on an Aristotelian foundation of reason. The written works of the Greeks were part of normal study in the Islamic world but unknown in Europe until "rediscovered" through twelfth- and thirteenth-century Latin translations of the Arabic versions of these books. To accomplish the translation from Arabic to Latin, Jewish scholars in Spain first made a rough translation from Arabic to Latin and then the result was polished up by Christian scholars practiced in Latin. We can believe that inaccuracies would build through successive translations from Greek, to Syrian, to Arabic, to Latin, and then to—for example—English.

For centuries, books in Europe had been copied only by a small number of monks, but after sufficient growth in the market of readers, a new business emerged to hand-copy books for sale to the wealthy public. People liked to read stories aloud for entertainment at home. Books about the lives of the Saints were especially popular but there were tales of swindled or henpecked merchants, beaten wives besting their husbands, and romance, too. A woman named Portia was the heroine of the popular novel *The Hard Creditor*. There was also the story of Flamenca, the wife of a jealous man. She managed to exchange two words each time she walked passed a particular suitor on the street. Through the next several weeks, their conversation slowly built to "yes," but after four months of love she chose to stay with her husband and sent him away. During the twelfth century there was a popular story involving the adventures of a fox, a wolf, a cat, and a lion. For example, in one episode the fox, who was stuck in a well, tricked the wolf into coming down on the other end of the well-rope. As the wolf descended, the fox was lifted out of the well, leaving the now-trapped wolf behind. Soon, the demand for books and the available mechanical knowledge combined into the invention of the printing press, as described below.

## Doctors and hospitals

High population densities, poor sanitation, diets low in fruit and protein, and cold winters made for short lives. (Only in the last few decades have we come to understand how easy it is to avoid such unnecessarily shortened lives.) Pneumonia and typhoid killed many persons. Leprosy and leper colonies were common—France had 2,000 of them. Crippled people filled the roads on pilgrimage to holy sites. Hospitals were staffed by priests and nuns who tried to help those with simple sicknesses. The hospital did not take patients with leprosy or plague and did not handle pregnancies. Midwives helped deliver babies at home. Medieval medicine was not too effective, consisting of astrology, blood letting, and herbal concoctions. Any quack could sell a remedy. Even the largest cities would have but a handful of licensed doctors who had completed eight years of training.

Medical training included such practical advice as asking for payment while the patient is in pain and covering all bases by telling one of the patient's relatives to expect a recovery while telling another to prepare for death. If a doctor returned and found yesterday's patient dead, the doctor was trained to avoid looking surprised and instead explain that he knew death would happen and just wanted to find out at which hour the patient had died. Trained doctors learned surgical techniques to correct cataracts and to deal with hernias and kidney or gall stones. Opium or mandrake was used for anesthesia because they would “make the patient sleep for four hours, not feeling knives or fire.” Doctors were also taught that a good surgeon's cutting and burning is not hampered by the patient's weeping. The barber profession was becoming divided into hair cutters, blood letters, and tooth pullers.

## Guilds

For each craft or service there was a trade guild attempting to control competition while upholding quality through surprise inspections. Paris had 120 different guilds. Each guild was run by members working in its field. Officers were usually elected by masters only but sometimes journeymen could also vote. A craftsperson would be fined by the guild if, for example, caught claiming that an object was made entirely of metal when its core was simply wood. Substandard products were confiscated and given to the poor; its maker was fined the object's price. Since it was possible to create famine by fixing prices through the monopolization of foods, guilds forbid a food-seller from contracting at a farm for its eggs or cheese and such. The food-seller had instead to wait for the farmer to arrive at the market and then compete in public against other bidders. Guilds kept occupations apart by requiring, for example, that tailors make only new clothes and not repair old, existing clothes and that clothing repairers never make new clothes. Guilds also set employee wages and adopted holidays.

Guilds set rules concerning apprenticeship durations along with the number of apprentices that one shop could train. Masters were to feed, lodge, and clothe their apprentices: to treat them as the “child of a good family.” Apprentices received training in exchange for their mostly-wageless labor. Some apprentices were given a small stipend and some were sent for weekly lessons in reading, writing, and arithmetic but others were beaten. Few apprentices were married. Parents paid a fee to have their child apprenticed in certain fields.

Apprenticeships lasted four to eight years but usually five. The duration of an apprenticeship

could be shortened if the student's parents paid a fee to the master. Apprenticeship in goldsmithing and other metalworking fields might last ten years. To demonstrate mastery of their field, apprentices created a "masterpiece." Apprentices had then to show enough funds and equipment to go into business on their own. They then took an oath and paid a fee to the lord or prince who "owned" the guild. Lords sometimes sold their income-providing guilds to other lords.

After repeating the same motion fourteen hours per day for decades, the bodies of many craftspersons became crooked and bent. Each guild helped ill or destitute members and they helped pay hospital and funeral expenses. These activities were often handled by an auxiliary association called a brotherhood. Each brotherhood had its own patron saint who was related in some way to that field of work.

### Growing wool industry expands trade

By the year 1300 in Europe, there was more demand by volume for wool than for grain. Wool was grown in the North and then sent south to Flanders, France, and Italy to be made into cloth and clothing. Merchants obtained wool from many places but the breed of sheep in England had the best hair. The resulting clothing was being bought by people throughout the continent. Each city and region carefully guarded its wool or cloth reputation. Cloth was also obtained from local linen or flax, silk from China, or cotton from India.

Merchants bought wool in quantity to obtain the lowest cost. A wool agent might form an agreement with a manor or monastery to purchase its entire wool production in each of the next several years. A notarized contract would be made in triplicate, providing a copy for each participant. Wool sold for four or five shillings per stone. Wool merchants began to insist that fleece be shorn in a barn having a board floor rather than one made of dirt.

Several steps are involved in turning fleece (sheep hair) into cloth. Fleece must be cleaned of dirt, beaten, combed to remove tangles and impurities and to get the fibers to form parallel rows, carded to fluff its fibers, spun into thread, wove into cloth, brushed to remove clumps, dyed, cleaned of oils by a fuller, pressed, and folded. These steps were not performed within one factory building but were done by a series of persons, each doing one step—maybe more—and working within his or her own home. A cloth merchant might buy raw fleece and then take it each worker, one after another, in that series of homes. At each step, the merchant would sell the unfinished product to a home-worker who would perform the next step in the process and then sell the material back to that merchant. The merchant bought, sold, and re-bought the material several times as fleece became finished cloth. To begin the process, after purchasing fleece, the wool merchant would take it to a sequence of workers to have it cleaned, beaten, combed, and carded. The merchant then took it to be spun into thread. It was sold to the spinner and the bought back after having been spun. Thread was still being spun by hand but the spinning wheel would soon be invented to handle the demand. The merchant then carted the wool to the house of a weaver and sold it to him or her. The weaver owned his or her own weaving frame. The merchant would specify the weave to be done and then buy the resulting cloth from the weaver. The merchant then sold material to a dyer to be dyed and then bought it back again afterwards. Dying could be done on either finished cloth or on raw wool. The term "died in the wool" refers to the dying of raw fleece rather than cloth. The merchant then had the cloth brushed, pressed, and folded. The Gies describe this as "a factory spread around town."



The Gies mention the legal proceedings against Jehan Boinebroke, a cloth merchant and "notorious skinflint," in the year 1286 ad. Boinebroke bought wool, sold it to a weaver, bought it back as cloth, sold it to a fuller for cleaning, bought it back, sold it to a dyer, bought it back, and finally sold it to his agents who would sell it at the market. He rented the homes of entire streets to his workers. He was taken to court for tyrannical dealings with the clothworkers. If there was a downturn in the price of any of the above clothmaking steps, he would simply refuse to buy back the cloth. The court case shows the exploitation of labor and the existence of class conflict but also that justice could be obtained: one-third of the claims were honored by the court.

The loom was the only complex piece of machinery involved in the cloth making procedure, and this gave the weaver some leverage in disputes with entrepreneurs like Boinebroke. In fact, weavers brought the cloth industry of Douai to a halt in the year 1246 through one of the earliest labor strikes. Weavers refused to work for the low fees merchants were attempting to pay. The merchants managed to end this little uprising and hoped it would never return. We'll see that in a few centuries, merchants began to lease weaving frames and equipment to these workers who in effect become their employees. When merchants later began gathering that sequence of workers into a centralized building, the factory was born.

In one generation, the production of sheep grew four-fold. The people of the time experienced a dynamically changing world. Sheep were becoming England's national treasure, and this caused the conversion of much crop land into fenced-in sheep land. This so-called "enclosure movement" displaced many English peasants from their farms but fewer continental peasants because less shepherding was being done there. The displaced peasants simply packed their belongings and left the village, leaving a few wattle-and-daub homes and a church to crumble through time. The old stone manor house might then be slept in by sheepherders. By the year 1500, 10% of English villages had been abandoned. At the same time, a few craftspeople were moving to villages to circumvent guild membership and restrictions. Yet other villages became proto-industrial towns. For example, Birmingham began to specialize in tanning and cloth-making when its population was just 1,500 persons.

Some cloth merchants made enough money to buy real estate. They might buy homes that would be rented to the weavers with whom they dealt. "Rent" was actually a payment against a home-loan subject to a 10% interest rate. These payments might last for generations. The wealthiest merchants often became money lenders.

The largest bankers in the year 1250 were in Italy. They charged high interest rates to "offset losses" even though the church denounced such usury. A debtor's property would be seized. Sometimes property could be seized from others living in the debtor's community because the community had a tradition of looking out for its reputation.

Nobleman were the largest debtors; in fact, their loans might take more than a generation to repay. Sometimes a nobleman would levy a sales tax in his manor town to obtain repayment funds while at other times a town would make a loan to a nobleman. Sometimes a nobleman would knight a merchant for his financial services. The Pope once halted all church services in Champagne until a count had paid his loans. To lift the ban, this count repented and promised to conduct a crusade. (Once again, shame on the offensive crusader.) Another loan of historical proportion was that of Edward III, who borrowed 250,000 pounds from Italian, German, Flemish, and English families so he could invade France. His bankruptcy in turn bankrupted those loaning families. One French king

owed a banker in Lyons as much money as his entire kingdom earned in two years.

The wool industry was expanding into a new economic entity that would soon require centralized ways of manufacturing. It was also moving people from farming villages to the city where they would become both the labor and the market for the products of the eighteenth-century Industrial Revolution. In Medieval Europe, there were few luxury goods and they were bought by only the wealthiest of us, but the cloth trade was growing into a scale that would soon require the invention of the factory. An important aspect of the Industrial Revolution is that the factory workers are also the consumers of the factory products.

### Annual Trade Fairs of France

Thirteenth-century France had a set of ten, annual trading fairs held in towns such as Troyes and Provins. Peasants attended the fair to see the sights and sounds of foreigners and to see the entertainment and animals. They might also sell a hen. Mostly, European wool and clothing was exchanged for oriental spices and silks and for luxury goods such as ivory and pearls from Syria, Morocco, Tunisia, and Egypt. Indigo dye was brought from India by Italian merchants. Italian dye makers had recently learned from Muslim suppliers how to make red and violet dyes from crushed insects and lichens.

These luxury goods were brought to the fairs by Southern European traders who obtained them from Middle Eastern, Islamic traders in Constantinople, Acre, Antioch, or Tripoli. Some of these Arabic traders had obtained goods from Oriental merchants. Arabic traders told incredible tales to the Europeans including stories about lakes guarded by winged animals. (In Chapter 10 we saw that the Kingdom of Saba spread similar rumors about monsters and flying serpents to protect their source of frankincense and myrrh.) Worldwide transportation was expensive: a pound of mace cost as much as three sheep. Spices were guarded like diamonds at every step in their sale as purchasers watched for dilutions and checked weights.

People also exchanged handicrafts, local animal skins, and Scandinavian furs along with iron, lead, tin, and copper from around Europe. Food could not be transported beyond a day-long journey because people could not carry more than needed to feed themselves for the journey. The price of a wagon-load of wheat doubled when transported just forty miles or seventy kilometers.

Prior to the fair, roads would be busy with the cargo-filled wagons of merchants. Princes were expected to guarantee the safety of travelers on the roads within their regions and sometimes reimbursed travelers who had been robbed. (We saw a similar guarantee in Ancient Mesopotamia.) While attending the fair, the town's lord guaranteed safety for the merchants from dawn until dusk. Some towns used candles to provide nighttime street lighting. (Robert Payne mentions that the eleventh-century Caliph al-Mustansir ordered the streets of Cairo to be lit with oil-lamps.) To pay for this protection, the lord collected an exit tax on goods taken out of the city. This was very profitable for the lord. The lord also collected tolls, a share of rents, weighing and notary fees, and court fees.

In response to high court costs, merchants at some fairs demanded a separate fair-court to try commercial cases. The fair-court might arrest someone who hadn't paid a fee at the fair of another town. When a person owed a large debt from one fair, the fair-court would threaten to bar all merchants from that debtor's town, who then made sure that the debt was paid.

There were twenty-eight licensed money changers at the Troyes fair and there were also currency exchangers, pawn brokers, money handlers, and loan makers. A merchant might deposit money with a handler at one fair to be collected at another fair. A loan might be repaid at the next fair or its payment might be spread across the next three fairs. In a new development, some started selling the loans due to them at a discount to third parties who would collect the full loan. These notes were called "letters of the fair" and could be used as cash in other fair transactions.

Since travel was dangerous, especially with a wagon load of goods, merchants typically contracted transporters. A transporter might receive one-quarter of the sale's profit but pay for all lost goods. Italian transporters typically supplied one-third of the capital for the enterprise and kept half the profits. Most European wholesalers were Italian. Ever since Roman times, Italy had Europe's highest level of business, and for this reason, the European Renaissance began in Italy.

Many languages would be heard at the fairs. Arabic traders introduced Europeans to many new things and were our source for words such as bazaar, jar, magazine, tariff, artichoke, orange, Muslim, gauze, sugar, and alum. Another occasional reminder of the Troyes fair is that we still encounter "Troy weight" in which there are twenty pennyweight to the ounce and twelve ounces to the pound, as was the case for monetary denominations.

Genoese merchant ships first made their way to England in the year 1277. Ocean-going transportation costs less than hauling goods overland. The medieval fairs began to disappear during the famines and plagues of the fourteenth century but trade soon became ubiquitous. The Gies explain that these fairs and their wholesale exchanges were "Big Business in its infancy" and provided the basis for the Industrial Revolution.

## Gothic Architecture

The growth in trade meant Europe was emerging from its Dark Age, which is an overly dramatic name for the period following the collapse of the Roman Empire. This growth in trade provided sufficient funds, which were unavailable and unimaginable just two centuries earlier, to build great cathedrals. These were being built in the new Gothic style. After many centuries in the shadow of their predecessors, architects were proud to have finally surpassed the abilities of the Romans. The increasing height of Gothic cathedrals was developed by stone masons through experience only and not through the use of measurements or calculations of forces. The geometry of triangles and such was used to draw plans on parchment.

The Gothic architects were among the most respected persons in society. They were not as specialized as are today's builders; one might simultaneously be a sculptor, painter, and poet who could build castles, wells, bridges, and water pipe systems. A Gothic cathedral combined the work of many persons, including sculptors, wood carvers, metal workers, and stained glass artisans who would travel from town to town working on cathedrals. About ten churches were being built each year in France alone. A church could be built in three years if funding was available, otherwise several generations might be required.

Iron clamps and pots and bells of brass were made on site. A brass bell is made by pouring molten metal between two clay molds. After cooling, the molds are removed to free the bell which is then cleaned and tuned. Tuning is done by laboriously removing brass from the inside of the bell, which also makes it thinner. Its brass contained thirteen parts copper to four parts tin. The addition

of tin was found to make bells more brittle but gave them a better tone. A bishop would baptize a new bell with a prayer for faith, charity, and good weather. The inscription on one bell might read “call the living, summon the dead” while that on another read “sometimes joy sometimes sorrow” or perhaps “marriage today, death tomorrow.”

Gothic cathedrals were built by hand with help from newly invented wheelbarrows and people-powered or oxen-powered cranes used to lift materials. While Roman masons cut stones large enough to be held together by their own weight, Gothic masons used mortar to cement smaller blocks together. Romans built semicircular vaults of limited height but Gothic masons built buttressed vaults reaching successively increasing heights of 30, 35, 40, 45, and 50 meters. Spires would rise as high as 170 meters or yards. Such heights are truly awe-inspiring to every human who experiences them. They are examples of human artistic and technological capability.

These vaults also provide much space that was filled with stained glass windows, which accounted for half the cost of a cathedral. At Chartres, forty-four windows were paid for by princes and lords, forty-two by town guilds, and sixteen by bishops. Stained glass was made in a nearby forest because large numbers of trees were burned to melt the sand. Two parts ash or beech wood were combined with one part sand to make glass. Various coloring-materials were added. Glass-making techniques could not yet provide functionally clear home windows but it made highly artistic stained-glass cathedral windows.

Europeans inherit knowledge expanded in Islamic lands

Astronomy and mathematics were studied and exchanged between every region of the world, including Ancient Mesopotamia, Egypt, India, China. Central and South America had to work alone. Our combined knowledge has accumulated through time and place. Those of us human beings who lived during Medieval times along the Islamic equator inherited knowledge from the more ancient peoples of Babylon, Greece, Rome, and India and such, added to it, and then passed it on to other people, including those in Europe who were about to begin a Renaissance.

In the previous section, we met the Persian mathematician al-Khwarizmi who first described algebraic procedures in his eighth-century book *Hisah al-Jabrw-al-Muquabalah*, or Restoration and Reduction. Trigonometry was developed by Arabic mathematicians for use in surveying and astronomy. Seventeenth-century Europeans were still relying on Arabic textbooks of medicine and astronomy, including *The Compendium of Astronomy* by al-Fargani

During the European Renaissance, astronomers were able to use nine hundred years of Arabic observational recordings. The science of optics was developed by Arabs making lenses for people with failing eyesight. In the year 1038 ad, Alhazen published *The Optical Thesaurus*, which was the basis for the telescopes and microscopes developed by later Europeans. Arabs inherited ancient alchemy and turned it into the science of chemistry through experience with a large number of substances and processes. In the eighth century, Jabir Ibn Haiyan’s studies made him the father of chemistry.

While making medicines, Arab doctors were the first to experiment with distillation procedures. This process was further developed in the large-scale production of perfumes. The distilling industry was the first to have scientific procedures. Europeans soon used this process to distill drinking alcohol, which had never before existed. Demand for alcohol first grew during the

plagues of the fourteenth century, and laws were soon made to limit its use.

Through the careful study of the separation and purification of salts, Arab technicians developed the industrial-scale production of soda, alum, iron sulphate, and nitre. These chemicals were exported for use in the textile and other industries. Nitre makes gunpowder.

## Gunpowder

The weapons of every time and place we've so far seen consisted of sword, and bow and arrow. Nowhere in the world had iron and gunpowder been merged into canon and then into hand-held guns. This was first done in Europe, probably through a modification of Chinese bamboo firecrackers. Their low cost and lightweight mobility were their initial advantage over catapults and ballistae. Procedures of warfare among fifteenth-century Europeans had to be rethought. Gunpowder enabled the wealthiest kings and queens to merge feudal lands into nations.

We have seen that in the year 1500 ad, cities existed throughout the world, on every continent, and we have seen that each region of the world contributes in the advancement of human technology. But then, some Europeans kings sought to expand their little empires by invading the people of other continents and using canon and muskets to slaughter people. The victims were happily being human before they were killed. These kings claimed that they were exporting Christianity and superior ways, as did the westwardly expanding people of the United States. Both were demonstrating their momentary advantage in weaponry and their inferior morals. Gunpowder and European diseases allowed the slaughter of too many of the world's cultures.

When one group of us humans drives another culture to extinction, it is a crime as great as driving a species to extinction. Today, we understand that success in life is measured in terms of healthy and happy children, families, and communities, not in militaristic expansion. Don't let your ruler try to convince his nation to do this.

In the dilemma of humanity, the technology of immoral weaponry is always closely related to more useful things. The need to understand gunpowder helped advance the science of chemistry, especially as it lead to the discovery of oxygen. The study of cannonball motion was necessarily mathematical and helped build the science of dynamics generalized by Galileo around the year 1590 and finalized by Newton in 1687. The technology to build canons from iron tubes was also used to make steam engine cylinders. The development of fire-using steam engines was inspired by the use of fiery explosions to impel cannonballs. The attempt to understand steam engines resulted in the science of thermodynamics. Today's car engine also uses fiery explosions within cylinders.

## European Renaissance

The "Dark Age" of Europe was a time of little food surplus and trade. The people of Medieval Europe suffered social and economic injustice through the manorial system. The Medieval Age ended as its restrictive manorial system evolved into something less constraining and as its trade and population increased to levels requiring new solutions. The expansion of the wool industry and the growth of towns, markets, trade, and specialists meant Europe was emerging into a new age and beginning its Renaissance.

The Gies explain that the European Renaissance in art and thinking was in place by the year

1300 within the silver and goldsmith shops and in the fledgling universities. Trade volume was doubling with each generation. Markets and commerce were developing into continental entities making some business persons—and their taxing lord—wealthy enough to fund art and architecture, scholarship and universities. But famine and plague occurring in the 1300s delayed the full Renaissance for another century. As plagues killed one-fourth the population of Western Europe, the resulting labor shortage provided a reason to increase the use of mills and other mechanical devices. During the 1400s, Italian trading cities were among the first with public funds great enough to build monumental architectural works. This occurred as popes and princes were taxing commerce.

European peasants won the end of the manorial system, changed their political system, and were necessarily in a questioning mood. They began to ask for proof of all ideas. This continued through the next few centuries as the Reformation and Renaissance, as the Enlightenment, and in the scientific method of obtaining facts and understandings from repeatable measurement. Criticism of the Catholic church resulted in Luther's Reformation, which began in the year 1517.

The decrease in burden on the general population was accompanied by a rebirth in the intellectual pursuits of art and scholarship. This rediscovery of art impelled artists to create realistic representations of people and objects. The people of the Renaissance wanted to re-attain and then surpass the accomplishments, knowledge, and techniques of the past .

The Renaissance happened as ideas and techniques bounced between people, each building on the successes of those coming before them. The people of the entire continent were contributing their talents as they became unconstrained by manorial impositions and obligations. (Still today, economic and social constraints are keeping too many persons from contributing their talents to the flow of civilization. Our full human blossoming will occur when these unnecessary constraints are removed.)

You might like to read *The Renaissance, A Short History*, by Paul Johnson. Here is a summary of portions of his book.

Johnson explains that the Renaissance received a push from patrons, rulers, and cities competing to expand their power with embellishments of art and scholarship. For example, Federico da Montefeltro (1422-1482) obtained his wealth through the mercenary trade. Johnson says it was a rare age in which political and military hegemony was partially judged on cultural performance.

At the same time these leaders were committing cruel acts to expand their own power, as described in *The Prince* by Nicolo Machiavelli, which was written in 1513 ad. In case a new ruler had compassion for others and was not inhuman, Machiavelli explained how to act inhuman. He described the actual political and diplomatic workings of our leaders, and explained that the ends justifies the means.

On a local scale, some cities were busy attacking others in their attempt to control their region. Ferdinand of Aragon and Isabella of Castille united their crowns and gave full support to humanist scholarship in Spain. They were succeeded by their son, Charles I, who became Pope Charles V of the Holy Roman Empire.

France was expanding through the years 1440 to 1527 by annexing Gascony, Armagnac, Burgundy, Provence, Anjou, Brittany, and Bourbon lands. A series of French kings wasted many lives and much money trying to invade Italy. (Such sloshing empires do not improve the well-being of their populations.) Payne describes the work of the fourteenth-century Arab philosopher Ibn Khaldun, who studied the typical demise of empires through price inflation, corruption, and waste.

We see that the nations of Europe were being built as conglomerations of feudal hierarchies. Those lords having the largest number of under-lords were at the tops of the tax-collection pyramids and so were collecting the largest amount of money and the greatest number of promissary soldiers. They were hence more likely to attempt to engulf neighboring pyramids.

In contrast to Machiavelli's manual of courtly procedures, Baldassare Castiglione (1478-1529) wrote a manual of courtly etiquette for men and women that popularized the ideals of the Renaissance. Francois Rabelais (1483-1553) wrote *Gargantua and Pantagruel* describing humanism, bawdy humor, peasants, academics, merchants, lawyers, and courtiers. He wrote in French using slang and dialect and made the French enthusiastic about their own language and its potential. His works were both banned and loved. The humanist Michel de Montaigne (1553-1592) wrote informal reflections on people, events, customs, and beliefs and on life's milestones of birth, youth, marriage, sickness, and death. His work was among the first written in a modern conversational tone.

The development of art and scholarship in the Renaissance involved a series of contributions from many individuals. Erasmus (1466-1536) wrote *In Praise of Folly* and influenced Cervantes (1547-1616) who described life in *Don Quixote*. You might like to read in detail about the contributions of Robert Fleming Thomas Moore (1478-1535), John Colet (1467-1519), Lorenzo Valla (1407-1457), Ulrich von Hutton (1488-1523), and Antonio de Nebrija (1444-1522).

Already by the year 1300, artists were studying the form and style of Roman ruins along with the technology that made them. For example, the lost-wax process was once again used for sculpting figures—the most difficult of which was that of a mounted rider. The Renaissance was fully under way in the year 1400 when an art competition was held in Florence and won by Lorenzo Ghiberti (1378-1455), who was selected by a team of thirty-four judges. You might like to look at some of the works—in a variety of mediums—of Michelangelo (1475-1565), Filippo Brunelleschi (1377-1446), Jacopo della Quercia (1374-1438), Raphael (1483-1520), Leonardo da Vinci (1452-1519), and the later masters, such as Rembrandt (1606-1669).

Renaissance artists were versatile and enterprising. They worked with any material and in any medium for which there was a market. Many studios were operated as profit-making businesses, and signed contracts detailing the patron's wishes. Much effort was expended to obtain reality in art: actual body parts were recorded in plaster, measured perspective was carefully duplicated, and every mechanical and optical aid inventable was used. For example, Philip Steadman points out that a mirror can be used to reflect an image onto canvas so that the artist has only to trace the image. Any fifteenth-century picture displaying mostly left-handers was likely made using such a mirror system. Perspective had been forgotten in the European Dark Age, but from 1430 on, every artist learned perspective. Leonardo understood that the human eye does not perceive scenes with mathematically precise perspective. The Ancient Greeks knew to bulge one of the horizontal lines of temple tops so they'd be perceived as parallel lines though they were not parallel.

Philippe de Vitre's (1291-1361) improvements in musical notation allowed more precise and varied results. Musical ensembles became popular. Improvements in the technology of instruments allowed the development of the lute, vio, violin, trumpet, woodwinds, harpsichord, and the virginal. By the year 1600, compositions were requiring four-octave instruments.

Leon Battista Alberti (1404-1472) published *On Architecture* describing every aspect of the trade, including definitions, concepts, materials, construction methods, town planning, building

styles, water supplies, archaeology, restoration, and costs. Every builder used this book. Renaissance buildings spread across Europe as works were commissioned by kings and queens. The Kremlin in Moscow contains two Renaissance buildings. Soon Baroque and Rococo would come into fashion. (My favorite building is the Baroque belltower of St. Sophia's cathedral in Kiev.

Instead of writing in Latin, works began appearing in French, English, and Spanish and such because writers wanted to reach a wider audience and were beginning to value their own local heritage. The Renaissance in literature began with Dante's *Divine Comedy* and Chaucer's *Canterbury Tales*. Johnson says that Chaucer and Dante emerged from a vacuum and had no equals for centuries. Chaucer's new magic was to understand the mind of other's well enough to make personalities jump out of the page as no previous author had done. During the previous 1,000 years, there had been few works of poetry until Francesco Petrarca (1304-74) began its revival. He also advocated the study of both Greek and Latin grammar in the university.

Some humanists became private tutors for the children of wealthy families—including daughters, not just sons as had been more common. For example, Angelo Poliziano (1454-1497) taught the Medici family. In 1427, an early Medici family member had as much wealth as the annual income of 2,000 wool workers. Some members of the Medici family were amateur scholars and paid for translations, church and building expansions, and family palaces. Lorenzo Medici commissioned works of art and was a scholar and poet. He wrote about hunting, woods, nature, love, and short lives. He was a Renaissance man. As the Medici family moved into government, they brought along their enthusiasm for culture. Two Medicis became popes, while another married the king of France and was mother to three more.

## The printing press

The techniques and knowledge of Renaissance individuals spread through mass-produced books made in the printing press that was invented by Gutenberg. The steps leading to Gutenberg's machine include Chinese paper making and block printing transmitted to Europe through Muslim commerce, water-powered paper mills of thirteenth-century Italy, and movable type placed into a letter press. The two goldsmiths Johannes and Johann Fust developed movable type during the years 1446 through 1448. Guttenberg solved the last problems of combining moveable type, punch cutting, composing, inking, and pressing paper with a modified screw press. It took him five years to print his first book, the Bible, which he finished in the year 1455. By 1460 he had printed an encyclopedia. Classic texts were the first to be printed. Printed books cost less than hand-copied versions, which continued to be made only in luxury editions.

Before the printing press, only 100,000 books existed on the European continent; only the largest libraries possessed 600 books. By the year 1500 there were nine million books made by printing presses in over sixty cities throughout Europe. A press was first setup in Mexico in the 1550s and in Boston's Harvard College in 1638.

The fashionable appearance of letters was chosen after a few decades of experimentation. For example, in 1501 Aldus printed in a whole book in italic letters. Soon italic came to be used only for emphasis, contrast, or quotation. Carolingian minuscule or Roman type came to be the most popular type.



## The Scientific Revolution

Through the years 1500-1700 ad, our way of thinking changed as we came to realize the scientific method of building increasingly-accurate, knowledge and understandings from repeatable measurements. Much human talent has been demonstrated in the rapidly developing scientific, technological, and medical fields. Look how far we've come in the last few centuries. Our success is evident to each of us every few minutes as we use a machine or a medicine that is a result of these efforts.

Before this time, we didn't make measurements. We just sat in place trying logically to deduce the ways of nature. During Aristotle's time in the 4<sup>th</sup>-century bc, we thought that it was logical to assume that the motion of an object ceases when you stop pushing on it. A bowstring puts an arrow in motion, but what next keeps the arrow in motion as it travels through the air. We thought that something must keep pushing it, so we imagined that the air somehow rushes from the front to the back of the arrow to push it across the field. We had to wait 2,000 years before Galileo and others came along to begin measuring this aspect of nature. When we make measurements, then we find out how nature actually behaves, and nature always surprises us. In the 17<sup>th</sup>-century ad, Galileo explained that inertia keeps the arrow moving, and then Newton explained that force changes the velocity of an object – if there is no force then the velocity will stay constant forever. As we continually improve the accuracy of our measurements, we also continually improve the accuracy of our understandings and the abilities of our technology. Bronowski and Mazlish explain that the scientific method changed our way of thinking about the world and that it cannot be un-learned.

In the year 1687, Isaac Newton showed that the motions of the planets in the heavens followed the same equations as an apple falling to the earth. It came as quite a shock that there was an equation that even the motions of the planets and heavens obeyed, and it is pretty impressive that we human beings figured this out. Before Newton, there was little distinction between the natural and the supernatural. We thought that the starry sky was beyond nature, inaccessible to direct understanding, and surely made of material unlike anything found on Earth. Today's measurements of starlight finds that the atoms here on the Earth are the same as those in the stars. After Newton published his motion equations, other scientists began searching for equations that might govern other aspects of the world, including biology, geology, and society. [omit: Today, Edward O. Wilson explains that the full understanding of the biological operation of the brain will lead to a full understanding of psychology and even of society, business, economics, and government.]

We see that the questioning mood that produced the Renaissance (1400 to 1700 ad ) also resulted in the scientific method (began around 1500 ad).

Our ideas for specific liberties resulting from specific injustices

In *The Western Intellectual Tradition*, J. Bronowski and Bruce Mazlish, point out that the inventor of the steam engine had a larger affect on our way of life than did Napoleon. If Napoleon wanted to change the world, he should have been a folk singer, or at least a scientist. Electricity and computers have changed our civilization while our most-selfish political leaders have simply made temporary adjustments in the map. Ideas have a life of their own and serve as stepping-stones to new ideas. The old ideas do not go away; they cannot be un-known. Also, ideas and society continually interact and

affect each other. The following description of elements of the Renaissance, the Enlightenment, and the Scientific and Industrial Revolution is a summary of the book by Bronowski and Mazlish.

The kings and queens of Europe were sometimes oppressive. Western ideas of tolerance and personal liberty resulted from specific injustices. For example, certain kings and queens of Europe would select a church of their own preference and then dictate that everyone must attend that particular church—under penalty of death. The questioning intellectuals of the Renaissance responded to this oppression with the development of the idea of religious freedom. In 1598 in France, the Edict of Nantes guaranteed religious tolerance in that people were free to attend the church of their choice. In England, it was not until 1689 that the Toleration Acts allowed the existence of religious sects. The new, "free-church" was a voluntary group—unlike the intolerant state-church. Still today, we hold the idea of religious freedom as a basic tenet of individual rights. This idea is a part of our view of civilization and cannot be un-learned.

### The Petition of Right

In the seventeenth century, university intellectuals began to speak of political and constitutional issues. They also began to debate the role of the king and queen. King James I (1566-1625), who had the Bible translated into English, wrote *True Law of Free Monarchy*, in which he argued that the king has a divine right to rule and is above the law.

Complete power might be obtained by those kings generating total fear. Some settled for fits of wrath. For example, Henry II, King of England, would throw himself to the ground in a fit of rage, as did Hitler. Henry II said "The displeasure and wrath of Almighty God are also my displeasure and wrath. By nature I am a son of wrath: why should I not rage? God himself rages when He is wrathful." Friedrich Heere describes how wrath was considered a legitimate royal trait.

When seventeenth-century kings and queens needed money for war, they would tax an item—perfume, for example. Parliament—still consisting of only nobility, not common people—tried to require the king to obtain their approval before a tax could be levied. James' son Charles I also believed in divine right, but in 1628, when he needed money for war, parliament forced him to sign the Petition of Right before they would give him any.

The Petition of Right asked the king to observe the rights of his subjects, demanded a stop to the billeting of troops, demanded an end to the trial of civilians by martial law, stopped arbitrary imprisonment, and stopped taxation without the consent of parliament. This statement of individual rights has been repeated in many later constitutions and are now a part of our collective idea of civilization. In the seventeenth century, individual people now had religious and political ideals. Economic and social ideals would develop in the eighteenth and nineteenth centuries.

### Worth of individuals over states

Some medieval kings claimed importance over individuals because the individual was only a piece to be used by the king in achieving the goals of the king. Such kings believed that their kingdom was more important than its people and that it was ok to repress people. The kingdom or state must hold its position of power among the other states. In response, the idea of the value of an individual is said to be "humanism."

Bronowski and Mazlish explain that those rulers believed that the tenants of morality did not apply to them or to their kingdom. Suppose that a person comes to your home and says "I must kill you for your food to feed my children." We all agree that the person's lack of food is no excuse for this immoral behavior. But a king will sometimes kill thousands of people to obtain a port, raw material, or any other object of interest. Normal people do not think this way.

Such immoral behavior by a state is unacceptable by many persons. Today, many of us believe that the state exists for the people and that it must be concerned for the well-being of the people. The fourth-century-bc Confucian philosopher Mencius said that the measure of a ruler's virtue is the well-being of the people. In 1768 ad, Joseph Priestley published *The First Principles of Government* in which he stated that the happiness of the greatest number of persons is the standard by which every social action must be judged.

Ever since the first emperor invented the empire, military forces, and war around 2200 bc, the concern of kings and queens has often been nothing except the maintenance or expansion of their own territory, wealth, and power. It has taken us some 4,000 years to overcome the tyranny of emperors who used people's lives for their own goals. The importance of the state is being replaced by the importance of the individual, and the concerns of government are becoming more closely related to the concerns of people. We measure success in life simply in terms of healthy and happy children, families, and communities not wealth or power. This trend will continue until our civilization is viewed as a collection of us human beings and their mutual efforts rather than as a collection of selfish kings and states who believe that they answer to no one.

In many times and places through the past 4,000 years, people felt that politics was something controlled from above. We often had a fatalistic acceptance of events as they were given to us. Bronowski and Mazlish explain that during the Renaissance, politics began to mean a more or less conscious participation of all strata of society in the achievement of everyday purposes. Do you feel this is true in your nation today?

### Government by and for the people

At the time of the English Civil War, which occurred throughout the 1640s, people began to debate whether government should be "by the people and for the people." Cromwell said that government should be for the people but not necessarily by the people. Still others thought that there could be only a single decision maker, a king or queen, but wanted this ruler to be guided by the needs of the people—an "enlightened despot." This idea played a large part in the French social revolution. Colonel Rainborough said that a person should be allowed to give consent to be under the government's authority. Ireton asked, why should unpropertied persons be given a say in government if they have no financial stake in its operation. He said that that would be the end of civil law. Some of us today feel that government isn't about the protection of wealth but the protection of individual rights and the well-being of the people.

In 1649 in England, the House of Commons first assembled: "Being chosen by the people, and representing the people, the house has the supreme power in the nation." Popular assemblies, representational government, and the freedom of political views have become part of our view of civilization.

## Political Science

The university intellectuals began an open debate over theories of state. Thomas Hobbes wrote *Leviathan* in 1651, arguing the absolute sovereignty of the state. In 1690, John Locke wrote *Two Treatises of Government* in which he compared parliamentary government with a limited liberal state. Both these persons stated that contemporary troubles were the motivation for their work.

Locke made government an object of rational analyses and based political science on reason, not tradition. Before that time, government was thought to be a veiled, divine institution that was above examination. It was accepted as traditional heritage. Locke said there was no such thing as a divine right to rule and that kings and queens cannot claim that tradition gives them the right to rule. He said that the cause of the ruin of cities, the depopulation of countries, the disorder of the peace, is not due to the question of whether or not there is power in the world or from where it came, but who should have it. Even if power is dressed up with splendor, it must still show that it has a right to that power.

Locke said that people are born free, equal, and rational. We have inalienable rights of life, liberty, property, and the right to punish anyone who harms us or our property. People create a political or civil society by appointing a government to protect their rights. The government does not give a gift of these rights but instead protects them. The government derives its power from the consent of the governed. Supreme power lies with the people. Locke said that the true function of government is not to impose laws but to discover the proper laws. He believed that there must be laws of nature that govern human society just as Newton's laws governed motion.

Locke was explaining the new realization that people didn't have to live under tyrants. Europeans began to talk about freedoms because they had just endured some centuries of restriction through the manorial system. In other regions of the world, daily life has never been unfree in these ways. While yet other governments have learned to keep people from talking about freedoms by making their daily lives so harsh that they must expend all of their efforts just to get daily food, as explained to me by Laszlo Magayar.

Separating government into portions that balance each other

In 1748, Montesquieu wrote *The Spirit of the Laws* in which he compared democracy, aristocracy, monarchy, and despotism. He argued that the best government is a balance of power by power and divided government into executive, legislative, and judiciary branches. He said that liberty was lost whenever one person or group has all three of these powers.

Today, we want to ensure that no individual can dictate the goals, policies, and actions of the entire nation. Democracy is firstly a blending of views that partially satisfies all persons and groups. A consensus is required before any action can be taken. Much of daily politicking is the attempt of one person or group to convince others to adopt their view and create legislation that will turn this view into law. In contrast, dictators have to convince nobody.

Montesquieu's ideas influenced both the French and American revolutions. He also created sociology by comparing and discussing classes of people. He felt that social facts were subject to natural laws, just like Newton's equation of motion.

## Voting

Rousseau (1712-1778) said that the collective consciousness and the will of the people can be determined by counting votes. Voting would direct the general assembly and guarantee that its decisions represent the general will. The laws of a society do not appear out of nowhere: they originate and operate by the consensus of the people. Laws represent the way of life that the society has adopted for itself. The will of the people is to ensure the general welfare. In England, the reform bill of 1832 first gave the middle-class a voice in government. Our view of civilization now includes the idea of making decisions by counting votes. Rousseau also promoted nationalism, which had not existed before that time. Today, some of us promote the global view of humanity.

## Constitution of the United States

In the year 1776, the Declaration of Independence of the United States could proclaim that "We hold these truths to be self-evident" because these truths had just recently become self-evident. The writers of the U.S. Constitution had the opportunity to put into action some of the political ideas of the European intellectuals from the previous centuries. The goal of the writers was to protect against absolute power because people had learned the hard way about injustice and tyranny. The Bill of Rights of the United States contains protections against a list of injustices that had been committed by previous kings and queens. It is a summary of our idea of individual liberty as had been learned the hard way. The Constitution of the United States developed the Federal system of joining independent States. Taking the advice of Montesquieu, it also designed to ensure that power is shared and balanced between the legislative, executive, and judicial branches of government.

Bronowski and Mazlish explain that the English-speaking colonies of North America were located far from their English government so the populace already had control of the local systems. They did not have to capture the government but only to defend their rights from the encroachment of the distant English government. The American revolution was begun by, and largely controlled by, the upper-class. It did not become a social revolution as would occur a few years later in France.

Through the last two centuries, the changes in the idea of government in the United States include the end of human slavery, the right to the due process of law, income tax, voting rights for those of us who had been enslaved or are female, equal opportunity for all of us, and the redistributions of the welfare state. In the last century, the enlargement of the U.S. government has been a late and reluctant response to the social and economic consequences of the shift from farming to factory work, where people are both the wage-earners and the customers of the factories.

The South African Bill of Rights was enacted in 1997 and contains protections against a more modern and thorough list of injustices. Guarantees include equality, life, dignity, work, access to governmental information, movement and residence, business, occupation, fair treatment at work, the right to unionize and strike, the right to a healthy environment, education in your own language, and to have housing, healthcare, food, water and social security. All children have the right to parental care, shelter, and healthy food and may not be neglected, abused, or forced to work.

Numerous travelers talk of other cultures

One ancient Greek noted that the people in India depict gods as Indians, Africans depict gods as Africans, Greeks as Greeks, and if cows were to draw gods they would surely depict them as cows. In the 15<sup>th</sup>-century, European traders and travelers began to write about the people of distant regions who took their own way of life just as seriously as Europeans took the European way of life. In 1721, Montesquieu wrote *Persian Letters* in which the customs of France were described from the point-of-view of two Persian visitors. In 1726, Jonathan Swift wrote *Gulliver's Travels*.

Comparative travel literature asserted the existence of a natural ethics that was independent of the particular customs of any group of persons. Some philosophers felt that there should be ethical "laws" as clear as there are laws of geometry and that these laws should be self-evident to all persons. Today, "natural ethics" is understood to be that which is innate to a social species – that is, the Golden Rule.

Idea of history

In past ages, no one thought the future would be better. Instead, things were considered to be static and permanent. The Industrial Revolution resulted in the idea of change and progress. Hegel (1770-1831) said that people are history: to understand people you have to understand history. In the past, history had been used mainly to present examples that might argue a certain moral point. Now, history is important for its own sake. Today we look at the history of everything. We believe that we understand the present better when we understand the past and we always look to the future.

Economics

Around the year 1700, the university study of statistics and economics made people begin to realize that the wealth of a nation lies in its capacity to produce goods. Before this time, rulers believed that wealth was measured by the amount of gold in their treasury. In 1776, Adam Smith wrote *The Wealth of Nations* in which he created the modern science of supply-and-demand economics. He pointed out that not just gold but also labor is a source of wealth because labor produces products that in-turn produce wealth. He said that nations can become wealthy by exporting more goods than they import. Adam Smith also said that the greater part of people's misery is easily removed by increasing education and ensuring the decent living conditions that result from increased wages.

Industrial Revolution

Before the Industrial Revolution, each product was made in a home. Since many steps were needed to turn fleece into cloth, and each step was done in a different home, a single cloth merchant took the progressing material to each of those homes. The merchant sold the material to each home, and then bought it back after that home completed its step. The only step that required equipment was the weaving done on a loom. In Medieval Europe, the home weaver bought the thread, owned the frame, and sold the cloth.

During the economic downturn of eighteenth-century England, many weavers began leasing

their frames from that merchant. In effect, these weavers had become wage earners. The wool merchant, or cloth seller, came to own the thread, frame, and cloth. Some merchants brought all of their equipment into a single building—a factory—where they could exercise more control over the entire process, including the hours of the workers and the quantities of produced goods. The workers were then traveling to that building to do the work instead of the work being taken to the home of the worker. This was the start of the factory that began our Industrial Revolution around the year 1760.

The Industrial Revolution was a change in manufacturing technique—the factory—not a change in machinery. In the year 1750, materials were taken to the homes of the villagers to be processed into a product. By 1800, workers instead went to the factory. Within two generations, the customary way of running industry changed, and human civilization changed from consisting of farmers to factory workers. We worked in one factory, and used our wages to buy products made in other factories. This was as dramatic a shift in our way of life as had occurred ten thousand years earlier when we changed from being gatherer-hunters to being farmers. (What is next for us as factories and stores require no workers and robots are everywhere? )

In the factory, many persons would simultaneously make thread that fewer persons would weave into cloth. With the concentration of people, water mills were soon used to power factory machinery. The first spinning machines were invented in 1760. New machines were continually invented to reduce each newly-found bottleneck in every manufacturing process.

The industrial revolution began in England where lots of streams flowed year-round to provide water-wheel power. Soon, water-powered factories were built in most every rural area that possessed such streams. It is significant that these factories were not located in urban areas where they would have met fierce opposition from guilds.

Before the Industrial Revolution our homes typically contained about twenty items: two pots and a ladle, a few wooden or earthenware plates, a chicken-feather bed, a candle holder and some candles, and two sets of clothes. A log may have served as a bench. We had no curtains, pictures, carpeting, or painted homes and we often used sharp sticks as forks and clam shells as spoons. Only the richest of us, the so-called "nobles," could afford to pay other persons to hand-make these utensils and decorations. The rest of us made many of our own basic utensils using any handy material.

Factories mass produced clothing, utensils, and decorations at a fraction of their previous price, and this meant that most every worker could afford to buy them. The number of items in a home grew from 20 to 200. We were both the producer and the consumer of these items. For example, by 1830, 20% of U.S. homes had a carpet.

The contents of the homes of the wealthiest of us were less changed by the Industrial Revolution. In the year 1850 they still looked much like those from the year 1750—or even 1650—in that items were mostly handmade from expensive materials. For example, you might like to compare the contents of the homes of wealthy persons in eighteenth- and nineteenth-century Amsterdam with those of nineteenth-century Kentucky.

As increasing numbers of persons bought factory-made products, increasing numbers of persons were needed to work in increasing numbers of factories. The number of consumers, factory workers, and factories increase together because each requires and promotes the other two. Soon, most everyone was working in a factory, most everything was made in a factory, and factory workers

were buying most everything they used from those factories.

Notice also that the purchases of factory workers depends on the wages that they are paid. The more wages they are paid, the more goods they can purchase, and the greater the number of factories are needed to make those goods. But most factory owners instead chose to keep wages as low as possible at his own factory.

This led to the commercialization, or buying and selling, of most everything in a search of profit and provided the opportunity for nonliving wages and poor working conditions to develop. These conditions were quickly followed by discussion and attempted solutions as government was forced to take on a whole new range of responsibilities.

The steam engine began as a power source to remove water from mines. James Watt improved the steam engine, and sold them to factories. Since factories no longer had to be located near a stream, they were moved to the populated cities where laborers could be found. The coal industry rapidly expanded to supply the steam engines of the factories. Steam power replaced stream power after about 1840. The steam engine provided more power than the water-wheel and allowed the machines to become larger and more complex.

Chemical processes were also improving. In 1709, people found how to make coke from coal. Coke produces enough heat to reduce iron ore so that iron quickly became the common material. The new industry of iron produced the railroad industry and then the automobile industry. With each emerging industry, a few persons would become as rich as a nation (as will be discussed further below). Today's new industry is the computer and its internet and robots.

### Social affects of factory life

The factory owner sometimes allowed poor working conditions to exist. Some people lived in misery and worked long hours for little money. Workers were sometimes less valued than factory machinery. Because factory machinery was simple enough to be run by children, child labor moved from the home to the brutal factory. Newspapers were full of discussions about the emerging, mechanized factory and its social implications, especially about child labor. Child labor laws were passed during the years 1850 to 1900, and compulsory child education slowly began around 1850. In response to the social affects of the growth of industrialization, we began to include social programs in our view of the role of government. We will see that this caused government to expand greatly in the 1900s, especially in response to the Great Depression.

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## Questions

1. Did the Canela, Mesopotamian farmers, Ancient Athenians, or Medieval peasants have religious freedom or the right to form political parties? Did they suffer from unapproved taxation, the unwanted billeting of troops, arbitrary imprisonment, or military trials of civilians? Did assemblies of citizens make decisions by voting? Could the leader bring arbitrary harm to a citizen? In each of those societies, which was more important, soldiers, citizens, leaders, business persons, or priests? Was there a balance of power in their governments? How did their economic systems compare?
2. Does industrialization lead to democratization in a nation?
3. In what ways do modern religion and government have the same purpose? In what ways are their goals different? How does each define justice, tolerance, liberty, and our Golden Rule? How does each go about teaching ideals?
4. Governmental buildings of the West often use ancient Greek architecture. What do Muslim, Buddhist, and Hindu nations use?
5. How large can a population be before it is no longer able to decide actions by a show of hands?
6. Create a piece of art to describe the progress of our civilization.
7. We saw that some Greek villages grew through trade with older Mediterranean states. Where a similar thing occurs today, there is sometimes a local resentment directed against those within the community who are trading with the larger, foreign states. Did this resentment also occur in those Ancient Athenian villages? What form does the resentment take today?
8. Compare the so-called dark age of Europe around the year 1000 ad with that of Mesopotamia around 1000 bc. Was Europe blossoming, stagnating, or suffering a decay?
9. Make a worldwide plot of population levels, in 500-year intervals, and compare to plots of technology levels, innovation rates, and expertise levels.
10. Compare the sequence of farming and technological innovations in the New and Old Worlds. These two regions were completely isolated from each other, as if there were humans on two different and isolated planets, and so provide two independent examples of human innovation. The similarities and differences in the sequence of innovations and its timing provides clues to the driving forces behind technological innovation.
11. How much did Medieval villagers pay to their manor lord and what did they receive from the lord in return? Were these exchanges just and were the amounts fair? Compare the role of the manor lord with that of today's government. Which is the most dictating or the most intrusive on our daily lives? In what ways did the "contract" between lord and serf differ from that between people and their government today? The manor lord held a monopoly on certain services. What sort of business monopolies exist today?
12. What were the official and social positions of a reeve within a village? When did a sheriff's occupation originate. What were the original duties of a sheriff and what similarities between this occupation and a "shire-reeve" from the past resulted in people choosing to use that name for the new occupation?

13. Compare accounting procedures in Mesopotamia, Medieval China and Europe, and today. Why and how is accounting done?
14. What was the origin of your last name? When did your ancestors begin using this name?
15. What portion of your total income today is used for governmental, religious, and living expenses. What portion is paid to governmental and religious organizations? Compare this portion to those of people in Mesopotamia, Medieval China and Europe, the U.S. of the year 1800, and the Canela. In what way do these efforts go into the operations of the community during those times and places? Is your daily life more free or less free than that of a Medieval Chinese or European person?
16. How many families must combine efforts to safely survive by farming? Did any of the world's first farming regions consist of non-communal, independently operated, single-family farms? In various times and places around the world, what was the role of the clan in communal farming?
17. Compare portions of hours worked by individuals that is taken by the government in Ancient Mesopotamia, Medieval manors, and by our governments today.
18. Medieval European villagers would more easily have made ends meet if the manor lord had not leached off their efforts. What did the lords provide in return for their share of people's efforts? Was it a just exchange? In some times and places around the world, those of us controlling the system find the maximum amount that can be taken from others and still leave them with bare sustenance. Where is this occurring today? Would gatherer-hunters agree to such an unequal system?
19. We have first, middle, and last names today. Can you relate the number of names used by each person to the population density? When did we start having three names and when will we require four? How many names are used in other parts of the world today? Does everyone list their family name first or do some list it last?
20. Compare the reasons for the disappearance of some Medieval villages and today's small towns in the U.S.
21. Chess is centuries old. During the first Star Trek decade a three dimensional version was tried out. Can you make a feudal chess game involving more than two players, or one in which the pieces change role every so many turns, or having a few spies who suddenly switch sides after so many moves, or after so many elapsed moves or enemy captures allow knight movements to be promoted to three spaces up and two over, or where each player begins each turn by adding a square to the board so that it expands in any desired direction—even up or down? This would mean each turn is begun by promoting a piece to a higher rank, exchanging two pawns for one knight, making a prisoner exchange, adding a square, and revealing a spy. Have you ever tried treating every piece as a queen or one having all bishops while the other has all rooks in "lines versus diagonals"?
22. Compare childbirth, weddings, old-age pensions, funerals, and business contracts among the Canela, Mesopotamians, and thirteenth-century China and Europe with those of your own culture today.
23. Compare Medieval farming village life to city life. How do Medieval villages compare with those of today?
24. How did the invention of farming flow into Europe and how quickly and drastically did it change the lives of the gatherer-hunters living there?
25. If you are a descendant of Medieval Chinese, Europeans, or Africans, which cultural details remain in place in your life today and which have changed? The Medieval Chinese, African, and European villages described above occurred seven hundred years ago. How many cultural details changed from seven hundred years before then and how many have changed in the seven hundred years since then? How many 500-year time spans have occurred since we began farming and how many cultural details change during each 500-year span of time?
26. Compare today's guilds with those of Medieval China and Europe. Which functions of a Medieval guild are now handled by the government?
27. Compare wool and cloth industries in Mesopotamia with those of Medieval Europe and Africa. Were the

masses of village farmers and urban workers buying the cloth and clothing or were they bought only by the wealthy?

28. Could one band of twenty-five gatherer-hunters decide to make clothes and tools and sell them for food to the members of other nearby bands? Could half the people in a Mesopotamian farming village decide to make clothes and tools and sell them for food to the other half of the residents? When the Industrial Revolution began, what percentage of the population were farmers? What is that percentage today?

29. Would you like to be a stone mason? Compare stone building techniques from Mesopotamia, Medieval China and Europe, and today.

30. Compare educational opportunities and techniques in Mesopotamia, Medieval China and Europe, and today. Compare medical knowledge in these four times and places.

31. Compare long-distance trade in Mesopotamia and Medieval China, Europe, and Africa.

32. How might the European Renaissance been different if Chinese books were being translated in addition to those from Greece? Are translations of both Eastern and Western books readily available today?

33. Which of the world's cultures create works of art depicting human emotions?

34. If we had somehow stumbled across gunpowder about the time our first city-states were beginning to go to war, how would history have changed? It would have been even more unlikely for the discovery of gunpowder to have occurred in the year 1800 or 1900. How would history have been different in this case?

35. What are the causes of dark ages and renaissances around the world?

36. Discuss the role of barriers to travel and language in slowing the movement of knowledge and techniques around the world. Is there free movement of ideas and knowledge today?

37. What was the European Renaissance about? Discuss the role of the Renaissance mood in the development of the scientific method and in our idea of personal liberty and democracy.

38. What was the Industrial Revolution about? Did Renaissance moods play any role in its development? Did the scientific method play any role in its development?

39. What roles did the Industrial Revolution and the scientific method play in the development of European democracy?

40. Describe the role of Confucianism in Medieval China.

41. Compare urban life and commerce in Mesopotamia with those of Medieval Europe, China, and Africa. Compare techniques of building city walls.

42. Describe the flow of knowledge, techniques, and art around the planet through time.

43. Compare the sacking of the capitals of Sung China and Rome.

44. Get a map of the world and color code regions by the population levels feedable by agricultural production. Were our earliest cities located in these regions? Our earliest empires? Our largest?

45. Can rice be transported over larger distances than wheat? Which crop is more reliable, year after year? How does this affect famine rates and supportable population levels?

46. Compare the range of goods sold in Medieval Chinese and European shops. Were these goods available to all the residents?

47. Compare the use of rivers and oceans by merchants in Medieval China and Europe.

48. Some of us engage in fashion contests in which the person with the most expensive clothing, jewelry, home, and furnishings wins. Is this related to our primate social system of competing extended families, or to our desire to care for our children, or are we just seeking mates, or is it something else?

49. What percentage of the population was either making or buying tools and utensils in Mesopotamia, Medieval China and Europe, and England at the beginning of the Industrial Revolution?

50. As European colonizers and conquerors spread around the world, they sometimes explained that their actions were justified because they were exporting "civilization." Do you agree? The people of the U.S. justified their westward expansion into native lands as their manifest destiny. Do you agree?

51. Those of us humans from certain continents have the stomach bacteria needed to digest dairy products

but others do not. How long have we been eating dairy products? What does this tell us about the speed with which an animal species can change its dietary habits? How rapidly did our ancestors change from herbivore to omnivore?

52. Did Medieval Chinese tea drinking habits result in less frequent water-born epidemics because of the use of boiled water? As tea-drinking spread around the planet, did water-born disease decrease?

53. Describe the ideal family and community. Can you relate specific ideals taught to children to the overall features of the resulting society? Are the ideals taught to our children attainable by rich and poor alike or only by the children of one class of people?

54. Which cultural elements remain in effect today that originated in Mesopotamia? Which cultural elements remain in effect today that originated in Medieval China, Europe, Africa, and America? Which cultural elements remain in effect today that originated during the Renaissance or Enlightenment?

55. List some things common to Canela, Mesopotamians, Yoruba, and Medieval Chinese and Europeans.

56. Compare birth, puberty, wedding, and funeral ceremonies around the world.

57. Compare the goals of art in Medieval China and Europe during the Renaissance.

58. Last names were often taken from a person's occupation, including smiths of all types. Since a great number of persons today have "Smith" for their last name, does it mean that these craft-persons had greater than average numbers of children?

59. Discuss some aspects of China today.

## **Chapter 13 Daily life in New England around the year 1820 as Europe's Industrial Revolution arrives in the U.S. and changes farmers into factory workers**

Here are some details of daily life in New England. In Chapter 6, we discussed the many ways in which community members exchanged assistance on tasks that were larger than one person can do alone.

### **Birth, marriage, and death**

Our life begins within our own warm and crowded home, with the community's women assisting and guiding as has been done since our species began. Men wait outdoors. More often, mom gave birth while standing than while lying down. In the frontier west, dad is often the only person around so mom will sit in his lap for support while giving birth.

If the baby isn't emerging, the neighborhood women try to turn it and sometimes have to decide within a few moments that to save at least the mother they might have to pull the baby out in pieces. In their book, *Life in a Medieval Village*, Francis and Joseph Gies said that whenever a woman died during childbirth, the midwife was expected to quickly cut her open to remove the baby in hopes of saving at least its life. It is guaranteed that within the last few centuries, one of your grandmothers lost a child or her own life in this way.

In New England, when a woman has her first delivery, her mother or a sister might stay in her home for six weeks to run the house, give parenting advice, and allow the new mother to devote more time to the newborn.

Doctors did not assist in births until after the 1840 arrival of the tools for troublesome births. For several years after that, the doctor would have been surrounded by many critics while attending childbirths. It took a few more decades for the house-calling doctor to spread from the wealthiest urban areas to rural areas. Childbirth slowly changed from the anciently-communal female event to the private relation between a woman and her doctor.

One in six of us die before reaching the age of one. This happens less often among gatherer-hunter peoples than among farmers. Only in recent decades have we learned that simple sanitation, clean water, and basic health care is all that is needed to avoid having our babies die before reaching the age of one.

In New England, most couples had seven or eight childbirths so most parents knew what it was like to lose an infant. When an infant died, it was in its mother's arms. Larkin explains that what is now seen as a disastrous stroke of fate was the expected experience of most families back then.

Some women would not speak the child's name or make clothing until the child had evidently survived. Some said that they tried not to love too dearly until some weeks had passed.

Many of our infants die of the intestinal infections that commonly occur at the end of the hot summer. Nursing typically lasts twelve to fifteen months, until after the child's second summer has ended because it has been noticed that nursing decreases the number of infections occurring at the end of the hot summer season. Of course there was much daily discussion in the neighborhood about whose baby was sick, whose was not, and what each mother and father were doing differently. Back

in our biological past, such discussion began the very moment that we had sufficient language to do so.

As a girl approaches marrying age, she takes extended visits with nearby relatives to meet their neighbors as potential spouses. These visits are necessary because few potential spouses live within a day's walk of her own home. Women usually marry between the ages of nineteen and twenty-three.

The agricultural season encouraged most of us to marry in late November or early December, which is after the time-consuming harvest and before the coldest part of the winter had set in. In the wedding ceremony, we didn't yet have the traditions of wearing white gowns or of giving gifts, but the bride did wear some white items. If you asked them why they wore dressed this way, they would answer "Because it has always been done this way." After the wedding, the entire neighborhood would come to the house to celebrate with dancing and heavy drinking.

When a person dies, Rosemary leaves are spread around to "ward off any danger from the corpse" and all pictures and mirrors are covered with white cloths "because vanity is considered unseemly in the presence of death." The family and the neighborhood mourn together. The town's bell ringer would ring three times for a child, six for a woman, and nine for a man and then ring as many times as the age of the deceased. This told everyone who it was so that they could head for that person's home. It was said "for whom the bell tolls."

The funeral involved heavy drinking and maybe a musket volley. Mourners at the funeral did not wear black but the coffin might be painted black. In the previous centuries, Europeans were did not use coffins but instead wrapped the dead in cloth. For six to twenty-four months following the death of her husband, a widow often wore black clothes. Around the year 1830, people stopped having the neighborhood-wide funeral supper. Funerals began to be attended by just the immediate family and friends, and elaborate sermons and services came to replace the community gathering.

## Social events

We human beings also have extensive culture. Culture consists of a people's recipes for how to do everything in life. In looking at the way of life of New Englanders in the early 1800s, we see that the past is a foreign culture. The culture of our own grand-parent's grand-parents is as foreign to us today as is a culture on the other side of the planet. If those of us who live in the U.S. today were transported back to early 1800s, we would not know how to do anything in daily life. Each of us today works a specific job, few of which existed back then. Few of us would know how to farm, and we wouldn't know how to be an artisan, shopkeeper, or even how to dress, prepare food, or clean houses. But we would know how to love children and care for our community. We can recognize elements of ourselves in our past ancestors. Our ancestors become us through the passing generations. Notice also that if a newborn child from previous centuries was somehow transported to today, that person would grow up to be right at home, feel that the culture of the past is strange, and that child will be as likely to become an artist or engineer as is any other child born today. Each person from the past or from another culture on the other side of the planet today will have a personality just like you or one of your friends.

Women gathered for quilting parties and apple parings. While removing apple peels, a young girl would look for those that spelled the initials of her future husband. The finished quilt adorned

a person's bed and embodied the work and skill of the neighborhood. Around the year 1840 in Pennsylvania, New Jersey, and Delaware we began to sign our own squares. When young women met for a quilting party, it would be followed by the arrival of young men who would shout hurries from outside the home while waiting for the after-quilting dance.

While working or socializing we would discuss the world. One day Francis Underwood recorded the sequence of topics at a social gathering. First measles and whopping cough were discussed, then a reported bear sighting, followed by discussions of absent neighbors and the marriage prospects of some neighborhood youngsters. They then discussed how the clock of a newly deceased man hadn't run for years but struck forty-four times, which was his age, at the moment he died. (Richard Feynman discusses a similar event in *The Meaning of it all, Thoughts of a Citizen-Scientist*.) One day in January 1804, nineteen-year-old Zeloda Barrett of New Hartford, Connecticut was writing in her diary when she decided to list the subjects of her parent's conversation with their neighbors. These were the pigs, the democrats (Jefferson's party had just defeated the Federalists), the terms of a local property dispute, a woman's sore finger, a colonel's promotion to general in the state militia, and a heated discussion about assigning family arrangements in the congregational meetinghouse.

There were many social visits. Mary White kept a thirty-year diary in which she recorded her social visits. During a typical week she would have ten visitors at her own home and she would visit three or four other homes. In 1835, unmarried Pamela Brown of Plymouth, Vermont kept a diary. She went to every funeral in Plymouth and often sat up with the neighborhood's sick. Four or five times per week she went to visit at a friend's house or had them visiting at her own house. These visits would often last for two or three days. She also went to visit nearby relatives in other towns. After harvest she went to weekly dances, singing schools, and quilting parties—all without adult supervision. In 1824, the recent mother Ann Jean Lyman said that "the conflicting claims of society and children made her curtail her visiting." Visiting was less frequent during the busier agricultural months and the cold winter months. The country store was also a place for meeting and gossiping. There would be talk about livestock and produce, sickness and health, births and marriages.

In the cities neighbors would visit each other's home several times per day. (The city also contained countless strangers.) Wealthy urbanites developed an increasingly complicated etiquette determining how often one person or family should visit another and who should visit whom. The rules involved kinship, business, and politics. They were burying themselves behind "a system of exclusion as rigorous as that of aristocratic England but without the guards and knights."

Social events and work including much singing. European travelers said that those of us who were slaves had good voices, sang in tune, and had a rich and distinctive musical style that revealed both the highest joy and the deepest sadness. They also said we would all participate instead of having just one person performing solo in front of a silent audience as occurred in the churches of the Europeans. For centuries, church singing consisted of all members trying to sing simultaneously in a manner that sometimes lacked in tone and synchronization. Between 1770 and 1820, talented groups went around the country training a portion of each congregation who would then comprise a church choir. In turn, that better-trained choir would attempt to lead the rest of us with their more-proper singing. Some churches had one lead singer who would sing out a sentence alone that was then repeated by the entire congregation. Organs were added to help direct the members. Some churches leaders would sing out "fa-sa-la" to help direct the group in a style that lives on in the

"sacred harp singing" of Alabama.

The neighborhood met each Sunday at the town church. The church building was shared by several sects who took turns using it, and it was also the town meeting house. In the colder North, wine might freeze in the unheated building during the service. We brought our family pets and let them roam around the building during the sermon. Chickens and turkeys would walk through the building and might even roost on the pulpit. On Sunday, some families put all toys away and conducted religious readings; play and laughter might even be forbidden. Some described Sunday as a peaceful day while others said it was busy. The unchurched would lounge on Sunday or drink heavily with neighbors.

For entertainment and socializing, many of us drank heavily at the town's tavern. The per-capita rate of consumption of alcohol was triple today's rate. In 1827 the city of Rochester, New York had one-hundred taverns for 80,000 persons, which is one for each eighty persons. Women drank in small amounts and were rarely seen drinking in a tavern. The temperance advocates of the 1820s estimated that men drank fifteen times as much as did women. Entertainment also consisted of various forms of gambling. Card and dice games were common, and many towns had a horse-race route on the outskirts of town. Bets were also placed on bloody fights between pairs of about any types of animals, including roosters, dogs, dogs and chained bulls, and dogs and bears. Eventually, we decided this was just pointless brutality.

Every social event was also an occasion for courting, and couples acted with a freedom that surprises today's more sexually restrained age. For example, couples were allowed to sleep in the same bed together but only if fully clothed, or if separated by a board, or if each were wrapped in their own cloth sack or [bundling bag](#). This is not all that surprising since family members, hired-help, and strangers were sharing beds all over the country for warmth's sake.

The civil calendar was filled with elections, circuit-court sessions, whose schedules were listed in the almanacs, and seasonal militia musters. On such occasions, the town held foot races, pony races, and wrestling contests and experienced a general uproar. The Fourth of July celebration was the midsummer festival. Each state required all able-bodied men to meet for military drill for two or three days in both the spring and fall. Many of us hated to do this and made a travesty of it by arriving drunk, without our gun.

Guns had been invented just a few centuries before this time. In *Life in a Medieval Village*, Frances and Joseph Gies explain that back in Europe, only noblemen were allowed to own guns, and before guns existed, only those persons having more than a specific amount of wealth were allowed to own crossbows. But in the New World, everybody owned and used guns, and every male citizen was a member of a state militia.

The people of the U.S. are today debating the meaning of their Constitutional right to bear arms. The Second Amendment reads: "A well regulated Militia, being necessary to the security of a free State, the right of the people to keep and bear Arms, shall not be infringed." People today are unsure if the right involves only the militia or every citizen. The historical description of the Gies makes one ask if the amendment writer meant that gun ownership should not be restricted to just nobleman. By the way, when an early nineteenth-century person said that they had "A well regulated house" they meant that it was orderly, tidy, and well-kept.

Public executions were the ultimate in violent gatherings. In Castille, Maine in the year 1811, one execution began with a parade of infantry, artillery, and eight ministers. The sheriff lead a cart



carrying the coffin of the condemned man, who was tied with ropes and wearing a burial shroud. At the end of the parade was a fife and drum band playing the death march. Public hangings brought enormous crowds and confirmed the power of the law and the solidarity of society against the offenders. The crowds were mostly men and sometimes their sons, and would make for big business at the taverns. Sometimes a tavern would hire a guard to place in the condemned prisoner's cell to ensure he did not commit suicide and cheat the tavern out of this profitable event.

Public hangings began to stop in the 1830s because the general population came to the consensus that the events lowered the public to the same brutal level as that of the murderer. The debate over public executions has recently renewed but without any mention of our past experience with public executions.

Every town had whipping posts and stocks. A thief would be flogged or branded with a T, while an 'M' was branded on the forehead to tell of manslaughter. A counterfeiter would have an ear cut off. Public pain and the screams of the punished were meant to be heard all around town. Larkin explains that some people, including John Hancock, felt that these sorts of punishments were more of an insult to humanity than a deterrent to crime.

In the 1820s we stopped whipping and branding convicted persons, though Delaware continued public floggings until almost 1900. We began instead to place offenders into prison houses "where convicts would have time for moral reflection." The first U.S. prison was built in Auburn, New York in 1821, but we began ending debtor's prison in the 1830s.

## Education

New England was the only region of the U.S. having public elementary schools in the year 1800. There was one school house for every two to four square miles, which is three to six square km. Some were funded from local taxes while others funded through barter. For example, a family might bring a load of wood for the school to use or they might bring a load of something that the teacher could trade.

Through the 1700s, people were beginning to imagine educational opportunity for every child instead of it existing only for the children of the more-elite members of our society. Through the 1800s, public education became a reality in much of the world. By 1850 in the U.S., every state had public schools at both the elementary and secondary levels. But still, only the children of the wealthiest of us could attend college. That would change through the 1900s.

In 1820, the curriculum of the New England public school was planned to be more practical than the Greek and Latin schooling of past centuries. Parents believed the purpose of school was to teach children enough reading, writing, and arithmetic to enable them to add up a bill of purchase and to read and understand things like property deeds, the almanac's astrological recommendations, and especially the bible. A particular Reader and Speller pair became popular because they also taught moral habits. (One high school that I attended told us we were ready for the world if we could do no more than add and subtract well enough to balance our checking account and figure out which price was cheaper per ounce: thirty-two ounces for \$3 or sixteen ounces for \$2.) Teachers soon added geography, history, and science.

In the 1840s, Horace Mann argued that Universal education would guarantee the nation's political and economic stability and that it was a public matter for the public's good and should not

remain a luxury of the elite. He said it would prepare informed and intelligent citizens and that in a Republic, ignorance is a crime. We must prepare children to become good citizens, develop their capacities, enrich their minds, and imbue their hearts with the love of truth and duty. We agree with this today. We consider education an important part of being human, and believe that no one should be denied an education. With each new thing that you learn or accomplish, you become a fuller person, a more complete citizen, and are then able to contribute more to the operation and progress of our mutual society.

School attendance was not yet mandatory. Classes opened after harvest and closed before planting-season began. Often, two- and three- years-olds went along to school with their older siblings. Children were kept at home whenever they were needed for farm work. Most five- to fifteen-year-olds spent three to eight weeks per year in school. Since the Western Frontier had fewer schools, it often occurred that frontier children had the opportunity to learn to read and write only if their parents could teach them. Higher education was expanding in the East but it was not meant for women and especially not meant for women to use in pursuing professions. About 75% of the population could read and write. Law forbid us slaves to become literate because slave-owners knew to try to restrict minds but still many of us learned to be carpenters, metalsmiths, tanners, harness-makers, shoemakers, and fiddlers and such.

## Health

Our family's work was done right on our own farm and directly sustained our own lives. The future was held in our own hands and was not dependent on any outside and uncontrollable economic cycle or job-boss. The quality of our lives did depend on the weather, and our continuing health was precarious.

Nylander explains that our lives began in our own, warm, cozy home and ended in our own home, with our family and friends around us. They made a coffin, cleaned our body, and then carried us to the graveyard to bury us there.

When a person is accidentally cut, there is a small but drastic chance that the cut will become infected. When that happened before 1945, family members could only watch as the person died within days. Simple antibiotics avoids the unnecessarily shortened life from infected cuts, but antibiotics were not discovered and put into use until the 1940s.

During our childhood, many of us lose a parent and a brother or sister and a young adult within the extended family. Even worse was the fact that if a disease kills one person in our home then it will likely kill a couple others, too—or even all five of the children. Overall, one in four of five of us die before reaching the age of twenty-one. Only half us slaves lived to be an adult.

One in six of us died before reaching the age of one. This worldwide rate was common until recent decades when we reduced it to one in 150 by using simple sanitation, soap and water, keeping human waste away from public areas, and using clean water. We were oblivious to the simple reasons that so many infants died. We didn't know how easy it is to avoid such an early death.

Larkin explains that disease and bodily discomfort could rarely be cured, only endured. The accidents that each of us accumulated through life were easily visible from the way we limped or moved; typically, one in ten of the persons at any gathering would show the effects of the poorly-repaired broken bones of their past. It was so common to see somebody have a three-minute

bout of malarial shaking that the event was treated in a matter-of-fact manner.

Successful surgery and doctoring had to wait for thorough sterilization, stitching, and anesthetic to be developed during the last century. By the way, Crawford Long accidentally discovered the numbing affect of ether in 1842. When Long and his friends ran out of the laughing gas that they were passing around for fun, they decided to instead try sulphuric ether, and found that it left them unable to feel pain.

In previous centuries, death was always near. Even a simple fever was taken seriously because it too often meant death before the next dawn. During your illness, a person from your family or a neighbor would stay up all night watching over you. Many persons spent several days per year doing this at homes in the community. If strangers took ill while passing through town, they too would be put up and watched over.

Today, about one in 650 pregnancies results in miscarriages, but in the year 1800, that number was one in sixty-five. We slaves lost about one in three of our children due to low birth weight, too little food, and too little nursing while mom was working in the plantation fields.

Medicine does not yet exist. Our immune system keeps half of us alive into our sixties. Whooping cough, diphtheria, measles, mumps, chickenpox, yellow fever, and scarlet fever enters a city and simply runs their course. Those more-quickly acting diseases kill us before the more-slowly acting stroke and heart disease can get around to it. Many adults die of spoiled food, parasites, typhoid fever, bacterial dysentery, and pneumonia. Tuberculosis (more commonly called consumption) kills as many as 25% of us adults. An open wound is dangerous because tetanus, gangrene, and blood poisoning can not be dealt with. The colder north has less disease than the tropical south: wherever there are swamps there is malaria.

Yellow fever would arrive at a port city but since it was spread by mosquitos it was not able to move inland very far. In 1793, it killed 10% of us in Philadelphia. Grave diggers went down the street shouting for us to bring out our dead. Larkin says that if our friend even acted as if they were in mourning, we would avoid them until after the disease had left town.

1. Philadelphia 1793: 5,000 dead ( 10% of the population)
  2. New York City 1795: 730 dead
  3. Boston, New York City and Philadelphia 1798: 5,000 dead
  4. Baltimore 1800: 1,200 dead
  5. New Orleans 1853: 8,000 dead, 7.4% of white residents died, but only 0.2% of blacks.
  6. Norfolk 1855; 2,000 dead
  7. Mississippi Valley 1878: 20,000 dead
  8. Cuba, 1898; hundreds of U.S. soldiers dead.
  9. New Orleans, 1905: 900 dead
- Yellow fever epidemics took more than  
41,000 lives in New Orleans from 1817-1905

The only successful medical remedies were broken-bone setting, quinine for malaria, and tooth extraction, which ended the pain in your mouth but sometimes led to a fatal infection. Toothbrushes were not used. In fact, if you were simply seen with a toothbrush you would be mistaken for a dentist. Surgery was a desperate attempt for a cure. Instead of an anesthetic, your only

aid was the physician's speed. As the "cure" for most every ailment, doctors gave their patients chemicals that would either make them go to the bathroom or vomit violently. Sometimes they would use a pointed metal tool to let blood out. These severe, so-called "remedies" usually just made us all the weaker, but everyone was willing to try any root or herb rumored to help—and took it at the astrologically correct time. We also turned to the age-old arts of the Indian and African shaman or a similar frontier grandma. Since there were no guaranteed cures, we instead used alcohol and opium as pain killers.

People would go to an apothecary shop, describe their symptoms, and on the basis of this alone receive a collection of herbs from the attendant—as occurs today. Tunis says that the public confidence in patent medicines and quacks was boundless, as it still is today, but back then, the government didn't protect people in spite of themselves.

Barbers performed surgeries in medieval times, but by Henry VIII's time, surgery at the barber shop was confined to just tooth pulling and blood letting. While releasing blood, a patient grasped a bloody staff around which were spiraled white bandages that became striped with blood. For this reason, the red and white striped pole became the barber's symbol. Barbers performed bleedings in the U.S. until the 1830s.

Around the year 1800, it was discovered that if you were given a small amount of the smallpox virus then you would suffer but a mild case and become immune to future infections. Some families decided that the benefits outweighed the risks and had every member of the house given such an inoculation at the same time. A "smallpox" sign would be then posted on the house, which was shut off from the world through the next two weeks. Since a family member would sometimes die in this attempt, it was a tough decision for two parents to make. Edward Jenner perfected his smallpox vaccination in 1820. Finally in the 1980s, we humans made a concerted effort to remove smallpox from the entire planet. Our mutual health is a meaningful goal and priority for the mutual efforts that comprise our civilization

During a lifetime, our immune system enables us to recover from dozens of ailments, except for one. In previous chapters, we saw that our immune system has been the secret to the shaman's success through the last 50,000 years. Our maximum lifetime has not changed in countless generations. It is part of our biology. What has recently changed is the increase in the percentage of us who live nearly to that maximum. In previous centuries, our life-span was shorter on the *average* due to the much larger percentage of us who died as infants and children. If we managed to survive childhood and reach the age of twenty, then we often lived to sixty-five. In the year 1500, if an English aristocrat reached the age of 21, then he usually lived to be seventy. In recent decades, this has been stretched to about seventy-five, but not for everyone on the planet. In a later chapter, we will see that a nation's infant mortality rate today is a measure of its ability to put basic health knowledge into practice and that a poor rate is easily improved by implementing a simple, national strategy. At the age of sixty today, instead of dying from a previously-fatal illness, many of us undergo a medical procedure, typically costing \$50,000 in the U.S. or \$500 in India, that allows us to live another decade or two.

Health care began to be successful around the year 1940, as it had realized sterilization, stitching, anaesthesia, antibiotics, and surgery. This means that our 250-year-old Industrial Revolution, and science and technology, have recently given us something more meaningful than a few utensils and decorations for our homes—plus decreased community ties and wage-depending

lives. We all agree that only life matters, not the number of items in our homes. Un-shortened lives and the mutual health and education of ourselves and our children are meaningful priorities and goals for the mutual efforts that comprise human society and civilization. Our health and education are mutually beneficial ways in which we are exchanging help within our society. Life is a precious gift for each of us. Equally. You might like to let your government know the budget portions or amounts that you feel should be spent on health care, education, and the military and such.

Today, U.S. citizens spend twice as much as Europeans, who live longer. In the 1960s, 2% of our income was spent on healthcare. Today it is 15 - 20 %, and the industry is dreaming of 50% or 100%. Much of the cost is due to hospital visits and surgery that costs \$150,000 in the U.S., but only \$5000 in India.

## Homes

Since the land of the U.S. was covered by essentially one large forest, the space for each home was obtained by cutting away the forest trees, one by one, with an axe. As a clearing was being finished in one field, the clearing of the next field had already been started by cutting away bark to kill its trees. Many travelers commented that Americans would not let a tree stand anywhere.

Home design changed little from 1600 to 1800. Until 1750, homes were not aligned with the street but to catch the southern sun. European immigrants continued to build homes in the fashion of their old country. Sometimes brick was used but mostly homes were constructed with heavy wooden posts and beams held together by mortise and tendon joints in which each board fits into a slot within the next board.

A house builder was called a housewright. Housewrights usually built a home using trees cut down in the yard of the home-owner. To cut boards from those felled trees, a string was covered in red ochre dust, stretched tightly over the bark covered log, and then snapped to leave a straight red line on the log. These lines were used to guide the axe cut. A sixteen foot (five meter) oak could be squared in two hours with an axe. It was usually too difficult and expensive to haul ready-to-use lumber from a sawmill.

The sides of any log that would be visible in the finished house would be smoothed with adze and plane by a person called a joiner. Axes, adzes, and planes were made by a blacksmith who forged pieces of iron and steel brought from Europe or India; India produced the best steel, which was needed for every cutting edge. Any wall that was assembled but still lying on the ground would be raised into place with the aid of the neighbors. Since there were no closets, the joiner might make a lidded box to hold clothing and such. Later, some drawers were built under the box, and yet later, the box was all drawers—a dresser. Only the largest homes had two floors, and in this case it was the joiner who made the stairways and their balusters.

Knowledge of the more-easily built log home was brought to the colonies later by Swedes and became the typical home of the Western Frontier family. These families hoped to build something more permanent in the near future but often lived in their log home for a generation or two. We have all heard that Abe Lincoln was born in a log-cabin that "he built with his own hands!"

There was a much wider range in home sizes around the year 1800 than occurs today. Most were one-room homes, but about one-third of them had a second story that was used for sleeping. (Today's suburban neighborhoods contain miles of homes that differ little in size but come in three

colors.) The fanciest homes were found in the cities. The oldest surviving homes that we see today were not the typical small homes but were the largest, or those that had a famous resident, because those were more likely to remain standing.

During the 1800s, our homes in the northeast were built by a local expert and were typically 32 by 22 feet (10 x 7 meters) in size but many were either half or double this size. A home typically had a cooking area at one end and a sitting area at the opposite end, which contained a few cushionless, wooden chairs. The walls of the house were usually bare because paintings were expensive. Only 10% of families could afford a single painting or engraving—these would usually depict the homeowner. Mirrors were so expensive that usually just one could be afforded. The windows had no curtains and the floors had no carpets. The house contained no insulation at all so the summer heat and winter cold could only be endured. We took turns washing at the sink with water. Soap was used only to clean clothing. It was common to see mothers picking lice from the heads of their children.

Collecting, emptying, and cleaning the chamber pots was a daily chore. The chamber pots were used to avoid a freezing nighttime walk to the woods. By 1820, English factory-made pots were cheap enough that all but the poorest homes had one (Still today we say "I'm too poor to have a pot to pee in"). Since the contents of a pot were often thrown through an open window or door, archaeologists often find broken chamber pots right outside the windows. The pots presumably landed there because a person's grip was lost while trying to toss its contents. Indoor bathrooms did not exist in New England. Some city-homes had an outdoor pit for garbage and waste, but many persons simply threw the contents of their chamber pot into the street; there was a common story about a couple being hit on their way to a wedding.

Bedrooms were rare. Only the wealthiest homes had a separate bedroom for use by the parents. Sometimes part of a one-room home was sectioned off to create a separate sleeping quarter for the parents, but then this area would not receive any heat from the fireplace. Babies slept in their mother's arms until they were weaned. The bed was placed in a corner of the house; its mattress was stuffed either with straw or with chicken feathers. Many families slept in the bed at night and then sat on it during the day because it was their only "chair."

If two beds were available then all of the females of the family slept in one of the beds along with any female hired help and any female guests that might spend the night. Similarly, all the males slept together in the other bed. This meant that we became used to being surrounded by the warm bodies of our siblings and came to miss that after our siblings had moved out. Combining warmth this way helped us make it through the cold winter nights whose temperatures went below freezing. We can now see why travelers would share a bed with strangers who happened to be staying at the same tavern. When pots became cheap and our homes began to have separate sleeping areas, we began to place private basins, pitchers, and wash-stands in them. Some people started washing their entire body more often than once per year. A few wealthy homes had indoor water taps.

Usually three candles provided the light for an entire house. A large office of ten persons typically used just eight candles and the personnel tried to work near the daylight windows. Only the wealthiest homes could use more than a few candles; some might fill a chandelier with several candles. Outside the house were dark nights and bright stars, as can be seen today only when far from city lights. On the farm, one day each year was spent making candles from melted animal fat. People in the city would instead buy candles from one of the city's candle-makers. Back in Europe, a

wealthy church or home might purchase cleanly burning candles made from bees wax. The wealth of homes could be differentiated simply by the number of candles burning within them. The wealthiest 1% of urban homes contained the early version of a piano called a pianoforte. As you strolled in the afternoon past the homes within a wealthy neighborhood, you would hear tunes being played by the daughters within those homes.

Just as our homes did not contain any areas separated for specific uses, neither did the farmyard. Piles of wood were anywhere and everywhere. Our pigs and cows wandered throughout the yard and our chickens wandered throughout our home. The outside area was seen as a place for work. There were no grassy lawns, enclosed yards, or sunshade—due to our habit of removing every tree. Our yards were chaotic and our homes might be in need of repair. Home repairs required an imaginative use of available materials because factory-made replacement parts did not exist. The cracks in a log home were filled with mud, and some doors that wouldn't shut were simply allowed to hang sideways from one corner. Since glass was rare and expensive, we repaired broken windows by stuffing them with rags, hats, or bags.

Only the wealthiest of us could afford to paint our homes until chemical factories came into existence to mass-produce inexpensive paint. After 1840, the fashion developed to paint homes and to surround a yard with a picket fence that would be painted white. We also started planting decorative flowers around our homes. Some commercial villages in New England began to paint every building in town in white. These painting and planting fashions took a few decades to spread toward the southern and western U.S.

In 1798, 20% of rural homes were occupied by two families but this number had decreased to just 10% by 1850. Until 1850, one in five of our families had eight or more persons, but today, just one in twelve have this number. This means that in the early 1800s children were seen everywhere, much more so than occurs today. (The average is 2.7 persons per family in the U.S. today.) In the 1800s it was common for a home to include extra, unrelated persons, including co-workers, kinfolk, or lodgers. The dairies of the Ward family of Massachusetts shows that throughout a thirty-year period, they kept eleven to sixteen guests in their home. They were wealthy enough to afford to do this. Prosperous families could house more kin, employ more workers, and have longer staying guests.

A more-prosperous family might have a live-in helper who was a girl or boy from a poorer family working toward establishing their own future farm. (A girl was paid about one-fourth as much as a boy.) These youths would work for one or two years at one farm before switching to work for another. Children from homes with "more children than means" might be [bidded](#) out until adulthood to help with a more-prosperous family's chores. A poor family with little land might send their eight-year-old to work and stay at a nearby farm, trading labor for food and shelter. As they became mid-teenagers, they would frequently return home to help in their parent's own home.

## Food storing and cooking

We women worked in the farmyard milking the dairy cows and feeding the chickens and hogs. Skim milk and swill for the hogs would be poured into a trough dug out of a big log. We maintained the vegetable garden and spent many hours cooking at the fireplace. Every woman knew the preservation crafts of salting, pickling, and smoking. Bread was made in the home, including wheat, rye, Indian,

and Johnnycake. Inside the house we churned milk into butter by vigorously shaking it for about an hour and then kneading it with our hands or with wooden paddles. The Ward family made eighty pounds (35 kg) of butter per week, using eighty pans, to barter at the local General Store.

Not every household had the knowledge required to make cheese. First, milk was poured into a stomach lining taken from a calf. This lining contained acids that solidified milk into curd. After this was done, a press was used to squeeze the whey from the curds. (Oh, so that's what those old nursery rhyme words mean.) Then it was left to age by covering in wax. In effect, the calf's stomach acids would partially digest the milk and turn it into cheese that could be stored for long periods without spoiling.

Coffee and sugar were becoming more widely available. Tea had long been England's beverage, but in the year 1800, only half of U.S. homes had daily tea. In the New World, coffee cost less than tea because coffee was grown in the New World; consequently, by 1830 it was more popular than tea. Coffee was obtained in bulk form and then ground and pounded. Sugar had been an expensive luxury item but as its price fell it became more-widely used. It came in the shape of a tapered-cone, about six inches in height (15 cm), and then sugar scissors were used to cut off little pieces from the cone. The doors of our homes had no locks but both tea and sugar were kept in locked boxes.

Food was stored by placing it underground, as we had done for 10,000 years. It was also preserved using the more recent discoveries of salting, drying, or smoking. In a large home, a year's supply of pig meat was slaughtered on a single day, packed into a 25 by 4 by 3 feet (8 by 1.3 by 1 meters) salt box for ten days, hung on rafters to be smoked for two days, and then left to be eaten throughout the winter. (Recall that in Ancient Mesopotamia, Inanna was the power in the storage house and became the last piece of green meat at the very end of winter.) Other foods were also hung to dry from the ceiling or rafters inside the home. Game meat—including deer, possum, and raccoon—was a more-regular part of our diet along the Western Frontier than in the Northeast, where there was a decrease in the numbers of these animals. Fresh meat was then available only after the autumn pig slaughter.

Some wealthy families in the Mid-South filled a large pit with winter ice that could then be used in the summer. In *Gleanings From Long Ago*, Ellen Mordecai says one person warned that ice in the summertime "went against nature." [Here](#) is an ice-house, and [here](#) is a video clip of ice harvesting around the year 1900. Recall that the Medieval Chinese used fast boats to move ice from north to south.

Since apple trees were abundant in the Northeast, apple cider was stored in barrels for the year and was alcoholic. We drank it at every meal, so did our children. Alcohol also came in the form of rum distilled from molasses that came from the West Indian Islands. After 1790 we began distilling grain. Immigrants from Germany brought beer making knowledge. Recall that for 7,000 years, clean water has been the hardest thing for each group of persons to obtain.

After 1750, those of us who lived in New England began to have a more varied diet than other regions by growing squash, turnip, and cabbage that we then kept through the winter in the root cellar, which consists of dirt piled against the bottom of the house. Those of us in the southern U.S. began growing sweet potatoes. A Georgian friend of mine says Southerners discovered that collared greens were edible during periods of hunger in the Civil War. Each of these foods remain somewhat regional still today.



Each house had a fireplace for cooking. The fire also provided light and was the only source of heat in the winter—except that it could heat just one side of your body and could not heat any separated sleeping room. You might have a burning-hot back toward the fire while facing away and holding a frozen dishrag in your hands. The chimney required continual cleaning or else it would catch fire. One person said that a simple way to give the chimney a quick cleaning was to drop a chicken down it from the roof and let its wildly flapping wings remove some of the soot.

The Bennetts explain that many household items were placed around the fireplace: the bird gun and its powder horns were hung above on the wall, strings of apple and pumpkin were drying above, and alongside were bellows, pots, and utensils. The fireplace was constantly burning, accompanied by the sound of crackling logs. If the fire went out, a dish full of live coals might be fetched from the nearest neighbor or a spark would be struck from flint. Sometimes punk material was gathered from a rotten maple tree, dried, and kept handy because sparks from the flint would easily ignite this material (no-doubt this was discovered by accident just before the ensuing living-room stomp-dance was performed). A slow-burning fire could be started within a hollow elm, where it could get little air and might burn for weeks, and used to supply coals to kindle the fire in the home's fireplace. Some men carried flint and steel to light their tobacco pipes. Each fireplace burned an amount of wood that was about 8 by 8 by 4 feet in volume (200 cubic meters). To obtain firewood, we would cut down a tree, trim its branches, and then hitch it to the oxen to be dragged to the front door where it would then be cut up and used in the fireplace.

We cooked our meals by placing heavy metal pots directly into the hot coals or at the edge of the fireplace. Some of us hung our pots above the fire from a crane that could be swung over the fire. The typical home had just a few pots and cooking utensils. Within the fireplace, a smaller fire might be pulled off to a side whose heat was less intense and could be used to warm certain foods. Different heats were used for different purposes just as is done today.

Until after 1800, the family ate from the same large bowl of food, with their own utensil, and passed around a single drinking vessel for all to drink from just as their European ancestors had done and were still doing. Manners called for you to wipe your mouth with the tablecloth before drinking from this vessel. Around age sixteen, George Washington recorded one hundred rules of manner, see *The Exercise of a Schoolboy*, which is online [here](#). You might compare this to the 1951 film about teenage etiquette available from the Open Video Project, which is online [here](#).

Plates were often made of wood or pewter. Forks continued to be in use in Europe but did not exist in the early colonies for several decades. When forks did later appear, they were held and operated upside down compared with European usage. Forks are used as pokers in England but as lifters in New England. (You might watch for this difference in movies from these two continents.) Before industrialization reduced the price of utensils and furniture and such, we used any available item as a utensil, including seashells for spoons, sharp pointed sticks for forks and knives, and conveniently shaped logs for chairs and tables. After industrialization, we used ceramic instead of wooden plates, drinking glasses instead of tin cups, and a butcher knife that actually had a handle.

European immigrants found that meat was eaten every day by the residents of the U.S.; in Europe, commoners rarely ate meat. The huge land area of the U.S. allowed room for a larger number of cattle and pigs. New York City residents bought \$12 million in food in 1841. Of this, 39% was spent on meat, 25% on grain, 22% on dairy products, and 10% on vegetables (compare these percentages with your own). Half the meat was beef and one-quarter was pork. In the U.S., bread was

usually made from wheat; only 1% of the native-born population had even heard of the cheaper oat bread that was common in Europe.

## Iron Stove

For one million years or maybe two or three, we gatherer-hunters had been cooking over an open fire. A couple centuries ago, we moved the open fire into a hearth (or fireplace) within our home, but still cooked in the same manner.

In the year 1709, people found how to make coke from coal. Coke produces enough heat to reduce iron ore, and with the growing Industrial Revolution, huge quantities of lowcost iron are produced for the first time and used for many things. In 1813, the cast iron plow began to replace the metal-covered wooden plow. John Deere introduced a steel plow in 1837 that was strong enough to turn tough prairie sod.

Cast-iron cooking and heating stoves appeared around the year 1820 and changed our cooking technique for the first time in one million years. It took a few decades for the use of iron stoves to spread across the nation. When one family was the first in their town to purchase a cooking stove, the other townspeople might warned that it would poison them all but instead, within two years most every family in that town had stoves. One woman said that the first time she started a fire in her stove it seemed like magic. Instead of turning meat on a stick placed over the fire, the iron cooking-stove had topside heating surfaces placed at waist height. Heavy iron pots no longer had to be lifted into and out of the blazing hot flames of the fire. Since stoves used just one-third as much wood as did the open fireplace, less wood had to be chopped on the farm or purchased in the city. Cookbooks quickly appeared for this new-fangled machine just as they would 150 years later when microwave ovens first appeared. The preparation and cooking of foods has always been among humanities most complex procedures.

By 1850, the older generation said that, because of the newfangled stoves, youngsters did not know what cold was, and that when they were young, wash rags and bowls of water would freeze solid just a few steps from the fire. Notice that for the first time in history, heating-stoves enable an interest in indoor plants because room temperatures stay above freezing throughout the winter.

## Superstition

Superstitions guided many aspects of the daily actions of Ancient Mesopotamians, Medieval and Canela people, and New England farmers, too. If only one family in the community had trouble with illness, cattle, or butter- or cheese-making and such then accusations of witchcraft might occur to explain why they were singled out. Such accusations occurred in the U.S. until the twentieth century. Astrology guided the timing of numerous activities, including the weaning a calf or the weaning of our own babies. We would wait to do a certain chore until the proper sign of the zodiac. We would plant certain crops only during certain phases of the moon. For example, the December hog slaughter had to avoid a waning moon or it was feared that the pork would wither and shrink in the barrel. Why do you suppose our grandparents would do things this way? They would answer "Because it has always been so."

As we began working in factories, the owners required us to work during set hours everyday

– regardless of the phase of the moon. Astrology then began to play less of a role in our daily activities. Remember that, while today’s science and technology produce countless devices that make life easier, astrology has never built one machine or made one improvement. Astrology is nonsense.

My friend Kelley likes to explain to astronomy students that the apparent positions of the constellations of the zodiac have rotated by one month, out of twelve, since the time at which they were defined. For example, those persons born between March 20 and April 20 are said to be born in the constellation of Aries. If you were born 2,500 years ago, on March 27, then the sun's position at noon on your birthday was indeed within the constellation of Aries. But if you were born on March 27 during some year within the nineteenth century then the Sun's position at noon on your birthday was not in Aries but actually in Pisces. Astrology and its “prediction” procedures are older than our realization, by Copernicus in 1543 ad, that the Earth and the other planets orbit around the Sun.

## Holidays

We saw that each city and village of Europe had its own festivals and holidays, but as their former residents scattered and blended into the communities of the New England, few of these holidays survived transplantation to the New World. Easter was celebrated by us Catholics who were only a minority. Some of us boys in seaport towns celebrated the November 5th Gunpowder Plot against the House of Parliament by building large bonfires. Those of us who were Irish would celebrate St. Patrick's Day, but Halloween had not yet made its way from Ireland.

Thanksgiving had always been celebrated by us Wampanoag. Around the year 1600 there were about 12,000 of us Wampanoag living in forty villages in what would become Eastern Massachusetts. After contact with European guns and germs, our number would decrease to just 400 in the year 1675. The pilgrims first celebrated Thanksgiving with the Wampanoag in 1621, and then that holiday spread outward from New England to the rest of the nation. By 1819 it was an official holiday in six states and would later become the nation’s most important holiday. Apprentices would travel home for Thanksgiving, and siblings might travel hundreds of miles to meet at their parent's home.

Christmas was celebrated but we had not yet begun to exchange gifts or to decorate our homes, except for us Pennsylvanian Germans who decorated a tree just as we had done in Europe. Those of us in the dual Dutch and English heritage of New York City burned a yule log and told the story of St. Nicholas. In 1822 the Reverend Clement Moore wrote *Twas the Night before Christmas*, which you might like to read once while looking for elements of daily life from the year 1822. Some of us New Yorkers began giving candy and toys, filling the city's stores with shoppers the day before Christmas. By 1830 this had spread to some other parts of the Northeast.

## Villages

In New England, villages were commerce centers only and were not sleeping areas for farmers as they were in Europe, which was the home-region of the predecessors of the people of New England. The villages of New England were contained a handful of craft shops and a general store, sometimes two. There was also a public building that served as both church and town meetinghouse. The town

might have a tavern that served food, and that tavern might have a bed for travelers to share. European villages also contained a few shops but mainly contained the homes of the area's farmers. Each day, European farmers would walk from the village to work in their fields, so villages tended to be spaced apart by this walking distance.

As a group of families moved from Europe to New England, those transplanted Europeans might form, and live together within, a new village from which their farmlands stretched radially outward. But land was so abundant that the very next generation would move out to the center of their farmland. The expectation of obtaining abundant farmland was often the reason for transplanting the family from Europe to New England in the first place. Hawke points out that the transplanted persons had no plans of changing their culture as they moved to the New World. Each group setup life in their new home to match that of their old European culture. Notice that the culture of their children was no longer European; it was European-American.

The South had very few villages. Tunis says that even a county seat had nothing but a church, a blacksmith, and an "ordinary," which was an inn where travelers spent the night and ate whatever they got. In contrast to Northerners who always went to a nearby village to see a smith and such, the South's smaller farmers went to a nearby plantation for things they couldn't do themselves. For example, few persons could do their own blacksmithing.

## Cities

Around the year 1700, New York City had 5,000 persons, Boston had nearly 10,000 persons, as did Philadelphia. On the edge of town, deer could still be seen in herds of one hundred. Both cities had one dozen night watchmen, working in pairs, watching for fires, and calling out on the hour that "Two of the clock, and all is well." The New York watchmen asked every seventh house to light a candle out front. The twelve watchmen are the closest thing to a police force.

The town's residents were the fire department. An alarm brought everyone out to quickly form a double line between the burning building and the nearest stream or well. Each household brought a fire bucket, which was made of leather and might be marked with the family's name or initials. Water filled buckets were passed along one of the two lines, and the empty buckets were passed back along the other line. When finished, everyone retrieved their bucket.

Houses have nightly visitors. As was done in the country, urban households took care of the sick, orphaned, and widowed. In the year 1714, Boston required citizens to vouch for the character of out-of-town guests and to explain their circumstances to the authorities before getting permission to let them spend the night.

Many families kept small gardens, a milking cow, and some chickens. A bird house for bee-martins was placed on a tall pole. These birds squawk to warn of approaching hawks or crows, who would try to eat the family's chickens.

Continuing the medieval technique, townsfolk grazed their milking cows in a common area. Cows were allowed in the Boston Commons until the year 1840. Each person built twenty feet or seven meters of fence for each cow that was grazed, and was fined if a cow broke through that fence and got into a corn field or damaged other property. The town also appointed a so-called hay-ward, who watched for cows loose in crop fields and fined their owners. Boston hired hay-wards until the year 1900. To devote more time to tending their crops, townsfolk might hire a herder to tend all

cows. In the morning near the center of town—for example, at second and dock streets in Philadelphia—the herder blew a horn to call the cows. The cows were trained to walk to the herder, follow him to the commons, spend the day grazing, follow the herder back to the center of town, and then walk back to their homes to be milked.

As had been done since the first cities of Ancient Mesopotamia, most cities still relied on roaming hogs to keep the streets clean. Charleston used buzzards. Towns appointed a so-called hog reeve, who kept the pigs out of crop fields. Ralph Waldo Emerson was appointed Concord's hog-reeve on his wedding day. Roaming pigs converted the trash into pork that the poorest of us would eat. But one visiting farmer said "the city streets were so littered that their surfaces hadn't been seen in years and that the city was so noisy he couldn't sleep." Both town and countryside contained the odors of animals, manure, rotting food, chamber pots, alcohol, and tobacco.

City water systems have been made since Ancient Mesopotamia did so 5,000 years ago. Boston's public water system was built in 1652. A person, called a pump-log-borer, made holes lengthwise through logs using an auger with addable extensions. Pipe ends were tapered and recessed, joined together, and then sealed with mutton fat. Most towns built their water systems in the late 1700s. As towns became larger in the later 1800s, greater water pressures were needed and wooden pipes were replaced with newly-available, metal pipe.

In 1800, only 5% of the U.S. population lived in cities. By 1850, Boston's population had reached 100,000 and New York City had over 300,000 persons. Already by then, rural people said that the big-city dwellers "rushed like they were heading for a good dinner or running from a bailiff and that their faces showed knit eyebrows and compressed lips." Some of us big city dwellers would want it no other way.

## Roads and travel

After crossing an ocean—a journey of a few weeks duration—in pursuit of a better life, we would frequently move yet again, still in pursuit of a better life. This move might be across town or across a few hundred miles of land. Notice that since the time in which we were gatherer-hunters, each and every time a family has moved they were in search of a better opportunity to pursue life. Still today, we move across town, the nation, or the world for this same reason.

Since the United States began, it has been common for a family to move every few years. It is often found that 25% to 65% of the persons in one town would have moved elsewhere between successive governmental censuses, which occur every ten years. Around the year 1800, New York City had the convention of ending leases on May first of each year. There were so many families and shops moving on this day that the streets were filled with carts and furniture "as if everyone were running from the plague." Western land had an enormous pull on us farmers. Those of us who had made one move toward the nation's west were likely to move again even farther west, perhaps to the leading-edge of that moment's western frontier. Still today, we continually emigrate from one state to another in pursuit of a better life.

Travel has been common since the beginning of the U.S., but back in Europe, there were millions of persons who had never been "beyond the sound of the parish bell." Most of the traveling in the U.S. was done on foot. In 1840, only half of farming families had even a single horse and almost no horses were kept in urban areas. You might see three family members riding on one horse.

Thousands of us walked two miles to school, four miles to church, and ten miles to a weekly event. (My friend Datman Escher's grandparents said they had to walk uphill both ways to school, see [www.worldofescher.com/gallery/jpgs/P14L.jpg](http://www.worldofescher.com/gallery/jpgs/P14L.jpg).) If we walked more than fifteen miles we would spend the night before returning.

Some of us had two-wheeled carts pulled by a horse. These were easily overturned and upon smashing into pieces would impale passengers with their debris, as happened in 1818 to two drunken sailors while passing a bottle in Newbury, Massachusetts. Beginning in 1800, four-wheeled vehicles were starting to be seen and by 1820 they had become the most common vehicle. These four-wheeled wagons were used on the farm and for hauling goods across the county. Commercial freight wagons began to appear and quickly grew in size to be pulled by as many as eight horses. Tunis says that these wagons differed little from those made in Roman times.

In the U.S., the earliest coaches were nothing but wagons with a few rows of forward-facing benches nailed onto them. Later, they were enclosed and had two benches that faced each other to facilitate conversation. For many years, a third backless seat continued to be placed between the other two with nothing but a strap of leather for the passengers to lean against. Larkin explains that "nine persons squeezed their cleanliness and tobacco into these coaches." A tenth passenger could choose to ride outside in the weather next to the driver—for full fare but also with full ventilation. The wind and the rain came right through the cracks and the leather-curtained viewing holes. If these leather curtains were strapped down then the passengers were simply tossed around in the dark. All the passengers had to get out and walk up every steep hill because the horses could not pull them.

Along the journey each passenger would try to guess about the lives of the others often while pretending to be someone else – because their wise uncles had told them to “never let the truth interfere with a good story.” The passengers might debate politics or theology. You might like to read about a fourteenth-century coach trip in *The Canterbury Tales* by Geoffrey Chaucer, or you might like to read *Travel in the Ancient World* by Lionel Casson. For first-person accounts of travel in the U.S., visit <http://memory.loc.gov/ammem/lhtnhtml/lhtnhome.html> and xroads at <http://americanstudies.as.virginia.edu/students>

Few stage lines existed between the years 1700 and 1800 but then their numbers quickly increased. In 1786, a journey from Boston to New York City took four to six days, depending on the weather. By 1830, stagecoaches were making this trip in just 1.5 days, and after 1840, railroad trains would make the trip in just twelve hours. Today it requires four to six hours by car. By 1835, the Boston area had 600 coaches per week traveling along one hundred lines at the good-weather speed of eight or nine miles per hour (13 or 14 km/hour). We also started putting spring suspensions onto the coaches.

Coaches suffered from runaway horses and broken axles. Holes and stumps in the "roads" would overturn a coach and sometimes cause injuries to the passengers. Overturns were expected on long journeys. For example, one New York City to Cincinnati coach was overturned nine times during its round-trip journey. On such long journeys, not only would the passengers fall asleep but the driver would also (a dozen sleeping persons being dragged behind a team of horses). One sleeping driver fell off the coach, caught his coat in the wheels, and was killed.

Traveling for pleasure was becoming easier and cheaper. We could more easily make a two-hundred-mile (320 km) trip to visit parents and siblings. Some more-wealthy newlyweds started a fashion of traveling to Niagara Falls for their honeymoon. Travel in 1835 was three times faster and

three times cheaper than it had been in just 1790 but it was still costly. A stagecoach trip from Boston to Providence, Rhode Island cost two day's wages for a skilled artisan. From Boston, it cost eight-day's pay to go to New York City but two month's pay to go to Ohio.

By 1840 there were 15,000 freight drivers on the road. They were called "crackers" for their constant attempts to speed their horses by cracking their whip. Rougher taverns began to appear on the major roads for the rougher travelers. A traveler could rent a bed for the night in one of these taverns. Often, two or three strangers had to share a single bed. (There's an old saying that "politics makes strange bedfellows.") When we rented a bed for the night, we found that it contained the insects of each and every one of the previous guests. If we asked the tavern operator for soap, we surprised them.

### Peddlers, freight haulers, and entertainers

Throughout the nation, roads were also filled with thousands of peddlers who would take dry goods, hats, and perfumes and such and sell them door-to-door. For example, one northern peddler traveled the south to sell manufactured clocks, while another peddler covered an area from Cleveland, Ohio to Charleston, South Carolina. (I had a job for a while doing something similar to this.) The road also contained freight truckers who were driving wagons at high speed and yelling at the slow-moving families as they passed. (We are familiar with this rudeness between truckers and families today, for example on Interstate 40 between Memphis, Tennessee and Little Rock, Arkansas.)

Since people were usually starving for novelty, traveling entertainers spent months on the road stopping in town after town. One entertainer traveled with dioramas that depicted historical events and charged a few pennies for people to see them and to hear him explain their stories. In 1836 P.T. Barnum began his traveling circus, averaging two shows per day as he went from Connecticut to Charleston, South Carolina in a six-month cycle. We could then see with our own eyes the strange and exotic animals of the world of which we had only heard. As always, the road also contained beggars and other free spirits.

Roads were few and usually minimally built because road construction required great numbers of men and animals. New England was the oldest part of the country and so had the largest number of roads. In the 1820s and 1830s, local governments increased the pace of road construction and helped enable the westward migration. Some private companies tried to build toll roads but the maintenance cost kept them from being profitable. The U.S. government built the National Road from Cumberland, Maryland to Vandalia, Illinois.

Before there were steamboats, river travel was essentially limited to one-way travel. Flat boats, which simply drifted downstream, were used to take items down the Mississippi River to the ocean port of New Orleans where they could be sent on to the Northeastern U.S., the Caribbean, and Europe. At the river's end in New Orleans, these flat boats could only be broken up for lumber and the boat drivers were left to get back upstream anyway they could.

### Steamboats

The first steamboats appeared in the U.S. in 1807, had their heyday during the years 1820 to 1850, and then declined in number as they were replaced by railroads. A few can still be found today.

The inventor Robert Fulton put an English-built steam engine and large paddle wheels onto a boat that could move upstream at five miles per hour (eight km/hr). This great speed resulted in some steamboats having names like "Velocepede." In *The Changing Years* Arch Merrill describes how each steamboat whistle had a different tone and how these boats often got stuck in mud, jammed in shoals, or caught in ice floes. Steamboats traveled on every big river to transport people and cargo between major cities. By 1830 there were 400 steamboats on the Mississippi and Ohio rivers alone. Mississippi steamboats increased the New Orleans cargo from twelve million pounds in 1820 to 200 million pounds in 1850. The steamboats also crossed the Great Lakes to the new towns of Chicago and Detroit, and helped bring the Western U.S. into the nation's economy.

While on a several-day-long steamboat trips, those of us who were first to go to bed could sleep in curtained berths. The rest of us piled onto and under chairs, benches, and tables—right along with many strangers. Thomas Hamilton said that his first night on a Mississippi steamboat drew him the luck of a night's sleep on a table and had one man's knees in his stomach and his own feet on the head of another. The passengers were ministers, drunkards, swearers, fiddlers, dancers, and gamblers. The minister Peter Cartwright tried to sway card players into a discussion of history and astronomy, and he managed to stop a fiddle dance to hold a Sunday sermon.

The steamboats were seen as both a bit of a marvel and a bit of a death trap. Their high pressure steam boilers were a new technology; as usual, we had to learn the hard way about their breakdowns. In 1830, one steamboat boiler exploded at the dock in Memphis and blew fifty persons into the river, killing them all. Most boiler explosions were not caused by poor materials or design but by the reckless daring of inexperienced and insufficiently trained operators who did not fully understand these machines. One third of the steamboats on the Mississippi before 1850 sank from accidents; this is an unbelievable portion. When Charles Dickens traveled U.S. rivers by steamboat, his friends told him to sleep as far as possible from the boiler. Already in 1840, books were being published to thrill us with steamboat and railroad disasters—just as any disaster today is soon followed by purchasable accounts of the incident. Another inconvenience for the passengers was the accepted practice of "running a machine for as long as it will go."

Merrill tells of the steamboat Onondaga being quarantined for weeks, including an entire entertainment troupe, because one of its crew came down with smallpox. The resulting stigma resulted in the Onondaga being blown-up in a well-attended spectacle. Merrill also describes how the people of New York's Finger Lakes remember steamboat rides in the early 1900s, including moonlight cruises and dances. They took box-lunches with boiled eggs and other such long-lasting food. They marveled at the huge glowing engines below deck and watched sweating men shovel coal.

Canals transport people and goods between east and west

The Erie canal began in 1817 as a New York state project but was largely funded by British banks. It was completed in 1825 for a cost of \$7 million and earned \$0.5 million per year. It ran 363 miles (580 km) from Albany on the Hudson river to Buffalo on Lake Erie and consisted of 18 aqueducts with a total of 83 locks. Initially it was 4 feet deep and 40 feet wide (1.2m x 12 m) but its immediately-heavy traffic resulted in it being expanded to 7 by 70 feet (2.1m x 21m).

A horse path was placed along each side of the canal so that horses could be hitched by rope



to pull freight or passenger barges down the canal. The horses pulled one-hundred-ton freight barges down the canal at a speed of two miles per hour (3.2 km/hr) for a price of one cent per ton-mile. Log-rafts were pulled at a slower pace. Passenger boats could be pulled at a speed of four miles per hour (6.4 km/hr).

While boat rides had always been dangerous at sea, a trip on the Erie canal was like a carnival ride. Passengers often commented that as the canal's strip of water made its way across the land they could just look off to the side of the boat and watch the unoccupied forest pass by. When it opened, it enabled people to travel by boat half way across the country. A person could start in New York City, travel up the Hudson river on one boat and then shift to another boat pulled along the Erie canal all the way to the Great Lakes and the Ohio River. From there they might choose to ride a boat all the way down the Ohio River to the Mississippi River, and on to Memphis and New Orleans.

The Erie canal instantly provided an economical transportation system from the Great Lakes to the Atlantic. We saw earlier that in ancient Rome the price of grain doubled if it had to be transported overland by just fifty miles (80 km). Before the Erie canal was built, the cost to haul grain over the Appalachian foothills to New York City had been three times the market value of wheat, six times the market value of corn, and ten times the market value of oats. The Erie canal meant that these costs suddenly disappeared overnight. It quickly brought Western New York flour to New England and connected the factories of the East to the farmlands of the West. The Erie canal brought so much food to the urban Northeast that one New York City restaurant offered thirty kinds of meat. One person publicly denounced the new commercial food reliance as unhealthy and said that we should eat only bread and drink nothing but water.

Canals were quickly built in many states. One problem for the canals of Indiana and Ohio was that ice and low water closed them for part of the year. By 1840 there were 3,300 miles (5,200 km) of canals costing \$125 million, but the canals were quickly replaced with railroads. The people of the U.S. had never built a large-scale engineering project—just factory buildings and their machinery—before the Erie canal. Railroads would be their next project, followed by dams, automobile highways, and spaceships. (In the previous chapter, we saw that the first canals were made to irrigate crops in Ancient Mesopotamia and that the residents of fifteenth-century Timbuktu made a canal to connect their city to a nearby river. Twelfth-century Hangchow had many canals in town and was connected by canal to the Yangtze 100-miles, or 160 km, away.)

## Shops and apprentices

As had occurred since the time of the first cities in Mesopotamia, industry in the U.S. before the year 1800 was composed entirely of small shops with people crafting items by hand. The small shop was typically located in the first floor of the home of the shopkeeper-craftsperson. Compared to a modern, mass-production factory, working by hand is slow but much more personal. A day's work might result in the casting of one spoon, sometimes three.

Tunis explains that there were four kinds of shops. There were craftspeople who did custom work to order in what was called "bespoke work." Retailers simply bought and sold goods. Other artisans made items which they sold on a take-it-or-leave-it basis. There were specialists who performed some direct service for people—for example, those people who traveled the country offering to repair shoes or metal pans or some other specific object. These travelers often arrived in

the morning, discussed the work needed with the farm owner for a few hours, did the work, and then spent the night in the home of that customer. Other travelers might sell these items from a wagon—sometimes from a wheelbarrow. These travelers did most of their work during April through October, when the roads were least miserable.

The city had many shop-less hawkers shouting their offer of goods or services as they walked the streets, perhaps pushing a cart full of goods. For example, there were wood sellers, charcoal burners, rag buyers (for paper making), broom sellers, chimney sweeps, scissor grinders, meat butchers, fish sellers, game hunters, and milk sellers. The milk seller carried milk through the streets in big copper cans and ladled it into the customer's container right at their front door. Tunis describes the old joke about a hard of hearing person sticking a trumpet through a barely open door and getting milk in it.

In the city, each shop placed a sign above its entrance. The sign was usually a three-dimensional object depicting the shop's business, a shoe or tooth for example, but some signs were just a flat painting. A customer did not have to be able to read to understand these signs. Some craft shops illegally displayed the heraldic arms of their trade's English Guild, though few persons could recognize those now-foreign symbols. A tavern sign was either a jug or a portrait of a presumably important person. Tunis says that in 1776, every "King George Tavern" changed its name but not its portrait. Tobacco shops customarily hung a picture of an Indian, supposedly because Indians had introduced tobacco to the Europeans. One tobacco shop in Baltimore in 1775 had an old ship mast carved into the figure of a standing Indian and by 1850, every tobacco shop had a similar figure standing at its entrance. Shops had signs but homes needed no identifying numbers. Before street addresses were common, people would tell incoming travelers to "Go to the Inn on River street and ask anyone you see to point out my house."

Every shop was run by its owner, who might also have an apprentice. It was rare for a shop to have more than a few workers. As we saw for Medieval Europe, the "shop" was a room within the home that simultaneously served as living quarters, workshop, inventory warehouse, and retail showroom. The shop owner obtained materials, discussed custom jobs with customers and directed apprentices. Shop owners and their spouses did the retailing and accepted payment in most any form—usually farm products. A shop in a city might advertise that this "country pay" was accepted. A silversmith's newspaper ad might also mention some cheese that he or she had to sell. If coins were exchanged they were usually Spanish Dollars. These were cut into eight pieces or bits; two bits made a quarter dollar, hence the term.

Apprentices and hired help were not paid in wages but in food, clothing, and housing. Most occupations were learned through on-the-job apprenticeships. The occupations included those of merchants, lawyers, doctors, carpentry, clergy, and most every craft. Apprentices traded their labor for the master's training and usually lived in the master's home and ate with the master's family. The housewife prepared food and clothing for her children and for the apprentice. Masters not only taught the apprentices but housed and fed them, too. Most any other shopworkers also lived in the shop-owner's house and were fed as a single family.

Some apprentices lived in the home of a wealthy master while others lived under poorer conditions; some were even beaten. The apprentice typically worked "sunrise to sunset" but also took part in the chores and activities of the household. An apprentice could travel home for occasional visits.

Apprentices signed a multi-year contract with their trainer. If apprentices ran away before completing the contract-period, the trainer had the legal power to have them found and returned to work. The town's tavern often had a few posters showing rewards for runaway apprentices. At the end of the training period, apprentices—now journeymen—would move away to open their own shop.

## Printers

A craftsperson was not as specialized as today. For example, a printer was an editor, typesetter, book binder, book publisher, book seller, and book repairer (re-sewing covers onto books), and usually made the local newspaper. A printing shop also sold writing paper, ruled paper—whose rulings were hand drawn in the shop—for keeping accounting records, pen quills, ink, and sealing wax (for sealing folded papers for privacy in correspondence). A printing shop often made its own ink from either foreign or local, organic materials; some printers made a surplus of ink to sell to other printers.

Printing presses were expensive and finicky to operate. They were made by only a few persons, still following the Gutenberg design. The first printing press in the American continents arrived in Mexico in the 1550s—the second in Lima, Peru in 1584. In 1638, the first press to be used in the English colonies was setup in the cellar of Harvard College. Printers published religious books, translations of Greek and Latin classics, history, school texts, official proclamations, apprenticeship contracts, and almanacs. An almanac contained weather predictions, moon phases, tides and schedules of courts, post riders, ferries, and freight wagons. When needed, space was filled with jokes and home remedies.

Type was expensive, as it had to be imported from Europe. The typical printing shop owned one set of type and so printed in a single font. Type pieces were kept in a case having separate sections for each letter. To create a page of text, individual letters had to be placed into a block, which would then be smeared with ink, covered with a sheet of paper, and finally pressed. Individual letters of type were hand placed into that block, at a rate of almost one per second. Tunis explains that the typesetter grabbed type from this case without having to look at the case, just as a typist today doesn't have to look at the keys. Small letters were more frequently used and so were placed in a "lower case" within closest reach of the typesetter. Larger letters were used less frequently, and so were grabbed from a more-distant "upper case." We still use these terms today to refer to upper and lower case letters. By the year 1900, the typical printing shop owned type for three hundred different fonts; by 2000, a computer could hold tens of thousands of fonts.

In the early colonies, paper came from Europe only. If a boatload of paper was late in arriving then the press might come to a halt. Later, local paper was made from cloth rags gathered from the community. The rags were chopped into pieces, wet, left to decay for a few months, and then stamped into sheets. Many processes were experimented with while trying to better refine paper. In Asia, paper has always been made from wood; this was not done in the U.S. until recently. (This also means that toilet paper was being used in China in the ninth century ad but not until last week in the Western World.) Colonials tried making paper from corn husks, straw, pine cones, seaweed, moss, or wool but did not know enough chemistry to break down these materials. Papermaking involves complicated chemistry. Today, paper mills are common in the forested Southern U.S.

A newspaper typically contained four pages and was shared around the community until it was worn out. Its two outer pages usually contained local ads while the inner pages contained literary

works and local commentaries along with three-month-old news stories from foreign exchanges. Many newspapers also made their way to other regions of the colonies, keeping each colony informed of the others. A local newspaper printer would reprint articles contained in papers received from other colonies. On January 14, 1768, when Anne Catherine Green's newspaper contained but a half-sheet she explained that her meager content was due to bad weather blocking the arrival of other newspapers.

## Railroads

The industrialization of the 1830s and 1840s was dramatically topped by the steam locomotive. In the U.S., railroads began to emerge in the 1820s with some short lengths of track.

Christopher Columbus Baldwin said he was astonished the first time he saw a train moving toward him under its own power because it was "just like a living thing." Before the train, only living things could move under their own power. The trains astounded passengers with lightning speeds of fifteen to twenty miles per hour (25 to 30 km/hour) and with lightning sparks from metal wheels on metal tracks. They compared the train's flash with the stagecoach ride's slow-motion dawning of day.

The railroads also had their own dangers. This was another new technology and we had to learn the hard way about its shortcomings: there were axle and frame failures, derailments, and collisions. Railroad ties and spikes would be thrown upwards through the floors of the passenger compartments, sometimes causing injuries. Trains were the loudest noise ever known, causing the passengers to have to yell to each other. Ash and cinders from their wood-burning engines showered onto passengers who emerged from the trip half-deaf and blackened with soot but thrilled by the speed of travel. Larkin explains that us travelers accepted the risks as the price of rapid travel and that it was an exhilarating experience to participate in the breaking-up of age-old constraints on human movement. Collisions of old trains were soon arranged for entertainment.

In 1828, the Baltimore and Ohio railroad began operating. By 1840 there were 3,300 miles (5,300 km) of both railroad tracks and canals but the canals soon ceased to be used because the railroads were much more popular. Some 9,000 miles of tracks were added during the 1840s and another 22,000 during the 1850s. By the 1860s railroads were the most popular form of long-distance transportation. Notice that these were not needed before long-distance trade and travel were occurring. The amount of railroad tracks grew until the automobile appeared around the year 1900, and then they began to disappear. In turn, automobiles disappeared around the year 2100 as fusion-powered flymobiles began to be used.

Colonial crafts, technology, and industry were brought by European immigrants and evolved from the techniques of the first cities of Mesopotamia

Humans have solved every problem that has come their way, but solutions are typically found after some fumbling in the dark. Notice also that a solution never precedes the problem and that problems evolve with each generation. (We sometimes have trouble understanding that a group of people will not solve a problem before it has come their way.) The techniques of our ancestors show that they were very clever in solving the problems of their generation. Humans are clever creatures, but keep

in mind that our technology and civilization have been built using our animal mind that is not too different from those of our animal cousins. The techniques and procedures of our civilization—built with the mind of a parenting and social gatherer-hunter—are the combined sum of the solutions obtained by all of the persons throughout the planet and throughout all previous generations. Once a technique or procedure has been developed, it is quickly adopted by every group of people currently experiencing a need for that solution. This is illustrated by Ralph Linton's description of the global diffusion of techniques and inventions, which was quoted above. Our solutions are continually refined through time by the contributions made by all of us.

The following details of colonial crafts and industry are taken from the book by Tunis. You might enjoy reading each of his books about colonial and frontier living. The dates and descriptions of the ancient origins of techniques are given by Frances and Joseph Gies in *Cathedral, forge, and waterwheel* and from other books cited in Chapters 1 and 12. In the following pages, we'll look at a few aspects of colonial technology and have a glimpse of their more ancient origins. For example, we were making baskets and boats when we were still gatherer-hunters, before the time of the first farming villages. We have been making wooden furniture since the time of our first permanent houses—much furniture has been found in Ancient Egyptian tombs. During the early years of the U.S., whenever a basket became worn out, someone in the family simply gathered some material to make another. Until the last century, basketmaking techniques had been passed from parent to offspring for thousands of years. Shipmaking was done in ancient times and evolved from prehistoric experience. In prehistoric times, bands of humans migrated by boat to Australia and even to the most remote islands of the oceans.

The forested colonies built many ships for European merchants and navies, including the new style of fast moving clippers that could outrun pirates but carried less cargo than did the older design. In 1774, one-third of England's merchant ships were made in the colonies. Shipmaking combined a wide range of crafts and specialists, including ropemakers, sailmakers—who made hemp or linen sails—and the craftspeople who made the brass ornamentation. Carpenters used their eye and experience—and some steam—to bend wood, as a ship has few straight boards. They also searched the forest for naturally shaped pieces of wood that could be cut from, for example, the area of a limb branching from its trunk. They also selected those pieces of wood having the appropriate grain direction for specific boat parts so that the piece would best bear its expected load. Blacksmiths made iron blocks, pulleys, anchors, chain, rudder pieces, cannon, and the iron bands that were wrapped around masts. By custom, the oldest sailor would christen a newly finished ship.

Since the time of the first humans, we have been using animal parts to make tools. During colonial times, horn and turtle shell was used for many purposes. For example, we have all seen pictures of people carrying their gunpowder in a horn (made from bull's horn.) For most uses, the end of the horn was cut off and the remainder boiled, slit lengthwise, heated, and pressed flat in a screw press. Turtle shells were similarly prepared. Horn or turtle was used for combs, lens holders, and snuff box tops and such. Scraps might be made into buttons. A thin slice of horn was somewhat transparent and so was used in a lanthorn, which is a lantern with windows of horn rather than glass.

## Grain mills

We saw that Ancient Mesopotamian farmers took their grain to thrashers who kept a portion for their service. Grinding grain into flour using mortar and pestle, was a daily chore for each family. Rather than personally grinding meal-sized amounts of grain with mortar and pestle, pairs of large, horizontal stones began to be used to grind continuous amounts of grain. The upper stone of the pair was rotated on top of the lower, stationary stone. Grain was poured through a hole in the center of the upper stone and then moved radially outward as it was crushed between the moving stones. The resulting flour emerged from the outer edges of the stones.

The Gies explain that the horizontal waterwheel was probably invented in Armenia around the year 200 bc. At that time, the Chinese began using water power to rotate the upper grinding stone, while the Romans began using animals for this purpose. Waterwheels east of Persia were typically horizontal but were vertical west of Persia. Persians invented a horizontal windmill in the seventh century ad. The use of vertical windmills had made its way to Europe in the twelfth century ad. Since the wind was caught edge-on, in pinwheel fashion, the entire building or at least its roof frequently had to be turned toward the wind.

In an overshot waterwheel, water fills buckets at the top of a vertical, rotating wheel so that the weight of the water forces the wheel to rotate as the water falls. Water is collected behind the closed gate of a stream dam during the night and then allowed to flow over the wheel during the day. Overshot waterwheels were more expensive to build than were undershot wheels, in which water current strikes the bottom of a vertical, rotating paddlewheel forcing it to spin. The paddles partially dip into the water as the wheel spins. The paddled wheel could also be oriented horizontally. In the heavily forested colonies, wheels and their gears were nearly always made from wood rather than metal. The Gies show that an overshot waterwheel produces eighty to one-hundred-twenty times the power of an animal-turned mill and ten to twenty times the power of an undershot wheel.

In the year 1000 ad, England had only about 100 mills, but the Domesday book lists 5,624 mills in the year 1086 ad—not quite a century later. Georges Duby has calculated that this amounts to one mill for every forty-six peasant households and shows that the peasant diet was switching from boiled, un-ground porridge to baked bread. A person can live off two or three pounds or one kilogram of bread per day. (About three kilograms or 6.5 pounds of potatoes have to be eaten per day to get sufficient nutrients to remain alive.)

Medieval peasants took their grain to the miller who ground it while the peasant waited. The miller then gave back their grain in the form of flour—minus the portion that was the miller's fee. That is, each peasant took home the same grain he or she had brought, only it was now in the form of flour. We saw that medieval lords were requiring each unfree peasant family to take their harvested grain to the manor's grinding mill where about one-thirteenth of the grain was taken as a fee for its use. This made some peasants mad enough to return to eating boiled porridge rather than baked bread. Peasants did not like to have to haul their grain to the mill, nor to stand in line waiting for their turn to have their grain ground into flour. Landlords allowed free tenants to pay a fee to skip to the front of the line, which predictably angered us peasants. In addition, free tenants paid just one-twenty-fourth of their grain. Tunis says that since the time of Chaucer, millers had a bad reputation because some would make a secret hole to catch extra flour for themselves.

In eighteenth-century New England, some mill owners began buying grain from farmers and

selling previously sacked flour. In this case, farmers did not go home with the same grain they had brought. There were no lords in the colonies but farmers still showed the same sort of impatience toward anyone trying to skip to the front of the line. The miller's share was now regulated by law and fines were paid to the offended person when a miller was caught cheating. Milling stones began to have both large and small holes to allow both coarse and fine flour to be ground. Some persons traveled the country working as mill-stone sharpeners.

Our civilization has always needed power to operate its tools. Our own muscles provided that power until we began inventing pulleys and levers. Mills came much later. We will see below that around the year 1850, steam engines quickly replaced water and wind powered mills. Today's factories use electric motors that obtain their power from distant, electrical power generating plants. These plants burn coal or gas to spin electromagnetic generators. Nuclear powered electrical generating plants were developed in the 1950s. There is much debate today about our current and future sources of energy.

## Baking

Bread making is as old as the first farmers. We saw that much of an ancient Mesopotamian family's day was spent preparing bread. Tunis says that Medieval bakers cheated so regularly that London bakers came to be required to give the "baker's dozen" of thirteen rolls to assure customers of their money's worth. New Amsterdam (later renamed to New York City) had a bake shop by 1648. A mayor's monthly duties might include weighing each baker's bread loaves, which were required to be eight pounds (3.5 kg). Today, bread is made in large factories and shipped for hundreds of miles to supermarkets. A loaf no longer weighs eight pounds.

Eighteenth-century bakers began work way before dawn and worked half-dressed because of the intense heat of the ovens. The baker kneaded two hundred pounds (100 kg) of dough with strong hands, cut loaf-sized pieces to rise, and placed them into the oven. To picture the oven, imagine two fireplaces, one above the other, with wood burning in the lower fireplace heating dough placed in the space within the upper fireplace, which held no wood. The slow rate of cooking resulted in a thicker crust than we usually see today. Bakers kept their supply of yeast alive indefinitely by feeding it a paste of flour and mashed potatoes each night.

The colonial baker usually obtained flour from the miller, but people sometimes brought in dough that they had prepared at home to have it baked by the baker; they might initial their dough to be assured they got back that which they had brought. A customer might choose to bring cloth in which to wrap bread carried home from the baker. (Today, we take our grocery sacks for granted.) Bakers did not make pies; they were made by the pie maker, who made little else. To set the curls of a wig, sometimes a wigmaker brought a wig to be baked in the baker's oven.

## Tanning

From the city's best smelling shops we turn to the worst smelling shops, the tanners. Most every colonial village was within smelling range of a tannery—and dreaded the days that the wind blew straight from the tannery. We saw that Ancient Mesopotamian cities were divided into zones to keep such industrial districts away from residential areas. The procedures used to tan hides have come

down to us from our gatherer-hunter ancestors, who were learning to make clothing and such from animal hides. In fact, this knowledge allowed us humans to spread from the warm equatorial regions of the Earth toward its frosty poles. Since ancient times, tanning involved soaking animal skins in the sorts of chemicals readily available, including tan bark from oak trees, animal dung, salt, lime, water, and alum. Cow, ox, horse, buffalo, and moose hides were tanned while the thinner skins of calf, sheep, pig, deer, and goat were tawed. The tanned or tawed hides or skins were kept in a pit for a year and then dried and beaten to make them softer. Only in the last few decades has our understanding of chemistry resulted in any significant change in the tanning process.

For thousands of years, leather has been our multi-purpose material. Some leather items made in the English colonies include shoes, boots, breeches, book covers, gloves, drumheads, sieves, saddles, animal harnesses, and the protective aprons of the metalsmith along with their bellows. Carriage tops and their curtains were made of leather and the body of a carriage was suspended from stretched leather strips to provide some cushion against the bumps. In the last few decades, rubber and plastic have been added to our list of multi-purpose materials.

A New England farming family might try themselves to tan the hide of its dead cow or instead choose to take the hide to an expert tanner who would do a better job. The tanner returned the tanned hide to the family who brought it but kept half in payment for the service. The tanner also kept the hair, which was sold to plasterers to hold their lime mortar together, and the offal, which was sold to peddlers who sold it to gluemakers. The family might next take their tanned hide to a shoemaker, who would use that specific piece of hide to make shoes for that customer. Eventually, the shoemaker began selling previously-made shoes for less money than charged for making shoes from hide brought by a customer.

The shoemaker was called a cordwainer until about the year 1700. (These unrecognizable words show that such occupations are older than our modern language.) The shoemaker made holes to attach buckles but did not attach any; instead, the purchaser would attach their own buckles. Shoe and boot soles were made from the thick hide that occurs near an animal's backbone. Thinner, belly hide is used for shoe uppers. It is tanned by being placed in hen dung for just a week. The so-called "cat whipper" was a shoe repairer who traveled from farm to farm. Tunis says that the family might have the cat whipper use tanned hide from their own cow to repair any of their shoes that "still had wear in them." Similarly, the traveling tinker repaired spoons, dipper handles, basins, and pewter plates and bowls.

## Weaving

We saw that five thousand years ago, Ancient Mesopotamians were herding sheep and making cloth and clothing from the fleece of sheep. The removed fleece was cleaned and then combed to remove tangles and impurities and to get the fibers to form parallel rows. Yarn is then spun by twisting fibers between one's fingers and thumb, into an increasingly longer thread. This was done entirely by hand until the invention of the spinning wheel. The Gies state that the first illustration of a spinning wheel is from Baghdad in the year 1237 ad. Yarn is then wove into cloth on looms and dyed with those organic materials found to produce fashionable colors. The colonials found that logwood made a brownish red color, peachwood or brazilwood made a red and purple color, black oak bark made yellow, and blue was obtained from indigo. The fuller then cleaned the woven, woolen cloth of



grease by rubbing clay into the cloth and then washing away the clay as it held onto the grease. The fuller also compacted the fibers, raised the nap, and then cut away any unevenly raised nap with long scissors. The cloth was taken to the tailor to be made into clothing. The Gies explain that silk was made into cloth in China as early as 3000 bc. Japan and India first learned the Chinese secret and then Alexander the Great took it back to Greece from India. Arabs first took cotton cloth to Spain in the tenth century ad.

The entire cloth making process is ancient. Hodges shows pictures of Mesopotamian and Egyptian looms from before 3000 bc and one from Ancient Greece around the year 600 bc. Looms were incrementally improved every century or so; the improvements would slowly bounce back and forth between lands as distant as China and Europe with transmission through India and the Islamic equator. We saw in Chapter 14 that the first factories of our Industrial Revolution developed as cloth merchants acquired the looms of the weavers and brought them into a central shop. Looms have been used in every city, on every continent. Today's mechanized looms are not too different from ancient designs.

Tunis says that colonialist John Pierson employed twenty Yorkshire families in cloth making. Pierson setup his shop in Rowley, Massachusetts in 1683. Tunis also describes the clever manner in which the movement of loom parts were planned to produce a final pattern. In England in 1776, James Hargreave (who did not have a daughter named Jenny) made his "spinning Jenny" which simultaneously spun cotton from eight spindles. Yarn was woven by hand until Edmund Cartwright patented a power loom in 1785, which began to be used in the English factories. We'll learn more below about the early water powered cloth mills built in Lowell Massachusetts in the 1820s. (Chapter 17 contains a short description of today's global cloth industry.)

Patterns were being printed on cotton cloth in India before the year 1600 ad. Adventurers took some back to England where other types of cloth began to be printed. The cloth was covered with an unconnected repetition of a single picture, which was applied with a dye-covered woodcut block. This block had been gouged away everywhere except where the lines of the pattern existed, leaving them as one-eighth inch (3 mm) high ridges. These ridges imprinted the pattern of dye onto the material. Typically, flowered patterns were printed.

This technique was used to print both cloth and wallpaper. In France in the early 1700s, Jean Papillon made the first repeating block pattern and this lead to the use of continuous rolls of wallpaper. The first continuous wallpaper arrived in the colonies from England in 1730. After 1750, it was also bought from China. The oldest known colonial-made wallpaper was printed in 1794 by William Poyntell, who advertised that it was cheaper than whitewashing and hid dirt and fly specks.

Tunis tells how Ben Franklin convinced the cloth printer John Hewson to emigrate from England to the U.S. Hewson illegally took his cloth printing knowledge out of England, which was trying to protect its monopoly on these techniques. England put a high price on Hewson's head when he fought in the Revolution. George and Martha Washington wore some of his gown patterns.

While cloth is woven, felt is made by boiling and beating fibers into a matted form. Felt hats were popular. Britain tried to limit hatmaking in its colonies by restricting the number of apprentices each hatmaker could train. Still, in 1732 Boston and New York each produced ten thousand hats. By 1774 there were forty-three hat makers in Philadelphia. Felt hats were made from sheep's wool; later, they were also made from imported llama wool. Fur hats were usually made from beaver, which almost drove them to extinction, but cheaper versions were made from otter, seal, muskrat, or rabbit.

Since the fashionably curled edges of a felt hat will unravel in a hard rain, many hat makers were kept busy re-blocking hats. A person who could not afford this service instead wore flat brims.

### Mining, ore processing, and blacksmithing

We have seen that people were using gold, copper, and silver about 10,000 years ago. At first, these metals could be found right on the ground but mines were soon dug to obtain more of these metals. Archaeologists have found some ancient mines which were dug using deer antlers and such as tools. Gold nuggets were often found in streams. Hodges says that around 3,000 bc in Mesopotamia, after much trial and error experimentation, it was found that mixing a little tin with copper made bronze. Bronze is much harder than pure copper and is easier to cast due to its lowered melting point. By 2,000 bc, there are records of goat-skin bellows being used to raise the temperature of a fire by blowing air into it. The bellows replaced the smaller blow pipe previously used and allowed larger objects to be cast.

On the ground, metals are found mixed with many other chemicals in a conglomeration called ore. The metal is separated from the ore by melting the mixture in an oven. Much copper ore was unusable because the sulfur it contained released gas upon heating and made the resulting metal porous. The Mesopotamians found that the sulfur gases were eliminated from ore by roasting before being melted. This made copper ores more often usable and resulted in a more-pure metal.

Precise amounts of pure tin could be mixed with pure copper to create bronze with specific properties. For example, high tin content was used to make mirrors and other objects needing relatively little hardness. Tools and weapons were made from a mixture of 8% tin with 92% copper. Less tin made bronze more easily hammered, as is needed in applications where the bronze can not be annealed—for example, in attaching bronze knives to bone handles. Bronze tools then replaced the stone tools our ancestors had been using for a few million years.

Iron ore can be found in most every region of the Earth, but it is much more difficult to work than is copper or gold. In addition, iron melts at a higher temperature than does copper; this higher temperature was first obtained in a furnace about 2,000 bc. The use of iron was less widespread because the processes needed to get it into useful form are very different from those producing useable copper or gold. Since it took several centuries of effort to find these processes, iron did not become widely used, except for weapons, until about 1000 bc. The Hittites were the first people to regularly use iron.

When iron is separated from ore, it is a hard but spongy mass. Iron has to be hammered while red hot to be forged into a solid bar. Since it quickly cools while being hammered it has to be repeatedly reheated. Two pieces of iron can be joined only by hammering them together while they are red hot. This requires tongs to hold the hot metal, a heavy hammer made of iron, and an anvil—none of which are needed to work copper or gold.

The Gies describe ironworking in the Medieval ages. During the tenth and eleventh centuries ad, craftspeople in Milan, Italy were making much of the metal tools used throughout Europe, including swords, helmets, and chain mail. Silver was mined in Saxony, tin in Cornwall, and iron in the Carpathians and Balkans. At this time, Northern Europe's sole source of iron consisted of pieces of metal gathered from bogs.

Tunis gives the following description of colonial ironworking at the Hopewell furnace near

Reading, Pennsylvania in the year 1770. The workers and their families lived on the premises at the Hopewell furnace. The management, who lived in the "big house," operated a store, school, and a blacksmith shop in Hopewell. The furnace was large enough to hold four tons (2,000 kg) of ore, flux, and charcoal. It had to be egg-shaped to support the weight of these materials, which were dropped in from an embankment built next to the top of the furnace. Every furnace through history had to be located near its source of ore and its source of fuel because the furnace consumed forests by the square mile (2.5 square km) to supply the energy needed to melt and purify the ore. The process also required flux in the form of limestone or oyster shells. By weight, three parts of flux were needed for every five parts of ore.

Furnaces removed more Virginia trees than did farmers, tanbark grinders, or lumber mills. Trees were cut down and made into charcoal to power the furnace. To make charcoal, cut lumber was stacked into a dome shape, about thirty feet (ten meters) across and nine feet (three meters) high. The dome had many air inlet tubes which were opened and closed to allow the right amount of air into the stack to keep it burning slowly for about two weeks so that the lumber turned into charcoal. The workers got little sleep while monitoring the burning dome of wood. The resulting charcoal was used in the furnace to melt ore. The wood used by the Hopewell furnace in one year could be stacked four feet (1.3 meters) high and 7.5 miles (12 km) in length.

Two large bellows were used to blow air into the furnace through a nozzle, whose tapered shape increased the speed of that air. The bellows were operated by a waterwheel which drove shafts, connecting rods, pistons, and air intake and exhaust valves. (Later, these mechanical devices went right into use inside automobile engines, which are miniature furnaces.) As air was exhausted from one bellow into the furnace, air was being pulled into the other bellow. This resulted in a more continual flow of air into the furnace.

The fire burned in the furnace for thirty to forty weeks while components were continually added to the top and molten iron was removed from the bottom.. Slag, which is the lighter debris that floats to the top of the molten conglomeration, was skimmed off the top every hour. Twice a day, a stopper was removed from the bottom of the furnace to let molten iron flow out. This was low quality "pig iron" and was sold to be refined into a more pure form—wrought iron—by further heating and pounding.

The molten pig iron flowed out of the bottom of the furnace and into a series of branching trenches. The main trenches lead to a few molds forming 60 pound (130 kg) "pigs." Other trenches lead to smaller, potter-made molds to form iron cooking pots and pans and such—despite being forbidden by British law—and backplates for fireplaces. A backplate is placed at the back of fireplace, behind the fire. It protects the bricks and also radiates heat into the room containing the fireplace. The pieces for those revolutionary iron cooking stoves were made this way, as were the later steam engine parts. In a few pages, we will see how the scale of the iron-making process was increased as the Industrial Revolution matured and large corporations developed.

Wrought iron was formed into standard sized bars that were bought by the blacksmith. The blacksmith often bought bars 3 by 1.5 inches (7.5 by 4 cm) and eight feet (three meters) in length. Thin bars, 1/8 by 1/4 inches (0.3 by .1 cm) and five feet (150 cm) long, might next be cut into nails, while larger bars might be made into "wrought iron" gates and certain ornamental items, including chandeliers, candle holders for home and street lighting, weather vanes, sign holders, and some locks and lock boxes. These items might also be made of brass, copper, or silver. Each nail was

individually formed by cutting and then forming a head and pointed end—so its not such a surprise that wooden joints and wooden nails were more common than were metal nails. Some people bought the metal rods to make their own nails. Nails sizes were "six penny" and "eight penny" and such, which meant the price per hundred. We still use these terms today.

Gunsmiths used iron to make rifles. Every colonist had a flintlock rifle and used it to kill game. These rifles could not shoot accurately for much of any distance but could effectively propel shot to kill birds. The Kentucky long rifle, invented in Lancaster, Pennsylvania, could shoot accurately for two hundred yards (meters).

The blacksmith was called a "smithy" rather than a "blacksmith." Smithys made shoes for horses and oxen, did animal doctoring, made tools, implements, hardware, cooking-pot hooks, waffle irons, stew pots, dippers, strainers, toasters, hinges, latches, and tongs. The smith made a few of these items to have in stock but most were made as bespoke work. Tunis points out that before our Industrial Revolution, no factory was making these items in quantity: they were being made one at a time, when requested, in a hand made world. Nor did there exist separate showrooms containing ready-to-buy products.

Lead, pewter, tin, copper, brass and silver working

The plumber worked with lead to make pipes and musket balls and such. To make shot, molten lead was poured into a copper pan that had holes in its bottom. As the lead dripped out it naturally formed spherically shaped balls. As these balls fell to the ground they cooled off enough to become solid before landing in a bucket of water. Larger spheres require more time to cool and so were dropped from a higher point. Shot towers were built as high as 200 feet (65 meters) for this purpose. Such a tower might be only ten feet (3 meters) in diameter. The cooling lead spheres were dropped from a platform and fell on the inside of the tower. To separate the non-round spheres, which would not shoot straight, the shot was allowed to roll down a plank; round shot rolled straight down to the bottom while non-round objects rolled off the side and were later re-melted.

The tinsmith, who was called a whitesmith, bought squares of tin plated iron sheets from Europe. (The tin coating helps prevents rusting.) No tin was made in the U.S. until 1830. Many everyday utensils were made from tin because of its low cost. The tinsmith formed sheets into boxes, cylinders, and cones and then combined combinations of these shapes to make dippers, pails, cups, and candle holders. The walls of a tin lantern had many holes to let light out. Since those holes also happened to protect the candle from the wind, a person could see their way to the outhouse during a dark and windy night.

Pewter is mostly tin. It is easily bent, stretched, or compressed and its low melting point makes it easily poured into molds. Unlike iron, hammering doesn't harden pewter, and pewter is too soft to retain detailed impressions, as does silver, so objects made with it are left smooth and undecorated. Pewter is too soft to make knives and forks but makes fine spoons, plates, bowls, teapots, pitchers, buckles, tankards, lamps, and buttons. Tunis says that before there were plastic baby bottles having rubber nipples, pewter bottles with pewter nipples were used. Pewter has been used in China for 2,000 years, and in the year 1348 ad, English pewterers organized a guild.

During the years 1720 through 1767, the value of pewter imported to the colonies exceeded the combined total of silver, tinware, and furniture. Pewter items were repeatedly melted and recast.

For example, a family could take three pewter spoons to a pewterer and get two back that were either in better condition or in better fashion. Pewter was cast in wood, copper, or brass molds that were obtained from a mold maker. A newly opened pewterer might have just three molds and be able to cast only spoons, bowls, or plates, but an older pewterer would have many molds. If one family in a village had a spoon- or button-mold then soon every other family in the area had identical spoons and buttons.

We saw above how iron ore is mined and processed. Copper was similarly mined and smelted and formed into large sheets weighing 1200 pounds (2600 kg) that were five by seven feet (1.6 x 2.3 meters) and one inch (2.5 cm) thick. These sheets might next be mixed with zinc to make brass or hammered into thinner sheets. A large hammer would be raised on an egg-shaped camshaft that was driven by a waterwheel and then the hammer was allowed to fall with a "thwak" under its own weight onto the sheet.

A colonial coppersmith purchased these sheets and used shears six-feet (two meters) in length to cut it into smaller pieces. Copper objects were not cast, instead tools were used to bend, pound, mark, and cut copper sheets into funnels, and tea pots, and such. Large copper pails and pots were made for dyers, fullers, hornsmiths, hatmakers, distillery stills, and steam engine boilers. Some pots and pans were copper but most were iron; however, a copper tea kettle was considered more attractive than one made of iron. A copper spout was made by soldering a flat, pattern sheet into a tube and then temporarily filling it with lead so that it could be bent into shape without crumpling. The lead was then removed by heating. Poisonous accumulations were always covered by tinning the inside of a tea kettle or of any other side of a copper item that would touch food.

Brass was not made in the colonies. Colonial brassworkers bought ingots made in Europe and then cast buttons, candlestick holders, turncocks, valves, navigational instruments, and bells. A large bell was cast by making clay models of its interior and exterior, aligning these two opposing pieces in a pit, and then filling the space between them with molten copper. Tunis mentions that Adam Smith discussed the twenty-five steps needed to make a brass pin in his book *The Wealth of Nations*.

A silver item can either be cast or made from sheets. A pot, pitcher, or bowl would be made from sheets while their handles and feet would be cast as solid pieces. The soldered seams of the sheets would become nearly invisible in the final item. A burin might be used to engrave lines onto the silver object by gouging out some of the metal. Other times, the object was temporarily filled with pitch and then the engravings were hammered onto its surface. A line was formed by a series of hammer strikes.

Between the years 1634 and 1776, there were about 500 silversmiths in the colonies. Silversmiths melted the customer's silver coins and out-of-fashion utensils to make another item for them. (Just as in clothing, it took several years for the latest European silver fashions to reach the colonies.) In 1697, Queen Anne tried to discourage coin melting by making them with highly pure silver that was so hard it held less-sharp engraving. English silversmiths countered this by either using less engraving or by diluting the silver with an impurity. Since Spanish coins were the most common currency found in the colonies, Queen Ann's change had less effect on colonial smiths.

## Glassmaking

Faience was made before 4000 bc by Ancient Mesopotamians in an attempt to duplicate natural and expensive lapis lazuli stone. Hodges says the first step toward making true glass occurred when faience was accidentally melted. Today's glass is a similar fusion of quartz, soda, and lime. At first, the Mesopotamians were using abrasives to cut and polish the finished product, just as they worked hard stone, but it was later found that the material was more easily molded while it was hot. By 2000 bc, glassworking techniques had improved in Mesopotamia and Egypt. Many colors were being created, and after 1500 bc, lead was being added to make the resulting glass more shiny and to keep it from contracting while cooling. Lead had been considered a waste product of copper smelting since 3000 bc because it was too soft to be used in tools, but now it was finding other uses.

Hodges says the techniques of glassblowing could not be developed until iron technology had advanced enough to make blowtubes. This occurred in Syria during the first century ad and was then spread by the Romans. (Hodges also says that the rate of Roman technological innovation decreased when they came to rely on the labor of slaves rather than their own cleverness.) The Gies explain that the secrets of Syrian glassblowing were taken to Venice in 1277 ad and that Muslim artisans taught the techniques to the Venetians who then built a European monopoly in fine glass manufacturing. Stained glass windows began being used in European churches in the seventh century ad.

Colonial glassmaking was largely begun by Jan Smedes, who transplanted a Dutch glassworks to New Amsterdam in 1654, and by the Bavarian Casper Wister, who built a New Jersey plant in 1737 employing experts from Rotterdam. Glassmaking secrets were being guarded, just as every factory today keeps its techniques secret. Wister also made window glass. Tunis says that a colonial home might remove and store these valuable panes before going on a long journey.

Glass "bends" light and so came to be used to make lenses. We saw that the Europeans inherited their knowledge of lenses from the Islamic world—for example, through their use of the Arabic textbook on optics *The Optical Thesaurus*, written in 1038 ad by Alhazen. Around the year 1300 ad, Roger Bacon first suggested using lenses to aid people's vision. Within a century, it was a common practice. A person simply tried several lenses to find which was most helpful. Tunis says that early eye-lenses were rumored to enable one to see into the future, to make the blind see, and to make illiterate persons literate. After the year 1500, people who were sensitive to light began using Venetian green glass to reduce glare. People who had trouble seeing both nearby and distant objects carried two different lenses until Ben Franklin first made "bifocals" in 1786. Lenses were spherically shaped: convex lenses help one see nearby objects while concave lenses help one see distant objects. In 1825, George Airy found that cylindrically shaped lenses helped those with astigmatism, which is a slightly misshaped eye that sees better vertically than horizontally. During the eighteenth century, lenses were not yet hung from ears and noses as we do today.

Galileo first used a telescope to make observations of the moon and planets in the year 1609. He reported that when viewed with his telescope, planets were seen to have the shape of a disk but stars remained point-like. He also said that hundreds of stars could be seen that were invisible to the unaided eye. The material of the Milky Way had been debated since the time of the first humans, but Galileo's lense enabled him to report that it simply consisted of innumerable stars. He described the craters of the moon and estimated the height of one lunar "mountain," which was actually the side of a crater, to be 20,000 to 25,000 feet (7500 meters). Its true height is 18,000 feet (6000 meters).

Galileo also reported that Venus cycles through the same phases as does the moon. His report that four moons were revolving around Jupiter came as a blow to those who thought that the Earth was the center of the Universe in that all the stars and planets revolved around a stationary Earth. The rings of Saturn were barely discernible in these early telescopes, and there were many imaginative explanations of these blurry objects before they were clearly seen to be rings.

Galileo is important in that he was one of the founders of the scientific method. He fully realized the value of making repeatable measurements. Newton deduced his general motion equation after considering the results of many experiments, such as those made by Galileo involving the motion of objects on inclined planes. Science was really born at that time; before then, we were only intellectualizing—that is, guessing from our arm chairs. Our tool-making arts are much older than our scientific procedure.

We can see that cloth, metal, and glass making techniques were not invented twenty years ago, nor at the start of the Industrial Revolution, but have a history that began with our first farming villages. The techniques of our civilization have been evolving since then. We also see that our homes had few utensils and decorations, and that these were hand made until the mass production techniques of the factory were developed in England around the year 1760 ad.

English mechanics were sought to build the first U.S. factories

Our Industrial Revolution began in England and consisted of the factory that brought many workers together in a single building. To maintain its advantages, England tried to outlaw the exportation of its new factory machinery, its designs, and even its operators, who were called "mechanics" because they worked with mechanical gears. Customs agents made inspections to monitor who and what was leaving England because other nations were anxious to obtain information about these new techniques.

Only about 150 English machinery builders are known to have managed to emigrate to the U.S. with their knowledge of English mills. Though these persons typically had little experience, they helped build the first factory machinery in the U.S. The designers of machinery in the U.S. could make use of abundant local wood while European designers used more iron due to the lack of local wood. Also, the U.S. labor force of available workers was much smaller than that of England so the U.S. mechanics had to try to design machines that required fewer attending workers.

Debate of benefits and drawbacks of industrialization

Many persons in the U.S. were trying to smuggle machinery secrets from England to the U.S. For example, while ambassador to France in 1787, the future U.S. president Thomas Jefferson was involved in a plot with Tench Coxe to obtain English machinery secrets. Tench Coxe was one of many persons who were advocating the increase of industrialization and its new manufacturing ways in the U.S. They founded many "societies for the advancement of manufacturing and useful arts." They published pamphlets and filled the press with discussions. They also interviewed British immigrants and imported factory machines.

Alexander Hamilton and Tench Coxe argued that industrialization would bring fiscal stability to the new nation, utilize its spare capital, decrease its dependence on foreign goods, and help to

build war machines. They said that industry and agriculture would each purchase the other's products. They also said that the factories would provide jobs for women and children, but this was one thing that most other people most wanted to avoid. Ben Franklin and Thomas Jefferson warned that in England, factories resulted in rural depopulation and urban growth, poverty stricken wage-earners, increased inequality of wealth, and increased social tension and uprisings. They asked if we would be better off to stick to our agricultural society. This public discussion was similar to the more recent discussions about the benefits and evils of the computer and the internet. Looking back, which of Franklin and Jefferson's predictions came true? Notice that similar discussions occur in any nation currently debating whether or not to industrialize its economy.

#### Debate over the role of government in any coming industrialization

During the first decades of the U.S., there was much discussion about whether or not the country should mimic the European kingdoms and become a mercantile nation of state monopolies. In one form this might have meant that the U.S. government would attempt to seek profit from involvement in selected market activities in sorts of "state-owned" enterprises. This question was forgotten only after private parties were seen to be pursuing every opportunity. Licht says that a good description of the U.S. from 1776 to 1820 is that it was shedding its mercantile past. No one knew what industrialization would bring for the U.S. but everyone did know that it would not be built from centralized power, aristocratic privilege, or from government-granted favors for monopolistic licenses.

From the start, the U.S. government was setup to guard against centralized power. While discussing the beginnings of industrialization, no one thought that the U.S. government should dictate the efforts of industry. We will see that by the year 1900, our government would come to be forced to play an increased role in economics—whether it wanted to or not—in response to the growth of our businesses. We will see that industrial companies would grow to be regional in size within a few decades, nationally-sized by the year 1900, and that they have always grown faster than our government has been able to react to govern them. "Big Government" came as a delayed response to the social consequences of our switch from farming to factory work. We will see that today, our businesses are global in scope while government is not at all.

#### Production techniques mixed as industrialization requires power and decades to mature

Licht explains that the process of industrialization in the U.S. occurred in a sporadic manner that required several decades to develop and then spread. It was not the case that the entire nation choose to industrialize and then did it one Tuesday. The nation did industrialize but over several decades, and throughout these decades, handmade items continued to be made in small shops and in home-based shops, too. The nation did urbanize but this happened through the commercialization of everything in a capitalistic manner. Licht says that a better term than "industrialization" is "an expansion of the market to include the buying and selling of everything."

The mechanization of manufacturing resulted in social changes as the factory caused a shift from skilled apprenticeship training to unskilled machinery operators and to the abandonment of live-in helpers. We began to be paid for our labor in cash wages rather than in credit for goods. In



addition, the large rate of population growth, which was typically doubled by immigration, promoted unregulated market activity. In turn, the runaway market activity promoted social unrest—as occurred for example, during the labor strikes of the 1880s and 1890s.

After the year 1790, some of our shop-owners were increasingly using water-power (steam-power after 1840) to obtain enough energy to drive the machinery that could increase our production levels. Just as a person today who begins a house-painting company will prefer to use a painting machine to boost production. Think of two shop-owners in 1800 discussing the use of the newfangled water-powered machinery to increase their helper's productivity and think of two shop-owners today discussing the use of the newfangled computer to increase their helper's productivity.

The factories knew only to produce the same items of daily life that we had always been using. National markets emerged for chairs, tables, drawers, pots, hats, brooms, shoes, books, and farm implements. Some factories wove cotton and wool into fabric while others turned chair legs. In recent decades we have taken the average number of washing machines and televisions per home to be a measure of a region's industrial output, but in the early 1800s, output was measured in terms of the average number of factory-made shirts, chairs, brooms, spoons, dishes, and pans per home.

Until steam power became available, factories had to be located in the more-remote places where water power was available. Factory builders could take advantage of water power only if the shop were located by, or moved to, a source of water power such as a river or a waterfall. Wherever a river could supply water power, there would soon be a factory. New England has many year-round streams (as also occurred in England) so that by 1830 there were hundreds of water powered factories along these waterways. This was the beginning of industry in the U.S.

Notice also that the mechanical factory's dependence on waterways meant that large cities had few water-powered factories. New York, Boston, Baltimore, and Philadelphia continued instead to have numerous small shops. One of the few, large-scale factories in the cities was William H. Horstmann's label, ribbon, and thread shop which he opened in Philadelphia in 1815. By 1854, he employed four hundred to five hundred persons in a five-story building while the average Philadelphian firm employed just eight persons. Most of the city factories had to wait for steam-power to arrive after 1850 before they could mechanize their operations. Before then, some small shops did use hand- or foot-powered machines.

The first communities of factory workers began to surround these industrial towns, as was the case for Manchester, New Hampshire. There were about four hundred of these small, mill villages in New England by 1820. These villages might contain a store and a few multiple-family homes. Most of these villages would in turn disappear by the end of the 1800s as the steam engine allowed their factories to be moved into larger cities. It also occurred that some mill villages were replaced by coercive, company towns.

The handmade, low volume manufacturing within city shops could not compete with the lowcost, mass production factories. These shops did not try to directly compete with the factories; instead, they made smaller quantities of more customized items. The independent artisans had to work in their shops for longer hours and less money to offer their alternative to the products of the mass-production factories. The factories were not able to quickly modify their machinery to produce small quantities of variations of products. Philadelphia and New York City had numerous small and medium sized shops; they were often located in cellars and attics and made many different products.

Licht explains that industry continued to be a mixture of many small shops and a few larger factories. In fact, the U.S. simultaneously contained every sort of economic activity known to us humans, including gathering and hunting, subsistence farming, tenant farming, commercial agriculture, fishing, lumbering, mining, crafting, slavery, wage-labor, apprentice labor, home production by the family, and bartering of goods and services.

No employees exist for the first factories

It is surprising that the earliest U.S. factories had trouble finding employees, but this happened because most everyone already had a job on the family farm. (Since most everyone today hires themselves out for wage-labor to a business, it is hard to imagine a time when practically no one was doing this.) The shop-owner-turned-mechanized-factory-operator tried many different ways to obtain workers. In the first few decades, women and children were often hired to do most of the work in a factory. Some operators hired entire families of the poorest of us who lived nearby and expected parents to keep their children working at the machines. It was often found that these families would work at one factory for some months and then move on to another factory in a continual search for a better arrangement. At some factories, wages were paid in terms of rent in the factory homes and in credit for goods that were obtainable from nearby stores that had arrangements to sell the factory's products. That is, we traded our labor for rent and for some products. Other factory operators began to pay us employees in cash wages.

As Samuel Slater finished a management apprenticeship in a cotton mill in England in 1787, he read in a news article that the Pennsylvania Society for the Encouragement of Manufacture and the Useful Arts had awarded John Hague £100 for making a water-powered machine to straighten cotton fibers for high-volume spinning. (Such promotional awards continue to be used today, such as the recent prize for the first private spaceflight, see [www.xprizefoundation.com](http://www.xprizefoundation.com).) In 1789, Slater disguised himself as a farm laborer to get through British Customs and emigrated to New England. Slater then worked in a New York City spinning-jenny factory and heard that Moses Brown was trying to establish a textile works in Providence, Rhode Island. Since there were few knowledgeable persons in the U.S., Slater got Brown to agree to give him a good share of the profits in return for his mechanical expertise. With Brown's money and Slater's knowledge, they built dozens of cotton mills in Rhode Island and Massachusetts. To staff their factories, they tried to hire orphans from the area and to contract with families for work in their mills. Day-wage immigrants began arriving in the 1830s and 1840s who would work in the factories for lower wages.

For 10,000 years, every farmer in the world has worked from dawn till dusk. Since we were already used to working twelve-hour days, the factories continued this habit. The more hours we worked, the more would be the factory's output. But factory hours proved to be much more monotonous than farm work had been. (My most miserable job consisted of stapling a piece of felt to the wire frame of a mattress, once every few seconds throughout the day. I also had miserable work as a collator while the boss repeatedly shouted "No talking. Work Faster.") It required a worker's constant attention to keep the various parts of a mechanical device operating. Some workers would sabotage the complicated machines to slow the pace of work. By 1830 we were already beginning to push for a ten-hour work day.

## Corporations for pooling business funds

Starting a business in the U.S. was less restricted than in Europe due to the absence of guilds. Where parliamentary or legislative action used to be required to create a corporation, individual states began simply to require that a few forms be filled out. But starting assets were still needed to begin a company. For the first time in the U.S., business entities were being formed that combined money from several unrelated investors to begin commercial projects that would not be directly operated by those investors. Before this time, two relatives or friends might pool together their own knowledge and labor to begin a business.

One way for people to pool their resources is by forming a corporation. A corporation is a permanent organization that continues to exist even as its operators and directors come and go. A corporation comes into existence by selling stock in its operations. People invest money in the corporation by purchasing its stock. If the corporation makes a profit then it is distributed among its stockholders; if it loses money then it will obtain additional funds from its stockholders. A small group of persons are hired to make decisions for the corporation. These persons are paid a salary and may also own stock in the company. Today, many small businesses are setup as corporations because those are viewed to be more-permanent than are sole-proprietorships.

## Lowell mills operated by northeastern girls, then immigrants

Frances Cabot Lowell received a math degree from Harvard and became a Boston merchant. In 1810, he went to England to search for new investment opportunities while claiming he was there for "health reasons." He took only mental notes as he visited several textile mills, so that as he left England he had no written documents for the customs officers to confiscate. Lowell then formed a corporation with Nathan Appleton and raised \$400,000 from other wealthy families to build a state of the art spinning and weaving mill that would manufacture cloth through an entirely mechanized procedure that began with raw cotton. Lowell hired the mechanic Paul Moody to construct their first water-powered mill, which was built in 1814 in Waltham, Massachusetts. Since it soon exceeded its available water power, Lowell raised eight million dollars from eighty wealthy families through the next fifteen years. He then moved his factory about fifty miles (eighty km) north of Boston to the site that would become the town of Lowell, Massachusetts. By harnessing the power of the Merrimack River Waterfalls, the town grew from a few farmer fields in 1820 to an industrial town of twenty-two mills by 1830. Its population was 20,000 persons in 1840. (For the Lowell National Park, see [www.nps.gov/lowe](http://www.nps.gov/lowe).)

The Lowell mills were much larger than any other and needed many employees. Initially in 1820, workers in the Lowell mills were young women from the farms of New Hampshire and Vermont. The women typically worked for a year or two before marrying. It was a bit of a radical change for some of us twenty-year-old girls to be accumulating money. We earned money to do with as we pleased but had to work eleven-hour days and lived in crowded boarding houses near the factory. An older and respectable widow would supervise the boarding house and encourage us to follow the 10 O'clock curfew and to attend church on Sunday. (These are just the sorts of assurances you would expect before allowing your child to live and work in one of those newfangled and distant factories.) In 1834 Davy Crocket toured Lowell's "mile of gals" and said they were well-dressed,

lively, and genteel. As one form of entertainment, the girls pitched in together for a subscription to a Paris fashion magazine. The Lowell girls published their own periodical, *The Lowell Offering*, containing discussions of their experiences and thoughts. The girls also objected strongly to each proposed wage reduction or increase in working hours or machinery speeds.

In the 1830s and 1840s, the Lowell girls were being replaced by immigrants who would work for lower wages. (In the coming chapters, we will see that factories are in a perpetual search for cheaper labor, and moved first to those regions of the U.S. that temporarily had cheaper labor, and then to the successive regions of the world that temporarily have the cheapest labor.) At this time, many immigrants were arriving from the farms and famines of Ireland. With the resulting glut of persons who would work for low wages, one Lowell manufacturer was quoted in 1855 to say "I regard people just as I regard my machinery and I'll keep them for as long as they'll work for what I'll pay them; those people are part of my machinery." It had taken just thirty-five years for this manufacturer's greed to grow to sufficient magnitude that money was more important than humans. By 1855 there were 52 mills in Lowell, employing 8,800 women and 4,400 men and making 2.25 million square yards (square meters) of cloth per week.

### Factory clothing replaces homemade

This huge amount of cloth would be turned into manufactured clothing and meant that we farmers were making less and less of our own clothing. We women stopped having to spin thread at home and so had more time for other things. From the very start, factories make only as much product as is being bought by consumers. Since factory-made clothing began to replace homemade flax clothes, little flax was grown after 1835. Factories also produced buttons, bonnets, and ribbons.

In the first decades of the 1800s, the emerging industry of the North penetrated further and further into rural New England. By then, the scale of commerce had grown to the extent that the New England factory products began to be transported all the way to the South and to the Western Frontier, which we have seen continually moved further west. It took yet more time for these items to be widely used there. (New fashions still originated in the capitals of Europe, appeared a few months later in the seaports of America, and took additional time to work their way out into the countryside and to the West.)

### Handmade shoes and instruments

Licht explains that a final product often had a complicated history. For example, a fiber might be combed and carded in a country home on an outwork basis, spun by machine in a mill, woven by artisans in an urban shop, and then dyed or printed in a small manufacturing plant. Not all products were made in central factories or even through mechanical means. For example, shoes were mostly made through outwork in the home in which shoe components were taken to a family who would make the final shoe. (In 1977, my sister worked in her own home lacing components into leather purses. The component were brought by a merchant who later returned to collect the finished purses.)

Shoes became the major product of the town of Lynn, Massachusetts. Tunis says that Philip Kerkland opened the first Lynn shoe shop in 1636 and that in the early 1700s, one Lynn shop had forty shoemakers, each working independently to make an entire shoe. Around 1750, Thomas Adams

Dagys divided a shoe into its components, each of which were assigned to a different worker. These shoe pieces were then taken to a home to be sewn together into the final shoe. In the 1830s, shoe production was moved to large centralized workshops (as we see today in Southeast Asia). Soles were then being nailed rather than stitched. By 1835, those of us who were working in these New England workshops were hand-making fifteen million shoes per year; not coincidentally, the population of the U.S. was about fifteen million persons.

While mechanical production techniques led the way in Lowell's cloth factories, these techniques occurred much later in the shoemaking business. Sewing machines were not used in the shoemaking process until the 1850s and 1860s. Until then, shoemaking artisans—rather than the machinery—were controlling the final shoe design. Few shoes are made in the U.S. today. (The news today often mentions Asian shoemakers working for \$5 per week and the American shoe-sellers who purchase those shoes for \$5 and then market them in Europe, Japan, and the U.S. for \$100 each, as described below.)

William J. Young was born in 1800. At the age of thirteen he became an indentured apprentice and in 1825 inherited his trainer's business. His company handcrafted surveying instruments and is another example of an unmechanized factory. As the nation expanded westward, land speculation created a demand for his instruments. By 1850, his twenty employees were making 150 instruments per year. He paid them well so that they would not open competing shops.

Varieties of products fill our homes

Oil lamps began to be used in 1810 that were as bright as ten candles, and by 1830, many city-homes had a lamp or two. The Standard Oil company began by producing this type of oil after the Civil War ended in 1865. Standard oil quickly monopolized the distillation plants in order to control the supply side of "supply and demand" and thus obtained large profits. (Still in 2005, the supply side can be similarly limited in the U.S. by having too few distillation plants.)

On the outskirts of Baltimore in 1821, one company built a coal distillation plant to produce gas that was piped to nearby homes and businesses to be burned for lighting. Since the installation and usage of gas in a home cost as much as the average person's annual wage, not many persons chose to purchase this newfangled convenience. By 1830, gas lighting was available in Boston, New York City, and in Philadelphia where there were 700 customers by 1836.

The earliest paint manufacturing shop in New England was opened in Boston in 1700 by Thomas Child. He supplied paint to those Boston homes that could afford that luxury. In 1784 Sam Wetherill (born in 1739) began making paint by grinding lead and mixing it with oil and pigments. In the 1840s his sons built a larger paint factory. For the first time, paint was cheap enough that our wooden homes were commonly being painted. (The Great Depression closed the Wetherill business in 1933.) Henry Sherwin and Edward Williams formed the Sherwin-Williams Company in 1866.

Eli Whitney, see [www.eliwhitney.org](http://www.eliwhitney.org), built a firearms factory in which he put into practice the European idea of making identical and interchangeable parts. This allowed one broken part to be replaced with another just like it rather than having to replace the entire machine. (Today's cost of repair-labor for many of our electrical appliances and gadgets has made us return to replacing wholes instead of components). His factory grew to have ten apprentices. In 1794 Eli Whitney invented his cotton gin that separates cotton fibers from seeds.

In the previous year, 1793, the South's cotton production was 10,000 five-hundred-pound (230 kg) bales. England's textile factories were purchasing, processing, and selling huge amounts of cotton, and within a few decades, New England's factories were also. The demand for cotton and the production of cotton quickly increased together until cotton had become the world's main commodity. The South's cotton production grew to 335,000 bales in 1820 and then to one million bales in 1835. This was a 100-fold increase in forty years. Throughout this time, over half the cotton was being exported—100 million pounds in 1820 and 300 million pounds in 1830. Since the cotton used in Northern factories came from the slave-labor of Southern plantations, northern factories were processing slave-labor cotton.

Mass-produced items are less-expensive but are also less decorated. For example, between 1800 and 1830, the number of chairs per household doubled but their hand-carved hearts and crowns had been eliminated. As an item began to be mass produced, local craft styles and their detailed distinctions also became less pronounced. As factories began to make carpets, curtains, mirrors, and upholstered furniture these things began to cost less so that more and more homes were able to afford them. By 1830, 20% of homes had a carpet. In 1840 the invention of an inexpensive printing process, the lithograph, began to bring art to the walls of the common home. European and Chinese dishware began to have images printed onto them and these too started to appear in the average home. Only one house in ten had a watch before inexpensive watches were mass produced. Tunis says that their repeated breakdown kept the local watch repairer busy. Mass-produced clocks began to be cheap enough that more could afford to have them so that by 1830, two-thirds of rural craft shops had one. Still today, there exists the idea that a stand-up "grandfather clock" can bring a certain distinction to a home. Before industrialization, these items had been available to only the wealthier families but now an average home could afford them. Poorer families had to wait a few more decades before prices had sufficiently lowered that they too could purchase these items.

The earliest factory products were being worn or decorating our homes. At the time, there was much discussion about the increasing number of mirrors, curtains, and carpets in the home. Much of the post World War II industrial boom in the U.S. involved the production and purchase of labor-saving devices such as washing machines. At the time, there was much discussion about the average number of such devices in the home. In fact, Cold War comparisons sometimes rated nations by these numbers. Korten explains that lately, electronic gadgets that fill time are being produced and purchased, including televisions and games.

The South chooses to remain agricultural

Industrialization was suited to some regions of the U.S. while others remained agricultural. (As has always been the case, each region of the world has its own culture and a unique history.) The southern U.S. had the soil and climate to grow a large share of the world's main commodity, cotton, and so remained an agricultural region while the North industrialized. In 1860, the South's manufacturing capacity was 15% of that of the North. The South's Gross Product ranked among the world's top ten but was just 10% as large as that of the northern U.S. Manufacturing in the South was less inviting because of many reasons but mainly because of the success of cotton. The long-successful, wealthy elite had no interest in changing the system that they headed. They had no interest in putting their money into manufacturing or anything else. Besides the landed elite, few

others had the money needed to build factories. The South had little interest in industry until after World War II. Whether or not a nation begins to industrialize today similarly depends on many such aspects of society.

Nearly all of us who were enslaved in the South were working on plantations. Just 5% of us were working in factories in 1860. The manufacturing that did occur in the South was done mainly by us slaves. A factor in the lack of Southern factories is that those of us who enslaved others avoided uprisings by never allowing many slaves in a single place, as would have occurred in a factory. The difference in labor costs made Southern, slave-labor factories two or three times as profitable as were Northern factories.

We can imagine the thrill that some business owners would have today if no wages had to be paid. A typical business spends one-third of its sales income on its labor force, one-third on materials and other outside purchases, and has one-third left for investments, executive wages, and the profits that are the owner's wages. Each of these percentages varies from one company to the next, and there are extreme cases. For example, in some years the U.S. Postal Service has spent 80% of its income on labor costs.

In the U.S. there were four roads to industrialization: there were mill villages that employed family labor in the home, there was slave-labor industry, there were one-industry factory towns, and there was diversified, urban manufacturing. Industry in the U.S. brought inventors together with wealthy investors, and it grew from the outside help of English mechanics who encountered idea-spurring isolation in the U.S. The early lack of labor to run machinery was soon succeeded by floods of immigrant labor. (Still today, people all over the world are leaving the family farm to seek work in the factories of a nearby city.) The large population growth of the westward-expanding U.S. expanded the markets. Half this population growth was fueled by immigrants who are, by definition, unafraid of change. The population of the U.S. mostly welcomed new machinery while in some other nations machinery was seen as a threat that might replace workers. The mix of natural resources, capital, labor, ideas, and artisans was allowed to develop into new opportunities unimpeded by custom, except for the culture of the Southern elite. Many cultural and economic elements played a role in the adoption and development of industrialization of the U.S. If a nation today chooses to begin industrialization, it faces a very different world that is already full of previously industrialized nations.

Many of us factory workers struggle to earn money for bread and rent

Most seventeenth-century persons who transplanted their families to the New World colonies came from the middle class. Peasants could not afford the trip and wealthy people did not want to leave. The result was that the colonies contained a smaller range in economic class. (Imagine plucking the middle 2% of the people of your nation today and moving them to a new area to restart society.) The people of the colonies had shed the European system of nobles but after 1820 or so, they were beginning to be threatened with subjugation by new "economic nobles." This was creating a new "noble" in the land of equals.

Many in the U.S. were bothered by the rising importance of money and by the cold and uncontrollable business cycles. Since the time of the first cities and artisans, typically just 10% of us were involved in business, and business mostly meant selling utensils and decorations to only the



wealthiest of us. Business cycles were much less pronounced and they affected a smaller portion of us. Only the price of cereals mattered to most of us. The population as a whole was more affected by intermittent years of widespread disease or poor crop production. By the way, the business cycles also impeded the rise of U.S. labor unions until the 1880s because developing unions were repeatedly bankrupted by them. Early unions did not survive the economic downturn of 1819, nor did a second development of unions survive the downturn of 1839.

Those of us in the city who were poor lived in one-room homes that had dirt floors and scant furnishings. We would use any broken or discarded utensils we could find and continued to use sharp sticks for forks and shells for spoons. This lifestyle remained more common on the Western Frontier for a few decades longer than in the East because it took that long for the inexpensive, factory-made products to spread that distance from the northeast. In the urban east, the homes of us poor persons were within a few blocks of the homes of wealthier persons. The difference between homes of the western frontier and the urban east was similar to the difference between rich and poor homes of the big cities until the eastern factory goods made it all the way to the western frontier.

The homes and possessions of us Slave-Americans were comparable to those of the urban poor. Our health, as measured by our height and life-span, was also similar to that of the urban poor. Typically, three of us adults and eight children lived in homes that were ten by ten feet (three by three meters) in size. Those of us who owned slaves chose to build for them minimal homes in the manner of the cheapest contemporary building style. We provided minimal furniture and dishware. Often broken and discarded furniture was all that we made available. No candles were supplied. Certain aspects of the material quality of life and the health of us Slave-Americans might have been comparable to those of poor-Americans but there is no comparison between enslaved and free humans.

Those of us who were of the working class instead rented homes. These houses were built by manufacturers or by small scale real estate businesses that built row homes. The poorest city dwellers crammed into tiny apartments, where often a family plus a few boarders lived in a single room. The cheapest rooms were the unfurnished cellars. While making a house call in 1849, one Boston doctor found thirty-nine persons living in a flooded cellar. The patient was lying on a plank placed between two stools, and there was a dead infant sailing around the room in its coffin. (Visit [www.tenement.org](http://www.tenement.org) for panoramic views of tenement houses.) What sorts of living conditions occur in today's lowest-wage areas of the world, such as the Asian regions where many shoes are made? In Chapter 16 we have a look at the daily life of some of us who live in a poor area of the U.S. today.

The increasingly harsh economic life for some of us meant an increasing amount of crime in the city, mostly in the lower class areas of the city. In response, the less-affected business and higher-class areas called for the creation of a police force—as other large cities were doing. Unfortunately, we came up with the unimaginative solution of using police forces to fight poor living conditions and dismal hopes for the future. In addition to the newly added expense of police forces, cities began to pay to install water and sewer systems, street lighting, schools, and fire departments. Fires could level an entire section of town, and disease spread in the big cities. There were cholera epidemics in 1832 and 1849 that killed thousands.

The average annual wage of \$250 per worker did not support a family; three or four family members had to work to get enough money to pay rent and to buy bread and clothes. Despite this, 2% of the population of temporarily suffering European nations were continuing to move to the U.S.



in search of factory jobs or farm land and a chance to beat the odds and live a good life. The temporarily suffering nations were those experiencing war or an economic downturn. In New York City, the percentage of foreign-born residents increased from 20% in 1820 to 50% in 1850, when they comprised 80% of the wage-earning workforce.

Many of us recent immigrants wrote to our families back in the old country about the harsh life in the U.S. factories but said also that we believed we had a chance of doing well for the family. (Do you feel the same way today?.) The letter might recommend that several other family members should make the move "but not John because he couldn't handle it." We move around the world for the same reasons today and often find the same harsh conditions as we are forced to take the lowest paying jobs; as is occurring, for example, in the migration from farming villages to the big-city factories of Asia and Latin America.

From 1820 through 1860, there was little change in the standard of living for working class people because both wages and the cost of living rose together. Most were not able to improve their level of living even after working for a lifetime. Throughout these decades there was an increasing separation between the quality of life of unskilled workers, skilled workers, employers, and professionals. The lower class had swelled and become a visible mass of glaring inequality such as had not before occurred in the colonies.

By 1850, each city developed economic rings that surrounded the city's center. The poorest of us would live in the oldest structures in the city center, while those who could afford transportation would live farther outward from the center. Professionals and such lived near the edge of the city. Each economic region of the city also had its own churches, schools, retail stores, and organizations. By the 1840s, many cities had become larger than could be handled by a town meeting so representative systems began to be used.

The city dwellers of the U.S. now confronted increased contrasts between wealth and poverty, but still growing numbers moved to the cities to work and live. Poverty, disease, and illiteracy became more concentrated and apparent as cities grew in size, and we were witnessing an increase in the number of persons enduring poor living conditions. This caused some of us to question the very foundations of capitalism.

In 1845 the New York Daily Tribune made a series of reports on the city's working conditions. The reporter, George Foster coined the term "sweating" for the "sweat-shops" of the textile industry just twenty-five years after the Lowell mills were built. Textiles were made by subcontracting clothing work to the lowest bidding sewing shop. The competition of small but numerous sewing-shops made for very low bids and higher profits for those taking the bids. Sweat-shop workers were not paid a living wage and were forced to rent cellars shared by at least two families. They often worked sixteen hours per day. Any person willing to work for these wages was hired to do an unskilled job, making a small portion of a product without having to first undergo years of apprenticeship training. During times of slow business, workers managed to live by eating cheap food, taking many small odd jobs, and by relying in part on charity relief.

The portion of us who became wage-earners rather than farmers continued to grow. There were discussions back in the farming villages about some of us factory owners taking advantage of laborers by decreasing wages and giving unfair treatment. As early as 1827, some of us were publicly condemning the greed of some business persons. The ability of some business persons to treat others unfairly was just emerging. (Has such unfairness increased or decreased since then? Does our culture

now accept unfairness to be the way of life just as peasants accepted the existence of manor lords? Do either wage-earners or peasants accept unfairness in any degree? Is that a mutually beneficial society?)

A shoemaker named William Heighton, denounced the greed of those who attempted to profit from the labors of others. He said that we are all born equal and are good by nature, and that democracy would be damaged by the growing concentration of wealth. He formed the first labor-based political party, the Working Men's Party of Philadelphia, to promote the end of debtors prison, a prohibition of licensed monopolies, legal protection for labor unions, stopping the use of prison labor contracts, a reorganization of militia recruitment, the payment of wages in hard currency, better public service in poor neighborhoods, and free public schools so all children can obtain knowledge. He said that workers should benefit from their labors and have equal access to education. They should even control the government to guard against injustices being done to them by the wealthy. Other contributors to this debate included Fanny Wright, Robert Dale Owen, John Ferd, Seth Luther, and Thomas Skidmore.

Such injustice has occurred since the first cities of Ancient Mesopotamia but it had never before involved so many persons because never before had such a large portion of the population been employed as wage-earners. The injustice came to involve enough persons for public debate to begin, and this debate continues today. Why do young adults choose to become wage-earners today? Because that is the way of their parents and their culture. It is the way of our group. What is the appropriate level for the quality of life of us workers or of us business owners? Which persons deserve to have a higher quality of life? We discuss these topics in Chapter 17.

A large movement to form labor-unions occurred from 1820 to 1840, and involved a good portion of workers—who were still a minority of the entire population. They criticized a society coming to be ruled by supply and demand and to contain undue concentrations of wealth (there were similar complaints in Europe). Already in the 1830s, the Lowell girls responded with work-stopages whenever the mill owners threatened to decrease wages or to increase work loads. For example, one-third of the girls walked off the job in 1836; since inventories happened to be low at this time, the girls won their demands from the factory owners. Other early unions sponsored strikes for decreased hours and for increased wages but these few attempts produced few results. Court rulings went against these early labor associations, and then the economic recession of 1837 to 1843 closed them down. The loss of jobs resulted in the loss of members. It would be many years before unions would reappear.

### Interrelated elements of the economy

The recession of 1837 was due mostly to the overproduction that caused many prices to drop by as much as 50% but also by the flood of bank-issued paper money. This began to show us the relations between prices, money supply, inventory levels, inflation rates, unemployment levels, and consumer spending. These things are often discussed in today's daily news, but the fact that these things are also related to the quality of life of workers and business owners is rarely mentioned in the news, as we'll see in Chapter 17.

During the recession of 1837, many of the urban unemployed came close to starving. The doubling of the price of flour resulted in New Yorkers looting flour stores, as described in the article

*The 1837 Flour Riot of New York City* in Joel Tyler Headley's *Great Riots of New York, 1712-1873*. At this time, Horace Greely advised the unemployed to "Go west." During this recession, eight states defaulted on loans from European banks, ruining their credit for several years.

Economic relationships and cycles quickly became more complicated and pronounced as industrial production and employment and consumer purchases began to involve a larger portion of the population. The first economic slowdown occurred in 1819 with sudden unemployment that was due to the overexpansion of the emerging industry. There would be many more economic bursts and slowdowns to follow. McConnell and Brue (page 144) list the post Civil War slowdowns and show that they occurred during the years 1875-1880, 1884-1885, 1893-1895, 1903, 1907, 1914, 1922, 1929-1940, 1945, 1950, 1954, 1958, 1961, 1970-1971, 1975, 1981, and 1991.

### Exchanges and occupations change

Before industrialization, craftpersons were choosing the materials and designs of products, but after industrialization, the merchant-capitalist who operated the factories were instead choosing these things. During the years 1832 to 1836, this caused the craftpersons of most every urban community to hold protests over their decreasing control of the final form of their products. For example, in Philadelphia in 1835, 20,000 craftpersons went on strike. They also demanded the decrease to ten-hour workdays.

Society changed as lifelong craftpersons were replaced with machinery whose operation required little training. Since it takes just a few hours, days, or weeks to train a person to operate a factory machine, increasing numbers of persons were becoming urban factory wage-earners without having to undergo apprenticeship training. This changed society as it meant that the new merchant-capitalists were not taking apprentices into their own home as family members through several years of training. In addition, the wage-earner began to pay cash rent in one home and work in another building for cash wages. As rent was starting to be paid in cash money it was no longer being paid through the ancient help-exchange system that was the apprenticeship contract. This meant that the home rental business switched to being a source of income rather than being the labor assistance of a person you have staying within your own home.

As farmers bought more factory-made implements, many local blacksmiths went out of business. They couldn't compete with the factories that were making cheaper, mass-produced items. Some blacksmiths moved their rural shop to the city to become machinists for the factories. Others remained in the country to become repair shops for these factory-made items. Still others became specialized in axes and such.

The 1800s saw many older occupations disappear to be replaced with a larger number of more-specialized factory occupations. In some occupations, the older, traditional ways continued a few more decades. For example, the store keeper's assistant still lived in the owner's home. Also, since home-building work is always done locally, it continued in the traditional ways for more decades than did other types of work. While most every industry in the U.S. today is controlled by a few nationwide or global corporations, the home construction industry is still the least of all.

In the past we were working on our own farmland to provide directly for our own family's welfare and needs. For example, we would chop wood and then burn it during the winter nights to keep ourselves warm, and we would make food, clothing, and utensils for our own family's use.

Seeing the direct fruits of our own labor produces an immediate sense of accomplishment. Now we were beginning instead to perform labor for business owners to provide indirectly for our family's needs. From 1820 on, the home was becoming separate from income-earning work.

### Growth of inequality

Our families that were the most wealthy before the emergence of the factory were also the ones who could most afford to build those factories—and become yet wealthier. Our new factory-ways also greatly increased the number of us who were propertyless city-workers. Our Industrial Revolution's factory resulted in a growing inequality in our income and wealth. For example, the average Boston merchant left \$5,000 in land and property to heirs when wages were \$0.50 per day or \$183 per year. Day-laborer wages were fine for a single person but not for a family. Before factories existed, mom might obtain income from sewing or laundry work or by working as a servant. But after the arrival of factory work, both parents and a child or two might have work in the factory just to cover the cost of rent and food.

One woman pointed out that while young men ponder their choice of future careers, a woman was forced to ponder only the career of her future husband. In many ways, we men treated women as property having no rights of “its” own. Many of the world's men still do this. Many of us women referred to a girl's marriage as “resigning her liberty.” Catherine Clinton explained that the plantation mistress was trapped within a system that controlled her, and that in the South cotton was King, white men ruled, and both white women and slaves served the same master (but to differing degrees, we might add).

In the 1840s there were increasing discussions of the injustice of constraining women's lives. Women are half our human assets. We women had almost no legal property rights under the U.S. Constitution of “equals.” In fact, we didn't even have rights to our own children in that ex-husbands always kept the children after a divorce. Lucy Stone refused to pay taxes since she was not represented in the government. In 1848, Elizabeth Cady Stanton wrote her Declaration of Sentiments in the fashion of Thomas Jefferson's Declaration of Independence, challenging the nation to be true to its founding documents: “We hold these truths to be self-evident: that all men and women are created equal; that they are endowed by their Creator with certain inalienable rights; that among these are life, liberty, and the pursuit of happiness.”

There were increasing discussions of the injustice of slavery. In 1852 Harriet Beecher Stowe explained that the people of the Northern U.S. were beginning to be consumed by the growing magnitude of business greed and this greed's factories were now willingly participating in the enslavement of some of us humans in the Southern U.S. She pointed out that the Northern factories were also using slavery because they were buying cotton grown and picked by us slaves in the South. Stowe made the Northerners understand their own inhumane role in participating in Southern slavery. This helped generate a large increase in anti-slavery sentiment by the people of the North as they realized their own role in the enslavement of some of us humans. When President Lincoln met Harriet, he commended her, allegedly by saying that “She was the lady who wrote that book which started the war.” In its first seven years, one million persons—one in thirty-five U.S. residents—bought Harriet's book *Uncle Tom's Cabin, The Man That Was a Thing*.

In 1800 no state except Vermont, New Hampshire and Kentucky would let a person vote

unless they met minimum property and taxpaying requirements. This was a continuation of the medieval idea of "having a stake in society" but was inconsistent with our founding document's idea of "equals." (In the U.S. today, we officially believe that every male and female adult over the age of eighteen years has a stake in society.) By 1840, every state except Rhode Island, Louisiana, and Virginia had removed these property requirements. Some regions would instead charge a tax at the voting place to try to keep us poorer persons from voting. This practice was not ended until 1964 with the 24th Amendment. Women were kept from voting until 1920, when the 19th Amendment stopped this restriction. In 1971, eighteen-year-olds became able to vote. (Today, fifteen-year-olds vote in Iran and sixteen-year-olds do so in Germany).

### Increasing numbers immigrate

Most of us Irish who immigrated to the U.S. in the 1840s were escaping the potato famine of our homeland. Potatoes had become our staple food in that each of us were eating several pounds of potatoes per day. Potatoes have nutritious contents, but a person has to eat several pounds per day to obtain enough nutrition to survive. One drawback is that potato starch causes tooth decay. Potatoes did not exist in the Old World until the early European explorers had taken them there from the New World, and the initial sample of potatoes taken there was too small to have the necessary genetic variability to survive disease. When a potato disease ruined our potato crop, one million of us Irish died during the years 1845 through 1847 and two million more died by 1860.

In the 1840s, us Irish immigrants began replacing the farmers' daughters in the Lowell, Massachusetts factories. Many of us Irish immigrated to the U.S. in a poor condition. Instead of moving out into the farming areas we stayed in the urban centers of the industrial northeast, where we took any job we could get and had to live in the cheapest section of town. Irish ghettos grew in Boston, New York City, Philadelphia, and Baltimore. In some places, an irrational fear grew that us Irish Roman Catholics would somehow conspire with pope and priests to take over the country. This fear kept Catholics out of the White House until John Kennedy's election in 1960.

Immigrants were arriving from many nations. For example, a new wave of immigrant German farmers settled in the region enveloped by a line drawn from Cincinnati, Ohio to St. Louis, Missouri and up to Milwaukee, Wisconsin, and another 400,000 of us immigrants came from Sweden, Denmark, and Norway to settle in Illinois, Wisconsin, Iowa, and Minnesota.

John Sturm's autobiography describes his family's 1847 Atlantic crossing in a three-masted ship. His family's journey began with lost food and clothes because their baggage disappeared while on a Rhine River steamboat going to the Antwerp boat dock. Next, the rolling sea kept many persons in a state of seasickness. The ship had just one kitchen shared by every family so each cooked but once every two or three days. One day when a pirate ship approached their own ship, everyone was called on deck to show how many men there were so that the pirates would seek an easier target. The sailors had their own kitchen and cook and mainly ate beans or peas cooked with bacon. This group of travelers was luckier than most of those making the sea-voyage because only one child died during the trip and had to be buried at sea.

About 300,000 of us Chinese immigrated to the U.S. between 1849 and 1880. We were often in search of enough money to return home to purchase land for our family. We worked hard for years and lived on a minimal budget to save this money. Still today, many persons seek temporary work

in foreign lands to accumulate money before returning home.

### Families migrate west

Migrating from the eastern end of the U.S. to the western end was also a long and dangerous trip. The "roads" were little more than wide paths full of holes, tree-stumps, and deep ruts created by wagon wheels. It took six weeks to travel from New York City to St. Louis. New Yorkers would travel by land to Buffalo and then take a boat down the Ohio river to Cincinnati or Louisville. About 150 miles (240 km) south of St. Louis, the Ohio river joins the Mississippi and then flows south another 150 miles to Memphis.

To leave the east, a family gathered its horses, dogs, wagons, furniture, farm implements, livestock, infants, children, elderly, and pregnant mothers and headed west down the roads. (Think of placing your family and possessions into a wagon and moving across the country.) When a road caused a wagon to overturn, the families possessions could be damaged. The poorest of us put our belongings in a backpack or handcart and simply walked west. It was unhealthy to spend weeks on the road. Our weaker and more-elderly might be killed by the journey. The trip was often full of unexpected expenses. An extended period of bad weather lengthened the trip's duration and could drain a family's money and supplies, leaving them stranded somewhere along the route. In 1829, the weather and the flu stranded many families in Cincinnati, Ohio. Many families would travel together in a train of wagons, usually sleeping under the wagons at night. In 1825 a Louisville, Kentucky newspaper reported that the road was literally filled with movers several times that week. After a Western area had time to develop commercial activities, a more-wealthy Eastern family could choose to sell their belongings in their old hometown, travel to their new Western home, and then buy replacement items.

### Commercial farms in the West

Increasingly from 1820 to 1860, the produce of Western farmers was sent to the Eastern population while the manufactured goods of Eastern urban factory workers was sent to the West. In the western farmlands, corn and oats were grown to feed the farmer's own livestock and wheat and flour were grown to send east. Western farms were commercial enterprises with the goal of producing as much as possible to be sold to the market. The farmlands of the upper Mississippi and Ohio valleys could grow five times as much wheat per acre as could the farmlands of the Northeast. These farmers were not simply growing food for their own use as had been done in the single-family farms of New England. Western farms were typically 200 acres (100 hectares) in size and were worked by the family, sometimes with some hired-help. These commercial farms increasingly relied on machines to increase output.

### Cities and industry grow and spread Westward

Before 1860, manufacturing in the U.S. was found in tiny and widely scattered spots but from 1865 through 1900 many additional industrial towns emerged. Industrial regions grew in the Northeast, the Middle Atlantic, and the Mid West—but not the South. In 1860, the industrial output of the U.S.

was smaller than that of either France, Germany, or Britain. But by 1900, it had grown by a factor of five to become larger than all three of these combined. During this period, manufacturing grew from 32% to 53% of U.S. output. The number of U.S. patents per year grew from 1,000 in 1820 to 5,000 in 1860. With each decade, new industries emerged. For example, in 1859 the first oil well initiated the oil industry. Oil was at first used for light and heat.

Many new industrial cities emerged, especially after the steam engine arrived to provide power in any location. This meant that factories no longer had to be placed along rivers to obtain water-power. Woolen textiles were made in Lawrence, Massachusetts; textiles in Manchester, New Hampshire; grain processing and distribution in Wilmington, Delaware was followed by iron works that produced ships, railroad cars, and carriages; wire rope and cable in Trenton, New Jersey ( whose factories also designed and suspended the Brooklyn Bridge in addition to pottery made from local materials); cotton mills and locomotives in Patterson, New Jersey; rifles, ammunition casings, machine tools and other metal products in Bridgeport, Connecticut; clocks and brass products in Waterbury, Connecticut; steam engines, files, flat silverware, and jewelry in Providence, Rhode Island. A 350 mile-long (550 km) line of manufacturing centers grew along the Erie Canal in cities such as Albany, Troy, Schenectady, Utica, Rome, Syracuse, Rochester, and Buffalo.

Throughout the 1800s, Pennsylvania employed and produced more than any other state. Instead of a line of industrial towns, much of the state was involved. Most of the nation's anthracite coal is found in Pennsylvania. The search for Pennsylvania coal mines was accompanied by land speculation. The especially independent nature of those of us humans who will work in a mine led to some dramatic labor strikes; you might like to read about the Molly Maguires. By 1900, Pennsylvania was producing one-sixth of the nation's iron and steel, mostly in companies having 200 to 300 employees each.

Already in 1880, 60% of Ohio workers were employed in manufacturing and Cincinnati's output was third behind just New York City and Philadelphia. Cincinnati made many products in small to medium sized factories that were mostly family owned and operated. It had become the major pork processing center and a major soap manufacturing site too because soap is made from animal fat. Proctor and Gamble was founded there in 1830. After the Civil War, the size of the factories and companies grew. John D. Rockefeller moved to Cleveland in 1854 to be a product merchant but switched to oil as that industry emerged. By 1870 he dominated the oil industry.

Manufacturing in other Ohio towns was more specialized: watches were made in Canton, agricultural machinery in Springfield, steel in Youngstown, railroad cars and office machinery in Dayton, and rubber in Akron. A large population of pottery makers moved from Liverpool, England to found Liverpool, Ohio and continue their specialty. Wagons, glass, and steel were made in Toledo. With every decade the centers of production of wheat, corn, cattle, hogs, and sheep shifted westward, creating first the large cities of St. Louis, Cincinnati, and Louisville, then Milwaukee, Indianapolis, and Chicago, and later Omaha, Kansas City, and Minneapolis.

Licht explains that in 1830, the suddenly realized fact that westward expansion had already been occurring for many years resulted in a sudden burst of land speculation. Its total grew from \$2 million to \$20 million between the years 1830 and 1836. Bank loans for land development and new industry were being made at a 24% annual interest rate. The economic recession, which began in 1837, caused land sales temporarily to drop to just \$1 million in 1842.

Due to the lack of wood in the prairies, people started to make homes out of frames made

with 2 by 4 inch (0.75cm x 1.6cm) boards that were simply nailed together instead of being jointed. During the 1830s, there were already daily boatloads of lumber arriving in Chicago from the north. It took about thirty years for this technique to become adopted in the eastern cities who were also beginning to fill street after street with brick homes. By 1900, timber homes and log homes had nearly disappeared.

In 1833 Chicago contained just 150 wooden houses and had just a few shops that sold salt, tea, coffee, sugar and clothing to the surrounding region. When the city was incorporated in 1833, optimists were already buying and selling lots twenty miles (30 km) out of town. These speculators were certain that Chicago would quickly become the commerce distribution center for all lands west. It also became a railroad hub and a shipping center for the Great Lakes region. Within fifteen years, Chicago's population had already reached 100,000 persons. The city was legendary for its mud. Road signs read "No Bottom," "Road to China," and "Man Lost." *Firsthand America* gives the story of a man who saw a hat in the mud. When he picked it up he found a man's face underneath and so asked if he needed help to get out, but the face replied that he was riding a good horse who had gotten him out of worse spots. By the 1860s there were huge stockyards and meat packing plants, and there were forests of grain elevators near the railroad yards. The Chicago mills were processing agricultural products, lumber, flour, meat, and liquor for the East. It was also the site of the growing farm implement industry, some of which still have offices there. This mass transfer of goods brought banks, insurance companies, mercantile exchanges, and downtown retailers. The 1892 Columbian Exposition was held in Chicago. Chicago's central location resulted in the two newfangled mail-order companies of Montgomery Wards and Sears-Roebuck to be built there before the year 1900. By 1900 Chicago was an industrial and commercial colossus. Young people flocked there to work and live. By 1910 it had a population of 1.5 million persons—second only to New York City. In Chapter 16 we will meet the grandchildren of two families who moved to Chicago in the 1930s to find work.

In 1831, Cyrus McCormick's horse-drawn hay-reaper could cut ten-times as much wheat per day as could a person with a sickle. But this also meant an end to the community gatherings that used to be necessary for haying. After seeing the community-binding events that were the New England hay-mowings, we can understand, as we saw in Chapter 6, why it is that those of us humans who are Amish believe that a person on a tractor is a lonely person and that it is more human for community members to combine efforts to cut hay as a group, even if it takes more time and effort when using hand sickles. We can now understand why some groups of people still to this day shun the use of community-bond-decreasing machinery.

In 1847 Cyrus McCormick moved his hay-reaper factory to Chicago. By 1885 McCormick had 1,500 employees making 50,000 reapers per year. (In the 1950s, Gregory Pinkus and John Rock developed the birth-control pill through funding by Catherine McCormick, who had married a McCormick heir.)

Before there were railroads we drove cattle overland to market, but cattle could lose 60% of their weight during this journey. Cattle drives were necessary because we could not ship processed meat for any distance. After railroads connected West and East, the cattle were instead shipped by railroad to be slaughtered in the East. Licht describes how Gustavus Swift moved his meat packing plant to Chicago in 1875 with bold plans to slaughter cows there while they were fat and then use cold, northern winter railroad routes to send just their meat to the East. He setup a network of eastern



outlets ready to sell this meat as soon as it arrived. In 1881 he also began to fill railroad cars with ice to be able to ship year-round. He built refrigerated warehouses in the East to store the meat for a short time. (At the age of fourteen, Swift had worked in his brother's butcher shop in Massachusetts. By his early twenties, Gustavus had become a cattle dealer and butcher.) Other food processing companies include, Philip Armour, which began a meat packing company, and John Dorrance's Campbell Soup Company. Dorrance invented a process for condensing soup and storing it in newfangled tin cans that could be stored for long periods and transported over long distances, but he had to ask people to try their first-ever canned meal.

Cigarettes were beginning to be made as a smaller and cheaper, paper-wrapped version of the high-status leaf-wrapped cigars. Merrill mentions that in the early 1900s, New York men still felt that they should smoke cigars not the little cigar-ettes. James Bosnack developed a machine that could roll four cigarettes per second (today's machines roll 250 per second). In 1884 James Duke bought the rights to all of James Bosnack's machines so that he could easily outproduce his local competitors who then wouldn't have such machines. In 1890 his company made 834 million cigarettes and earned \$400,000 in profits from \$4.5 million in sales. The same year he merged with four competitors to form the American Tobacco Company.

There was some manufacturing in the cities of Fort Wayne, Indianapolis, and Gary but the remainder of Indiana was involved only in agriculture. Grand Rapids Michigan was the largest producer of furniture in the U.S. while Milwaukee made beer. Minneapolis became a grain storage and processing center while Omaha and Kansas City became meat-packing centers. Moline, Illinois and Davenport, Iowa made agricultural equipment. Detroit, Michigan was a medium-sized manufacturing center until after 1900 when it began producing cars. Chicago, as we have seen, grew to rival New York City. The mountain states mainly produced minerals. Today, there is a line of manufacturing along the Pacific Coast but it is much smaller than that of the East, which includes much of the region between New York City and Chicago.

### Sharecropping in the South

In 1860, the South was a mixture of many things: small family farms and slave-labor plantations, lower and upper class, coastal and interior, seigniorial and pre-bourgeois, some who preferred federal rights while others preferred state's rights, some industrialists, and some medium-sized commercial farms. And it was fully capitalistic. The South remained a mercantilistic offshoot in that it never tried to produce more than its single, cash crop of cotton for export while importing most all of its needs, and it never made plans to become a whole and independent economy. The South's plantation owners were massing wealth and had no reason to change their economic system—for example, by building factories. The South would have been the fourth richest country if it had become an independent nation in a peaceful, nondestructive manner but the Civil War of 1861-1865 left much of the South in ruins.

The end of slavery meant an entire reorganization of the South's production system in that few of us former slaves understandably had little interest in working for our former owners. When the news of the Northern victory came, many of us slaves threw down our tools and said "You can't make me do your work." Those who had farm land could not find laborers to hire, and the laborers who could farm the land had none to farm. The compromise was the system of sharecropping in

which a family contracted to work a piece of land and pay rent through a portion, typically half, of the harvested crops (we saw similar contracts in Ancient Mesopotamia). This meant that workers would be their own boss, but the trouble was that we newly-freed slaves had nothing but the clothes on our backs: we had no farming equipment. Economic stagnation and poverty occurred because most every family had to purchase seed and tools and such on credit and the family's annual crop rarely raised enough cash to pay off both the creditors and the landowner. When it occurred that a single merchant was making most of a region's loans, that person would often set the interest rate at will. The farming-family's debts simply carried from one year to the next and meant that the family could not move to new areas in search of better opportunity.

Creditors insisted farmers grow cotton because it made them especially dependent on the creditor. At the same time, the price of cotton was declining throughout the world due to overproduction in several countries. Many countries, like Egypt, began growing cotton during the Civil War because of the South's wartime decrease in cotton production. This situation was beneficial to Southern creditors and employers in the short term only and resulted in poor economic conditions that lasted for several decades. Only after World War I did many families manage to move out of the South to the factories of Chicago and other Northern and Western cities.

After 1880, some northeastern textile mills began relocating to the South in search of lower wages; this led to the collapse of the northern textile industry by 1925. This search for cheaper labor continues through today. Those companies that are able will repeatedly move their factory, every decade or so, to the current location of the cheapest labor on the earth, no matter on which continent it is to be found.

Throughout the 1800s in New England, social relationships among neighbors were continually changing but there was no change in the social relationships, values, or power arrangements of the South and almost no plans were made to move away from its cotton-based economy. While the economy of the North grew by 500% from 1860 through 1900, that of the South was stagnant from the end of the Civil War in 1865 until World War II. (But then also, a stagnant economy matters only to economics statisticians and only affects a person if it means trouble finding food each day.) Half the manufacturing growth of the North was due to the increase in its population of worker-consumers through immigration while the other half was due to increases in productivity and capitalization. (These fifty-fifty shares still occur in the U.S. today.) In 1900, 80% of the U.S. workforce was foreign-born.

The stagnation of the economy of the South was due to many choices and factors that resulted in minimal industrial growth. This case shows the large role that generations-old custom and culture play in the decision of a people to industrialize. Some peoples of the world pursue industrial growth while others prefer to keep life the way it has always been. That this was true even in the pro-industry United States, points out that it is a mistake for those of us who are already industrialists to imagine that everyone else in the world also wants to be industrialists.

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## Questions

1. For people living in the U.S. in the year 1800, which elements of life were similar and which were different from the ways of their grandparents living in Africa, Europe, or in the farming villages of Native Americans.
2. Compare the cultural ways of the people living in the Northeastern U.S. in the year 1800 with those of their European ancestors living in a Medieval farming village in the thirteenth century.
3. Compare the food sources of the regions of Ancient Mesopotamia, the Canela, Yoruba, Cahokia, and the Northeast U.S. of the year 1800. What are the food sources of your own region, today? Where does the food come from that you eat?
4. Today, are we more or are we less dependent on the other members of our society? Describe how we are mutually dependent on each other and how our society is mutually beneficial to all of us today. In which ways is it not mutually beneficial?
5. Larkin says that the county records from the early 1800s contain lists of the house contents of every newly deceased household head. Check at your county offices for such records. Describe the contents of a typical home and compare them with those of other times and places.
6. Describe the differences between poor, average, and wealthy families in the years 1800, 1850, 1900, 1950, 2000, and today.
7. Compare the items an average home bought in 1820 and 1920 with those bought today.
8. Compare the items that our factories were making in 1830 with the items our factories make today. What

portion of family's could afford these things then and now? What determined the prices of these items? Gatherer-hunter groups make clothing, rope, and homes and such. Which items do we make in the factory which are also made by gatherer-hunters? Which are not?

9. Did the number of items in a home determine the family's happiness in the year 1700, 1800, 1850, 1900, 1950, or 2000?

10. Compare the changes brought about by the new iron cooking stove with those of the new microwave oven.

11. What would you think today if taking a new job meant moving in with your new employer?

12. Do you feel a natural tendency to exchange favors, utensils, or goods with your neighbors? Has your family ever exchanged these items or the assistance of youngsters with a neighboring family?

13. What do you think a person from the year 1800 thought life was about? Would the urban and rural people have different answers?

14. In past ages, what sort of material attributes distinguished a rich person from typical or poor persons.

15. Compare the range in wealth between rich and poor around the year 1800 and today. Also, compare levels of education and life expectancy.

16. Compare the culture of the U.S. in 1800 with the culture of some of the others we have met in this book, including the Ancient Mesopotamian farmers, the Canela, Yoruba, and the Medieval Chinese, Africans, and Europeans.

17. At all times and places, the members of a society help their other members and rely on the help of those others in every way needed. Compare the changes in these needs as we switched from being gatherer-hunters to being farmers in the villages of Ancient Mesopotamia. Compare the changes in these needs as we switched from being the family farmers of 1800 to the urban factory workers of 1850. Compare the number of ways neighbors exchange mutually-beneficial help among the chimpanzees, Canela, Yoruba, Cahokians, Mesopotamians, U.S. farmers of the year 1820, and in your neighborhood today.

18. What are the variables that affect population levels? In every region of the world, population grows rapidly whenever industrialization develops. Why do we choose to begin having more children during certain times and fewer children at other times? Can we relate changing population levels to a changing quality of life?

19. Describe some changes that are occurring today in our industry, occupations, and in our interactions with our neighbors.

20. Was the 1820 U.S. society a form of band, tribe, chiefdom, or state? Does the 1820 U.S. society have anything in common with that of chimpanzees?

21. Compare the 1820 U.S. society with that of the Yoruba, Canela, Mesopotamians, and to your own. Compare farming practices. Were separate fields farmed by individuals or did the entire village work together on the entire crop?

22. What can you say about the levels of social and economic equality in the 1820 U.S. society? Were some persons richer or poorer? Could some persons impose their views or preferences on others? Compare the health of infants in 1820 U.S. society to those of the Canela, Yoruba, Mesopotamians, and your own group, today. Did each member of the 1820 U.S. society have equal access to education and the benefits of that society? Did the members of the 1820 U.S. society have a sense of belonging to a community? Did they have a feeling of control over their own lives and over their own continued well-being?

23. Do you see any manifestations of the primate social system in the 1820 U.S. society? Do you see the Golden Rule at work in that society?

24. How do we arrange for children to have access to doctors and medicine at a cost of 1% of the family's wage rather than today's 20%? What is the purpose of health care? Should the people of a nation strive for minimized costs, maximized lifetimes, or maximized profits? Design a gizmo having a thermometer, stethoscope, blood-pressure, ear and throat light that connects to a home computer and can be operated by

a doctor through the internet.

25. State several differences between U.S. culture in the years 1800 and today. Were they "toy people" in the 1800s?

26. What is the maximum population level of a village before we can no longer ring the church bell to announce each death? When did towns first have bells and when were they first used for this purpose?

27. List some items from daily life and our world view during the year 1800 that have been carried forward to today and some that have not.

28. Find an elderly person's description from the year 1840 of decreasing community ties.

29. Describe the changes in culture during the last three generations of your family. Describe some cultural changes that have occurred since time of gatherer-hunters in clothing, shelter, food, entertainment, transportation and such. Describe some cultural changes since your grandparents switched from farming to wage-earning.

30. How have homes changed since the year 1800?

31. Grassroots movements are those in which the masses voice their opinion and take collective action toward a common goal. Was the temperance movement of 1830 the first grassroots movement in history? Were there grassroots movements during gatherer-hunter or Mesopotamian times? What are some of today's grassroots movements?

32. What were the changes in our social relations as we switched from being bands of gatherer-hunters to being village farmers? What were the changes in our social relations as our farming villages grew into cities of 100,000 persons? How did the magnitude of these social changes compare with that of our shift from farming to factory work? Which of these social changes occurred over the shortest span of time? How many generations were involved in each of these social changes?

33. We saw that the decreased community relations of the early 1800s was troubling to many persons. This might make one wonder if the origination of the Hindu, Zoroastrian, Buddhist, Hebrew, and Confucian religions may have been a response to the decreasing social relations of the first-ever population centers and warring empires that previously had no religion of moral behaviors. Do you think any of the major religions of today were formed in response to this development?

34. Create a piece of art to describe some aspect of life during the nineteenth century. Can you communicate the sense of community, the loss of mothers and infants during birth, or the loss of family members from simple illnesses?

35. Try a nineteenth century game of graces, which is played with a hoop and a stick that has a fluttering ribbon attached.

36. Now that you have had a glimpse of the change in community ties that occurs during industrialization, can you guess any changes that might have occurred as farming villages or cities first developed? As tribes, chiefdoms, or nations first developed? As imperialism developed? After your region was conquered? As one of today's major religions emerged 1,500 to 3,000 years ago? As cars, radio, television, computers, or gonkulators appeared?

37. A child sees both its parents throughout each day if it lives in a gatherer-hunter society. (We saw that gatherer-hunters spend about fourteen hours per week getting food and travel as a family while doing so.) A child similarly sees both parents if it lives in a farming village. In an industrialized society, one or both parents work away from home and their child for forty to sixty hours per week. How does this affect the child? What are the benefits and drawbacks for this child?

38. In *Life in a medieval village*, the Gies describe how the village farmland was worked as a whole by the entire population. Compare the way this village exchanged help in farming with that of the Northeastern U.S. community described above.

39. Make a list of the topics in a conversation you held with your friends yesterday.

## **Chapter 14    Everyday life for the factory workers of the U.S. during the 1800s**

In the year 1740, the population of New York City was 10,000 persons, but 2,000 of us were slaves. What does it mean to be a slave? By constant threat of the whip, you are forced to work all day long. You can not pursue your own life. You are kept from education. At any moment, your children and spouse are sold by the owner for profit and moved away. If a slave does not cooperate or is caught escaping, then all other slaves from within twenty miles (30 km) are brought together and forced to watch him being hung. (Today's national dictators similarly keep alternative views to a minimum by often and publicly beheading detractors.) The threat of death keeps nearly all of us in line because we will not gamble with our lives. A plantation owner might have fifty slaves, of which ten are his own offspring as he impregnated his slaves whenever he felt like it. His wife reacted in one of three ways. She might demand that he sell those children, or she might demand that he free them, or she might want them to be drowned. Today's descendants of African slaves still have genes that average 80% Caucasian. Back in the 1600s, Nigeria had already long been urbanized, and Islam had already spread into Western Africa. Many persons who were taken as slaves from Western Africa were Muslims who already knew of Jesus and Mary, but in another language.

Factories originated in England around the year 1760. An increasing portion of the English population were working in the factories and buying goods from factories. There were hundreds of factories in England before the U.S. had a single factory, a couple generations later. Many persons in the U.S. were trying to smuggle machinery secrets from England to the U.S. For example, while ambassador to France in 1787, the future U.S. president Thomas Jefferson was involved in a plot with Tench Coxe to obtain English machinery secrets. Tench Coxe was one of many persons who were advocating the increase of industrialization and its new manufacturing ways in the U.S. They founded many "societies for the advancement of manufacturing and useful arts." They published pamphlets and filled the press with discussions. They also interviewed British immigrants and imported factory machines.

Alexander Hamilton and Tench Coxe argued that industrialization would bring fiscal stability to the new nation, utilize its spare capital, decrease its dependence on foreign goods, and help to build war machines. They said that industry and agriculture would each purchase the other's products. They also said that the factories would provide jobs for women and children, but this was one thing that most other people most wanted to avoid. Ben Franklin and Thomas Jefferson warned that in England, factories resulted in rural depopulation and urban growth, poverty stricken wage-earners, increased inequality of wealth, and increased social tension and uprisings. They asked if we would be better off to stick to our agricultural society. Looking back, which of these predictions came true? All of them. Notice that similar discussions occur in any nation currently debating whether or not to industrialize its economy.

In New England around the year 1800, 90% of us were farmers working our own land, living mostly off our own crops, and exchanging daily assistance with neighbors. Farmers exchanged goods through the barter system and had little money to purchase goods made in the first factories. Only 10% of people were artisans and shopkeepers, and these often had a live-in apprentice. There were almost no employed or unemployed persons. In fact, the first factories had trouble finding employees.

It is surprising that the earliest U.S. factories had trouble finding employees, but this happened because most everyone already had a job on the family farm. (Since most everyone today hires themselves out for wage-labor to a business, it is hard to imagine a time when practically no one was doing this.) The shop-owner-turned-mechanized-factory-operator tried many different ways to obtain workers. In the first few decades, women and children were often hired to do most of the work in a factory. Some operators hired entire families of the poorest of us who lived nearby and expected parents to keep their children working at the machines. It was often found that these families would work at one factory for some months and then move on to another factory in a continual search for a better arrangement. At some factories, wages were paid in terms of rent in the factory homes and in credit for goods that were obtainable from nearby stores that had arrangements to sell the factory's products. That is, we traded our labor for rent and for some products. Other factory operators began to pay us employees in cash wages.

As Samuel Slater finished a management apprenticeship in a cotton mill in England in 1787, he read in a news article that the Pennsylvania Society for the Encouragement of Manufacture and the Useful Arts had awarded John Hague £100 for making a water-powered machine to straighten cotton fibers for high-volume spinning. In 1789, Slater disguised himself as a farm laborer to get through British Customs and emigrated to New England. Slater then worked in a New York City spinning-jenny factory and heard that Moses Brown was trying to establish a textile works in Providence, Rhode Island. Since there were few knowledgeable persons in the U.S., Slater got Brown to agree to give him a good share of the profits in return for his mechanical expertise. With Brown's money and Slater's knowledge, they built dozens of cotton mills in Rhode Island and Massachusetts. To staff their factories, they tried to hire orphans from the area and to contract with families for work in their mills. Day-wage immigrants began arriving in the 1830s and 1840s who would work in the factories for lower wages.

For 10,000 years, every farmer in the world has worked from dawn till dusk. Since we were already used to working twelve-hour days, the factories continued this habit. The more hours we worked, the more would be the factory's output and sales. But factory hours proved to be much more monotonous than farm work had been. (My most miserable job consisted of stapling a piece of felt to the wire frame of a mattress, once every few seconds throughout the day. I also had miserable work as a collator while the boss repeatedly shouted "No talking. Work Faster.") It required a worker's constant attention to keep the various parts of a mechanical device operating. Some workers would sabotage the complicated machines to slow the pace of work. By 1830 we were already beginning to push for a ten-hour work day.

Frances Cabot Lowell received a math degree from Harvard and became a Boston merchant. In 1810, he went to England to search for new investment opportunities while claiming he was there for "health reasons." He took only mental notes as he visited several textile mills, so that as he left England he had no written documents for the customs officers to confiscate. Lowell then formed a corporation with Nathan Appleton and raised \$400,000 from other wealthy families to build a state of the art spinning and weaving mill that would manufacture cloth through an entirely mechanized procedure that began with raw cotton. Lowell hired the mechanic Paul Moody to construct their first water-powered mill, which was built in 1814 in Waltham, Massachusetts. Since it soon exceeded its available water power, Lowell raised eight million dollars from eighty wealthy families through the next fifteen years. He then moved his factory about fifty miles (eighty km) north of Boston to the

site that would become the town of Lowell, Massachusetts. By harnessing the power of the Merrimack River Waterfalls, the town grew from a few farmer fields in 1820 to an industrial town of twenty-two mills by 1830. Its population was 20,000 persons in 1840. (For the Lowell National Park, see [www.nps.gov/lowe](http://www.nps.gov/lowe).)

The Lowell mills were much larger than any other and needed many employees. Initially in 1820, workers in the Lowell mills were young women from the farms of New Hampshire and Vermont. The women typically worked for a year or two before marrying. It was a bit of a radical change for some of us twenty-year-old girls to be accumulating money. We earned money to do with as we pleased but had to work eleven-hour days and lived in crowded boarding houses near the factory. An older and respectable widow would supervise the boarding house and encourage us to follow the 10 O'clock curfew and to attend church on Sunday. (These are just the sorts of assurances you would expect before allowing your child to live and work in one of those newfangled and distant factories.) In 1834 Davy Crockett toured Lowell's "mile of gals" and said they were well-dressed, lively, and genteel. As one form of entertainment, the girls pitched in together for a subscription to a Paris fashion magazine. The Lowell girls published their own periodical, *The Lowell Offering*, containing discussions of their experiences and thoughts. The girls also objected strongly to each proposed wage reduction or increase in working hours or machinery speeds.

In the 1830s and 1840s, the Lowell girls were being replaced by immigrants who would work for lower wages. (We will see that factories are in a perpetual search for cheaper labor, and moved first to those regions of the U.S. that temporarily had cheaper labor, and then to the successive regions of the world that temporarily have the cheapest labor.) At this time, many immigrants were arriving from the farms and famines of Ireland. With the resulting glut of persons who would work for low wages, one Lowell manufacturer was quoted in 1855 to say "I regard people just as I regard my machinery and I'll keep them for as long as they'll work for what I'll pay them; those people are part of my machinery." It had taken just thirty-five years for this manufacturer's greed to grow to sufficient magnitude that money was more important than humans. By 1855 there were 52 mills in Lowell, employing 8,800 women and 4,400 men and making 2.25 million square yards (square meters) of cloth per week.

This huge amount of cloth would be turned into manufactured clothing and meant that we farmers were making less and less of our own clothing. We women stopped having to spin thread at home and so had more time for other things. From the very start, factories make only as much product as is being bought by consumers. Since factory-made clothing began to replace homemade flax clothes, little flax was grown after 1835. Factories also produced buttons, bonnets, and ribbons.

As factories became increasingly common in the U.S. through the nineteenth century, about 2% of the population of Europe moved to the U.S., mostly from those nations experiencing war or an economic downturn. Immigrants mostly arrived to work in the big cities of Boston and New York City, arriving at Castle Gardens until Ellis Island was built in 1890. Very few emigrants were peasant farmers or unemployed workers. To choose to make the move required some financial resources in addition to a certain sense of adventure—just as it still requires today as about 1% of the human population is migrating. Still today, people move from rural villages to work in the nation's big city, or move to work in a nearby nation.

The U.S. population increased by a factor of five through the years 1840 to 1900, and the urban population grew by a factor of eight. In New York City, the percentage of foreign-born



residents increased from 20% in 1820 to 50% in 1850, when immigrants comprised 80% of the wage-earning workforce. Similarly, in the last fifty years, the U.S. population has increased by 85%, where half the increase has been due to immigration and the other half came from births within the borders. Both halves have drive the expansion of the economy.

In the cities of the U.S., the average annual wage of \$250 per worker did not support a family, so three or four family members had to work to get enough money to pay rent and to buy bread and clothes. Despite this, some adventurous Europeans were continuing to move to the U.S. in search of factory jobs or farm land and a chance to beat the odds and live a good life.

Many of us recent immigrants wrote to our families back in the old country about the harsh life in the U.S. factories but said also that we believed we had a chance of doing well for the family. The letter might recommend that several other family members should make the move "but not John because he couldn't handle it." We move around the world for the same reasons today and often find the same harsh conditions as we are forced to take the lowest paying jobs—as is occurring, for example, in the migration from farming villages to the big-city factories of Asia and Latin America.

From 1820 through 1860, there was little change in the standard of living for working class people because both wages and the cost of living rose together. Most were not able to improve their level of living even after working for a lifetime. Throughout these decades there was an increasing separation between the quality of life of unskilled workers, skilled workers, employers, and professionals. The lower class had swelled and become a visible mass of glaring inequality such as had not before occurred in the colonies.

The increasingly harsh economic life for some of us meant an increasing amount of crime in the city, mostly in the lower class areas of the city. In response, the less-affected business and higher-class areas called for the creation of a police force—as other large cities were doing. Unfortunately, we came up with the unimaginative solution of using police forces to fight poor living conditions and dismal hopes for the future. In addition to the newly added expense of police forces, cities began to pay to install water and sewer systems, street lighting, schools, and fire departments. Fires could level an entire section of town.

Beginning in the 1820s, there was a rapid expansion of commercial activities in the U.S. as people began buying and selling everything for profit. The number of factories and workshops grew with the number of employee-customers who worked in one factory—or in its warehousing, distribution, and retail sales—and used their wages to purchase goods made by other factories and workshops. To obtain profit, business owners had to pay wages to their own employees who then purchased goods from other business owners. The greater the wages of the employee-customers, the greater would have been their purchases and hence the income of the business owners. But each owner worried that purchases would occur at someone else's factory and so kept wages at their own factory as low as possible, though this also curtailed their own income. In society as a whole, wages, purchases, and factory production levels rise and fall together.

In 1845, the New York Daily Tribune published a series of reports on the low wages and poor working conditions of those of us who worked in the small-scale sewing-shops of New York City. Sewing work was mostly done by hand, and often in rooms that were so hot that everyone was sweating. The reporter, George Foster labeled and described the "sweat-shops" of the textile industry just twenty-five years after the Lowell mills were built.

By the 1840s, many cities had become larger than could be handled by a town meeting so

representative systems began to be used.

By 1850, each city developed economic rings that surrounded the city's center. The poorest of us would live in the oldest structures in the city center, while those who could afford transportation would live farther outward from the center. Those with better paying jobs bought clothes, strolled the avenues to see and be seen, became volunteer firefighters, had casual evenings dancing and drinking, and went to the theater, which was more interactive than occurs today.

The audience interrupted the actors by shouting comments, and the actors would comment to the audience. For example, an actor would turn to the crowd to say "Don't you boys?" and this would make the audience cheer. The audience most enjoyed portrayals of themselves. The Grand Dukes Opera House was entirely conducted by boys.

We next have a summary of the book *How the other half lives*, by Jacob, A. Riis, which was published in 1890. Additional details of work and life are taken from the book *Five Points, The 19<sup>th</sup>-Century New York City Neighborhood That Invented Tap Dance, Stole Elections, and Became the World's Most Notorious Slum* by Tyler Anbinder.

Through the years 1820 to 1900, about 100,000 immigrants per decade moved into New York City to work in workshops, warehouses, and retail stores and such. It took several decades for us to learn the hard way how to safely house one-million persons in a single city. Riis explains that in the year 1800, a person might rent a spare room in a large home or in the guest house behind the main house. These so-called boarders paid for room and meals, which were eaten with the home owner. A couple decades later, so-called lodgers paid for a room but did not receive food. This new arrangement was a source of income for homeowners. As immigrant numbers grew, homeowners added two or three floors to the guesthouse, regardless of the strength of the foundation, and divided the space into a greater number of smaller rooms. Floors were also added to the main house, and the basement that used to house a pig was now divided into small rooms that could each be rented.

Wooden tenement buildings of two or three floors began to be built as business investments. Anbinder says that each floor had four apartments, which were two-room flats. The larger room was twelve feet by twelve feet (four meters by four meters) and the smaller sleeping room was eight feet by ten feet for a total of 225 square feet (21 square meters). In the poorest Five-Points neighborhood, the average flat held five persons, but one-in-six had eight or more persons. Riis says that some flats held twelve to twenty persons of all ages and had no privacy. The room might have two beds but no tables or chairs, and people would sleep shoulder to shoulder on the floor. A pile of rags might serve as a bed. Anbinder says that the average room was crowded but some rooms held just two parents and one child. As an example of the worst crowding, one tenement had 179 persons in fifteen rooms. Typically, rent was \$8 per month in nice suburbs or \$7 per month in Five Points, but workers had to live near their workplaces. Rent was 25% to 50% of income, so many renters took in one or more lodgers. About 17% of Five Point residents were boarders in someone else's room.

In the 1850s, the wooden buildings were being replaced with brick buildings that had four to six stories. The buildings had no elevators, and only the outer rooms received sunlight and fresh air. Stairways were built steep so that they would waste little of the rentable space. Stairs were unlit. While carrying coal, food, and buckets of water, renters had to grope their way up the stairways that were so dark that you couldn't recognize faces as you passed other people. Many persons fell and were injured but no laws yet existed to hold the landlord accountable.

Anbinder says that renters had some dishware and toys and such and were not all as bad off

as reported in the press, but every tenement had a few persons who resorted to prostitution. One survey interviewed some 2,000 prostitutes to ask why they had to resort to prostitution. Anbinder says that tenement rooms let in the rain and snow, and that basements flooded with water that leaked in through the roof. Residents burned coal in a stove to cook and stay warm. The poorest families resorted to burning furniture to survive the coldest nights, but neighbors would intervene before anyone froze to death. The tenements were full of vice and humanity.

The inner courtyard was full of mud and garbage and the outhouse, which was not maintained and was not connected to city sewers but did flood into the basement on rainy days. The windows facing the courtyard could not be opened due to the chokingly bad smell of the outhouse. Despite the smell, residents had to resort to using the outhouse, and some resorted to keeping a chamber pot in their crowded room. In 1857, only one-quarter of the city had sewer lines. Raw sewage was everywhere. In 1865, the sixth ward's sanitation inspector declared 585 of 609 tenements to be unsanitary. Street gutters were also full of mud, garbage, and human waste. Visitors complained of the revolting smell. Streets were cleaned only by pigs until 1830, when New York City created a street cleaning department but trash was simply piled into the street gutters awaiting eventual pickup, which did not become weekly until 1865. Mud and trash from the streets got on clothing and shoes and was tracked into every building. Rugs were shook from windows above you and your laundry line. Only half of tenement rooms had a laundry line, and it was above the smelly courtyard. Some people dried clothing on the rooftop.

Tenement crowding caused cholera and other epidemics to occur and kill as many as one in five renters—plus one or two building owners or managers. Mourners placed a white badge at their doorway. This death would occur in one square block while a neighboring area had no illness. Death was as concentrated as happens in a tornado. Such epidemics resulted in the creation of the [New York City Department of Health](#), which still exists today, and in the [Tenement Housing Act of 1867](#), whose implementation was delayed by two years due to another epidemic. When a tenement building caught fire, residents of the upper floors could only hope to jump to neighboring buildings, so a law was passed requiring fire escapes. This new law also required ventilation shafts, toilets, and windows. The [1879 Act](#) further required that windows face outdoors, not an interior hallway. Landlords considered the air shaft to be a waste of rentable space, so they were only one yard or meter in width. The [Act of 1901](#) required that courtyards be built in place of the tiny air shafts.

Five Points had dozens of flop houses which rented sleeping space in a bunk for three cents per night (\$1 per month) or on the floor for one-third that price. Typically, two persons shared a bunk. About 5% of New York City residents slept in basements, but half of those persons lived in Five Points. Basements had no air or light and the musty smell got into clothing and people. Some saloons rented cots near the back wall where persons could pay to sleep even though customers filled the saloon.

Tenement owners told their building managers to "collect rent in advance, and to evict if it was not paid." They did not care about the comfort or safety of the renter, they cared only for profit. They typically made 15% to 30% profit but hoped to make 100% profit. Reformers complained that rent in Five Points was almost as high as was rent in nice neighborhoods, and stated that this proved the greed of the landlords. They also said that lower rents and slightly higher wages would reduce tenement crowding caused by the need to take in lodgers. Other persons said that business should do as it wants without any interruption by government laws. The residents of Five Points said that

they only needed more work than their average of 200 days per year. One person said that the tenements should be torn down and replaced with a post office and other government buildings because those would raise land values in the area. This was actually done some fifty years later.

Often, little maintenance was done to the tenement buildings. Wood was allowed to rot, ceilings would hang, and mold would grow. Some building owners leased the entire building to one “wholesaler” who would gouge individual renters. The buildings were noisy because walls were thin and every room door was left open in an attempt to promote the circulation of air. Tenement buildings ran out of water during the hot summer months. It took some decades for us to learn to put water storage tanks on rooftops.

When the summertime temperature was 95° Fahrenheit ( 35° Celsius ) outside, the temperature in the stale air of the inner rooms of the tenement was 115° Fahrenheit (45° Celsius), and this killed our babies. Family members watched helplessly as an infant gasped for air. Determined moms would carry infants on daybreak walks, hoping to make a cooling wind. It was common to take "wind excursions" on land or by boat. New York City hired fifty "summer doctors" who visited 16,000 families per year to give advice on how to cool babies. About 10% of families could not afford a funeral so their deceased, loved ones were buried for free in the city cemetery. Little coffins were stacked high and taken to the cemetery where infants were buried in groups of twelve. After sleeping shoulder to shoulder in the tenement rooms, dead adults were stacked three high and shoulder to shoulder in long trenches at the free cemetery.

Each week, a typical family might earn \$6 but pay \$2 for rent and pay about \$1 for bread, \$1 for milk, \$0.30 for butter, and \$1 for eight pounds of meat. They also bought coffee, potatoes, and pickles. Cheap milk was watered down and sometimes had contaminants that killed children. When this occurred, the manufacturer paid a fine of \$150 to the Sanitation Department but not to the surviving family members.

Riis accompanied a doctor who visited the tenement home of a man no longer able to work due to lead poisoning received on the job. The mother and one child had a contagious eye disease that had gone untreated. The family lived on \$2 per week and a few loaves of bread plus a piece of corned beef sent to them on Saturdays by a priest and nuns. The family watched the infant child die of starvation. When the departing doctor gave money to the family for food, the parents bought ginger ale meant to ease the suffering of the infant who, sadly, died that night.

While making a house call in 1849, one Boston doctor found thirty-nine persons living in a flooded cellar. The patient was lying on a plank placed between two stools, and there was a dead infant sailing around the room in its coffin.

One man worked in the sewers until the poisonous gases ruined his health, decreased his abilities, and caused him to lose his job. He then fell into an insane depression.

Korten reports that in the year 1890, out of about 10 million employees there were 35,000 accidental deaths on the job. Between the years 1855 and 1907, individual states passed [Employer Liability Acts](#) involving injuries on the job. (These evolved from medieval [tort laws](#).) An injured worker could sue an employer for negligence and demand compensation. Beginning in the year 1902, states created [Worker's Compensation](#) insurance plans that employers could purchase. The insurance would more-readily but partially compensate injured workers if they agreed not to sue in court for negligence and full payment. In 1884, the Bureau of Labor was [created](#) in the Department of Interior. In the year 2015, this bureau reported that about 3% of U.S. workers were [injured](#) and [5,000 persons](#)

[died](#) on the job, which is still a death-rate of 35,000 per ten-million workers. (The bureau also describes the U.S. [workforce of the year 1915](#).) In 1970, the [Occupational Safety and Health Act](#) (OSHA) was created to improve the safety of workers.

In the clothing manufacturing industry, the small-scale employer, who Foster described as the “sweat shop operator,” hired a handful of employees to fill an order for a few hundred to a few thousand items. The item might be a shirt but not its buttons or holes, or it might be just the buttons and holes, or maybe the entire shirt. The sweat-shop operator might rent a room or two, or a hallway, in a tenement building, own a handful of sewing machines, rent two others, and sometimes make 50% profit on a clothing order. A husband and wife team might earn more money by also sewing along with their employees and obtain a profit of \$30 per month.

The hired family might take cloth home to work in the tenement room where they lived. The room might be ankle-deep in cloth debris. Every family member over the age of ten or so would work twelve to sixteen hours per day in the home, seven days per week. This did not leave time for parents to learn English or for children to attend school. It typically took one or two generations for immigrants to learn English. New York City contained a mix of languages that changed with every city block.

By the year 1890, [child-labor laws](#) had been passed to outlaw employers from hiring children under age sixteen to work in a factory unless the child was literate, and no children under age fourteen could be hired, but New York City had just one labor-law inspector for all of its factories. Child workers were told to lie that they were over age fourteen. No proof of age yet existed. The child-labor laws applied only to the factory, not to the tenement sweat shop or wage-work done in the home. Laws also limited the factory work-day to ten hours, which had to end by 9 pm, and required a 45-minute dinner break. While [Prussia](#) and other European nations began passing comprehensive [child-labor laws](#) in the year 1839, the U.S. did not do this until 1939.

Riis says that the most evil landlord/sweat-shop operator employed the same people who rented his tenement rooms. He paid his tenant-employees just barely enough to keep them from revolting, told them that they will lose both their job and their home if they complain, and sometimes would evict numerous such families en masse. Some decades later, laws would be made that forbid eviction without due cause. Riis says that this landlord did not let his humanity curtail his profit. The renter/employees were tied to the building almost as peasant serfs were tied to the village landlord. By the way, some immigrants arrived from Eastern Europe, which had just recently ended [serfdom](#) around the year 1850. A brand new invention was to require new renters to pay a so-called “key deposit” equal to half a month’s rent. A key was needed to enter a flat but building entrances had no locks.

A cloak-maker was paid \$0.75 per cloak, which retailed for \$8. One cloak-maker bragged of earning \$12 per week by working seven days a week until midnight. One bowery firm sold 15,000 suits per year at \$1.95 each and at a cost of \$1.13 each. A good profit was 15% of gross sales, but one firm printed and sold lottery tickets that had no drawings or winners.

A girl might be paid \$2 per week in wages to be a cashier, ringing up \$1100 per week in sales. Her boss would fine her \$0.60 for little mistakes, such as “sitting down” in a chair that a recent law required to be placed there for her use. The owner of the company and the supervisor might split \$3000 per year in such fines.

One particular husband and wife team made cigars in their tenement room. The husband had

been a blacksmith back in the old country but could not find that type of work because he did not speak English. They made 3000 cigars per week, worked from dawn to dusk, and were paid \$11.25 for those 3000 cigars. They could work 17 hours per day in summer light but only 12 hours per day during winter. Tobacco workers soon became used to the odor released by this fermented plant. A law was made to ban cigar-making from tenement rooms, but the courts stuck down that law as unconstitutional. By the way, here is a list of chemicals added to today's cigarettes.

Smiths and masons and such who moved from the slavery of the South were not allowed to work in those industries within New York City. Riis was surprised that white oppression still occurred two generations after the end of the Civil War. Former slaves were allowed to rent flats in only the worst tenements and only under the condition that no building repairs would ever be made. The boundaries between black and white neighborhoods were lined with so-called black-and-tans, which were bars that had a mixed crowd. [Jim Lowe](#) combined shuffle with Irish dance to create tap dance. Former slaves held contests for aristocratic walks. The prize of a sugared and frosted cake was given to the winner of these so-called [cake-walks](#). Former slaves enjoyed owning pianos and went on to invent cake-walk music, then ragtime, and then jazz and blues music. The character of human beings is such that we say, "Oppress us, and we will make music." [Lewis Armstrong](#) is the greatest American because of the revolution that he created in music, including the solo. [Dr. Martin Luther King](#) is a great hero because he fought injustice. George Washington had only to fight armies.

In the first few decades of society-wide capitalism in the U.S., where we switched from working the family farm to working in industry, family income was so low that children were abandoned in disturbing numbers. This terrible characteristic of our economic system required the formation of the [Children's Aid Society](#) in 1853, just 33 years after the Lowell girls began working in New England factories. By 1890, the Children's Aid Society had sheltered some 300,000 outcast, homeless, or orphaned children, and sent 70,000 children to adopted homes in the West. This Society still exists today "to give needy children a family life." [The Society for the Prevention of Cruelty to Children](#) was also founded in 1853, and still exists today. Between the years 1875 and 1890, it helped 14,000 children per year and helped to convict 1,600 adults per year of abuse or neglect. Children grew up in homes of wearisome toil. In the year 1890, there were [1.5 million persons](#) in New York City, including 45,000 infants (calculated as 0.03% of population), 160,000 children under age five, and 450,000 children under age fifteen including 15,000 who lived in the asylums and institutions of New York City. These two societies and the asylum helped 38,000 children per year, where help ranged from a bed for the night to a hospital room or an adopted family. This number is 8% as large as the 450,000 total number of New York City children. Why did our children need help? Because the wages of their parents were too low. Wages were so low that tenement renters would burn wooden structures for heat, and would remove and sell metal fixtures—as still occurs today.

The official U.S. estimate in 1890 counted 360,000 poor out of 1.5 million persons in New York City. Riis titled his book "The other half." Wages were so low that 10% of New Yorker's had to ask for assistance from charities. One doctor said that in nine years of practice, he knew only one tenement family who had obtained permanent improvement. One woman explained that "We get so down-hearted that we just have to go where something is going on or we just can't stand it." Riis said that paupers were bankrupt in hope, money, courage, and purpose. A person who has no hope might see suicide as the only way to end the constant, daily misery. Persons who attempted suicide



were sent to the insane asylum. There, they were chained together while taken on a daily exercise walk. In 1889, some 1400 persons were sent to the insane asylum.

Older persons were no longer nimble enough to keep jobs, and might die homeless in the streets. Others died in an [Almshouse](#), which is an old folks home that was run by a charity. A city or county might operate a [poorhouse](#), where elderly and disabled persons would live and work. In the year 1854, U.S. President Pierce vetoed the [The Bill for the Benefit of the Indigent Insane](#) because he felt that this was a responsibility of the states. In 1935, the [U.S. Social Security Act](#) began the process that would lead to a retirement system for workers so that they would no longer starve and die in the street after becoming too old to work.

One in four babies died before reaching age one. Three companies sold “baby” insurance. They charged from five cents to twenty-five cents (\$0.05 to \$0.25) per week and paid \$17 if the baby died.

There were thousands of homeless children who huddled together to sleep in the warmth of exhaust vents, sand boxes, in the pipes of old boilers, or just inside the doorway of any unlocked building. Beat-cops shooed them on as they encountered them. In the year 1889, the Children’s Aid society housed 12,000 boys and girls by operating five lodges for boys and one for girls. The Society also operated twenty-one industrial schools, two reading rooms, a cottage for disabled girls, a brush factory that employed disabled boys, and schools for typing, dressmaking, and laundry. Some 4,000 children attended these each day. The homeless child had a slim chance of becoming an artisan.

Some criminal gangs included children. A gang might work one street corner, preferring to rob drunk or lost people. Gangs might ask a shopkeeper for “donations,” and do damage if none was given. Relations began to form between gangs and created what was referred to as a “chain gang.” A couple decades later, gangs sold damage insurance in the “protection racket.”

Children were put out on the street by parents who could no longer afford them. One child was found with a note that read “Take care of Johnny. For God’s sake, I can not.” Throughout history, children have been abandoned at the doorsteps of the wealthy by parents who hoped that the life of their child would be better in his or her new home. On each summer night in New York City, a few children were abandoned at doorsteps but nearly all of them were taken straight to the police and then on to an asylum. One boy, who was dressed in a single rag began singing when he got his first bed to sleep in and was given breakfast "of a whole egg and three slices of bread." He hadn’t gone to school, lived off bread crusts, and had been sleeping in a pile of hay on a bar-room floor. Abandoned infants were always taken to a hospital but 80% to 90% of them soon died because they were too far gone to recover. In the year 1889, seventy-two dead babies were picked up in the streets of New York City, and another 448 abandoned children died in New York City hospitals.

[The Foundling Asylum of the Sisters of Charity](#) opened in 1869 (and still exists today) because, they said, “All children deserve the right to grow up in a loving and stable environment.” Through a 21-year period, the sisters took in 1000 babies. The asylum had left a cradle outside its doors, but it filled up so fast that it was moved just inside the door. No questions were asked when a mother dropped off her child, but the sisters did ask her to breast-feed her own baby and one other before leaving. In the year 1889, 460 mothers nursed before leaving.

Some 1100 tenement mothers were paid by institutions to nurse abandoned babies, and to love and raise them to age four or five when they would be tearfully adopted by a new family out west. To receive monthly pay, these temporary mothers were required to bring in the child on the

first Wednesday of each month. There was a monthly spectacle of caring mothers amidst the new and inhuman economic system that demonstrably cared for profit over the well-being of children. Profit was increased by paying wages below the level needed for subsistence.

Riis said that the tenement renter labored to make the most of scant opportunity, working throughout a lifetime just for food, rent, and clothing and had no time for heart or mind. Riis asked if it was a life worth living, but we can still be certain that each family shared loving kindness for a few hours per day.

Low wages meant great profit for a few business persons but at the price of life-long misery for too many children and families. Low wages created a society that few persons desired. The increasingly harsh economic life for some of us meant an increasing amount of crime in the city, mostly in the low-wage areas. In response, the less-affected businesses and higher-wage areas called for the creation of a police force. Unfortunately, we came up with the unimaginative solution of using police forces to fight low wages, poor living conditions, and dismal hopes for the future. Our mutual efforts can do better for all of us. As businesses saved on wages, taxes had to be collected from all citizens to create their first-ever police force and to expand court systems. In 1889, the citizens of New York City paid \$7 million on its police force, \$2.3 million on its asylums, and \$0.4 million on its courts. This amounted to \$9 per adult citizen per year.

Compared to the rest of New York City residents, people living in Five Points got work in unskilled labor, and fewer owned their own business. Females got work sewing with needles by hand rather than being household servants.

The Five Points area had some manufacturing that paid better wages but the owners of these businesses would not hire residents of Five Points, nor recent immigrants. Signs would actually say “No Irish need apply.” Day laborers worked in construction digging foundations and sewer lines, carried brick and stone, laid cobblestone streets, and loaded and unloaded hundreds of ships per week. It was a hand-made world. Even the Brooklyn Bridge was built by hand between the years 1869 and 1883. Day laborers typically got work four days per week, less in winter. No work was available for day laborers when the weather was too cold or rainy. People who worked sewing with needles by hand could find only 25% as much work during the winter, so parents might resort to sending their children to beg in the streets.

Day laborers suffered frequent injuries as loads fell, unfinished walls fell, and people fell from heights. Injured persons, sick persons, and older persons had no income. About 10% of workers purchased insurance from the Laborer’s Union Benevolent Association, which charged \$2 to join plus twelve cents per month and paid \$2 per week when sick or \$15 for a burial. We would have to wait another fifty years before governmental systems would be created to regulate work-related injury, sick leave, and social security. Typically, work was available only 200 days per year for day laborers.

Throughout the last 5,000 years of civilization, 90% of us worked on our own farmland. Only 10% of us were artisans and very few of us worked for wages in shops, so unemployment could involve very few of us. In the first few decades after the invention of the factory, it was a new thing to have half of the population working for wages and becoming unemployed with the frequent downturns of the economy.

It was a new thing to have a city full of wage earners. During the frequent recessions, day laborers obtained work only one or two days per week. Many day laborers and female servants



became destitute street beggars. Soup kitchen lines would double in length. One mission fed 900 families per day. Clothing sales, production, and employment would drop to nearly nothing. Each morning, unemployed mothers would be heard in shops begging for work and offering to receive “one-half or one-quarter pay.” People who worked in the sewing industry had no financial reserves and were the first to be penniless. Anbinder says that the laborer’s life was hard, dangerous, and financially precarious. Some immigrants would return to their home country where they could grow their own food and gather burnable peat to keep warm.

During the recession of 1837, many of the urban unemployed came close to starving. During this recession, eight states defaulted on loans from European banks. [Horace Greeley](#) later advised the unemployed to “Go west.” This recession was caused by the overproduction that caused many prices to drop by as much as 50% but also by the flood of bank-issued paper money. The doubling of the price of flour in 1837 resulted in New Yorkers looting flour stores, as described in the article *The 1837 Flour Riot of New York City* in Joel Tyler Headley’s *Great Riots of New York, 1712-1873*.

We began to see the relations between prices, inventory levels, money supplies, inflation rates, unemployment levels, consumer spending, and the quality of life of the workforce. These things are often discussed in today’s daily news. Economic relationships and cycles quickly became more complicated and pronounced as industrial production, employment, and consumer purchases began to involve a larger portion of the population. Economic slowdowns resulted in workers losing their jobs, but then those unemployed persons had no money to purchase goods, and this led to further reductions in factory orders.

Newspapers described lives of misery, degradation, and wretchedness that “lasted until a person starved, moved to an asylum, or died.” One widow sewed twelve hours per day to earn \$1 per week, took in three boarders to pay most of her rent, slept on the floor with her children, and sometime had only bread and molasses to eat—and a piece of meat on Sundays. Author Solon Robinson sold 50,000 copies of a book describing the lives of poor, young New Yorkers. People cared about children and donated to charities which existed to make up for low wages paid by inhuman employers of parents. Few residents of Five Points ever managed to earn enough money to open their own business.

Sewing and shoe-making paid little for very hard work. Employers took advantage of newly arriving immigrants who had to accept any work they could find. The employer might charge a deposit equal to one week’s wage on cloth that his employees took to work in their tenement home, and then made some threat of keeping the deposit. Half of Five Points women worked in the sewing industries. In the year 1855, immigrants accounted for 96% of New York City’s 12,600 tailors and 6,700 shoe makers, and 90% of glazers, who walked through the streets shouting “windows put in.”

One quarter of Five Points women worked as low-wage, household servants in a more-wealthy home, as we saw occurred in medieval Hangzhou, China. Servants were on call twenty-four hours per day, and were given a day off only on every other Sunday. Servants were given a bed in an attic or closet and were paid as little as were the sweat-shop sewers but received room and board, though some commuted to work. Many employers treated servant girls terribly, demanding “respect,” obedience, and humility. A servant might be fired for being sick.

Peddlers were on every street and street corner selling anything and everything, including buttons, thread, fiddle strings, suspenders, pocket books, jewelry, buttermilk, straw for bedding, fruit, fish, and clams and such. Some peddlers bought and sold the clothing of recently deceased persons.

Streets were everywhere filled with shouts of “hot corn” by girls peddling during the season. Girls also carried brooms around to sweep dirt or snow away from streets in front of pedestrians who might tip them. A girl might receive \$2 per day in bad weather but only twenty-five cents during good weather. Girls also peddled flowers. If a grown woman worked as a peddler she would receive angry glares.

Boys worked as shoe shiners, who were called boot blackers. Boys also sold newspapers along the streets. They paid up-front for the papers from the printer or from a wholesaler and could not return unsold papers, so they quickly scanned the day’s headlines to estimate sales. Illiterate boys asked a friend to read the headlines. Headlines about disasters sold the most papers. Streets were filled with sound as boys shouted headlines. Boys would also call out the news that he thought might interest the pedestrian who was walking past. (Today’s city streets contain only the sounds of automobile engines and horns.) Each day, they sold a morning newspaper and then an afternoon newspaper. Boys earned one-quarter dollar on slow days but as much as \$3 on days of the most dramatic news. Boys also peddled matches.

Most boys and girls who were peddlers lived at home, but some were homeless. The children of single-mothers were likely to be street peddlers.

By the year 1890, the population of New York City was 1.5 million persons, and 1.2 million of them were living in 37,000 tenements.

Official estimates in 1892 numbered the poor of New York City at 360,000 persons out of 1.5 million persons, which was one-quarter of the population, but in the title of his book Riis estimated that half of us had too little work and wages. Half of us were paid little to sew fancy clothes for the half of us who were paid enough to buy them. Higher wages for the sewers would have doubled the sales of clothing and doubled the industry profits. Every big city today that has too little work and wages has streets filled with children peddling any and everything and working for pennies.

Riis thought that the tenement system had become a permanent aspect of life. Where today we would call for government to pass and enforce laws, Riis said that the reputation of New York City required decent housing for all as a matter of duty. It didn’t occur to him that government could regulate wages or limit the cruelty of the economic system, but he thought that tenement life would improve if laws would make it unprofitable to operate overcrowded and dilapidated tenements. He stated that some new buildings in the upscale side of town contained single-family dwellings of two to four rooms, which were being called apartments, that had windows, fresh air, laundry lines, and owners who settled for 5% in profit. Riis concluded that, to improve tenement life, the philanthropy of the assistance societies was needed and that the tenement owner should settle for a profit of 5%.

Such was the condition of capitalism just three generations after the Lowell girls began working in the new factories of New England. Life was very different for the wage-earner than for the village farmer of New England.

Just fifty years before Riis described tenement life in 1890, rich and poor homes were distinguished merely by the number of candles they were lit at night. By 1850, city residents were confronted by an increased contrast between wealthy and poor persons. The average Boston merchant left \$5,000 in land and property to heirs when wages were \$183 per year. Poverty, disease, and illiteracy became more concentrated and apparent, and an increasing number of persons were enduring poor living conditions.

As the portion of us who became wage-earners rather than farmers continued to grow, there were discussions back in the farming villages about some of us factory owners taking unfair advantage of laborers by decreasing wages. As early as 1827, some of us were publicly condemning the greed of some business persons. In his book *Industrializing America*, Walter Liche says that this caused some of us to question the very foundations of capitalism. Such injustice has occurred since the first cities of Ancient Mesopotamia but it had never before involved such a large portion of the population being employed as wage-earners.

New York City had a riot during the elections of 1834 as thousands of men gathered and conducted fist-fights “to protect the voting stations.” Beginning at a church meeting in 1835, fist-fights between anti-slavery and pro-slavery persons grew into a riot of a few thousand persons. Furniture was taken from specific homes, piled up, and burned. Rocks were thrown, buildings were burned, and people were injured. That year, a riot also occurred between new immigrants and descendants of immigrants. In 1849, an absurd riot occurred over a visiting British actor. During the riot, the military shot into the crowd, killing twenty-two and wounding thirty. In 1857, eight persons were killed and thirty wounded in a fight between two gangs. In an economic downturn that autumn, 10,000 persons lost their job and threatened to loot when they learned that companies were hoarding grain and cash. Many soup houses were opened. To reduce the troubles, the city hired many to work on Central Park and other public works. In 1863, some Americans were shocked that their government was drafting people into the military because this reminded them of military conscriptions by despotic, European kings. Even worse, the wealthy could buy their way out of being drafted. A city-wide and vicious riot lasted five days and killed 1200 persons. In 1870 and 1871, riots occurred between Catholics and Protestants that killed 38 persons and wounded 91 others. Once again, police had shot into the crowds.

By the year 1899, the gap between rich and poor had grown such that the top 1% of our population, which was 125,000 families, owned 51% of our nation's assets and had an average worth of \$260,000, while the 5.5 million families of the lower 44%, including most village farmers and all tenement renters, owned just 1.2% of all wealth and had an average of \$150 in property.

The J.P. Morgan interests alone held 341 directorships in 112 corporations with a total capitalization of twenty-two billion dollars, which was three times the assessed value of all real and personal property in New England.

The widest gap in wealth occurred in 1929 as the wealthiest 1% owned 59% of the property. That value decreased to 30% from the 1940s through 1980s, but then rose again to 40% in 2012 (Saez Chicago lecture: [gen-studies-last-day/top-1-percent-wealth-1913-2012.jpg](#)). In 2015, the top 10% of us receive half our total income (see, Saez) while the lower 20% receive just 3%. What is the appropriate division of wages and wealth among a population? Who is to make these important decisions? All of us together.

In his article *The New Politics* within the book *1915, The Cultural Moment*, John Buenker explains that within a few decades of the arrival of the Industrial Revolution, there was a general resentment among the population of the U.S. to the injustice of the readily visible and widening gap in wealth between poor and rich. The social legislation that occurred around the year 1900 was one response to growing inequality. This required the government to take on new responsibilities for the first time ever. Labor strikes were another response.

Labor disputes became murderous little wars over stable wages and profits

Beginning in the 1880s there were a large number of violent labor strikes, many of which resulted in the deaths of workers and militia. During the 1890s, there were 1,300 strikes per year, and these involved up to 3% of the entire workforce, which was 500,000 persons, and up to 30,000 businesses.

During the years 1877 through 1900, troops were used 500 times to quell labor unrest, and this showed that our corporate leaders had access to government police and were determined to suppress strikes at all costs.

It is hard to imagine that some people are killed over their own job and wage. It is hard to imagine that some of us enrich ourselves by stealing the very lives, or at least the well-being, of other human beings, but it is the demonstrated nature of some business owners and executives. Recent [reports](#) show that some business owners and executives have little empathy for other human beings, finding that 1% of the general population are psychopaths while 3% to 20% of executives are psychopaths.

When one business leader, John, tries to increase profits by decreasing wages then all other business owners should complain that this will reduce their sales and profits because John's employees will have less money to spend.

John tells his employees that if they give him sixty-six hours per week, he'll allow them four hours per day for their families, and in exchange he'll pay them almost enough to pay rent and buy food and cause 1% of them to abandon half their children. Rather than just being comfortable, John can become very rich through the extra and unnecessary misery of employees. Rather than donate my lifetime to enrich John, some of us employees prefer the family life of gatherer-hunters, Canela, and New England farmers.

Most strikes lasted fifteen to thirty days and began after announced changes in the rules regarding work assignments, discipline, or layoffs. Workers would generally strike because they felt that their livelihoods were being threatened by the arbitrary decisions of bosses. Strikes occurred as owner practices exceeded the wage-earner's endurance for precarious lives and uncertain futures. About half the strikes were over wages, others involved calls for shorter hours, controls on hiring, or union recognition. About 10% were sympathy strikes.

The workers won in 47% of strikes, lost in 39%, and compromised 14% of the time. In the end, these strikes resulted in an overall increase in wages. The strikes were held to decide whether the security of our corporate owners and operators through sufficiently healthy profits was more important than the security of workers' lives through regularly occurring paychecks that were larger than the minimal amount needed to just barely cover rent and to buy bread.

Licht says that the first generation of us workers to encounter the large corporation were challenging the growing political and economic power of concentrated capital and its threat to democracy. Workers fought injustice when they had believed it to have crossed a line. This was the reaction of the U.S. labor force to the economic injustice that accompanied the development of mass business.

Striking workers had the support of community members, who would take to the streets to show their support, and arrest records show that the supporters came from all walks of life. The targets of the community uprisings were the property of the corporation. Other local workers would often strike in sympathy. Local shopkeepers often extended credit to strikers, and local newspapers

often blasted the governmental officials for being unfair. Since local militias frequently sided with strikers, the local political authorities often had to request more-distant militia, whose arrival might cause an escalation of violence. The strikes were a grass-roots phenomenon prompted by a resentment of economic injustices and anger about hard times and the emergence of the giant and uncontrollable corporation. Organized labor played a smaller role in the upheaval because half the strikes did not involve a formal union.

Just 2% of the strikes involved railroads, while 10% involved coal workers, another 10% involved clothing workers, and 26% involved construction workers.

As the price of products rose during the 1860s, the number of union members increased because workers wanted corresponding increases in wages. In 1886, [Samuel Gompers](#) founded the American Federation of Labor and became the chief spokesman for labor until he died in 1924. Licht says that Gompers challenged the capitalists head-on while [Eugene Victor Debs](#) challenged the capitalistic system.

There were many protests to switch from twelve- to [eight-hour workdays](#). In one such protest, on May 1, 1886, about 200,000 persons walked off the job in both large and small towns across the country. Workers said that the shorter workday would give a well-earned rest but also time to be human, to pursue education, and to fulfill civic duty. For example, some said that they could not vote because they had neither time nor energy after finishing work. By the way, you might like to examine [Oregon's vote-by-mail system](#) which produces an 80% voter turn out rather than the 55% national average.

Licht states that the railroad worker strike of 1877 began a few weeks after the executives of each of the major railroads simultaneously announced a 10% pay cut. Many persons thought this was an example of the worst of our executive's backroom deals. In Martinsburg, West Virginia on Monday, July 16, 1877, the railroad workers of the B&O Railroad refused to handle the trains or even to let them pass through town. The president of the B&O Railroad persuaded the governor of West Virginia to send in the state militia. The ease with which the corporate executive gained access to the "levers of power," including the governor's agreement to use the threat of deadly force, made many workers wonder if the U.S. was a nation that stood for the corporate executive's profits or for the general well-being of all of its people. How would you handle this situation? The troops who first arrived in Martinsburg were on the side of the workers but a fight did erupt and a striking worker was killed. This ignited a nationwide strike that spread to workers of other railroad companies and other businesses, too. The entire B&O Railroad was shut down. Protesters then gathered at the B&O office in Baltimore. In the resulting riot, ten of us protesters were killed, sixteen were injured, and 250 were arrested in fights with police. The Governor of Maryland asked the President of the United States to send federal forces to help restore order in what was the first use of federal forces to suppress labor unrest.

Strikers in Pittsburgh were blocking all trains so the local militia was called in. When they refused to take up their post, the militia from more distant cities were summoned. In what the strikers viewed to be an invasion. As a train load of those troops arrived, they opened fire on the blocking strikers, killing twenty and wounding seventy. Word of this massacre brought the entire town into the streets to attack the militia, loot stores, and set fire to nearly all railroad property. After three days of fighting, forty persons were killed and 104 locomotives and 2,153 railroad cars were destroyed. Few railroad buildings were left standing.

At Cyrus McCormick's reaper plant in Chicago, a rally was broken up by police who killed four persons. That night 2,500 persons met in Chicago's Haymarket Square to protest these killings. A bomb exploded in the midst of us police killing eight, so we in turn shot eight persons dead and wounded fifty others. This battle reverberated throughout the country.

Three days of rioting in Chicago left eighteen persons dead. The railroad strike spread into a general strike as many workers from many trades struck in sympathy. Some federal troops were actually brought in from suppressing Native Americans to suppress the Chicago labor dispute.

This strike involved other towns, including San Francisco and St. Louis. The strike lasted for two weeks and halted much of the nation's commerce. This strike cost the railroads some \$30 million and resulted in lost wages for workers. Many workers lost their job as they returned to work. In the end, thousands were jailed, hundreds were wounded, and fifty persons lost their life because the owners and executives of the nation's major railroads simultaneously announcing a 10% pay cut for railroad workers in an effort to increase the profit of the their corporations.

When the steelworkers of Homestead, Pennsylvania went on strike in 1892, the company's owners and executives instructed the factory guards to build fortifications. They also hired three hundred extra guards; as these new guards first arrived, they were attacked by striking workers. Nine workers and seven guards were killed. The state militia arrived to restore order and to enable the managers to hire non-union replacement workers. The union strike was broken after three months. Full production was again resumed but with fewer union workers. The people of Homestead were bitter for decades.

George Pullman had a manufacturing plant, located in Chicago, in which sleeping and dinning cars were built for sale to railroad companies. He built lodgings for his employees south of town but charged high rent. Licht describes how in June 1894 Pullman announced a reduction in wages in response to the 1893 recession. When the announcement caused his employees to strike, he in turn closed down the plant and threatened to evict his lodgers. This strike quickly spread to once again shut down the nation's railroad system. The strike ended when federal troops killed twenty-five persons and wounded sixty others. Pullman then reopened his plant with new employees.

Throughout these wage wars, some business owners and executives called for the police and military to shoot to kill. One executive said that "the strikers should be given a rifle diet for a few days and see how they like that kind of bread." To these business persons, the month's profit was more important than the lives and misery of other non-persons who dared to become inconvenient in fighting the injustice.

[Thomas Alexander Scott](#) of the Pennsylvania Railroad, described as one of the first [robber barons](#), suggested that "the strikers should be given a rifle diet for a few days and see how they like that kind of bread."

This clash between workers and business owners came within the first sixty years of our shift from being family farmers to wage-earning consumers. When an employer uses power to mistreat workers, an individual worker can hardly fight back, so workers organize into unions to balance the power.

In the 1890s, only 10% of workers were members of a labor union. In the 1950s, one-third of workers were union members. To avoid the balance of power between unionized workers and business owners, many owners and their political assistants continue to draft laws today that attempt to restrict union membership—even for government employees. In 2016, only 6% of private-sector

workers are union members, but one-third of U.S. government employees still belong to a union. The national wage peaked in 1973 and has decreased 15% since then. As union membership and wages decrease, corporate profits increase, and this is the income of the wealthiest of us.

Workers struggled worldwide for 100 years, which is four generations, to obtain the forty-hour work week. It did not become law in the U.S. until 1937, though this law affected only 20% of workers, initially. Without unions, employers might still require employees to work 66 hours per week. By the way, workers in France today have a 35-hour work week so that they have more time to spend raising children, which is the priority of life for human beings and for our mutual society and civilization—but not for the robber barons.

Without unions, employers might still require employees to work 66 hours per week instead of today's 40 hours per week. By the way, workers in France today have a 35-hour work week so that they have more time to spend raising children, which is the priority of life for human beings.

### Wealthy business leaders

Licht explains that many of those of us having legendary wealth often got that way "by never being jailed for pseudo legal tactics and by never considering the ill effects of our rapacious activities." For example, Jay Gould once tried to gain control of the entire gold supply of the nation through massive buying and by spreading rumors that he was acting on behalf of the U.S. government. He was never jailed for this action though it jeopardized the nation's economy. He also illegally flooded the market with Erie Railroad stock and was forced to flee the state of New York. Gould managed to bribe a New Jersey legislator into passing a new law allowing him to hold the Erie stock within New Jersey.

Rockefeller's Standard Oil Company began in Cleveland, Ohio. He grew to dominate his market by buying out as many competitors as possible, including fifty companies in Cleveland and eighty in Pittsburgh during the years 1865 to 1868 alone. Standard Oil bought crude oil and then refined it into kerosene to sell to customers who burned it for home-lighting.

The owners of oil processing plants were already dumping waste products such as gasoline into nearby streams. No other human beings wanted their water supply to be polluted in this way but the owner of the oil plant saved a few pennies. Within 100 years, polluted rivers were actually catching on fire. The Cuyahoga River in Cleveland caught on fire thirteen times. Starting in the 1960s, government passed laws, raised money, fined polluters, and has spent the last fifty years cleaning up the polluted rivers. Scientists and engineers would be thrilled to build factories, homes, and vehicles that emit nothing into the environment and do not gamble with global death. The owners of manufacturing plants still prefer to save pennies. For example, automobiles need only to be equipped with exhaust tanks.

By 1878, Rockefeller held 80% of the nation's refineries within a single "holding company" whose purpose was to act as a cooperating group in purchases and sales. The holding group would tell a small, crude-oil supplier that they will purchase 80% of its crude oil but at a reduced price. The next year they would again offer to purchase 80% of that supplier's crude oil but at an even lower price than the previous year. This holding company was so large that it could forcibly lower the price at which it purchased crude oil, forcibly lower the price it paid the railroads to transport its refined oil to the market, and forcibly raise the price that customers paid, leaving an increased profit for the owners and shareholders.



Legally, this Ohio company couldn't own the stocks of other companies, especially those in other states, or even tell those other companies what to do. In 1890, the Sherman Anti-Trust Law was passed to outlaw corporate combinations, such as Rockefeller's holding company, that monopolized and restrained trade. Licht explains that in response, Rockefeller dissolved the holding company but reorganized into several companies chartered in different states but with interlocking directorships and a key set of executives who maintained control over the whole. In 1899, Rockefeller managed to get a law passed in New Jersey allowing him to control all the companies from within a single, New Jersey holding company. This is an early example of the way in which multi-regional corporations outmaneuver local government's legislative attempts to keep them from unfairly controlling their market. Rockefeller also learned to use philanthropy for public relations, but in 1911, the United States Supreme Court [ruled](#) that Standard Oil was an illegal monopoly designed to reduce competition.

Sometimes the owners of large companies who each made the same product, would agree on territories in which each had sole right to market that product. With no competition in the territory, each owner could raise prices.

While business leaders were talking of laissez-faire, saying that government should leave them to "act on their own to compete," they were instead forming secret agreements to reduce competition, divide territories, and raise prices to obtain maximum profit for themselves. We often hear of capitalism being the competition of the free market but competition is the main thing that business hopes to avoid so that prices and profits can be raised.

Already by the year 1900, large companies operated across state lines and so could not be governed by a single state. Individual state governments left things in limbo, and no federal laws were passed to control the collusive actions of the owners of some companies. Big business has always been decades ahead of our government's attempts to govern them. Today, Big Business is global while government is not at all.

### Industrialization, urbanization, and commercialization

Licht explains that the process was more complex than the common phrase "industrialization and urbanization" can describe. We have seen that the U.S. industrialized through a slow and geographically uneven process. The nation was becoming more urban while a commercial market emerged in which everything began to be bought and sold in search of profit. The nation contained a mixture of wage laborers, family farms, commercial farms, and craft shops. There were industrial towns with large factories mass producing a very narrow range of items at a low cost, and there were also diverse and specialized shops in the large cities that produced smaller quantities of custom, handmade items while being careful not to make expensive versions of the lowcost items that the factories were making. There were also mill villages using the outwork system in which family labor was done in the home, and there were one-industry towns.

Licht also explains that the increased market activity pulled the change to industrialization and urbanization: More products were made as it was found that more people were buying them. In the U.S. in 1776, 90% of us were farmers. As factory-work and industry grew the percentage of farmers dropped to 80% in 1790, 65% in 1840, 50% in 1860, 40% in 1900, and it is just 1% today. Agriculture accounted for 25% of the nation's gross national product in 1900 while today it is 2%.



(A similar but more rapid shift has occurred in the more recently industrializing nations. For example, 25% of India's GNP today consists of agricultural production.) At the same time the percentage of us who lived in urban areas increased from 10% in 1800 to 20% in 1860, and 40% in 1900, while today it is 75%. In 1860, there were just fifteen cities with a population larger than 50,000 persons, but there are about 2,000 cities in the U.S. today having a population greater than 10,000 persons. (This shows that having 20,000 nuclear bombs for only 2,000 cities can make "sense" only to our generals and political leaders.) Philadelphia's population exceeded 500,000 and New York City's had reached one million.

The industrialization in the U.S. through the years 1800 to 1850 meant that our way of life was changing from that of a mostly self-sufficient, rural farmer—with some help from our neighbors and other community members—to that of an urban, wage-earning laborer-customer. The individuals of our urban society today are not dependent on neighbors to harvest crops but are interdependent as wage-earning laborer-customers.

### Large corporations develop

The Sherman Antitrust law was enacted in 1890 to fight this practice of secret, price-fixing agreements. Antitrust meant anti price-fixing. This law left companies no choice but to switch from secret agreements to public mergers, and beginning in the year 1895 there was merger frenzy. Many large corporations were formed with the sole aim of immediate profit from the sale of stock. Our corporate leaders invented the merger as a way to reduce competition so that prices could be higher than occurs among numerous and competing proprietors.

Large corporations could be built only in those industries where standardized, mass-produced goods could be produced, where machinery could replace labor, and where economies of scale were possible. To put an economy of scale into action required capital to buy machinery. The first scalable industries were materials and chemicals, including oil, steel, copper, aluminum, chemicals, sugar, alcohol, grain, and tobacco but not clothing, shoes, lumber, leather, machine tools, or printing. These excluded industries involve customized products made in small, constantly changing batches and could not be supervised by the corporate bureaucracy—until more recently.

As farmers bought more factory-made implements, many local blacksmiths went out of business. They couldn't compete with the factories that were making cheaper, mass-produced items. Some blacksmiths moved their rural shop to the city to become machinists for the factories. Others remained in the country to become repair shops for these factory-made items. Still others became specialized in axes and such.

Before there were railroads we drove cattle from western states to market in eastern states, but cattle could lose 60% of their weight during this journey. Cattle drives were necessary because we could not ship processed meat for any distance. After railroads connected West and East, the cattle were instead shipped by railroad to be slaughtered in the East. Licht describes how Gustavus Swift moved his meat packing plant to Chicago in 1875 with bold plans to slaughter cows there while they were fat and then use cold, northern winter railroad routes to send just their meat to the East. He setup a network of eastern outlets ready to sell this meat as soon as it arrived. In 1881 he also began to fill railroad cars with ice to be able to ship year-round. He built refrigerated warehouses in the East to store the meat for a short time.

The meat-packing industry created an assembly line in which the animal carcass was moved from one employee to the next, with each person carving a specific section. Henry Ford later copied the assembly line into his auto plant.

Other food processing companies include, Philip Armour, which began a meat packing company, and John Dorrance's Campbell Soup Company. Dorrance invented a process for condensing soup and storing it in newfangled tin cans that could be stored for long periods and transported over long distances, but he had to ask people to try their first-ever canned meal.

Beginning around 1830, railroad companies were the first businesses needing to invent, through foresight and trial-and-error, a large-scale organization able to administer an extensive enterprise spread across hundreds of miles or kilometers. This is in contrast to business enterprises, since Mesopotamian times, which operated in a single building and village.

The planet's time zones were adopted to coordinate railroad schedules, and this was first done in Great Britain. Before time zones existed, every town had its own local noon when the sun was highest in the sky.

A corporation that contains thousands of employees and is spread across several states needs a functioning system that, Licht explains, must consist of a basic sales strategy, specifies detailed tasks and responsibilities for each employee, sets up layers of authority among many levels of managers in an organizational scheme, separates administration from ownership, has a production system, a cost-accounting system, and financial officers who track the internal flow of revenue, specifies company rules and regulations, personnel practices, feedback, and forecasting methods.

The yet-larger corporations that followed took what the railroads had learned about large-scale organization and adapted and expanded it to manage business on a previously nonexistent scale.

At first, steam engines obtained their power by burning wood, but coal soon expanded the use of steam engines and enabled their size to be made larger. It was soon found that coal could be processed into coke, which burns hot enough to make steel and produces methane gas that can be used for street lighting. Larger steam engines enabled larger factories to be built, which in turn allowed larger corporations to exist. Licht explains that there is a direct relationship between coal, mass industry, and bureaucratic corporations.

As corporations were growing in size, many industries continued to be family owned and operated, producing small batches of specialty goods, and were not involved in the flood of mergers that began around 1895. In 1880, the average factory in Philadelphia employed just twenty persons—only five had more than 750 employees. The typical business structure continued to be sole proprietorships and partnerships. Large scale corporations were less frequent—as they still are today. In 2017 the U.S. workforce numbered [160 million](#) persons. Half were employed by companies having more than five hundred employees and [15%](#) by businesses having fewer than twenty employees.

Corporate managers in manufacturing businesses tried to control the factory floor by defeating unions, increasing mechanization to replace expensive, skilled workers with unskilled persons, developing increasingly detailed divisions of labor, increasing supervision, adopting the standardization of parts, and using conveyor-belt production techniques. They would offer benefits to encourage allegiance and discipline, setup career ladders to promote loyalty, and consolidate resources through corporate consolidation. The mergers of the 1890s resulted in large companies that

could purchase expensive equipment, such as that used in making steel. This steel-making equipment required unskilled labor and so replaced many skilled workers, and led to lower wages, union busting attempts by the corporation, and large-scale strikes. The corporate managers also learned to influence politics and politicians in an attempt to steer away public and regulatory opposition to their existence. Many executives became as rich as only kings and queens had been.

### The role of government and courts in industrialization

What was the role of the U.S. government in the industrialization of the nation? Licht explains that its largest roles were in acquiring land through international transactions, such as the Louisiana Purchase, by taking land through war with Mexico, and in forcing native peoples onto reservations. In his book, *The Spanish Frontier in North America*, Weber explains that Spain claimed that the transaction involved the state-sized region from New Orleans to St. Louis, as shown, but the U.S. interpreted the Louisiana Purchase to be the nation-sized region from New Orleans to the Montana-Canada border. The government surveyed and then sold these public lands to individuals and corporations, but more land went to the railroads than to homesteaders. Before the Civil War of 1861, the U.S. government played a minor role in economic development. The first and second U.S. banks developed fewer industries than did private funding. Telegraphs, canals, and railroads were mostly built with private funds. Education received less funding from government than from private sources until after 1860. Governmental tariffs helped to grow just a handful of industries—steel for example.

In the year 1776, the political founders of the U.S. could not imagine that the nation would become a huge, economic machine within the next century. To limit the power of the federal government, the founders restricted it from taxing luxuries, making bills on U.S. credit, or establishing national schools or research institutions, and the founders gave states the right to grant licenses of incorporation.

The founders said that no state could place obstacles to the flow of goods, people, or money across state borders. The federal government, not individual states, was to issue copyrights and patents to encourage trade. Licht says that "the U.S. Constitution did not promote economic development, industrialization, or capitalism, it simply allowed them to occur." It was felt that if the government were allowed to act, it would just grant monopolies to favored elites as had been done by kings and queens.

What was the role of the U.S. courts in promoting or restricting industrialization? The courts were usually more sympathetic with entrepreneurs and with creditors than with private individuals. For example, the court would more often side with the mill-builder seeking access to a river rather than with the farmer who needed to irrigate a crop field. Consumers had little recourse when they found that they had purchased defective goods (such fights between manufacturers and consumers continue today). The U.S. Constitution of 1789 called for a nationally uniform bankruptcy law but none was passed until the 1860s because the courts struck down every attempt. A final law was passed in 1893. Similarly, debtor's prison was not abolished until the 1830s. Employees assumed all risk for injuries on the job—placing the value of the product above the life of a human. The courts showed that the fine print of a contract mattered more to them than did any ideas of fair practice. Since these court rulings sided with business over fairness, local communities had to pass laws for

quality product-standards and worker safety. Business leaders claimed that worker injuries were acts of god and not their fault. The debate was characterized as a fight over un-liaible businesses versus governmental intrusions. The U.S. government had to take on a new role in regulating business to require worker safety.

After a roller-coaster accident in the year 2015, one industry spokesman actually said that government safetyvregulations were not needed to ensure the safety of customers. He said that if many customers died at one park then people would stop going there and that this would eliminate any unsafe park, but he did not state who would be jailed for the murders.

Local courts were most often sympathetic to business owners and fought labor unions by considering them to be illegal attempts to restrict interstate trade. Legal protection for unions did not exist until the 1930s. In 1886, the courts ruled that since a corporation is a collection of citizens, it has all the same rights as a citizen. But the courts didn't decide that a union is a similar collection of citizens. Mills says that the supremacy of corporate economic power began with this Supreme Court decision.

The southern, agricultural states stood in the way of most of the attempts of the northern, industrial states to get the federal government to fund any expansion of northern industry. For example, southern legislators blocked the building of roads that were needed only in the north since the south had plenty of navigable rivers. But during the Civil War, the South was temporarily absent from the U.S. Congress, and this allowed the northern states to get their way in passing the 13<sup>th</sup> and 14<sup>th</sup> amendments to the Constitution, abolishing slavery, defining citizenship, due process, and equal protection, and in established the preeminence of federal over state government. When the Civil War was over, the South returned to Congress and continued to block the growth of federal government. This is an example of government being either a blending of views or a single view, as described above. Do you want to have strong national government or strong state and local government? This change in governmental power relations of state versus federal preeminence played less role in reshaping the nation than did the rise of the corporation, or the fight between labor and capital, or the changes in government that came in response to the Great Depression.

## Review of industrialization and its societal consequences

Our Industrial Revolution involved the related processes of industrialization, urbanization, commercialization, and capitalism in what Licht describes as "the expansion of the marketplace to include the buying and selling of everything." Licht explains that the market society is as old as the first farming villages. What changed with the emergence of our Industrial Revolution's factory was the "pervasiveness of the market."

Throughout the 1800s, there was much contemporary discussion about the increasing number of utensils and decorations in the home, the loss of help-exchanges among neighbors of the community, the end of live-in apprentices and helpers who were treated as family members, and the conversion of society into one of cash exchanges, cold business cycles driven by supply and demand and calculation, business persons concerned for nothing but profits, child labor, and underpaid wage-earning laborers losing control over their own lives. The new merchant-capitalists were not taking apprentices into their own home as family members through several years of training. The wage-earner was paying cash rent in one home and working in another building for cash wages.

Through the first 10,000 years of farming and civilization, most everyone was a farmer and few persons were either rich or poor. In New York City of the 1890s, after just a few decades of industrialization not yet subject to the laws that it would necessitate, one-third to one-half of us were poor enough to be hungry and 1% of us were forced to abandon our children.

In his book *The Power Elite*, sociologist C. Wright Mills explains that the growth of Big Government has been a late and reluctant response to the social consequences of our shift from farming to wage-earning and the development of Big Business.

Our initial government-of-farmers had to take on new functions as we became wage-earning customers. Through the decades, government was forced to create programs for worker's compensation, unemployment insurance, housing regulations, labor laws, consumer protection, and retirement or social security. To pay for this, Congress passed the first graduated income tax in 1894, but the U.S. Supreme Court declared this "direct tax" to be unconstitutional. [Minimum wage laws](#) did not occur in the U.S. until 1938. The economic collapse of the Great Depression resulted in an expansion of government.

Today, some of us complain about Big Business or Big Government as if the two were unrelated. If we did not have Big Business today then we would not have Big Government. In the future, will both be greatly reduced as each person has a machine that will make any other machine, including vehicles and homes, and as block-chain transactions occur between individuals without the need of a bank?

Throughout history, people [sing](#) while working— except at the factory. Industrialization has reduced communal ties among neighbors. While some corporate leaders and commercials tell us that life is about money, people still obtain happiness only from other people. We are a social species.

## The U.S. power elite

In his 1956 book *The Power Elite*, sociologist C. Wright Mills gives a description of the growth of U.S. business and government during the years 1800 to 1950. He explains that the growth of Big Government is a delayed and reluctant response to the social consequences of our shift from farming to factory work. This is an important lesson. He also describes the layers of our society. The following pages contain a summary of his book.

In the United States in the year 1776, the Founding Fathers said that a strong and independent middle class made a society of balanced classes. At that time there were several small organizations, each having equal power. (The United States never had a nobility. That is, there were never persons who held power simply because they were born into a noble family.) The political and economic aspects of society were independent of each other; today they are intricately joined.

At that time, the military establishment, economic institutions, political order, and social life shared the same group of leading persons, and the cultural, social, economic, political, and military leaders easily shifted from a top role in one of these areas to another. The more-important persons were leaders in more than one of these groups at the same time. The elite could be legislators, merchants, people of the frontier, scholars, or surveyors. Henry Cabot Lodge said that he first remembered Boston society to be based on the families that had been there the longest. Their previous generations had been educators, merchants, lawyers, legislators, and judges, and they had fought in the Revolution and helped to write the State and National Constitutions. Until 1850, the

elite were at most a loose coalition. In the early 1800s, the emergence of the factory owner broadened the economic order. There also emerged a political elite in charge of the new party system that grew with the new nation. But no small clique dominated either political or economic affairs.

After some decades, it came to be that every small town had a set of upper families who owned most of the town's property (remember that New England towns were small commercial centers rather than living centers), and these families were able to make important local decisions concerning the building of new expansion projects and such. This situation still exists today. These are the people whose faces you often see in the local newspaper. They own the paper. They own the radio station, the three important local industrial plants, and most of the commercial property along main street. They direct the banks, and their children intermarry. Big cities contain a collection of such wealthy families. An extreme example today is that just a handful of families, including the Agnelli's who own Fiat, control two-thirds of Italy's commerce.

It takes a good starting sum of money and the right circumstances to build larger amounts of money. But to obtain great wealth requires that you are born wealthy. The newly-rich are referred to as "new money." The families who make up the upper class are constantly changing but the type of person remains. They are the persons included in "social registers" listing those who are not just wealthy or of notoriety but who are truly comfortable in a ballroom and will not make other guests uncomfortable. For similar reasons, a wealthy person will pay \$1,000 for a meal or a motel room to be guaranteed that the clientele includes no riffraff, who are persons unable to pay such a fee. Mills says that today's pro-athletes and movie-stars merely form the celebrity element of our society. He also points out that the members of the Senate and the Congress usually come from the upper class and that few have been wage-earners.

As the new industries of steel, railroad, automobiles, and oil developed there occurred humongous corporations with a few persons at the top who would become very rich. Many of the very-rich became so by receiving huge gifts of the people's resources from our government. The railroad and mining industries have received more land than was given to all of the homesteaders who spread the nation westward. Our taxes have built the roads that enabled a few families to become very rich by manufacturing cars.

The United States spent a tremendous amount of money during World War II, most of which involved a small number of corporations. Two-thirds of the prime supply contracts went to a set of one hundred corporations—one-third of those contracts went to just ten of them. That is, ten corporations accounted for one-third of the war-material business. This meant that the plans for the war effort involved military and corporate leaders more than it included political leaders.

These largest corporations are administratively and politically interrelated in that they share top executives and associations. These associations organize a unity of view and translate narrow economic powers into industry-wide and class-wide powers used against labor organizations and in getting politicians to promote their interests. They also transfer their views to small business operators.

Mills finds that the corporate leaders mainly came from the most-rich not from the middle or lower class, nor from recent immigrants—as the "land of opportunity" promises. The chief executives and the very-rich are mainly the same group of persons and have a single guiding interest. The corporate leader is not the person with the knowledge or the ideas for new products. Instead leaders simply make decisions from the briefings they receive from those who do have knowledge.

When handed a 3,000 page report, a leader might say “In three sentences, just tell me what I need to know to make this decision.” (George W. Bush likes to explain that this is how he handles it.) They hire people with knowledge and ideas but do not move these people into higher corporate positions. It is a fallacy that the smart and knowledgeable always become wealthy or that the wealthy are smart and knowledgeable.

Wealth occurs in the form of money, land, buildings, and stocks. The corporate world is the organizational center of the private property system. A fraction of a percent of our businesses own most of the wealth and assets and employ most of the workers. By 1939, the top 250 corporations already owned 56% of the production facilities of the United States. Mills points out that most of the stock of the largest corporations is owned by a small number of the most wealthy of us and that this means that the profit of those corporations is simply the income of the most wealthy of us. Today, 0.5% of us own one-third of all stocks, just 10% of us own 80%. Typically, just a fraction of 1% of us own most of the voting stock and receive the majority of corporate dividends.

The corporate executives control the property that belongs to many individuals. They are the trustees for the financial interests of these individuals but no checks exist for their fairness and judgment. They never had to win the moral consent and approval of those over which they hold power. These executives are hidden behind closed doors and are not always concerned with the numerous, interrelated aspects of society—including pollution and health or unemployment, divorce, and decreased consumption—just the profit of their own business. It amounts to what they can get for themselves at the expense of others. In contrast, the state is the trustee for all aspects of society and is subject to a free electorate. When elected politicians perform poorly or do not respond to our requests then we vote them out of office. In contrast, the business executive holds no public debate of actions and does not have to campaign for election by the entire public. Some stock holders are able to vote but lots of stock are sold as nonvoting shares. When voting in political elections, it is one vote per person—giving each person an equal say. In contrast, it is not one vote per stockholder but one vote per share, giving more say to persons having more shares. In deciding whether you want a particular task to be handled by business or government, you might decide whether you want the handler to have a free hand or to have to answer to a free electorate. For example, there is now a debate to turn social security over to private business. (The U.S. social security system was our response in the 1930s to seeing our elderly poor die in the streets.)

Mergers began around the year 1895 and within just fifty years the largest two or three hundred corporations dominated the nation's economy. (Today, about 300 global corporations dominate the global economy.) The industry of the United States was growing through the production of washing machines, steel, cars, radios, telephones, stoves, and televisions and such. In each type of business, the all-out attempt at monopoly creates two or three large companies which are the end result of a series of successively larger mergers. For example, Merrill explains that 2,200 car models were made during the years 1895 to 1905, including 125 each of steam powered and electric powered cars. Within a few decades, just a handful of companies remained and these would no longer compete. (When was the last time you saw a price war among automakers or an ad that brought attention to the shortcomings and flaws of another brand of car?)

Today, each brand-new industry will have early competition that is soon followed by a series of mergers. Examples from recent decades include the initial spread and subsequent merger of cable television and internet access providers. The first managers and executives of a new industry know

not to be mentally attached or loyal to a single company but to instead look out for the interests of the industry and its coming mergers. In most every industry today, just a few corporations dominate. These few companies are not a monopoly or subject to antitrust laws but do not compete. They monitor each other's decisions. They are happy to share the industry's market because to risk further competition is to risk being the one out of three that would disappear. They set prices to be "the highest the market will bear" because that results in the largest profit percentages (maybe not the largest incomes) and the safest financial existence.

In 1996, 82% of the twenty million firms in the United States were sole proprietorships and partnerships while just 18% were corporations, but 90% of sales were done by the corporations. The nation's small business employs about half of us workers but the largest 1,000 companies in the U.S. account for over 60% of the nation's Gross National Product. The new technologies of the typewriter, telephone, rapid printing, and then the computer has enabled the bureaucracy necessary for the corporation to grow to billion dollar size.

Korten lists some of the monopolized U.S. industries of the 1990s. (Economists use the rule of thumb that if four companies control 40% of a market then it is monopolistic.) Ninety-two percent of the appliance market was controlled by the top four major appliance corporations, which include Whirlpool, General Electric, Electrolux/WCI and Maytag. The four airlines United, American, Delta, and Northwest account for 66% of passenger miles. Four computer software companies controlled 55% of software sales in 1990, and then two of these merged in 1994. In the entire world, the top five companies control about 50% of their market in the consumer durables, automotive, airline, aerospace, electronic components, electrical, electronics, steel, oil, personal computer, and media industries.

Corporations are now more than simply a business; the largest are states within states. A small company can come and go without many effects but when a giant corporation gets into trouble there can be government and military intervention on their behalf. If it occurs that the President of the United States more often relies on corporations than those corporations rely on the President, then the corporations will be in a position to make demands of the President. (This is similar to the way that King John relied more on the landed barons than they did on him, enabling them to force him to sign the Magna Carta.)

The Congress dominated the President throughout the 1800s. Then, from 1900 to 1945 Congress partially relinquished power to the President. The two-party system had become a semi-feudal structure of favors and protection. Legislators would search for a favor they could do without harming their other interests. The committee rules of the House and Senate were chosen such that their senior members held all of the power. The legislators ignored national issues and could raise local issues in only a contrived manner. They were happy to let the President insert national issues into the picture and to abdicate to the President all debate concerning emergency issues of war and society—lest a semi-organized deadlock would occur.

Recently, Congress has been making steps to restore the balance because a series of presidents have exceeded their legal power. For example, our presidents waged the Vietnam war for years without having ever received the consent of Congress, which has the sole Constitutional authority to wage war. Other abuses include the Watergate Scandal, Nixon's refusal to spend the money that Congress had budgeted, and several more Presidential wars that had no congressional approval. If power has no authority then secret manipulation becomes necessary, as occurred in



Reagan's Iran-Contra affair.

Mills warns that the number of us who are making the decisions of our businesses has decreased to the point that just a few thousand business leaders are making decisions that can affect millions of us. These decisions are being based on the motives of only the business and profit side of our civilization. These decision makers have not been democratically elected and probably will never be. Our political institutions must be increasingly thorough in governing these economic enterprises as the magnitude of the social consequences of their actions increases. When a business grows to be so large that it begins to interfere with the actions of a government then there is no longer government by the people.

Mills explains that we expect that all official decisions are in the public interest and that no single group is to dictate policy. The public of anonymous, equally-weighted individuals are to think things out for themselves and then contribute their voices to public opinion. The people are to see a problem, have discussions, make decisions, formulate views, discuss competing views, form a consensus, and then take action on the problem. Important policies should be reasoned, argued, justified, and intellectually debated. Public relations cannot replace reasoned argument. Political debate must not become repeated accusations just hoping to become accepted as truth-like advertisements. Mills emphasizes that issues and priorities should be raised and decided by the public. Too often it is only the media bosses who are raising new issues—and the number of media bosses is decreasing. Public debate is crucial to democracy. Education of the public is also crucial.

The purpose of our education system is not merely to provide job-training at public expense but to build politically knowledgeable citizens and to promote self-development and societal development. Knowledge first clarifies what civilization is and what a person is, and it then sets them free. Even if you owned and ruled the world, without knowledge you would be a pretend human. Knowledgeable persons recognize that their own personal troubles are also experienced by others and see that solutions require modifications of the structures of society so that improvement can then occur. A genuine public of thinking individuals need no master. And public education must not be politically timid. A successful school approach can be measured in terms of an increasing number of books sold per person each year and an increasing number of hours spent discussing societal issues and possible solutions to newly revealed troubles.

Mills harshly criticizes both our business and political leaders today by saying their talents are less broad than they were two hundred years ago. He says that today's upper class of business leaders has no ideology that is suitable for public use; it is culture-less. Feudal society at least had some honor—not so for the successful capitalist. If the successful are viewed as immoral then success itself will decline as a trait. Mills echoes Confucianism in stating that laws without supporting moral conventions invite crime and spur the growth of an amoral attitude. If our society treats moneymaking as a sacred endeavor then it will produce only sharp operators and shady dealers. Personal relations will be turned into public relations and a personality market that tries to convince others that you are the opposite of yourself.

Until the 1850s, the elite of culture were also the most knowledgeable and held the positions of power. One person might simultaneously serve as mayor, head the local militia, and run a large farm. Several of our first presidents had enough knowledge and talent to write the U.S. Constitution. They had knowledge of past governmental forms and of past forms of injustice. Should you vote for the presidential candidate today who is best prepared to write a constitution, as were our first

presidents? Mills compares two Congressional discussions from the years 1830 and 1947, both of which concerned Greece's fight for independence from Turkey. In 1830 the debate was knowledgeable, dignified, and eloquent while in 1947 it was a dreary garble of irrelevancies and bad history. George Washington read Voltaire and Locke but Eisenhower simply read cowboy tales and mysteries. Even worse is that today's politicians often don't know that they should be ashamed. Some are not the cultural elite they once were.

Consider the one hundred most powerful persons and the one hundred most knowledgeable persons. In 1776, many persons were among both groups while today few would be found in both groups. Back then, the persons in power pursued learning and the persons of learning were in positions of power. The knowledgeable today are mere consultants to the persons of power who are neither kinglike nor philosophical. Intellectuals often serve powerful supervisors only reluctantly. Democracy needs a knowledgeable public and also knowledgeable and responsible politicians. Today's leaders hold power that is unequaled in human history but are not always the most able and knowledgeable persons. Since education builds knowledge and improves results, it must be among the highest priorities of our society.

Mills points out that history does not unfold around a select group of leaders. There is no group of omnipotent persons who conspire to rule all. History is not due to chance or fate; it is a sequence of innumerable small decisions mixed in with a few larger ones. The decisions are made by just a few persons but the group of decision-makers continually includes different persons. The first set of decision makers did not leave instructions for all later sets to follow; instead, each group promotes its own directions. This means that the decision-makers do not conspire to a previously agreed upon course but simply test many directions. Mills warns that as the circle of decision makers is narrowed, the means of decision-making is centralized and the consequences of their decisions become enormous. We do not want a small group of persons to make the decisions of history; we prefer instead that all of us should make these decisions together after sufficient public debate.

Mills defines the power elite as those few persons who either make decisions for millions of us or fail to make decisions. There are just a small number of organizations within our society, and at the top of each we find just a few persons. He points out the undemocratic reality that some of these persons—who have power over the lives of millions—are not elected. It is likely that the decision-makers of our corporations will never be democratically elected, but these corporate decision-makers need to be governed. Are you comfortable with the level of today's corporate governance?

## Big Government

In the previous chapter we saw that democratic government and our ideas of personal freedom were a response to what we had learned the hard way about the lack of freedom and inclusion in the political process in Europe during the previous centuries, while democracy in Athens was a response of all city members to economic oppression by a handful of members. Licht explains that democracy was setup in the U.S. before industrialization, commercialization, and urbanization were later added. The books by Larkin, Licht, and by Bernhard's team, help us glimpse the world of 1776. It was a pre-industrial world of family farms, country stores, and craft shops.

During the years 1850 to 1900 individual corporations grew to have marketing areas that

were national in size. As the owners and executives of the corporations talked of individualism and free competition unfettered by governmental interference, they were themselves acting in increasingly associated ways. Throughout the 1800s, the unbridled market activity increased economic inequality and created social unrest among the workforce. We saw that the striking workers of the 1880s and 1890s said that their loss of control over their own lives occurred because our continued income depends on economic cycles, our supervisor's whims, and the cold decisions of distant managers. Reforms began to occur around 1900.

Mills has explained that Big Government developed in response to the social consequences of our shift from a farming to a wage-earning way of subsistence. Our initial government-of-farmers had to take on new functions as we became wage-earning laborer-customers. The economic collapse of the Great Depression resulted in the origin of much of Big Government—for example, social security and unemployment insurance. By the way, a person having no income does not buy factory products. In turn, this leads to decreased production and additional layoffs. In the Great Depression of the 1930s, we initiated unemployment insurance to help the out-of-work individual not only buy food but also to continue buying factory products. It is simultaneously aid for the unemployed and aid for the factory that would otherwise decrease production. Back in the year 1800, we all grew old and died on the family farm. As we switched to being factory workers, we wage-earners often found that our lifetimes ended in conditions of poverty as we became too old to continue earning a wage, causing some of us to die poor in the streets. Our governments reacted with the development of social security programs that drastically reduced poverty among the oldest of us. (Some of us now want our government out of the "retirement business." In every approach to such problems, we must carefully measure the success of our attempted solutions.)

During the 1890s, many contemporary investigative journalists were exposing the underhanded practices of some of the most wealthy of us—for example, Rockefeller's holding company—and published many photos showing exploitative working conditions and the poor living conditions endured by many workers. This forced us to consider the social rather than the personal causes of poverty and the necessity of public involvement. We were beginning to see new roles for government in regulating working and housing conditions, and in developing a system of financial assistance for those of us who become unemployed, incapacitated, or elderly. We were also beginning to see that we form an interacting whole to which each of us contributes our lifetime's work. We saw that many labor strikes involved worker grievances about the arbitrary rule of the supervisors and that strikers sought justice and security in the workplace. Starting in the late 1860s, trade unionists and social reformers called on state governments to begin gathering statistics on working-conditions, standards of living, and worker unrest. They hoped this information would increase public awareness of the deteriorating working-class life and lead to legislative action.

Kurian reports that the number of federal civilian employees was 6,914 in 1821 and 36,672 in 1860, which was 0.1% of the population as compared to today's government that involves as much as one-third of our Gross Domestic Product. The U.S. government grew during the Civil War by creating, for example, the first income tax. It created the Department of Agriculture that was to sponsor research and development. This means that seventy years elapsed before the people of the U.S. decided that government should be involved in research despite George Washington's call for governmental sponsorship of agricultural research in 1797. Many of us today think of government first whenever an action needs to be taken. For the first time, the U.S. government also created some

economic agencies that would lead to a greater, centralized role in the nation's economy. Today the Federal Reserve Board is in the daily news. These first debates about enlarging government occurred as the economy was enlarging.

Already by 1870, farming was becoming more capital intensive and was concentrating into fewer hands. Since railroad companies were charging smaller fees for their largest customers, farmers organized and lobbied state legislators to regulate railroad prices, and they also pressed to regulate grain elevator prices. These Grange Laws were the first steps toward greater governmental regulation of U.S. business. In 1887, farmers got the federal government to create the Interstate Commerce Commission to prevent collusive activity among railroads. The federal government was beginning to play a larger role in economic affairs.

Mills explains that before 1920, events of importance tended to be political in nature. The events of the 1930s shows the extent of the role of business in the world. For the first time there occurred massive social legislation and the inclusion of lower class issues in government. During the Great Depression, Franklin Roosevelt's administration conducted a desperate search for the ways and means to reduce the magnitude of the numbers of unemployed. There was a shifting balance of power between the newly instituted farm measures, newly organized labor unions, and big business—all contained within the framework of an enlarging governmental structure. Decisions were still being made in an entirely political manner as large corporations were not yet overly influential. The political leaders balanced interest groups, adjusted conflicts, gave in to some demands and sidetracked others and were the servants of no single group. Roosevelt's welfare state differed from the laissez-faire state. While Teddy Roosevelt was neutral because he sanctioned favors to no one, Franklin Roosevelt was neutral because he offered favors equally to all groups.

Many aspects of modern life have created new reasons for expansions in government. In the U.S. before the year 1900, roads were little more than chuck-hole-filled cow paths. Is it the responsibility of our government to build roads for automobiles or should our automobile manufacturers build these? Which organization should issue licenses or traffic tickets?

We see that the growths of Big Government and Big Business are closely related, and that it has always been the case that Big Business stays ahead of Big Government's attempt to govern them. We saw that it quickly occurred that individual states could not govern our corporations that were by then doing business in several states at once. Since many of today's corporations operate in several independent, sovereign nations at once, business has taken on a global scale while government has not at all. Today's global corporation is capital intensive, owned by a group of persons, bureaucratically managed, mass-produces items in the region of the world that results in the lowest cost, and sells the resulting product in the region of the world in which the highest price can be paid. For example, shoes are made in Asia for \$5 and then sold in Europe, Japan, and the U.S. for \$100. This also means that the wages of Asian shoemakers are so low that they cannot buy those shoes they are making.

When a nation chooses to industrialize today

Every nation that has already industrialized has done so through its own unique route. We have seen that large differences existed even between the northern and southern regions within the U.S. alone. The differing economic and political systems sought by North and South illustrate that a people's

culture plays a large role in their choice of their own economic and political system. This is referred to as "political culture" and discussed in Chapter 13 as we illustrate how the differing peoples of the world have differing political systems.

There were differences in the development of industrialization of two nations as closely related as were England and the U.S. Some differences were due to the lack of guilds in the U.S. For example, England's guilds more-often resulted in career artisans continuing to make all the components of an entire product while an unskilled U.S. laborer made just a single component of an entire product. Remember that the apprentice was learning not just a skill but an entire business and was becoming not just a laborer but an artist; the apprentice was also a family member while a laborer is not. Some other differences were due to the differing amounts of forests and open land within each of these two countries. England's relative lack of forests resulted in expensive but long-lasting iron machinery while the heavily forested U.S. could instead use cheap but short-lived wooden machinery. This gave English machinery designers more reason to make improvements in iron-making technology. The smaller number of laborers caused the U.S. machinery designers to make machines that required fewer operators.

In 1830, the farm machinery of England was replacing farmers and causing them to take urban, factory jobs. That is, a farmer who had the resources to purchase machinery could out-compete the smaller farmers who could not buy these machines. The machine-using farmer could then expand further by purchasing the lands of those less-competitive farmers. (Today, this same thing is occurring in many newly industrializing nations around the world.) Machinery replaced fewer workers in the U.S. since there was nearly endless land in the ever-expanding West that needed the machinery to handle the available area. Machines were also taking jobs away from the large number of English industrial laborers. In the U.S., there were not enough workers to begin with so that machines were less-often cursed for stealing jobs, but machines were cursed for decreasing the ties among the members of the neighborhood. After steam engines began to be used, machinery was then believed to be replacing U.S. workers—not the first wave of workers, like the Lowell Girls, but the workers who were recent immigrants and had replaced the farm girls at the factory machines.

We see that the industrialization of the world has been an ongoing process for 250 years in that industrialization has spread to just a portion of the peoples of the earth. In another century or so, around the year 2100 the entire world will be more equally industrialized. One benefit of industrializing today rather than one century ago is the ability to skip over older technologies, techniques, and systems and instead install today's versions. For example, the overhead telephone wires of the early 1900s and the underground cables of the 1970s can be skipped for the wireless phones of the year 2000.

When the people of a nation choose to begin a planned course toward industrialization today, they do so in a world that is very different from that which England encountered in the year 1760 or the U.S. encountered in the year 1820, and the lessons learned back then are of little use in guiding a nation today. For example, none of the world had yet industrialized so there was no competition to consider. Today, a nation might decide to concentrate on a product they believe to be in short supply. This works well unless several other nations also get the same idea all at the same time. Sometimes the price of this single product suddenly drops, leaving that nation with insufficient income to purchase enough food for its people. (For example, see the United Nations report *The State of Agricultural Commodity Markets 2004* concerning the global food market or the Global

Policy Forum website.) We will see that sometimes these bad situations are the result of the more-industrialized, money-lending nation's attempts to plan an industrialization course for the people of another nation using inappropriate scenarios. Since the acceptance of those plans is sometimes a requirement for receiving the loan in the first place, the people of many nations have been angered by these economic intrusions.

From the time of our first cities in Mesopotamia until about 150 years ago, less than 10% of us worked in shops while 90% of us worked as farmers. Business was a much smaller portion of the community than it is today. Since there was a smaller portion of us who depended on wages from others there was much less chance for unemployment and poverty to occur. The occasional drought will cause occasional famine for farmers but low-wages will cause continual malnutrition for wage-earners. In the U.S. today, just 1% of us are farmers. All of our livelihoods are now more intricately woven into our mutual business and so are now susceptible to the fluctuations of the business cycles rather than the fluctuations of the weather. Our levels of production, purchases, wages, and profit all alternate together between too much and too little.

Understanding the dramatic changes in our grandparent's way of life as we first industrialized in the U.S. enables those of us in the U.S. today to better understand what the people of another nation will go through as they now begin to industrialize. We have seen that there are both benefits and drawbacks to industrialization. In each newly industrializing region of the world today we can expect similarly pronounced increases in the inequality of wealth to develop—and similar reactions to then develop in response. (Nations sometimes become politically unstable when there is a sudden increase in inequality.) The industrialization of a nation means a lessening of social bonds within the community as a people change from working their own family farm within a neighborhood to being wage-earning consumers with less control over their own continued well-being. Until the increased health benefits of the last few decades, the main benefit of industrialization had been nothing other than an increase in the number of utensils and decorations within our homes. Increasing the standard of living with more utensils does not automatically guarantee that we will increase our happiness.

There is a tendency for some industrialists to rate the “progress” of other countries in terms of the average number of industrial products found within their homes. Those of us who have not industrialized simply measure success in life in terms of healthy and happy children and communities. How do you gauge success in life? (You might like to list the things most important to you.)

We have seen how the people of each region choose their own economic course. For example, we saw that the plantation owners of the Southern U.S. chose to continue the economic system that had worked so well for them for centuries and so did not industrialize until the time of the World Wars. The people of every nation have their own complicated circumstances and history.

We have seen that a group of people will not drastically change their way of life unless outside forces give them no other option. It is wrong for an industrialist to think that every other person on the planet wants to be an industrialist, too. The industrialists way of life is not the object of desire of all the peoples of the world—as if every person on the planet wants to suddenly alter their long-working traditions and turn themselves into another people for no good reason.

Remember that it is not the level of technology of the products that matter to a people but their own customs and traditions and the well-being of their family members and society. Industrialization and technology, like any other tool we have invented—including the tool we call our

civilization—are useful only if they improve our well-being and the quality of our lives and allow us to be human. It is important that nearly all of us experience an improvement, not just a small portion of us (we are just now beginning to measure these portions). Sadly, the peoples of the various regions of the world who still live as either gatherer-hunters or as self-sufficient farmers will not be able to choose to do so for very many more decades. This homogenization will change our planet into a less-interesting place.

### Summarized sources

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### Questions

1. Why are certain corporations, like Standard Oil, still here while others have disappeared?
2. Why do some people protest the recent growth of global business? (For example, visit [www.citizen.org](http://www.citizen.org) for more information.) Compare their complaints with those of a Big Business protester of the year 1890. Visit <https://freespeech.org> for debates about current events.
3. Does your small hometown have a few families that own most of the downtown property?
4. Compare the process of industrialization of two different countries from two different continents.
5. Compare labor unions in the years 1830, 1900, and 2000.
6. Why did we develop Big Business? What benefit is it to us humans?
7. Why did we develop Big Government? What benefit is it to us humans?
8. Compare the leaders of culture, government, military, research, and religion.
9. Describe different pricing schemes of business.
10. List the ten largest businesses in your town, county, state, and nation.
11. Find out what has been said by several millionaires about what they have decided life is about.
12. What can you say about any differences in the feeling of satisfaction parents have while providing for their children by picking berries as gatherer-hunters, by growing crops and cows on the family farm, or by tending a particular machine at a factory?

13. Can you relate the size of economic upheavals to the portion of a population that is participating in commercial activity rather than working their own family farm? In what way do the farmers participate?
14. Does the 1820 U.S. society have business, governmental, or religious aspects? Compare their commercial, governmental, and religious practices to those of your own culture.
15. Did the individuals of the 1820 U.S. society have innate talents for becoming engineers, artists, or doctors? Did the individuals of the 1820 U.S. society pursue the limits of their talents and interests?
16. What can you say about crime among the 1820 U.S. society? Compare reasons for crime, amounts of crime, and deterrents against crime in 1820 U.S. society with those of your own people?
17. What can you say about poverty in the 1820 U.S. society? Compare reasons for poverty and the amount of poverty in 1820 U.S. society with that of your own people?
18. Did the members of the 1820 U.S. society care for their family, friends, and society? For a member of the 1820 U.S. society, what were the most important things in life? What are the most important things in your own life?
19. Did our invention of farming or factory-work have the greatest impact on our way of life?
20. Describe the effects on the culture of a people undergoing the transition to industrialization. Choose a particular nation.



## **Chapter 15 The early 1900s brings college for the middle class, instant and mass-communication by radio, massive advertising, movie stars, sports, and blues and jazz music**

A short description of some aspects of the first decades of the 1900s will bring us to the modern world. The following description of the United States of the 1920s is a summary of the two books *The Twenties*, *Fords, Flappers & Fanatics*, which is a collection of articles describing contemporary issues edited by George E. Mowry, and *The Changing Years* by Arch Merrill. Merrill describes the first automobiles, movies, and planes and such along with the decline of steamboats, bicycles, trains, annual floods, ice harvests, and the general store. He describes Western New York during the years 1900 to 1967. In the early 1900s, most of us were still working on the family farm.

Many aspects of the 1920s are fully understandable by us today; it is easy to put ourselves in their shoes. Those things that make the world modern were then emerging. The number of hours worked per week was cut from sixty to forty-eight. Women's social movements changed our society forever. There was an explosive growth in the number of automobiles and in the recreational industries of sports and entertainment. Rather than just being home decorations and tools, new mechanized consumer products began to reduce the physical effort of our daily chores within the home. For example, washing day used to involve several hours of physical exertion, including the raising and hauling of a few hundred pounds (150 kg) of water, boiling clothes and fingers, scrubbing and wringing by hand, and hanging and folding. Clothes washing and drying machines save nearly all of that work.

Since the time of our first cities, education has mostly been available only to the children of the wealthiest of us. Through the 1800s, primary education became available for most everyone. Since the origin of the medieval university, higher education had been an option for upper class persons only. That too changed through the 1900s. Now millions of persons were enrolling to learn about the world and to increase their options in life. But still today, college education is out of reach for the poorest 10% of us in the U.S.

Record players and radios made music available for everyone—anytime someone feels like listening. Before then, music had been performed and heard only on special occasions. Today's instantaneous, nationwide mass communication began to occur with the radio. For the first time ever there was instant news in which we could hear an event as it was taking place. A succession of national crazes swept the country, driven in part by radio's instant influence on a national audience.

### **Bicycles, autos, and planes**

The earliest machine resembling a bicycle was made around the year 1800 as an adaption of a wheeled cart. The Velocipede was an early model merging wheels and hobby horse. With the addition of steering, peddles, and springs, bicycles became usable motion machines around 1870. Within a couple decades, they had spread throughout the world.

Today's bikes have peddles connected by chains to rolling wheels, while a child's tricycle peddle is instead attached to the center of the front wheel. As with today's tricycles, early bikes also had their peddle attached to the center of the front wheel. The larger the diameter of the wheel, the

father the bike will roll with each peddle rotation and the faster the bike can go. You may have seen pictures of old bikes having front wheels as tall as a person. Today's bikes increase speed through gearing rather than wheel diameter.

In many parts of the world still today, bicycles are more numerous than automobiles. (My Dutch friend Hester Amstel says that in World War II, the German army would confiscate bicycles. When a Dutch person today runs into a German they might joke "Bring back my bike.") Merrill explains that the sputter of the horseless carriage was first heard in the late 1890s while the bicycling craze was at its peak—when it was said to be "all the go." Many bicycle shops began selling autos.

The automobiles or "mechanized buggies" of the 1890s were noisy, smelly, and continually stuck in the mud. Many dismissed them as a passing fad of the rich. Fashion required goggles and dusters for men and veils for women. Mechanics, tinkers, and horseless carriage manufacturers began making models. During the years 1895 through 1905, 2,200 models were introduced. Most had gasoline-powered engines but there were also 125 steamers and 125 electrically-powered models. Merrill lists the names of many brands and models, including the Seldon, Sullivan Brothers, Foster, and Thomas Flyer. The Silent Northern was the first to have running boards, while the Locomobile was the first to have its engine placed in the front. Steering wheels, speedometers, and windshields were soon added.

The earliest models were steered with a stick and had kerosene headlamps. Their engines were started with a hand-crank, which had to be operated in just the right manner or a person might have their arm broke by its recoil. So it was best to have a friend do this chore. Since these "devil wagons" scared horses, many localities passed laws requiring an autoist to pull over and shut off the engine if an approaching horse-rider raised a hand signal.

For several years there were no traffic lights or laws. As traffic laws first appeared, police rode bicycles but later began using motorcycles. The first speed limits were typically six miles per hour (10 km/hr) but by 1910 these had been raised to fifteen mph. Auto owners paid \$1 for a license number. They did not receive a license plate, just a number. They would hand-paint their number onto a metal plate attached to the rear of the car.

The first death from an auto accident in Rochester, New York occurred in 1903. In many years, more persons are killed in auto accidents than in warfare. Deaths during car accidents were seen as acts of fate; our automobile manufacturers believed they had no reason to attempt safer designs until padded dashboards and seat belts were introduced in the 1960s—some seventy years after the introduction of the car. Today's professional car racers will crash and tumble at 200 miles per hour (320 km/hr), usually without injury. This tells me that our automobile industry can do much more to eliminate 50,000 deaths per year in the U.S., one-million worldwide.

In the early 1900s, auto clubs formed in every town. Members planned weekend picnics and other such "doings," and cried "get us out of the mud" until governments began building "hard roads." The U.S. Congress began to authorize the National Highway in 1916, paving a strip of land from Maryland to Illinois. Highways were soon built everywhere so that traffic jams would have a place to exist. We see that our governments had taken on a huge new expense; paved highways might have been constructed by the auto industry. Today, the U.S. spends fifty billion dollars per year on highways, while the profit of an automotive manufacturer might be 50 billion dollars annually from its sales of cars. Before there were highways, people might follow telephone poles to get from one town to another. Bellamy Partridge wrote that his 112-mile (170 km) trip took twelve

hours and required four flat repairs, a fender repair, and one motor repair. In 1912, another person drove from New York to San Francisco in just two months. There were few gas stations along the way, and these had no pumps. Instead, a filling can was used to scoop gasoline out of a larger container. Often, drivers were expected to bring their own cans. By 1942, the cross country trip could be made in a week.

At first, ninety percent of cars were open-air models having a folding top that could be quickly raised when a storm began. By 1929, 90% were closed models. There were forty-five makes in 1920 that have since disappeared. General Motors was created through a merger of a handful of companies. Henry Ford's Model T was introduced in 1908, and by 1927 there were 15 million of them on the roads. Ford said that he got his idea for his automobile assembly line after seeing those used in Chicago meat butchering plants, which we saw in the previous chapter.

Cars typically cost one or two year's wages—in fact, they are designed to cost this amount. Car manufacturers soon found that people running short of money would make the car payment first, and they would never let a car go back to the dealer or bank. The only time they got rid of a car was to get a better one. They would also buy every new gizmo available for their car. "Antique cars" came to be those that forty-year-old persons could not afford to buy when they were twenty years younger. Some car retailers were already complaining that the manufacturer was unfairly pushing them around, for example, in trying to dictate how many cars they should sell each week "regardless of the prosperity of their local area." (I have heard many franchise operators making similar complaints today about being pushed around by their franchise headquarters.)

Cars were considered to be a luxury at first, but they were soon believed to be a basic necessity of life. In fact, it was a social error to walk just three blocks to go shopping. Unfortunately, the auto was soon followed by traffic jams, accidents, and air pollution. Half of today's air pollution comes from car exhausts while the other half comes from industrial plant emissions. Junkyards did not exist before cars came along; wooden wagons were never piled into heaps on the edge of town.

At the time of their first introduction, few persons dreamed that this machine would drastically alter everyday life. In the United States, the automobile caused the end of the steamboat, horse-and-buggy, bicycle, and many passenger railroads, including city trolleys and inter-city trains, which had just become common. These things are used only for recreation today but still find everyday use in other, more environmentally gentle countries utilizing mass transportation. Automobile engines mechanized both farm machinery and warfare, putting an end to the calvary. Both the isolation of the rural farm and the independence of the small town were ended because the mobility of the auto enabled long distance shopping and excursions. The local, general store was doomed to extinction. Downtown hotels were replaced with outlying "motor hotels" or motels. Merrill says that horse-drawn fire engines were spine tingling to see, and that it was sad for them to be replaced with trucks. For a generation or two, the village pastime had been to watch the 5:15 train pull into town. But this too came to an end.

We saw that in the 1790s, people were thrilled by the newly invented air balloons that were able to defy gravity. It's a safe bet that humans have been dreaming of flight for a million years. The Wright brothers made their historic airplane flight in 1903. The success of the Wright Brothers was due to their practice of making measurements on scale models. By 1927, Charles Lindbergh was able to cross the Atlantic Ocean. Merrill says that a shout about a passing flying machine brought everyone into the streets. We are still thrilled today to see them fly into motion, especially when they

are heading for outer space.

## Movies, sports, and other entertainment

The moving-picture first appeared just before the year 1900. Nickelodeons quickly appeared everywhere, charging a nickel—five cents—to watch a silent "flicker" from a hand-cranked projector. The films usually lasted fifteen minutes and were accompanied by piano. A slide would say "Then came the dawn." Plots were not important; only movement mattered. Audiences were thrilled to see moving trains, calvary charges, bathers, horse races, and prize fights. People loved this new art form.

Shows became longer and the price went up. Advertisements soon appeared. In 1927, Al Jolson's *The Jazz Singer* contained some talking and singing scenes but the first movie to talk throughout was *The Lights of New York* in 1928. Those silent stars who had nice sounding voices continued their careers in the new "talkies." It is human nature to form friendships. When we see a particular person acting in a series of movies, we sort of think of them as a friend. Movie makers know that we prefer new movies having our "friends" in them. Film making moved from the East Coast to Hollywood, California to take advantage of its easier weather. Some people worried that movies would shut down Broadway plays or ruin the morals of the youth.

The decade of the 1920s saw the rise of mass spectator sports and of the sports hero. The amusement and recreation industries became big business. Previously, outdoor games were for children and aristocrats; now, millions of people began to play golf, baseball, and tennis. Each year, seventeen million persons attended college football games and twenty-seven million attended big league baseball games. In 1895, the city of Boston provided just three sand piles for children to play on. A short time later, by 1923, there were 6,600 playgrounds in 680 cities with 1.5 million attending daily.

The mass-communication that began in the 1920s meant that the people of the entire nation could jump from one fad to another in rapid succession. The rapid rise of a fad showed that for the first time public opinion could be mobilized in a few days. Examples of fads include crossword puzzles, flagpole sitters, marathon dances, and Mah Jong, which is a Chinese game in which pairs of identically patterned tiles are sought from a collection of numerous patterns. Some newspaper editors warned that these fads would be an end to the republic. (Today, video games are predicted to end the republic.) By the way, Simon and Schuster's big break occurred when they published the first book of crossword puzzles.

For some of the town's elderly persons, entertainment still consisted of being "sitters" on the benches placed in front of the stores along main street. They had nothing to do but change to the next bench when the sun had moved. We still see this being done in today's small towns. The town elders would talk about the changing world, including the silly language used by the young. Popular sayings of the 1920s included "Smarty," "Oh, you kid," "23 skidoo," "What's eating you," and "Does your mother know you're out?" Many of today's slang words originated in the 1920s, including jalopy, ritzi, baloney, nookie, and bootleg.

## Radio

Radio's first public broadcasting step occurred in 1906 when Reginal Fessenden transmitted a musical program to a small audience. Radio grew slowly during its first fifteen years. The story of its slow commercial acceptance was much the same as for those of the more recent personal computer and internet. Radio's use was laughed at by business until it was suddenly learned that it could instantly influence the people of an entire nation—and sell products to them. A radio show would advertise a product, toothpaste for example, and that company would find a 300% increase in sales.

Radio exploded from wireless telegraphy in 1920 to a billion-dollar industry in 1930. At the beginning of the 1920s, there were only amateur radio enthusiasts (like the home computer enthusiasts around the year 1980). The businessman Mr. Davies was one of the first to realize that radios and programs could be sold to the masses. The first radio station in Pittsburgh, KDKA, had no competition for ten months. Just a few years later, in 1926 RCA bought the radio station WEA from AT&T to form NBC for one million dollars. (We still recognize the companies behind these abbreviations.) Three years later, NBC grossed \$150 million, mostly from advertising (the internet is now being used for advertising, and the same humongous growth is occurring). The Federal Radio Commission was created in 1927 to assign radio station broadcast-frequencies. By 1930, there were 600 stations in the U.S.

Radio brought a barrage of advertising. A survey showed that just 5% of listeners had become tired of the newfangled radio, but 53% were annoyed by its advertising. This didn't keep people from purchasing huge numbers of radios. In the year 1929, people bought \$850 million worth of radios in the U.S. alone. Some people warned that advertising would ruin radio's noble purpose. In Europe, people paid \$250 per year to hear advertisement-less radio.

Nationally selling shows and songs made large incomes for some persons. A common annual salary for a U.S. radio show star was \$100,000, which was 170 times the average annual income of \$586. Today's movies reach a global audience and today's movie stars are commonly paid ten million dollars for a single movie, which is 400 times the average annual wage of \$24,000 in the U.S. Company sales and profits grow as the number of persons they sell to grows from one-thousand to one-million, and on to one-billion. Today's global companies want to market to everyone living in the industrialized nations.

In 1865, the nature of electromagnetic waves was already understood. Light is an electromagnetic wave, and radio waves are light waves of a color we cannot see. Light waves and sound waves are different. Sound is a traveling pressure wave. In radio, music is not directly sent through the air; instead, it is encoded onto a varying radio wave. To transmit music, radio stations vary either the amplitude or frequency of emitted radio waves. Our home and car radios wiggle speakers in step with the wiggling of the amplitude or frequency of the received radio wave. Engineers knew that they could similarly send pictures by encoding them onto electromagnetic waves. It took a couple of decades for this television project to be completed. The wiggling of the received waves tells the television set which fluorescent screen dots are to be lit up. When television became a reality, many persons warned that it would ruin the morals of children (we hear that today, too).

## Music

Instead of hearing music only on special occasions, radio makes it continuously available to everyone. Radio brings both classical music and the new Jazz music to the masses. Dance crazes become a cultural expression of the masses. Phonographs also became widely available. One person stated that "the new Jazz is not just music but is a spirit of joyous revolt from convention, and a safety valve against machine-ridden and convention-bound society." What do you suppose the parents of this person had to say about the "evil" new music? (We see that people have complained about mechanistic society, from Rome to the 1920s to today.) Proponents said Jazz was here to stay: "Don't fight it, join it."

In the United States, every ten years or so a new type of music would develop—from ragtime through hip hop. Ragtime came from cakewalk—both of which were African American innovations—and developed into jazz, big band, swing, be-bop, rhythm and blues, and modern jazz. Country swing is ragtime played on a fiddle. (Throughout the previous few centuries, the fiddle had been the standard instrument of village music, including western "barn dances." It was brought to the New World by European immigrants.) Blues has continued throughout the last century and is heard within every other style. Bluegrass, country, cajun, zydeco, rock-and-roll, disco, hip-hop, and new age are some other musical types that have evolved through the decades of the last century.

The same thing happens in every other region of the world—and between the regions of the world. Traditional music is similar from Morocco to Iran. Going further east, it changes through India and into China. Going north instead of east, it changes through Greece and into Europe, or going south, it is African. Musical styles bounce back and forth between musicians throughout the world. Some of the musical styles of the world include gypsy rhumba that has further evolved through Cuban and African styles. African chimurenga music is played with the traditional Mbira thumb-piano. The Mbira is heard in Cuban son. In turn, the son is the mother of salsa and many other Latin musical styles. Nigerian high-life music was a local continuation of big band music. Cajunto is a Texas-Mexican adaption of European polka. African and European music have combined in the Americas.

Other musical styles include tango, val, samba, cumbia, reggae, zouk, ska, compas, calypso, kwela, mbaqanga, juju, soca, soukous, groove, lounge, and chill. Many genres are as much an attitude as they are a musical style. Various forms of music are meant to make you mad, happy, relaxed, or to give you strength to endure tough times. Musicians express emotions with individual notes. In *Murmurs of Earth*, Robert Brown says that "music is primarily a means of communicating emotional, spiritual, and intellectual states." Today's African and Carribean music makes me feel happy. Latin music energizes me, as do thousand-mile-an-hour speed metal, Celtic fiddle, and cajunto accordion music. Groove and lounge are cool—especially Asian and Arabic groove—as is Cumbia. New Age and chill music put me into a pleasant trance. The larger the number of instruments and sounds and the faster they go, the better—which is why modern jazz is so neat. Louis Armstrong is my hero. He is the most important American ever—more important even than any scientist, business person, or politician—because music feeds our spirits and makes us alive. (Martin Luther King is my other hero because he fought injustice.) Oppress us and we'll make music. We expand our happiness by singing at the top of our lungs. As the members of a community sing together they rally their abilities. Music has a magical effect on us. It drugs us.

## Drug war

The United States outlawed alcohol in 1921, and of course, the very first result of this was an increase in the number of saloons selling alcohol. In one region, the number of saloons grew from 1,500 to 15,000. They were now operating illegally but there was much more profit to be made. Drinks cost \$0.25 to \$0.50 each. Bartenders were paid \$75 per week and received \$50 each time they were arrested. There were Speakeasies and Blind Pigs by the thousands; they were selling anything resembling alcohol. Our officials tried to order police officers to stay out of the speakeasies while on duty.

We women went to speakeasies and publicly drank for the first time ever. We also began to smoke tobacco again for the first time since we had dropped our pipes a century earlier. Some frightened people begged women to refrain from smoking "for the country's welfare." The Women's Christian Temperance Union called for the scientific study of the health dangers of smoking.

Prohibition proved to be a criminal disaster. Half the people of the country refused to obey. In general, rural people were for it, while the urban population was against it. There was a general willingness to buy illegal alcohol and to condone lawlessness. Prohibition also meant the invasion of personal rights by overzealous federal agents, the corruption of government officials due to the tremendous funds of the bootleggers, the choking of the courts with alcohol cases, wholesale smuggling across the borders, and the growth of organized gangsters. These things are all too familiar to us due to today's illegal drug business. For a while, Detroit had a law allowing police to enter a saloon without a search warrant. This meant they had thrown out the U.S. Constitution in their efforts to save the U.S. Constitution.

From the first moment of Prohibition, the government raided illegal stills. One person hid and operated a still on senator Shepard's Austin, Texas farm (he was the bill's author). Just two weeks after the law took affect, two Internal Revenue Department workers were indicted on corruption charges. In 1924, the police in Detroit made 7,391 alcohol arrests but won only 450 convictions. In Chicago there were 1,000 bombings in the 1920s and 1,500 murders in the years 1926 through 1929 alone. The attempt to rid the country of liquor instead created the perfect opportunity for criminals, gangs, and racketeers. (Racketeering involves selling "protection" to shopowners, who will coincidentally find their shops busted up if they refuse to buy that protection.) Merrill says that the non-enforcement of liquor laws led to a more general contempt of law and a corruption of government officials. The experiment of prohibition was found to be a national disaster. Prohibition was repealed in 1933.

## Flappers

With prohibition came the "flapper," the new women who drank and smoked, visited speakeasies, wore knee length dresses, "bobbed" her hair, and entered the business world. She became a major purchaser, causing manufacturers to begin designing products to meet her demands. One woman said that the flapper "will pursue a man if she wants to, and that she won't knit you a necktie but she'll drive you to the lake, don knickers and go skiing with you. She is educated and will talk to you about current events or theology. She'll be the mother of the next generation and free them from hypocrisy."

Petting and necking became new aspects of courting. One flapper said "I don't care to be kissed by some of the fellows but I'd let them do it rather than have them think that I don't dare." She says she has heard of scandals with sudden departures and hasty marriages. She said "necking" is "petting" only from the neck up and that what her mom didn't know wouldn't hurt her. At the same time, she was sure that her mother hoped her daughter would get her full share of attention.

We saw that during the 1840s, we women were beginning to state publicly that we too are persons. In 1920, women won the right to vote in the U.S. The flapper's rebellion helped us women win the freedom to choose our own lives. These freedoms occurred throughout the world. By 1970, women had won the right to vote in nearly every nation. Today there are just seven nations in which women are not allowed to vote.

### Some modern things

Merrill describes many little things that occurred as the world of the 1920s developed into the modern world of the 1960s, in going from "sleigh bell days to the space age." In the early 1900s, it still occurred that most everyone was born and died within their home, and that one in six infants died before reaching the age of one. Since antibiotics had not yet been discovered (that occurred in 1928 when Alexander Fleming accidentally contaminated a dish of bacteria with a common *Penicillium* mold), our lives were still often shortened by a simple illness or accident. We live longer today because we survive our first year of life, take antibiotics to cure mild illnesses, and often have a \$100,000 (in the U.S.) hospital visit at age sixty-five to cure a more serious illness.

The towns near most every stream and river used to suffer annual floods before dams became ubiquitous. Ice harvests used to occur on every northern river or lake until the arrival of the refrigerator. Winter ice would be cut into large blocks and placed into storage houses to be used in the warmer months.

We saw that in the year 1800, the New England town had a store or two and a meeting house that was also the church house. In the early 1900s, a typical town had two blacksmith shops, two grist mills, a cheese factory, a saw mill, a small woolen mill, and three general stores. The general store would stay open until midnight on Saturdays to give the more-remote families time to make it to town for their weekly visit. The general store continued to be a place for conversing. During the late winter it was common for a family to trade maple syrup and sugar cakes at the general store for its "produce tickets" that they would use later in the year; this was the last remnant of the barter system that we saw had begun to disappear eighty years earlier. Area farmers used wagons and sleighs to take their milk to the cheese factory. For a video of sleighs and maple syrup.

Before unit-packaging arrived, the general store used to stock many things in bulk barrels, including corn flakes, flour, molasses, and crackers. A family would take home fifty to one-hundred pounds (100 to 200 kilograms) of flour. (We saw that Ancient Mesopotamians were grinding grain into flour everyday, and that throughout the last 1,000 years, individual families were taking sacks of grain to the miller to be ground into flour.) The arrival of the chain store and its buying power meant the end of the general store and the replacement of the traveling salesperson with the warehouse order-taker.

Suburbia paved over the pastures and crop fields that used to surround the city. Now hundreds of houses were crammed into a small area "in your choice of three models." Rochester had



only five apartment buildings in 1925 but hundreds by 1965. Independent school houses were replaced with big-budget school districts. Motorized farm machinery sped the exit of farm youth for the cities. Cities built civic halls, court houses, jails, and public safety departments. Today, we take all these things for granted.

### Summarized sources

*The Twenties, Fords, Flappers & Fanatics*, edited by George E Mowry, 1963, Prentice-Hall, Englewood Cliffs, New Jersey.

*The changing years*, Arch Merrill, 1967, American Books-Stratford Press, Inc., New York, New York.

### Questions

1. Interview your oldest relatives to find out about some details of daily life for them in their youth. Some interview topics might include the following things. Describe the social aspects of bicycles. The first dial telephone. The sound of their first car. Hand-crank starting. Car repairs. The purpose of a car. Bike and car clubs. Motorcycles. The sight of the first airplane. Descriptions of wars and the Great Depression. What stories do they remember hearing from their own grandparents. Playing baseball at school. Flappers, gangsters, speakeasies and prohibition. Reactions to the first radios and movies. Ice and milk deliveries. Jobs they have had. Occupations that no longer exist. The musical styles of their youth. Births, dating, marriage ceremonies, and death. The home town. The general store. Chain stores. Political events. Yearly floods. Natural disasters. The town dances and other festivals. Typical meals. Pets. Greetings and conversations. Traveling salespersons. Drive-in theaters. The proper usage of some tools. Fashions for clothing and hair styles. Upper class and lower class. Art. Apartment homes. Suburbia. Trains. Traffic. School. Home. Childhood. Health and health-care. Church. The court house. Retirement. Heroes. Leaders. Friends. Love. Relations among siblings and the extended family. Babies. How to raise a family. The major events of their life. What life is about. The roles of religion, science, technology, business, government, and our civilization. Where the world has been and where it is headed.
2. Describe music, sports, and entertainment today.
3. Compare the rate of acceptance of one of today's new technologies with that of radio. Compare the funding of both the initial scientific and technological development of radio and its commercial spread with a more recent technology.
4. Discuss advertising.
5. Who are today's celebrities? What makes them a celebrity?
6. How are cars different today than they were in 1920?
7. Describe some recent innovations in film making.
8. Describe some recent national fads.
9. Which things are threatening the moral fiber of today's youth?
10. Compare the ability of a woman to choose her own life during the 1820s, 1920s, and today.
11. Compare some of your favorite musical genres of the world. Describe the world's violin styles, including classical, and the 150-year-old fiddle music of Polish, Irish, and Gypsy peoples with that of U.S. barn dancers during the 1850s, and with the more recent fiddle music of Maritime Canada and Nashville. When was the

accordion invented and why does it appear in so many musical styles? Compare accordion styles in polka, cajun, cajun, zydeco, and cumbia music. Today's bluegrass music is based on the banjo. Describe some other forms of banjo music as you trace the history of this instrument to its origins in Africa. View Ken Burn's history of Jazz. Discuss the relations of Latin son music to salsa and cumbia. Describe some of the mutual influences of African, Asian, Caribbean, European, North American, and Latin American music. Compare the world's drumming styles. Which musical styles use a harmonica? Describe the throat singing of the people of Tuva.

12. Compare the U.S. social movements of the 1840s, 1920s, and 1960s.

13. The gangsters of the 1920s were selling bootleg alcohol and using part of their huge profit to bribe police, judges, and politicians. Certain aspects of the U.S. Constitution were being suspended to combat illegal alcohol. During the last few decades, other drugs have resulted in some of the same situations. Compare the 1920s trade in illegal alcohol with today's illegal drug trade. Can the United States alone control this international drug trade? International trade in illegal drugs amounts to over \$300 billion per year and is second in volume only to the arms trade. (For more, see [http://en.wikipedia.org/wiki/Illegal\\_drug\\_trade](http://en.wikipedia.org/wiki/Illegal_drug_trade).) The U.S. appetite for illegal drugs has created today's billion-dollar crime rings in the U.S., Columbia, Mexico, and Southeast Asia. What have been the effects on these countries? Should we legalize certain drugs just as we do alcohol? Would the crime rings instantly end? Why do some of us use drugs? Is drug addiction a criminal activity or a health issue? Which nations consider drug use to be a criminal activity and which consider it to be a health issue? What approaches do they take in dealing with drug addiction? Which approach has the most success?

14. There were a number of new things in the decade of the 1920s. Throughout the last one hundred years, has the number of changes been about the same during each ten-year span of time? Has this number been the same throughout every ten-year span occurring since the origin of farming villages? Is every decade different for gatherer-hunters?

15. Are there deities for the auto, highway, Jazz, radio, and computer?

16. Were the 1920s or the 1960s the "wilder" decade? Which was a more-drastic change from its preceding decade?

17. Create a piece of art to describe some aspect of life during the early 1900s.

18. Compare the public's rate of acceptance of iron cooking stoves, microwave ovens, gas lighting, electric lighting, x-rays, radio, television, computers, and the internet. Compare their effects on our way life.

19. Orchestras and theatrical plays are similar in that they are combinations of the efforts of many persons. Some American pan pipes play a single note. To make music consisting of a series of notes, a series of persons each has to blow a single note in rapid succession. This makes pan pipe and Jazz music the result of the simultaneous interplay between individual artists. Can a group of people generate a story or other work of art through contributions by a series of persons—for example by each adding a word or brush stroke? Is this the way technology and civilization changes? Are bureaucracies, governments, scientific research institutes, and corporations similar to orchestral combinations or to a series of individual contributions?

20. Do we feel that celebrities are friends, respected leaders, or heroes?

21. Discuss the influence of mass media on the general public. What controls have the nations of the world placed on media ownership. What has been the effect of the current deregulation of media ownership?

22. Describe the life of a person whose history has been recorded by the 1930s Folklore Project of the U.S. Works Progress Administration found online at <http://memory.loc.gov/ammem/wpaintro/wpahome.html>.

23. Which mode of transportation was used by the Wright brothers as they commuted between Ohio and North Carolina?

## Chapter 16 Everyday life in Chicago during the 1980s

We next portray the daily life of those of us human beings who live in a poorer area of Chicago. This human example will introduce the statistics of the social and economic indicators that are covered later. Through recent decades in the U.S., one-in-five of our children have been living in poverty. Those of us who have not lived in the poorer side of town hear only rumors of this daily-life and form a vague picture it based on few facts. The story of the lives of two boys, Lafayette and Pharoah, will help put you into their shoes and will give you a more accurate picture of life in the ghetto and what it means for our civilization.

The following is a summary of the book *There are no children here, the story of two boys growing up in the other America* written by Alex Kotlowitz. The two boys are Lafayette, who was twelve years old in 1987, and Pharoah, who was nine. Their parents, Paul and LaJoe Rivers, are separated so Paul is not around very often. Kotlowitz spent much of two years with them.

The boys live one-block from the Chicago sports stadium and one mile from the downtown business district. The stadium is easily seen from the Sears Tower, which is one example of the capabilities of our civilization.

The Rivers live in the seven-story Horner apartment complex, which is among what the residents often refer to as "the projects." The Horner building houses 4,000 children and 2,000 adults and was built in 1956 with federal aid from the 1949 Housing Act. The Horner building is one of many being managed and maintained by the Chicago Housing Authority. As we hear Lafayette and Pharoah's story, we will see images of projects in Chicago.

The 1949 Housing Act was meant to create almost one million units of low-rent housing across the nation. This number of units would house 0.5% of the U.S. population of 150 million persons. The Act helped to create affordable housing some sixty years after Riis had published his book *How the other half lives*.

The family of LaJoe's mother had earlier moved to Chicago from West Virginia, where LaJoe's grandfather had been a coal miner. LaJoe's father had been living in Arkansas before he also moved to Chicago to find work; he got a job in a steel mill. In 1956, when LaJoe was four years old, the family moved from a barely-standing building into the brand new Horner apartments. When the family moved into Horner their furniture consisted of a picnic table and some cots, but they had increased pride and the future seemed bright and full of hope.

They were thrilled with the immensity of the five-bedroom apartment and with its shiny new paint. The apartments are made of cinder block and have unplastered walls. The bedrooms are ten by eleven feet (3.9 x 4.3 meters) and have a two feet wide (61 cm) doorless closet. The closets were designed to have curtains but no curtain rods were ever installed. The living and dining areas are separated by a wall that extends halfway across the room.

When Horner was built, it had light poles in front of the building, a playground, and a regularly-mowed baseball diamond. Children liked to roller-skate in the basement of the building. There was a nearby boy's club that had both a gym and a pool. The area had a 250-member Drum and Bugle Corps that marched in city parades. Mom was active in the local democratic party. The area residents organized and fought for better schools and health clinics. There was a sense of community, which we have seen is important to us humans. Many Horner residents were successful persons.

The hope for improving America that began with the 1949 Housing Act has suffered from funding setbacks. The Chicago Housing Authority is responsible for the maintenance of the Horner building and for many others. This agency suffers from dwindling operating funds because those of us humans who set funding levels keep slashing those funds. By 1970 the Chicago Housing Authority no longer had enough money to paint the buildings, which used to be painted once every five years. The Reagan administration (1980-1988) cut funding for the Department of Housing and Urban Development by 57% during its tenure in office. The Community Development Block Grant was cut 28%, and the Urban Development Action Grant was cut 68%. Federally subsidized housing was cut 95%, from 27 down to 1.5 billion dollars. The Department of Housing and Urban Development was almost shut down. For eight years, the programs originally designed to house the poor and encourage home-ownership were manipulated to benefit the rich who had strong political ties. A federal special prosecutor found that \$2 billion had been lost to fraud and mismanagement and convicted some staff-members of wrongdoing.

LaJoe saw the neighborhood decay. First the middle-class families moved away to the suburbs and then the businesses left. One-third of the city's manufacturing jobs left within an eight-year period. The area's official unemployment rate was 19%. In 1982, Mother Teresa setup a soup kitchen and a shelter for the women and children of the area. Kotlowitz reports that through the years 1987 through 1989, the neighborhood had no theaters, libraries, skating rinks, bowling alleys, or any other type of children's entertainment. There was no drug rehabilitation center, though drug use was widespread. The area had three aid centers, one of which had funding to support just twenty-eight children. The infant mortality rate of the area exceeded that of many third-world countries. About half the area's population was living below the poverty line, and half the residents did not have a telephone.

Horner's building conditions were simply allowed to worsen through time. The baseball diamond was paved over years ago; nobody can remember why. One side of the basketball court has a leaning hoop and the other side has no hoop at all. The building's first-floor mail boxes often get broken into, so Lajoe, who lives on the first floor, has her government assistance check sent to a nearby check cashing store. That store charges her \$8 to cash each monthly check. The light bulbs in the building's hallways are broken-out by gangs who are trying to make it harder to be seen. These bulbs are not frequently replaced so the residents use flashlights to make their way down the halls. These flashlights were handed out by a campaigning politician. In many places, the floor tiling has worn through to the concrete. The medicine cabinets of two adjacent apartments are actually formed from a single piece of metal and so have been used to crawl through during robberies and assaults. The thin sheet metal of the kitchen cabinets has rusted through in many places so that the dishes have to be stacked around the hand-sized holes. Chicago's elevated trains pass within 100 feet (30m) of the apartment. The residents simply stop talking whenever a train roars by.

The apartment has a tub but no shower; the children have never experienced a shower. Since the faucet in the tub won't shut off, boiling hot water continually runs. The Rivers try to dampen this noise by closing the bathroom door. The tub is used to wash their clothes—and also the dishes, whenever the kitchen sink quits working. The boilers continually breakdown in the Horner buildings. The garbage chutes are too narrow to handle the trash, and the building is full of roaches. There are maggots in the over-full, garbage incinerator area. The River's first-floor apartment has two bathrooms and five bedrooms—and usually twelve residents. (When her oldest daughter moved back

home along with her husband, her two children, and her brother-in-law, there were then twelve residents in LaJoe's house.) One toilet periodically releases the odor of spoiled meat.

After many years, the basement source of the odor was found during a building inspection. In 1989 the basement was inspected by a new manager who reported finding roaches, sewage, garbage, junk, dead rodents and other animals. The sight of this caused the manager to vomit. In addition, the basement contained 2,000 appliances and replacement kitchen-cabinets, some of which were brand-new but would not work because they had rusted while being allowed to sit in water. Many appliances had been pilfered for their motors and wiring, which was taken to be sold as scrap. Many tenants were angered to learn that they had gone months with broken appliances while the authorities let their replacements rust in the basement. People had lived over this filth and stench for fifteen years before the Chicago Housing Authority "discovered" it.

When an apartment was vacated, the Chicago Housing Authority used to have the money to make it ready for the next tenant. Now, many are simply boarded up. The heat and water remain operating in the vacated apartments though nobody is living there, so these vacant homes are often broken into to be used by gangs or drug dealers. Often, area residents remove the sinks, toilets, and metal piping from the vacated rooms to be sold as scrap for a few dollars. One year, just before Christmas, a homeless group broke into some Horner apartments to have a place to live. The Chicago Housing Authority tried to remove them over "liability concerns." The tenants often shared hot food with these temporary neighbors.

A 1982 audit by the U.S. Department of Housing and Urban Development found numerous problems with the Chicago Housing Authority. For example, they didn't know how many apartments were vacant—or even how many they had in total. They found that one-third of the elevators were not working, even though the buildings contained five to fifteen floors. None of the 2,288 employees had ever been laid off or fired. The audit said that the Chicago Housing Authority was operating in a state of profound confusion, that nobody was minding the store, and in fact, nobody genuinely cared about the residents.

Eighty-five percent of Horner households are headed by the mother. The father is gone and is often un-respected by his children due to his absence, drug use, or unemployment. There is a caring and well-liked, fifty-year-old man who looks through the garbage of nearby businesses for discarded balls, plastic jewelry and flowers and such which he then gives to the area residents.

LaJoe gets most some of her clothes from a second hand store and the rest are purchased through lay-away (this means that the store will set aside, or "lay away," your purchases while you make payments on them). She arranges for the lay-away purchases to be paid-off at the three times of year that coincide with Christmas, Easter, and the start of the school year. One Christmas, in addition to clothes, she bought Lafayette a radio, Pharoah an Atari game, and each of them a ten-dollar watch.

LaJoe received \$900 per month in welfare and food stamps and spends 1% of her income to cash the check, 13% on rent, 40% on food, one-third on clothes and supplies, and 9% on burial insurance for her children, for reasons that will be obvious in the following discussion.

In 1986, president Reagan's Secretary of Education found Chicago schools to be the worst in the nation. About 40% of Horner area students dropped out before finishing high school (The nationwide average was 25%). The Horner area schools lost funding for all of its art and music classes in 1980.

If we fail to educate our children then it is equivalent to discarding them, their lives, their potentials, and the further contributions they would have made to our civilization. Do we do this to save a few dollars?

To this description of poverty and poor living-conditions, we next add drugs, gangs and violence to get the remainder of the picture of life in the inner cities of the U.S. Those of us humans who live under these conditions often grow to have feelings of hopelessness.

Kotlowitz reports that there are forty violent crimes per 1,000 Horner residents, compared to an average of 6 per 1,000 in the U.S. today. (Violent crimes are assaults, rapes, robberies, and murders.) Every three days, someone at Horner is either beaten, stabbed, or shot, mostly over drugs. The violence goes on and on and on and nobody gets used to it.

Gunshots around Horner are a common occurrence. When gunshots are heard, Lajoe moves the children into the building's central hallway. She makes them stay there until fifteen minutes after the gunfire has ended. Bullets have entered LaJoe's apartment

When gunshots are heard in the classroom, students habitually get down on the floor. Some of our teenagers say that "you know that you are a gang member when you see your family take cover from gunfire by getting into the bathtub." All of the area's children, including Lafayette and Pharoah, live among this violence. Lafayette was given \$8 on his birthday to buy earphones for his radio, but on the way to the store, gunfire broke out. As is their habitual response, the boys instantly dropped to the ground. From the Sears tower you could have seen them ducking the gunfire. When they felt it was safe they forgot about going to the store and instead headed home. During those tense moments, Lafayette lost \$7.50 of his birthday money.

Three days after Lafayette's birthday, there was gunfire outside the apartment as two rival gangs fired at each other from the windows of two high-rise buildings. During the shootout, the school-day ended so children began to leave the school building, which is across the street from Horner. Pharoah started to walk right into the area of gunfire, so LaJoe and Lafayette yelled out of the window at him. He stopped. Then he ran and ducked from one tree to the next. There were police officers in the area but they had mistakenly thought they were the targets of the gunfire and stayed in their car. Pedestrians lay motionless on the ground during the gunfire, as is their learned response to this common event. Nobody was hurt and no arrests were made. Kotlowitz later called the police headquarters and found that there was no record at all that this had occurred. Kotlowitz points out that Lafayette and Pharoah knew the gunfire had occurred.

The gangs are there to sell drugs. They have wandering sentries who warn of approaching police. They mark out territories by marking the buildings with their symbol—for example, a star. The members identify themselves by wearing certain colors or designs or by twisting their hat to a certain side. They will attack rival gangs who try to sell drugs in their area. If members of one gang enter the area of another gang they will be beaten, shot at, or killed. Gangs store their guns in a "safe house," which is often a nonmember's apartment. This person will be paid in money or drugs for the use of the apartment. Most of the drugs are sold to people who live outside the area; they drive their cars into the area just to buy drugs. Drug customers park at the gang's building and then wait for the drugs to be brought out.

The police never catch gang leaders with any drugs on their person because they do not handle the drugs themselves; they have their helpers do that. No Horner resident dares to report drug dealers to the police for fear of being hurt or killed, themselves. If you were to call the police and

they came to your door to talk to you then everybody would know that you were the one who had called the police. It is usually the lower ranking gang members who are arrested. While serving time in local jails, gang members often recruit new members into joining them.

The \$50 Billion annual profit from the manufacture, distribution, and sale of illegal drugs have resulted in this situation, and it is affecting much of the world. The appetite for drugs is responsible for much havoc in those countries that grow and process drugs. For example, from 2007 to 2017, about [100,000](#) persons were murdered among Mexico's drug gangs as they fought to supply profitable, illegal drugs to the U.S. market. If you buy illegal drugs to "have a good time," you are directly responsible for the resulting misery of the drug-war-ravaged people in parts of Columbia, Peru, and Mexico, and are funding the 25,000-man Taliban Army through its poppy business. Gangs exist to sell drugs, and this is wreaking much havoc within our own cities, just as it did during prohibition. The death rates due to gun-violence is the same in Miami and Colombia, in Chicago and Guyana, and in New Orleans and Honduras.

This gang warfare would end instantly if these hard drugs were legalized, but that requires us to allow everyone to choose for themselves. The world has to choose between legalized drugs or drug gang murders numbering in the hundred thousands.

We lower drug usage by decreasing injustice because some of us use drugs to escape misery while others use drugs just for fun. Some people in the U.S. are buying and using drugs because life seems hopeless. This shows that we have much work to do in freeing our own nation from injustice.

Some nations treat drug addiction as a health problem while others treat it as a criminal activity. Which do you think it is? Is it better to conduct a fifty-year drug war, legalize drugs, hospitalize addicts, or put one-million U.S. citizens, which is 0.5% of the population, in jail for drug usage? What do you think?

Gangs often recruit young children to do their dirty work. For example, near Horner they recently had a fourteen-year-old boy shoot a member of a rival gang. The gang members know that the courts treat children less-harshly and that the children cannot be held in prison past their twenty-first birthday; they are rarely held more than twenty days.

Gang leaders might buy groceries and shoes for the neighborhood residents who need them. They sometimes throw neighborhood parties with food, games, and live music, and show off their expensive cars to impress youngsters.

When LaJoe's oldest son Terence was just ten years old and not yet in the sixth grade, he was taken up by a gang leader. (Terence dropped out of school in the seventh grade.) He was taught to handle a gun and would earn as much as \$200 in one day. Though he was only ten years old, he would leave the house and not come back for days or even weeks. When LaJoe went to that drug dealer to demand her son back, he responded that "Terence is his son now." LaJoe repeatedly had the police get her son but he would remain at home for just a few weeks before leaving again. Once Paul went with his son Terence to see the drug dealer. The dealer told Paul that "It's Terence's choice to be here." Paul responded that "Terence is just twelve years-old. You are taking advantage of him." When Paul made more forceful threats, he was suddenly surrounded by the drug dealer's helpers. One of them reached into a sack and asked "Do you want me to pop him." Paul and Terence were allowed to leave unharmed, but the thought of his father being killed was enough to scare Terence into staying home for a while. When describing this situation, inner-city parents say "I lost my child to the neighborhood and to the lure of gangs and drug money." Some parents will nearly

lock their child within the home and say "Thank god I have a thirteen year-old child who is still mine."

Terrence said he was most-affected when he saw that his mother was so fed up with him that she quit giving the world to him. He became a father at the age of fourteen, and by eighteen, he had been arrested forty-six times. Terrence told his younger brother Lafayette to stay in school and to keep to himself: "Stay away from crooked people and tell them 'no' if they ask you to do something for them."

LaJoe has three children who are older than Lafayette and Pharoah, and triplets who are younger than them. The three oldest have dropped out of school and have each been in jail. Her oldest daughter has worked as a prostitute to support her drug habit. LaJoe knew of people who had managed to move out of the area just to find the same conditions elsewhere. LaJoe says she would die before letting a gang take another son. She vows that the lives of her younger children will be different because she will not allow the same mistakes to be repeated. The younger ones will have a childhood, graduate from high-school, move away, get good paying jobs, and raise a family. She is the guidepost for her children.

Lafayette refused to play with a certain group of children because they would try to get him to join their gang. Lafayette says that the only way to make it out of the projects is to make no friends and to keep to yourself. Then you will not get talked into joining gangs or participating in illegal activities. He says that he is going to move to a classy suburb that has 4-foot high (120 cm) flowers growing everywhere, and "you can sit out all night and nothing will happen to you." The boys sometimes argue about whether there is any place that doesn't have gangs.

When Lafayette was ten years old, he saw a man stumble into their building and die of a gunshot received during a gun battle just outside their home. The blood stains were still visible two years later. Two weeks after this incident, another gun battle broke out while the kids were outside playing; one nearby girl was shot in the leg. Lafayette and Pharoah ran and hid in some trash until it was safe to come out. When one gang used machine guns and shotguns to kill a rival gang member, even this neighborhood was shocked at the viciousness of the attack. Once when a fifteen-year-old gang member was shot in broad daylight, a crowd gathered around the body. Pharoah vividly recalls how the dead-boy's sister repeatedly wailed "He is not dead."

The gang that murdered the boy also threatened to interrupt his funeral, and they said that they would storm the funeral and turn over his casket. This caused the boy's family to keep the funeral arrangement as quiet as possible. The funeral's preacher commented that the only chance he has to talk to some young people about the love of God is while they attend funerals. There was a general feeling among the young people at the funeral that they too might not reach adulthood. These moments often gave Pharoah a piercing headache and once caused Lafayette to ask Pharoah if there were stores in heaven. The never-ending knife and gun violence is what had prompted LaJoe to purchase the funeral insurance mentioned above. A while later, both boys refused to attend a family funeral because they hadn't yet gotten over the previous one. All these murders and deaths occurred in the summer of 1987. At the ages of twelve and nine, Lafayette and Pharoah knew more funerals than weddings.

The violence and anxiousness caused Pharoah to begin to stutter. He also began to tremble when he heard loud noises. A few weeks after the later funeral, he fainted when bullets tore past the living room window. After that, he began to spend much time staring into space. He showed more



life while at school because he felt safer there. Pharoah worked hard to compete in the school's annual spelling bee contest. He spent three weeks studying a fourteen-page list of words and came in second place. His teacher took the class on trips to nearby museums so that the children could see that there is life outside Horner.

Lafayette saw three teenagers throw Molotov cocktails through the windows of the apartment next door. This also was not reported in the press. The burned-out apartment simply remained boarded-up for the next two years. Lafayette began to deal with bad events by not talking about them. His face no longer showed much emotion except for fear and loneliness, but his darting eyes missed little. He said that he has no friends, "only associates," because friends are someone you can trust. Lafayette once commented "If I grow up I'm going to be a bus driver." Kotlowitz points out that Lafayette had said "If I grow up" rather than "when I grow up."

Ricky was Lafayette and Pharoah's friend. Ricky saw his cousin shot to death by people who he said "did not feel sorry about hurting someone," and that this began to make him too stop feeling for other people. After that incident, whenever Ricky got into in a fistfight he said "he began to relive his cousin's last moments," and that this makes his anger turn into such a rage "that he doesn't even care if he kills someone."

LaJoe was robbed by two teenagers who were armed with a knife. During the robbery, they severed the nerves between two of her fingers. LaJoe grew more short-tempered from the daily worries of shootings, gangs, her son's stutter, and her daughter's drug habit. She said she felt as if her insides were being shredded, and that if she knew beforehand what her children would have to suffer through, she would have return them to her womb.

LaJoe was once reminiscing about her and Paul's earlier dreams of moving into a wood-frame house that had a backyard, a fence, and a porch where they could sit in rocking chairs and grow old. Then her older son Terrence was arrested for armed robbery, and the Department of Public Aid informed her that her aid would be cut off because they had learned that her husband sometimes stayed with her. They learned this by reading Kotlowitz's first newspaper article about the lives of Lafayette and Pharoah. Kotlowitz used the \$2,000 he was paid to pay Terrence's bail.

LaJoe describes the area by saying that "There are no children here" because they have seen way too much. By the time they reach adolescence they have confronted more terror than most people encounter in a lifetime. They are forced to make choices that more experienced adults would find difficult. They live with fear, and they experience death. This causes some young people to lash out by joining gangs, selling drugs, or even inflicting pain on other people. LaJoe says that, at the same time, they show that they are still children by playing baseball and marbles and such.

A mentally-disturbed woman, Laurie Dann, entered an elementary school in a higher class part of Chicago and killed one student and injured several persons. This was in the national news. There were calls for more school security and a team of crisis-psychologists were brought in to help the students deal with the event. Two days later at the Horner school, a nine-year-old was shot by a stray bullet during a gang fight but nothing was said in the press.

In the summer of 1988, two men broke into a Horner apartment to steal a television and video player, which they sold for \$120 to buy drugs. During the robbery they killed the mother, her boyfriend, and her four-year-old daughter. They also stabbed an eight-year-old girl forty-eight times and left her for dead. But when she was found the next morning she was still alive and was able to testify against her attackers.

A short distance from his own home, Lafayette found an apartment building that had a grassy area. He would go there to sit on the grass and read comic books or just daydream until the security guards would run him off. In the fall of 1988, when he was almost fourteen years old, he and a friend were caught shoplifting at a video store. They were not arrested; they were just properly scared by the store personnel. This made LaJoe worry that she was about to lose another son to the neighborhood.

The Chicago stadium is close to the Horner neighborhood and is home to two professional sports teams, the Bulls and the Blackhawks. When there were sporting events, the area would be flooded with the cars of fans. Lafayette, Pharoah, and many other Horner kids would earn a few dollars of spending cash by helping fans find parking spots and by guarding their cars against damage or theft. On game nights the entire area was lit up. There would be so many police cars and officers that the drug dealers have to close down for the night. That closure of drug dealing made the residents wonder why that sort of police activity did not happen every night. They asked why do the police protect sports fans but not Horner residents.

On one such night, a police officer told Lafayette and his friends to go back home and to stay away from the stadium. Lafayette either talked back or was too slow to move, so the officer grabbed him by his collar, threw him into a puddle of water, kicked him in the rear, and then called him a punk and told him that he wasn't supposed to be working here. Two of Lafayette's friends ran home and returned with LaJoe in time to find Lafayette in the back seat of the police car. Then, two more officers arrived and let Lafayette go. One officer told Lafayette he might get hurt out here at night. Lafayette responded that he had lived here all his life and had never been hurt except by the police. This made Lafayette begin to question his relationship with the police. It was also the first time he ever showed bitterness toward another person. LaJoe worried that Lafayette would become cynical toward the police because they had roughed him up.

The Horner residents have mixed feelings toward the police. They know that some genuinely care about the children and that they have a dangerous job. They are shot at while on patrol, and objects are often thrown at them and their cars. But they also believe that some police officers think they are bad people and mistreat them.

The next Christmas, LaJoe took her family on a bus ride to the center of Chicago to see the decorations. The children enjoyed seeing the tall buildings and the people with their fashions. LaJoe remembered coming here with her own mother and eating the best popcorn she had ever tasted. She bought caramel popcorn for her children. Then, two acquaintances of the family had an argument in LaJoe's house. One of them pulled out a gun and fired several shots while everyone ran for cover. Not long after that, LaJoe's daughter LaShawn gave birth to a baby boy who tested positive for cocaine and opiates.

In the spring of 1989 Lafayette's friend Craig was shot by a law enforcement officer who had mistaken him for another person. Craig was a special role-model for Lafayette because he maintained his ability to dream aloud about the future while most everyone else said that it was no use to even bother. Craig had recently graduated from high school and was pursuing his career as a disk jockey. [We saw above that in the projects, only 60% of us graduate from high school.] Medical exams found no trace of alcohol or drugs in Craig's body. The police said he was a suspected gun runner and member of the Disciple Gang even though his name was not on their list of 18,000 suspected gang members. The street where Craig had been shot was not part of the Disciple Gang's territory.

The police did not apologize to Craig's parents, or even send flowers to his funeral.

The death of Craig convinced Lafayette that he could be shot or jailed at any moment for doing nothing. He became depressed, collapsing in bed right after school and sleeping for long hours. His distrust of others grew and his memory began to fade. He said that if he were Craig's father he would go shoot that police officer and that he hoped the officer would die. Two days after Craig's funeral, Lafayette lost another friend who was driving in a stolen car with four others. When the group passed a police car they sped off and lost control, killing three of the five boys. When LaJoe told Lafayette about this, his facial expression didn't even change. He just said "He's gone, just don't talk about him." Lafayette then began to have mood swings. One moment he would act with a hot temper, show fury and revenge, and then the next moment he would show generosity and maturity. He asked a friend if he had ever thought of suicide. One month later, as the rest of the family moved to the building's hallway during gunfire, Lafayette just sat at the television.

When Lafayette was thirteen years old, he and three friends commandeered a vacant apartment, chose a certain earring for their symbol, and began to call themselves "The Four Corner Hustlers." They were not dealing drugs, but they were practicing for the real thing. The school then labeled Lafayette as a gang member. One of the boys had a gun. When he was once shooting at the feet of the others, he accidentally shot one boy in the arm. The four boys would talk about how they wish they could be young again at an age when most are wishing they would grow-up and are thinking of the future. Kotlowitz asks how could the Horner boys be expected to think of the future when it took so much just to think of the present.

Lafayette's brother Terrence was next given an eight-year sentence for armed robbery. LaJoe said that her children were her strength and her love, and when they are taken away from her it's like taking a part of her. "They're what she didn't have, and she had them in order to get it." At this time a man made threats at her for refusing to go on a date with him. She lost her self control for a moment and said that she couldn't take much more, that she had to get out of this ghetto life. She worried again about losing her children to the neighborhood. She wished she could take her children and move away but knew she couldn't pay rent anywhere else. LaJoe paid a swindler \$80 because he claimed he could get her name put at the top of the list for subsidized housing, and enable her to move out of the projects. The swindler was soon arrested.

One day Lafayette came home to find his dog missing. He accused his father of selling the dog for drug money and called him a dope fiend. They had a terrible argument. Paul slumped down into a chair knowing that his son didn't respect him due to his drug usage, and knew that he didn't respect himself either. The dog was then found in the kitchen.

Lafayette was also discouraged that his cousin Dawn, who had graduated from high school a year ago, still didn't have a job and was unable to move away from the projects. It worried him that even a high school diploma was not a guarantee that he would make it out of the area and have a better life. Lafayette had little to believe in because everything and everyone were failing him. Lafayette had a recurring dream of running from something that was chasing him but not being able to get away because of a strong wind. He would try to call for help but no sound would come out of his mouth.

Lafayette and Pharoah saw their first rainbow while they were walking to a store. Pharoah ran toward its end because, like other boys, he believed that you will get a wish if you catch it. After it disappeared, he came back and said that if he could have caught it he would have wished to get

his brother out of jail and his family out of the projects. He then held back a cry.

Pharoah was selected for the University of Illinois Upward Bound Project for math and science development of sixth through twelfth graders. During the orientation meeting each student was asked what he or she wanted to be when they grew up. Pharoah answered that he would be a congressman so that he could build houses and move everyone out of the projects, and that he would also put every gang member into jail. He enjoyed going to the University each morning, getting away from the neighborhood, and feeling like a scholar. This was also the year that Pharoah was given his first birthday party.

LaJoe was walking down the street and saw two boys shooting at two other boys who were wearing the red colors of a rival gang. This time it was especially troublesome for her because the shooters could only see the backs of the other boys. They didn't even care to know for certain at whom they were shooting. LaJoe then made Lafayette stop wearing red colors, hats, earrings, or anything else that could be mistaken for gang symbols and be shot at.

In a two-week period there were six shootings. A few weeks after that, Lafayette saw a friend run out of the building shot in the stomach. The violence never let up and nobody ever got used to it.

Lafayette and four other boys were next caught running away from a vandalized car. Lafayette said that after seeing one boy smash the window, he ran away to avoid being blamed. At court, the judge did not even look up at him while rattling off questions about his name and age. Yet worse, a few minutes later the judge did not even remember that he had just questioned Lafayette.

The Public Defender, Anne Rhodes, said that she defends hundreds of children at a time and has just a few minutes to interview them at the courtroom entrance. She has seen children taken away from their parents after a five minute abuse-and-neglect trial. She is scared by the overload of cases, the absence of parents, the hastiness and confusion of the trials, and worst of all, the inattention to the children. She says that "our kids are our future and we are not doing our jobs." In Lafayette's trial, she had to defend all five boys but was given only five minutes to talk with all of them about the case.

The judge found the boys guilty though none of them had been seen smashing the window. The judge said he had no doubt that the boys did it, and it didn't matter that they claimed they were innocent because "they always do." He said that "they were a threat to the public, out there breaking into people's cars." During the trial Lafayette was not given a chance to talk or to declare his innocence, and was mad that the one boy didn't admit to having broken the window. Lafayette was sentenced to one year of probation and assigned one hundred hours of community service at a boy's club. During this service, he found that he enjoyed teaching children how to catch balls.

While LaJoe was walking down the street, she saw several boys beating on one other boy, and she saw Lafayette in the middle of them yelling for them to stop. LaJoe ran up and pushed her way to the center, trying to stop them as she yelled at the boys. Just as it looked like the boys were going to turn on her and Lafayette, another boy ran up to help. Then everyone dispersed. On the way home Lafayette dropped to his knees and said "I'm tired mom." She helped her son to his feet and knew that he was just tired of being.

After the buildings had deteriorated beyond repair, they were torn down. This is what is meant by social and economic injustice. It causes thirteen-year-old children to fall to their knees because they have become "tired of being." Do you think the Horner kids have the same opportunity

to pursue the limits of their talents as do the rest of our children? Horner kids have the same talents for art, science, medicine and engineering as does every other child on the planet.

In the inner-cities today, it is common for half the men to be either jailed or killed by age twenty-five. You might acquire a feeling of hopelessness as you realize that this is your future. It shows the strength of human character that 100% of us do not turn to drugs or crime in such a situation.

Notice that the our daily news programs rarely discuss the quality of life for the one in six of us who are poor and it rarely discusses possible approaches to making things better. Instead, the news only lists dramatic crimes... between oatmeal commercials. Notice that none of this is discussed by our politicians. We improve our civilization only with un-flowered debate of problems and possible solutions and by acting, measuring resulting changes, correcting approaches, and trying again. Nothing will improve if we stick our heads in the sand and pretend that we are all going to become billionaires. Most of us measure success in life in terms of healthy and happy children, families, and communities not wealth, power, or war.

We have solved every problem in history that has come our way. That is how we are still here. Typically, a solution is found only after first stumbling around in the dark, often for decades.

Summarized source

*There are no children here, the story of two boys growing up in the other America*, Alex Kotlowitz, 1991, Anchor Books, New York

## Questions

1. Should the government fund such housing projects? What portion of the people should need assistance before funding is made available? Why does this portion of us need such assistance?
2. Why are some of us rich while some of us are poor? How can we become unrich and unpoor? Can't those of us who are poor just move to another part of town? Can you come up with a few thousand dollars to move today? What percentage of us could come up with this amount of money? Can you come up with a similar amount of money for the sudden expense of a car repair? Have you been able to move from the class of your birth into an upper-class neighborhood? Is life about classes?
3. Most of us are closer to LaJoe's income-level than to the levels of the rich. LaJoe's annual income of \$12,000 is 5% of the \$216,000 income that the upper one-fifth of us receives. Calculate your annual income as a percentage of \$216,000.
4. Compare your family's monthly food purchases with those of LaJoe and with those of other people. Also compare with a family that lived in the U.S. in the year 1820.
5. Compare your daily life with that of ghetto, middle-class, and wealthy persons. What are the most important aspects of life for the persons of each of these groups?
6. What percent of Americans live in such conditions as occur in the Horner neighborhood? What percent of the nation's wealth would be needed to modify these areas such that they have a more humane condition? Compare today's reform discussions to those describing the injustice of the sweatshops of the 1840s.
7. What can the Horner residents do? Say it takes about \$50,000 to open a small business that will then earn about \$50,000 in monthly sales and just \$5,000 in monthly profits. If 100 residents each contributed \$500

to form a group-owned business then they would each earn \$50 per month. How many residents have \$500 to spare? Is it workable for each of 1,000 families to contribute \$50 and then obtain \$5 each per month in profit shares? Can a \$10,000 investment create a business that earns \$10,000 in profits per month? What sort of numbers are typical for new business start-ups?

8. Can you numerically relate the amount of crime and violence in a nation to the average wage of its citizens or to the magnitude of inequality in wealth and opportunity?

9. Just as in every other business, the illegal drug business involves manufacturing, wholesale distribution, and retail outlets. How is the profit split among these sections? Where is the money? What are the expenses? Where does the street seller get the drugs? Should we legalize drugs, treat drug usage as a health condition, or double the prison sentences for drug offenders? How do other nations approach this issue?

10. How many blocks are in your town? How many blocks are there in your town's poor area? What percentage of your town's blocks are poor blocks? In recent decades, has this percentage increased or decreased?

11. Compare the costs of schools, parks, and libraries with those of drug enforcement, courts, and jails.

12. Compare the percentage of people living in poverty within gatherer-hunter, village farmer, and wage-earner societies. Compare the level of economic and social inequality among persons living in these three lifestyles. Has inequality increased or decreased as we shifted our ways through these three life styles? How do we minimize inequality? What would be a suitable level?

13. What percentage of the people of the U.S. are occupied as engineers, doctors, priests, and artists? What are these percentages for the Horner residents? Are the Horner residents being restricted from pursuing their talents and interests?

14. List some elements of each of the religious views from Chapter 16 in the lives of Lafayette and Pharoah, and give some examples of the Golden Rule at work.

15. Did the Yoruba, Canela, Mesopotamians, Ancient Athenians, Medieval Europeans or Chinese, Cahokians, or nineteenth-century U.S. farmers have to live amid crime and murder as did Lafayette and Pharoah? When and why did such a daily life begin to occur for some of us humans?

16. Paint a picture or write a novel that shows how you feel about life for Horner children.

17. Compare the life-shortening situations of Horner children to those of the U.S. during the 1820s.

18. What portion of the U.S. population needed low-income housing during the years 1800, 1850, 1900, 1950, 2000, and today. What changed about our way of life such that many of us do not earn a living wage? The U.S. government was not involved in housing in 1776. When and why did our government become involved?

19. Compare death rates and the causes of death among Horner residents during the 1980s with those of the general U.S. population during the years 1800, 1850, 1900, 1950, 2000, and today.

20. Divide news content into several categories, including discussions of the quality of our lives, and then show the percentage of news time, or pages, spent on each of these categories. What percent of your government's actions involve each of these categories? What percent of your church's actions involve each of these categories?

21. Discuss the workings of the juvenile court system. The nuclear family is the basis of human life. Parents show their children how to be human. Under what circumstance is it beneficial for children to be removed from their parents? How can the existence of these circumstances be verified? What are the reasons that those harsh circumstances developed? Instead of removing children from their parents, is it possible to remove the reasons that created those harsh circumstances?

22. Compare the most important things in life for people living in gatherer-hunter, village farmer, and wage-earner societies.

23. Compare housing costs, policies, and conditions for the Canela and Yoruba and in Mesopotamia, the U.S. in 1840 and 1990, Cahokia, and Medieval China, Europe, and Africa.

## Chapter 17 Government, dictators, and democracy

Most nations have a couple dozen political parties, but just a few of the parties typically receive most of the votes. In effect, the U.S. has just two parties who maintain a shared monopoly.

What is the difference between authoritarian and democratic systems? Democracy is a blending of views that partially satisfies everyone, while dictatorial governments have a single party with a single view of goals and priorities; this single party forces the nation down a single path by outlawing all other parties, views, and paths. Imagine how your nation would be quickly transformed if only a single party made all decisions without debate—for example, if the U.S. had only the Democratic Party or only the Republican Party. About half the citizens would be very happy, and the other half would be very mad. Single-party states are able to make more rapid decisions and effect more rapid change than is possible under the slow debate and necessary compromise of multi-party states, but only some of its citizens are happy with the result.

In an authoritarian state there is but one view of the role and priorities of the state because all other views are outlawed; anyone promoting alternative views is punished. The authoritarian state tries to control all political, economic, and social activity.

In the single party state, no organization of any kind can be created without first obtaining the permission of the government. No organization is allowed to compete with the state or disagree with the state, or serve any function that the state is already providing. An approved group is given a meeting place and allowed to publicize its goals and events and to collect dues. Those persons taking part in any unauthorized organization that is attempting to be autonomous of the state will be either fined, jailed, or expelled from one's profession or from the country. These punishments usually keep the number of active dissidents very low.

For about forty-five years, from 1945-1990, the authoritarian, communist governments of Eastern Europe tried to impose allegiance and to create citizens who would obey state directives and accept state-selected priorities and policies. But two generations was not enough time. Most Eastern Europeans felt that the imposed communist state was illegitimate and only grudgingly took part in mandatory voting, state-sponsored social groups, and demonstrations of state support. Most persons believed that the state was unable to bring about needed changes. Daily opposition occurred as citizens were forced to find ways of circumventing state barriers just to obtain the needed resources that were constantly in scarce supply. As soon as the coercion ceased, during Mikhail Gorbachev's reforms, the Eastern European states quickly dissolved.

In the book *Political Culture and Democracy in Developing Countries*, edited by Larry Diamond, Christine Sadowski describes the role of illegal, autonomous groups in organizing alternative ideas within the communist states of Eastern Europe. Group members used the same tactics that had been earlier developed by the underground in their struggles against the Nazis during World War II. They held meetings in private homes and, to get their message out to the public, would sneak into printing plants after hours or would resort to hand-typing copies of flyers. Various autonomous groups formed in response to a specific, well defined issue, particular injustice, or grievance such as wages, the availability of food, or the freedom of speech. They sometimes chose to publish a letter in a foreign journal, but the state would respond by forbidding any domestic journal to publish other works by those authors, and this meant an end to the author's professional career. The communist states inadvertently helped spread word of dissident groups when state-run

news agencies published accounts of the arrest and conviction of dissidents.

When the autonomous groups found that they were being allowed to come out into the open they demanded official recognition to operate independently of the state. Their existence, accomplishments, and knowledgeable critiques of the state undermined the legitimacy of the state by publicly revealing its limitations. For example, citizens would ask themselves, "If the state already has the declared purpose of protecting worker's rights then why is a trade union needed?" Group leaders gained public support, organizational experience, and were prepared to step in and take control as the states were being remade. The group's accurate information and open discussions brought change to the previously-authoritarian nations, though the group members were but a small fraction of the nation's population. The autonomous groups laid the foundation for the fall of the authoritarian, single-party state by presenting the truth to the people, publicizing goals, demanding that rulers be held accountable, and making the rulers see that repression was futile. The falling states had then to choose between increasing repression against the increasing power of the autonomous groups, as did Romania and the German Democratic Republic, or to dilute their own power by allowing the groups to represent alternative views, which meant moving toward a multi-party system.

In communist Romania, the Ceausescu regime used the most extreme measures to crush the formation of dissident groups. Citizens would not criticize the government even during private conversations because everyone knew that, throughout the entire population, one in five persons was paid to inform on everyone else. To control the spread of alternative ideas, Ceausescu outlawed every means of mass printing, even typewriters, so secretaries were handwriting each copy of a document. Ceausescu's repression was so successful that when revolution came, few persons had even heard of any dissidents, and this meant that there was no previously-accepted leader waiting to take over control of the state.

In 1983, I spent a month in Arad, Romania on a business trip to setup multi-million-dollar railroad-car test equipment in an engineering lab. Arad is a town of 200,000 persons. Our hosts were very nice people who took us to their favorite weekend vacation spots. They prepared lunch for us every day so that we could sample home-style food. One of our hosts gave me a mathematics book. However, the Ceausescu government was performing poorly for the citizens. I saw first hand how much that we citizens will put up with from a poorly functioning government. The government did not have enough money to provide electricity for the downtown streets, even the traffic lights were not operating. Since each person was rationed a few liters (or one gallon) of gas per month, horses were replacing automobiles. Shops were unlit. While eating at a restaurant with my hosts, a government agent appeared to photograph the Romanians who were socializing with Westerners. My hosts believed that this could be used against them in the future. As the government imposed more and more on their daily life, people continued to be concerned only that they could provide for their families. Laszlo Magyar, from Hungary, who was also visiting there for business and became our friend, pointed out that if you are occupied each day with just obtaining the day's food then you do not have time to worry about things like the Freedom of the Press. I learned that if the leaders of our government do such a poor job that we have to walk ten miles for daily water, then we will just walk ten miles for daily water. We will not resort to violent revolt unless there is no water or food. This makes me doubt the usefulness of placing economic sanctions against all of the people of a nation to pressure their leader to conform to foreign wishes.

During a protest in 1989, Ceausescu ordered his generals to shoot to kill. One hundred



persons were killed in an anti-government rally of 100,000 persons. Ceausescu then bused in workers to take part in a pro-government rally, but the participants were not fooled. When their chants drove Ceausescu from a balcony during his televised speech, it showed the national audience that he was no longer to be feared. Within four days his government had been toppled, and he had been arrested and executed.

Sadowski explains that forty years of unresponsive, communist rule had resulted in a general aversion toward politics for many Eastern Europeans, and there has been low voter turnout since their conversion to democracy. As people find that their government is unresponsive to their input they frequently withdraw from politics. At the same time, many workers and farmers feel that the government should continue to provide for their well-being, as it has done throughout their lifetimes. The sudden disappearance of governmental subsidies for food, fuel, housing, transportation, communication, education, and health care and such makes for economic uncertainty. The reforms of the new democratic governments must quickly produce growth; otherwise, the new citizen-critics may decide that the new government is also unresponsive to the needs of the people and that it is also incapable of producing needed changes. As it is said, the second election within a new democracy is often more difficult to obtain than is the first.

Through the last four generations, the people of Eastern Europe have lived under four different types of government. The best hope for stable democracy is for the people to relearn tolerance, compromise, trust in government, pragmatism, flexibility in goals, and moderation over extreme partisanship. These are some characteristics of the people living in a successful democracy. How do you rate the level of these things in the people of your own nation today? How do you feel today about the responsiveness of your own government to your demands for change and improvement?

After the Eastern European nations obtained their independence from foreign controllers for the first time in decades or centuries, and mostly in bloodless transitions such as the Czech Republic's Velvet Revolution of 1989, people were very happy to once again be controlling their own nation and its destiny and believed that the present and the future were bright and full of promise. The heroes of the process were dissidents, poets, artists, and other intellectuals, not warriors and generals.

For an authoritarian state to be accepted as "the natural form of government," it is required that the citizens have more faith in a powerful leader than they do in their fellow citizens, and they must lack suspicion of authority and view their ruler as a helpful "parent" who earns respect and obedience. The people must prefer to mute social criticism, to shun those who have views that differ from the majority, shun conflict over order, and keep quiet rather than disrupt society.

If a people's king and queen have always ruled with a single but caring voice then those people will feel that the only form of government that is natural and right is one ruled by a king and queen, not a democratic blending of views that partially satisfies everyone. Societal decisions are left to the king and queen to make. People who live in a kingdom will say, "I don't worry about unemployment levels, interest rates, or crime rates and such because I know that the king and queen take care of these things."

The various nations and peoples of the Earth do not have the same form of government, nor do they agree on the exact societal role of government. Each of us feels that the only correct form of government is that in which we grew; no matter if it was a band, chiefdom, kingdom, theocracy,

aristocracy, or democracy. This is said to comprise the political culture of a people.

Lucian Pyle says that culture resides in the personalities of each person who has grown up in that culture and that our personality is the sum of our life experiences. It is hard to change a given personality because it is hard to change the sum of a person's life experiences. Culture is not a vague feeling for historical tradition; it is part and parcel of our personalities. Cultural change, like personality change, involves true trauma. Our learned cultural view of the "correct" world is resistant to change.

Today's Western ideas of personal freedom and individual liberty came as a response to a lack of specific freedoms during the recent centuries of the European past. The short list of demanded freedoms is also a short but important itemized list of the past intrusions and abuses of kings and queens to which counter responses have been codified into law. That other regions of the world did not suffer these specific injustices from their own political leaders is an example that historical circumstance and the cultural background of a people play a large role in the type of government that each group of people feel is "natural." Every person is naturally adept at recognizing injustice. We have been doing this for millions of years before today's governments and religions came into existence and made it seem as if they recently invented these aspects of life. Where a person from the U.S. might say "That action violates my freedoms," an Islamic person might say "That action is un-Islamic."

Notice that it is ethnocentric arrogance for people from a democracy to think that the people of every nation want to be just like them and will happily resort to armed rebellion today to discard their so-called "wrong, nondemocratic system." Similarly, no foreigner can tell another group to abandon their so-called "wrong culture" or to exchange their farming ways for industrialization. It is not the case that the people of every nation want to be democratic industrialists and "be just like Americans." Everyone wants to continue their well-working ways. The form of government chosen by each group of persons is a result of their own cultural and historical heritage. One nation cannot impose their own form of government onto another group of people because force never works. That imposed government will lack legitimacy, which means that people will say "You are not my government or leader," especially in a military occupation lasting for a generation. As soon as those people are no longer forced into submission they will break free, as occurred when foreign-imposed, communist rule vacated Eastern Europe.

### The cultural ingredients of democracy

Now that we have seen some aspects of a single-party state, let's have a closer look at democracy to see what it is and to see which aspects of a people's culture and history will make democracy a suitable and stable type of government for them.

In the book *Political Culture and Democracy in Developing Countries*, edited by Larry Diamond, we learn that democracy is more than elections and voting and more than free speech and civil liberties. Democracy is first of all a blending of views that partially satisfies everyone.

While single-party states outlaw all points of view that are contrary to those of the ruling person or party, democratic nations have multiple parties and groups who propose policies and then conduct debate and compromise until a consensus is constructed. The process involves political parties, interest groups, and members of the media, elite, military, business, religious, university,

labor, propertied class, radical left and right, centrists, environmental, scientific, families, and professionals—but rarely the poorest of us. The “elite” of a nation consists of its most prominent individuals, including lawyers, doctors, journalists, intellectuals, and politicians along with its religious and business leaders. Within each group, there is a range in viewpoints.

With each of the following statements about democratic culture, decide how well it describes the people of your nation. Citizens of a democratic culture have a tolerance for different views and lifestyles and believe in the right of dissent. Undemocratic citizens might instead accuse dissenters of being unpatriotic. While the citizens of a monarchy have a confidence in benevolent kings and queens, the members of a democracy must distrust power and instead trust in the motives and intelligence of fellow citizens. Democratic citizens have an ever-watchful attitude toward authority rather than blind submission or a fatalistic acceptance of the actions of the leaders and the rules of the state. Citizens have an intelligent distrust of leadership but they are not hostile toward it. Authority must be questioned and challenged so that it does not become dictatorial, but it must also be supported or it will dissolve. Because of this distrust, power is spread and balanced among the branches of government and among many persons within each branch. This also means that the views, priorities, and agenda of no single person or group can monopolize the actions of the government. Much of daily politicking, including public statements and television ads, consists of the attempt to persuade a sufficient number of others that a specific action should be taken by the nation. Daily politicking has become the science of getting one’s way.

Democratic citizens believe that the state is responsive to their requests, but they must participate in the debate before they can measure the responsiveness of their system. The more involved are the citizens, the stronger will be their democracy.

Democracy is most appropriate and durable in a nation whose citizens have a working level of knowledge in politics, participate in political affairs, form political opinions and then express them through participation in public debates and organizations, consider education for all to be beneficial to the nation as a whole, desire economic development, have political beliefs and attitudes rather than apathy toward everything political, have a belief in the legitimacy of the state, have interpersonal trust for the other members, do not view government as a caring and trusted parent or as an institution that has the divine right to rule, have goals for the nation, reject revolutionary change and instead use the existing system to make changes, want to cooperate and compromise rather than suffer civil war, and have trust in their mutually beneficial system and gain enough personal satisfaction from its existence to support it while it is temporarily performing poorly—for example, during an economic recession. Restraining one’s ideology allows results to occur; otherwise, there is nothing but deadlock. It is undemocratic behavior for citizens to feel that they can demand their own way, be uncompromising, and require that everyone be just like them or else. Compromise makes all parties partial winners rather than having clear winners and clear losers. We see that within dictatorial or single-party states, a single person or party controls governmental plans and actions, while in democracies, plans develop through the jelling of consensus after an open debate of the views of all persons and groups.

Citizens are their own bosses and critics. Citizen-critics loudly judge the performance of bureaucratic government in socialization, education, economic growth, social reform, the maintenance of law and order, its respect for the rules of the game, and its ability to govern invisibly and to achieve legitimacy. How well do you rate the level of performance of your own government

today?

We see that democracy is more than just voting and personal liberty; it is a blending of views that partially satisfies everyone. Citizens of a democratic culture have a tolerance for different views, priorities, and lifestyles while undemocratic citizens feel that they can demand their own way and require that everyone be just like them or else. Second, the only form of government that seems natural to people is that in which they grew, whether it is a kingdom, dictatorship, theocracy, or democracy. For this reason, it takes one or two generations for a people to believe in a new type of government—force never works. We have seen that democracy in Ancient Athens meant that every detail of the city's operation was chosen by a show of hands. Democracy is a balanced sharing of power among many persons. We learned the hard way that this blending of views and spreading of power was needed to avoid having a single person dictate policy and actions for his or her own benefit. Power within the federal government of the U.S. is spread among about five hundred legislators and judges along with the president, who has the greatest opportunity to choose the agenda for the nation—except that we have an unchecked balance of power demonstrated by fifty years of presidential wars. The blending of views occurs only through a compromise that partially satisfies everyone, but many of our politicians are taking appearance advice from political marketers who tell them to be committed and uncompromising. This is actually undemocratic behavior. It is also undemocratic behavior for one group to imagine that their view should be imposed on everyone else. Democracy is a firm belief in the toleration of different views and in the right of dissent of others who offer opposing views and priorities. Democracy requires consensus building. It is undemocratic behavior to suggest that those having an opposing view are unpatriotic. Democracy ends when too many hold the view that "only my way is right and I won't compromise." When no compromised blending can be constructed then a civil war might instead occur. We have also seen that civil war ends when everyone has become so tired of daily death and suffering that compromise is seen to be not so bad after all. Democracy limits not only the pace of change but its magnitude, too.

Since no governmental action can occur in a democracy without first having the agreement of enough persons, much of daily politicking, including daily news conferences and the issue adds we see on the television, occurs as individuals and groups of individuals try to get their way by convincing others to agree to their views. This is often done by spreading a certain perception. It is said that in politics, perception is an important and powerful reality. The political process in the U.S. has become a science of getting one's way. In the last decade, the majority party in the U.S. House and Senate has tried to limit the participation of the minority party in the legislative process. The majority hopes to get its way by taking us toward single party rule between elections.

Single party states and dictators might jail or kill opponents. If people do not agree with the dictator's confiscation of the nation then he chops off their heads on Main Street in front of everyone. This works very well in keeping the rest of us silent. It is very effective because people will not risk their lives over anything less than the lack of food for their children. Such mind control is a new thing from the last century. In previous centuries, kings and queens did not kill people for speaking their minds.

Governmental systems are also a part of our culture. The only form of government that seems natural to a people is that in which they grew, whether it is a kingdom, dictatorship, theocracy, or democracy. For this reason, it takes one or two generations for a people to believe in a new type of

government—force never works. Democracy can not be forced on to a people by simply telling them that today, you will have elections and free speech. Instead, democracy's blending of views has to be part of the life and culture of a group of people.

In the U.S. today, we vote for president as if we are voting for the person who can dictate all laws, policies, and actions, but the president has to convince 500 legislatures and judges to agree. Hedrick Smith recommends that we ask presidential candidates not only to state their goals but to also explain how the legislatures will be convinced to go along. The president *can* set the agenda and tone of the nation.

In the last couple decades, the majority party in the U.S. House and Senate has tried to limit the participation of the minority party in the legislative process. The majority party hopes to get its way by taking us toward single party rule between elections.

Today, we have corporate-directed news channels in the political flavor of your choice. To maximize profit, each news corporation gets a roomful of people having the same political views and asks them What makes you really mad? Their answers become the topics presented on the news channel. This maximizes viewing audience size and hence the sales of oatmeal commercials, which makes the profit of the corporate news channel. For example, a test audience might answer that they get mad when thinking of "welfare people who buy drugs," so that becomes an hour-long shouting match on the news channel. The discussion does not include possible causes or solutions and is meant only to make viewers mad. The channel's topics are carefully chosen to upset viewers and make them addicted to the pain. Even the presentation of weather forecasts can be made to evoke fear. The channel might state that it is windy on the equator today and ask "will this grow into a storm that kills you tomorrow? Stay tuned." The solution is to turn off those channels.

About one in ten U.S. citizens has keen interest in politics and follows every daily nuance. In contrast, too many of us will simply vote for the person with the nicest smile or the most familiar, single-line statement. Too many U.S. citizens feel that "It is my way or nothing." The corporate news channels are fueling this, but the opposite of compromise is civil war. U.S. intolerance and refusal to compromise is driving the nation to civil war between those who want government to protect us from injustice and those who want to eliminate government and instead let business run the nation and do whatever it wants to increase profit. Historically, war ends when people tire of daily death and destruction and decide that compromise is not so bad after all.

## Democracy in Taiwan

Chinese civilization is 5,000 years old. Confucianism began 2,500 years ago, around 500 bc, during a time in which many states were fighting and the empire was collapsing. Confucianism encourages one to support the existing social order and to be loyal to the ruler. If children learn to respect older siblings and parents then, as they become adults, they will naturally respect the leaders of the village and of the nation. In this way, political and social order develop naturally from the proper behavior of the family. Confucius taught that society consists of fathers, brothers, friends, layers of bosses, and the sovereign. Mencius said that the character of a ruler is shown by the well-being of the people and that the people are important, not the ruler. It was believed that the main concern of politics should be people and that it was best to leave decisions up to the leader rather than having open political competition. There is a long history in China of viewing leaders as helpful parents.

Remember also that China has usually been a single, large political unit while Europe consisted of many independent kingdoms. In the year 1300, Paris and London had populations of a few thousand persons, but cities in China already had one millions persons and operated through an enormous amount of daily commerce and an efficient, bureaucratic system based on merit, not inheritance.

Ambrose King discusses the transition from an authoritarian to a democratic regime in the socially and economically successful Republic of China on the island of Taiwan. After the end of World War II, Mao-tse Tung led the Communist takeover of China. Taiwan became the home of three million exiled members of the Leninist-structured Kuomintang who were expelled from mainland China. The Kuomintang was lead by Dr. Sun Yat-Sen. During the 1960s many persons were jailed in Taiwan for trying to start new political parties. At that time, the public considered these dissidents to be threats to the order of society and a threat to political stability, which we have to be an aspect of Confucianism. In 1986, president and party leader Chaing Ching-kuo used his personal power and prestige to call for reform and to allow the formation of new and competing political parties. This meant an end to single-party politics and the beginnings of democracy. King points out that it was the leader of an authoritarian party who used no less than his authoritarian power to engineer and legitimize a democratic breakthrough. In addition, the Western-educated and reform-minded liberals within the party went along with him. This shows that democracy is most-easily accomplished when existing leaders have a firm and forceful commitment to its existence.

In Turkey in 1923, Ataturk similarly brought multi-party democracy to Turkey through a series of reforms.

### Democracy in India

Richard Sisson describes the development of democracy in India through a 100-year incubation by British colonialists. The English began visiting India around the year 1600 and were trying to control it by 1750. Much of India became a colony of the British empire in 1858 as a few thousand British officials struggled to oversee a nation of a few hundred million persons. When Indians demanded a role in their own government, the outnumbered British could hardly refuse. In response to India's first war of independence, which Britain refers to as the Mutiny of 1857, Sir Bartle Frere said that it was better to have Indian grievances out in the open before discontent became disaffection. From a small start in 1858, the British increased Indian participation in elected, parliamentary democracy. Including the Indians in politics was a survival reaction rather than a designed generosity. The Indian council was initially limited in the subjects in which it could take action, and it was subject to executive veto, but the British colonialists were learning that public discussion does develop legitimacy while autocratic rule does not. Through the next nine decades, reform acts continually expanded Indian involvement in their own rule, including the direct election of all representatives throughout the last fifty years of the colony. By the time of Independence in 1947, democracy had been practiced by the people of India for a few generations. Democracy had become part of their political culture as it had become ingrained into the way of thinking of its Indian practitioners. It didn't matter that in 1947, only 15% of the people of India could read.

Mahatma Gandhi played a large role in the fight for India's independence. Through the years 1920 to 1947, he promoted civil disobedience and nonviolence as a means of communicating

political demands. Whenever a protest turned violent, it was terminated. Still today, 25% to 50% of Indian's believe that work and business stoppages, political fasts, and sit-ins are legitimate forms of political behavior. The hero of Indian independence is a pacifist, not a warrior or general.

The people of India practice all the elements of democracy. They have multiple parties that debate to a consensus in parliament. The public shows interest in politics and forms opinions about political and public matters. Citizens feel that voting is an important way to influence their government, and feel that their vote produces results. They will elect a different party into power whenever they feel that the old party has performed poorly in keeping prices down, handling the food supply, or in fighting corruption. Indian citizens hold their government responsible for its successes and failures. India is a successful democracy.

The Constitution of India includes fundamental rights for equality before the law and freedoms for speech, assembly, association, movement, settlement, and employment. The Constitution guarantees the right to life, liberty, property, due process, free access to all public places, prohibition of forced labor, and the right to follow and teach the values of one's own culture (in this last item we see a particular Hindu tolerance that is missing from the U.S. Constitution).

### Independence of the colonies

Most every colonized nation won their independence from Europe in the decades following World War II. After the colonies had fought alongside their European colonizers, they then demanded that the colonizers acknowledge the hypocrisy of their relationship. (In a similar way, those of us U.S. citizens who are black returned from fighting in WWII to demand an end to the hypocrisy of our so-called "separate-but-equal" system.) The world war also left the colonizers drained and no longer able to afford the expense of maintaining their territories. Much of the imperial expansion had been financed by the profits of the expansion of industry and the Industrial Revolution. The 500-year-old, unjust European fashion of dominating, exploiting, and angering colonies was ending. There is nothing glorious about any empire. There has never in history been a people who wanted to be subjugated and oppressed. It has never once in history worked to be a bully, and there has never once in history been a bully who understood that it does not work to be a bully.

### Departure of authoritarian, European colonialists from Africa and the subsequent autocratic and democratic governments in Africa

Naomi Chazon explains that European colonists in Africa setup autocratic administrations instead of democratic systems. Each colony consisted of a random mixture of people, tribes, and languages because it consisted of an arbitrary geographical area. Unlike the colonies in India, Africans were not allowed to participate in their own government. The autocrats ruled Africa for a century and then rapidly vacated within a single decade without having first given the residents of ad-hoc nations any experience with democracy. After the colonial powers left, many African nations quickly reverted to autocratic rule, while democracy in India has instead had a stable and long life. But by the 1980s, the people of many African nations grew tired of dictatorial rule and began to insist on democratic rule.

The peoples of the externally concocted, African countries had to form themselves into

nations even though they contained random mixtures of unrelated tribes. Today, the citizens of each African country have successfully developed an emotional attachment to their nation and have a sense of nationalism. At the same time, people continue also to identify themselves with their village, region, and ethnic group.

### African before colonization

Remember that for hundreds of thousands of years throughout the world, including Africa, people lived in small bands of about 50 persons. Group decisions were naturally made through a discussion among family elders whose main concern was the continued, smooth functioning of the mutually beneficial group. Such democracy was not invented by the U.S., or even by the Ancient Athenians. It is much older than that. We human beings invented empires and emperors about 5,000 years ago. Authoritarian dictatorships are a more recent invention.

For thousands of years before the arrival of the European colonists, the many peoples of Africa were each following their own preferred political system. Some African societies were making village decisions through public debate, while those societies that were based on agricultural or pastoral economies typically had a centralized political authority in the chief, whom the people considered to be a caring "parent." The chief was held accountable for the community's success and failure and could be removed from power. There were few imperialistic states in Africa, such as the militaristic Zulus and the Rozvi Mutapa empire of Zimbabwe. The ancient state of Egypt never tried to conquer the entire continent of Africa. Each region instead maintained local rule. The Mali and Songhai of Western Sudan had a loose sort of central federation of local communities that were still very much independent. The local groups sent representatives to regional meetings where a consensus would be formed from differing views; it was said that "the middle road would be found by blurring opposites." Various African societies emphasized the importance of the community over that of the individual and strongly rejected both individualism and authoritarianism. Various societies emphasized obedience to elders, officeholders, clan heads, and village chiefs. The goal of every society was a smoothly functioning society—else disorder dissolve it at everyone's expense. Remember that we innately form social systems because we all agree that we will have a better life together than if we "go it alone."

During the Middle Ages, long before the arrival of the European colonizers, many cities in Africa had populations of 10,000 persons, including for example the cities of Timbuktu and Kinshasha. Islam quickly spread across northern Africa after its beginnings by Mohammed around the year 600 ad and long before the arrival of either the colonists or the slave traders. In the seventeenth-century, some slaves who were taken to the Americas were of the Islamic faith and so knew of Jesus and Mary before their arrival there.

Around the year 1850, Europeans began subjugating the separate peoples of Africa and divided the continent into many colonies. From the start, Africans saw little reason for the complex legal systems of the colonialists. The colonialists setup hierarchical, administrative institutions plus coercive devices that were meant to be instruments of domination over diverse peoples. These institutions were tacked onto what the colonialists saw as an existing system of so-called "big men" and stressed law and order not participation and reciprocity. An African person's social standing became linked to his or her proximity to state power. The government was both externally imposed



and excessively ruling, so it earned no feeling of legitimacy.

The colonies were established to promote the wealth, power, and prestige of the home country. They added territory and opened new markets for the sale of the home country's goods. They also wanted to setup a system of agricultural and mineral production meant for export. Chazon says that the vehicle of capitalism was the state rather than any private system of local entrepreneurs.

Colonial officials talked of the connections between intellectual enlightenment, economic advancement, and democracy but their subjects saw only that the reality of the imposed system was completely opposite to the presented rhetoric and veto. The ethnocentric colonialists told their subjects to be "just like them."

After WWII, Africans began to demand independence, self-determination, the right of a people to shape their own destiny, and to point out the injustice of foreign domination and the human indignities of colonialism. The more vocal the call for democratic participation, the more vocal also was the rejection of colonialism, imperialism, and capitalism. The largest amount of violence occurred in those nations where the withdrawal of the colonialists was most prolonged, including Zimbabwe, Angola, Mozambique, and Guinea-Bissau. Through the years 1950 to 1980, every African nation won its independence.

Before independence, the colony of India had one hundred years of experience and involvement with a democratic system. In contrast, the African colonies had one century of experience with nothing but an authoritarian system that sometimes talked of democracy. During the independence struggle in Africa, democratic activities were being used to protest the authoritarian system but not to build tolerance and consensus.

As the European colonialists were vacating African nations, hasty agreements created democratic and representational governments in each nation. Most colonies simply agreed to anything that might result in the quick withdrawal of the colonists. But democracy was not in the recent experience of the ad-hoc national entities, and was not imbedded in the political institutions or in the political culture of the citizens. The new, democratic constitutions were viewed as alien systems from a foreign culture, and democracy was considered a sudden and revolutionary change. The citizens saw no benefits and did not want to be revolutionized.

The independence leaders were typically elected to be the first leaders of the new nations, but after the election, these leaders had little vested interest in perpetuating the democratic system. Within a year of independence, the leaders of all but two African nations became authoritarian. No foundation for political competition existed. The new leaders quickly learned to strangle opposing views, to harass or expel their opponents, and to outlaw all other political parties, thus forming single-party states. These authoritarian leaders said that by discarding the alien democracy, they were promoting the re-Africanization of the continent's government. The expansion of the state also made the leaders extremely wealthy amid a growing poverty.

By the 1980s, most nations were in economic, social, and political crises. The official agencies could not perform even the most essential tasks. Scarce resources often ended up in the hands of officials who were diverting public funds. Social, medical, and educational services were deteriorating. Many nations had food shortages and basic necessities were unavailable. Such situations resulted in a visible decrease in the power and legitimacy of the state; decrees were simply ignored as people realized the regime's incapacity to govern. Many persons were more occupied with the daily search for needs than with devising a new form of government.

There were fifty coup d'etats in Africa in twenty years. Civil war occurred most often in those nations where the influence of various social groups was seen to be as strong as that of the state, itself. The intolerant absence of a willingness to compromise with other views led to civil war in many nations. Civil war coupled with drought brought horrific famine to some countries. Civil war would typically last twenty years until people decided that compromise was better than continued war and its daily death and destruction. After about a generation of experience with the unjust authoritarian replacements for the previously authoritarian, colonial governments, people were ready to once again consider democracy.

Grassroots movements emerged to promote democracy as the people began to campaign against unbridled state power. The new call for democracy was coming from the people. As democracy was once again put into place, the citizen-critics held the state directly responsible for its results and judged its performance in improving the well-being of the people, in the protection of civil rights, the promotion of equitable distribution, the administration of justice, and in the reduction of waste, corruption, and exploitation. The people now directly attribute depressed situations to the actions of the government and are aware of the pervasiveness of the state in their daily life. Citizens are no longer content with rulers who enrich themselves at public expense. Such attitudes are the beginnings of strong democracy.

### Future Democracy

During the 1980s, many Latin American nations switched from authoritarian or military dictatorships to civilian and democratic governments. Since 1990, there has been an increase in the number of democracies in the world. Larry Diamond explains that ruling groups can largely determine the character and pace of democratization, but the resulting democracy is stable only if the masses are committed to it. Notice also that long-established democracies continuously change because social, economic, and generational changes produce new interest groups. The groups must be listened to or they might topple the democracy because democracy requires flexibility or it crumbles. Some national governments are becoming dangerously inflexible due to ties with corporate and political interest groups. These nations include Italy, Japan, Israel, and the U.S.

The political system is another aspect of a people's culture. The form of government that each person believes to be "natural" is that which existed during his or her childhood. This part of our culture cannot be instantly altered—it takes a couple generations. For example, one nation can not externally impose democracy where it is not already ingrained in culture, which was the difference between India and Africa's transition to democracy.

### Guiding principles for U.S. foreign policy

While campaigning for president in the year 2000, George W. Bush said that "Foreign policy is easy, just stop doing things that make other nations mad at us." He was referring to fifty years of U.S. support for any national leader who was anti-Soviet, no matter what sort of dictators were supported. The priority of U.S. foreign policy was to suppress communism at all costs. This hurt the image of the U.S., created many enemies, and played a role in much misery and death in many nations. In the last fifty years, U.S. forces have conducted war or military operations in about one in four of the

nations of the world. This made a lot of the world's people mad at the U.S.

In the book *Understanding Central America*, Booth and Walker present a recipe for successful U.S. foreign policy that is designed to build and strengthen within each nation, the elements of successful democracy, including the blending of views through compromise, increasing the number of interest groups and political parties, building the generational commitment to democracy, and increasing public participation in their government and in choosing goals and priorities. They recommend that U.S. foreign policy pursue progress that supports genuine social, economic, and political development based on grassroots, majority participation. U.S. foreign policy should promote equality and social justice; if it does otherwise then it makes people mad at the U.S. Policy should stop dumping money on pro-U.S. regimes regardless of their behavior, and stop underwriting large, export-based "development" projects that involve only large corporations and mostly benefit the wealthiest members of the nation, increases inequality hence unrest, results in a leadership more responsive to foreign business interests than to its own people, and does not improve the well-being of the general population. When a U.S. corporation enters a nation and only increases the hardship of the citizens then those citizens get mad at the U.S. intrusion. The people who are suppressed by a government seen to be financially supported by the U.S. get mad at the U.S. for playing a role in their continued hardship that might otherwise end.

Booth and Walker further recommend that a better foreign policy would instead assist small producers, peasant cooperatives, worker-owned enterprises, and labor intensive activities geared toward local and regional markets. This is better than an insistence on capital intensive enterprises. To be most effective, aid money should be channeled through organizations experienced in grassroots economic development.

We form government to coordinate our mutual efforts at making life better for all of us and to organize numbers of persons greater than that of our innate band of 50 or so persons. To form a quick characterization of how well a government is performing in recent decades for its citizens, look at some economic and social health indicators. These things measure the success of a government in promoting the well-being of its citizens. Some indicators include infant mortality rate, average life-span, literacy rate, malnutrition rates, spending less than one-third of income on housing and utilities, access to affordable education, average number of years of education, access to affordable health care, income and wealth inequality, real wages and purchasing power, the portion of an individual's budget spent on food and housing and health care, the United Nations Human Development Index, the Gini coefficient, poverty rates, suicide rates, rates of child neglect, portion of the population that is in jail or is employed in police and military forces, ratio of CEO to worker wages, unemployment rates, international assistance money received, number of deaths and disappearances, number of refugees, crime rates, number of labor strikes per year, number of officially recognized political parties, number of anti-regime organizations, number of political demonstrations per year, number of hours per year a person spends discussing and participating in politics, Purchasing Power Parity, Gross Domestic Product, population growth rates, and the portions of the governmental spending on well-being, education, and the military.

## A global, democratic assembly of democratic nations

For the last 5,000 years, each of the political units of the world have been independent, sovereign, and selfish entities that were answerable to no others. Relations between states have been a matter of power politics. There has been a recent surge in the number of democracies in the world, but this has not been accompanied by an increase in the democracy *between* democratic states.

Today, business is global while government is not at all. Global corporations cannot be managed by any single country. Many issues are larger than one nation. A single nation cannot pass laws to stop the causes of acid rain, eradicate a particular disease, regulate the internet, conduct law enforcement, or manage the natural resources of the world. There has been a recent globalization of financial and production systems with the result that even the most powerful nations can no longer control their own economy because internal adjustments can be cancelled by external reactions. Third-world nations have long been familiar with external influences on internal affairs, but this comes as a recent shock to so-called "powerful" nations. There is a new international challenge to democracy to find global approaches to global issues. These global approaches will involve all of us because the issues affect all of us.

In his article *Democracy: From City-States to a Cosmopolitan Order?* within the book *Contemporary Political Philosophy, An Anthology*, which is edited by Goodin and Petit, author David Held explains the need for democratic nations to form a democratic assembly of equals to coordinate efforts on global issues. This is not a single world-government but a single cooperation among the world's governments on the issues that require this global cooperation. Culture is local. Everyone prefers local government on local issues, but global issues can be solved only in a global manner. We will continue to have local institutions within a global superstructure, but there is much to be gained by pooling global resources on large projects. The specific inadequacies of the old-style independent nation means adjustments are going to occur. David Held says the United Nations would be close to filling the need but the superpower, security council veto has left the U.N. in the power-politics world of old-style, independent, selfish, sovereign nations.

Bronowski and Mazlish point out in their book, *The Western Intellectual Tradition*, that many past rulers believed that the tenants of morality didn't apply to the entity that was their state. Suppose a person comes to your home and says "I must kill you for your food to feed my children." We all agree that this person's lack of food is no excuse for immoral behavior. But a state will sometimes kill to obtain a port, raw material, or any other object of interest. Throughout much of the last 4,000 years, the priority of many of our kings and queens has been the expansion of their own territory, wealth, and power. Bronowski and Mazlish explain that beginning with the Renaissance, politics began to mean a more or less conscious participation of all strata of society in the achievement of everyday purposes. The state exists to serve the people. The importance of the state has slowly been replaced by the importance of the individual. Our governments today more often debate things like health care and the employment of citizens than the conquest of foreign lands. People measure success in life simply in terms of healthy and happy children and communities, not wealth or power. How do you measure success in life? Today's state is the creation of a group of persons and is maintained by the decisions and actions of that group and its leaders. We are now realizing that our global economic, social, food, and environmental problems require the coordinated efforts of all nations and peoples. Our current problems are not confined to lone, independent

kingdoms or nations. That we human beings are still here shows that we have solved every problem that has arisen. Though typically, a solution is found after some fumbling in the dark.

### Humanity's global view of humanity

About one hundred persons form a band, one hundred bands form a city, one hundred cities form a nation, and today, two hundred nations form a world. We have already progressed politically from bands to tribes, kingdoms, and then nations. This trend will continue until our existence is viewed to be the collection of all of us human beings. As each larger social unit is formed, the previous unit is mostly forgotten—after a few generations have passed. A few thousand years ago, it was a new thing on the planet to consider oneself to be a member of a city-state that included many bands and clans. After some centuries, city-states merged into kingdoms. A few centuries ago, the world was divided into 10,000 kingdoms. There were no nations and nobody considered themselves to be a national citizen. Just as the members of the world's kingdoms a few centuries ago could not imagine themselves to be nationals, some of us today have trouble imagining ourselves to be global citizens and fellow human beings, but it is going to happen. Just as we have trouble today imagining how we were not nationals a few centuries ago, our ancestors will soon have trouble looking back at the year 2000 and imagining how we were not global citizens. Chiefdoms, kingdoms, nations, and nationalism are temporary things lasting only a few centuries. Will this mean an end to national militaries and to war? We are all in this together and are responsible for our own results. For the last ten-thousand years, we have been building the civilization of our own choosing.

We can safely predict that the characteristic of the last and permanent version of our government will be that its priorities fully match the concerns-of-life of individual humans. These concerns are love and family, friends, and community and justice, not war or power over other people. When a person is thinking, talking, or taking action, it involves these few things. Social scientists measure hundreds of aspects of the quality of our lives. We can fully utilize these to measure the success of our attempts to govern ourselves and to make life as good as possible for as many of us as possible. We have arranged our global, human civilization today such that it does very, very well for 0.01% of us but very poorly for 15% of us. We can do better with our mutual efforts. I would be happy to have citizens use the internet to choose goals and priorities for the mutual efforts that are our local, regional, national, and global society. I would be happy for citizens to choose the set of hundreds of indicators to measure our mutual success, to choose measures of the success of our mutual efforts, and even to choose revenue sources and expenditures and to propose and approve law. Do you prefer that these decisions are made by you and your fellow citizens or do you prefer to hire professional politicians to make these decisions for you and everyone else?

## Summarized sources

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## Questions

1. What will be the change in our civilization as we move beyond the era of independent sovereign nations and form a democracy of democratic nations?
2. Do you have any feeling of being a member of a global society? A national society? A city?
3. We saw how the industrialization of the U.S. developed over a 150-year period. It resulted in an increase in the number of items in our homes from 20 to 2,000 but also resulted in decreased community ties and decreased control over our own continued livelihood. There was a shift from 90% down to 1% of us working our own family farm as we became wage-earners. We also moved from rural to urban areas. When a nation sets out to industrialize today, these things can happen within a shorter time span and so be more stressful on the society. How has industrialization affected the Southeast Asian nations like Korea, Singapore, Thailand, Malaysia, Indonesia, and China? How has the oil industry changes society in the Middle Eastern nations?
4. Suppose you had been living in a chiefdom for as many generations as anyone could remember when suddenly an outside force came and told your group that you were now part of a larger nation and were to take part in a democratically elected assembly. What would you think about this? What would the Canela think about this? What would be the benefits and drawbacks? Do you think you can successfully command the people of a region of the world to turn their society into a replica of your own on a certain Tuesday? What is the role of culture in both sides of this attempt?
5. Define democracy. What are its benefits and drawbacks compared with other types of government? How does its practice change through the generations?
6. Which cultural elements make for successful and permanent democracy? Compare the existence of these elements in the U.S. during the years 1800, 1900, 2000, and today. Which of these elements are becoming increasingly imbedded in our society and which are decaying today?
7. A characteristic of authoritarian government is an intolerance for dissenting points of view. When our marketing advisors tell our political candidates to show "uncompromising commitment," and the candidates then act in an uncompromising manner, will this intolerance lead to the development of a one-party state? Will everyone feel that their government is being responsive to their requests if every candidate acts in an uncompromising manner?
8. Do the two dominant parties of the U.S. actively crush opposing points of view in any way? How do we guarantee that they don't?
9. A nation remains a one-party state only by outlawing all groups with an opposing point of view. Describe the laws that would result in the U.S. if suddenly there was only the Democratic Party and all other parties

were outlawed. How would the Republican Party change the U.S. if it were the only lawful party? If a nation has elections with many candidates but only one party, what sorts of differences exist among candidates? In the U.S. today, do the Democratic and Republican parties hold a virtual monopoly on political power? What number of parties are need for a healthy democracy? Before elections there are televised debates among the candidates. Is it healthy for democracy that our current system sometimes restricts the debates to candidates from these two-parties? If we can't include everyone in a televised debate then how do we hear every point of view? Are there other, equally influential media? How do you go about getting your views heard through these other forms of communication? How much money does it take to get your view heard? Should we hear only those views that have sufficient funding? Does a lack of interest in other points of view crush other parties? Is this healthy? We saw how the Eastern European autonomous groups gained in power when they spoke a truth that was being ignored by the official party. Third parties in the U.S. would gain influence if they openly discuss a topic avoided by the main parties. List some of these topics.

10. Do those of us who live in small bands have government? Would they prefer to have a government that is paternalistic, authoritarian, or a multi-party democracy? Which form of government do those of us who live in chiefdoms prefer?

12. Describe how our types of government are related to the mammal hierarchy of individuals, the primate social system of dominant families, or to the mutually beneficial primate social system of exchanging help between the individuals of the society. Considering democratic, dictatorial, or paternalistic-authoritarian types of government, which is closest to our innate biology?

13. Compare religious and governmental philosophies concerning the struggle against injustice. How are these viewpoints related to our primate social system of exchanging help among the individuals of the society?

13. Does the leader of your country more often say "I," "the people," or "the nation?"

14. What are the main concerns of dictators, the leaders of single-party states, communist leaders, and the leaders of democracy?

15. Describe some opposing points of view concerning a recent event.

16. Do you feel that your state is responsive to your requests? Can you initiate changes and improvements? Does your vote count? In what ways do you participate in the public debate about issues? Did you vote? (See the next question.)

17. Write a letter to your representative in the legislature and to your executive, and send a letter to the editor of a newspaper describing your own point of view about some recent event or a goal for the state. Discuss your view at the next meeting of an interest-group.

18. Do you believe that free speech gives a person the right to shout "movie" in a crowded firehouse, as does the *Atlanta Onion* newspaper?

19. List some groups who threaten armed revolt against your state, and describe their point of view.

20. Describe a recent action of your state with which you agree, and one with which you disagree.

21. In *Political Culture* edited by Diamond, Booth and Seligson ask if you feel the government should censor extreme viewpoints or crush demonstrations? Should any group be allowed to hold meetings? Should they be permitted to occupy public buildings—during a "sit-in" for example—to publicize their point of view? Would you participate in an organization to try to solve community problems? Would you work for a political party, candidate, or election campaign? Do you think people who say bad things about the state should be allowed to vote or run for office? Rate your agreement with each of these three questions on a scale of one to ten.

22. List the political groups in your area and describe their goals.

23. Why is your state the legitimate holder of power?

24. Do multiple points of view and democracy always result from economic development?

25. Is there anything that a nation's leaders should keep secret from its citizens?

26. How do you choose which candidate you will vote for?
27. What does the current apathy of many U.S. citizens for everything political, both foreign and domestic, mean for the future of their democracy?
28. How are a people's religion and their view of the proper form of government related? What role has Confucianism played in the Chinese view of the "natural form of government?" What role has Christianity, Buddhism, Hinduism, Judaism, and Islam played in their follower's views of the "natural form of government?" Since Hinduism and Buddhism are tolerant of the religious views of others, are they also politically tolerant? Has the intolerance of the Christian Inquisition appeared in any political manner?
29. Recently the issues of gun control and abortion have polarized the U.S. in an uncompromising manner. What will be the effect on the health of the nation's democracy if there is no resolution to these issues. How does the magnitude of polarization compare with that which existed just before the Civil War? Compare the compromising capacity of the citizens of the U.S. during the years 1800, 1900, and 2000. What were the reasons that the leaders and the citizens of the U.S. chose Civil War over compromise?
30. In the year 1776, why did the leaders and the people of the U.S. choose a democratic form of government? What other choices could they have made?
31. Describe something that is becoming worse within your nation, and something that is improving.
32. During the years 1970 through 1996, the average income of individuals within the U.S. decreased by almost 20% while the highest annual compensation of a CEO grew to be one billion dollars. Today, the CEO of a large corporation makes 500 times as much as the average worker within those corporation (in other countries this multiple is typically between twenty and fifty). Those of us who are among the wealthiest 1% hold 40% of the nation's wealth. One in five of our children today live in a home whose income falls below the poverty line. Have these changes occurred slowly or rapidly? What effect have these had on the health of U.S. democracy? What will be their future effect? (During the 2000 and 2004 presidential campaigns, only Ralph Nader of the Green Party mention these facts—neither the democratic nor Republican candidate did so. Instead, they timidly said "We are doing well, but not all of us.")
33. Were ancient empires just military institutions or did they play a role in the daily lives of their home populations? Were the ancient empires only overthrown by other empires or did the people of an empire ever choose to change the form of their own government? When did the last empire dissolve?
34. What is the difference between an ancient empire and the imperialism of the 16th through 19th centuries? Has imperialism stopped occurring?
35. How many nations are currently ruled by dictators?
36. List the social and elite groups within your nation at the time of its origin and today.
37. How are the priorities of your government proposed and selected?
38. Describe how various groups proposed to solve a recent issue and the compromise that was accepted.
39. Describe the views and priorities of ten different political parties within your nation.
40. Did Medieval Europeans view their system as an authoritarian regime? Were the chiefdoms of the Ancient Mesopotamian farming villages an authoritarian system?
41. We saw that some religions—for example, Buddhism and Confucianism—teach that the group is more important than the individual. What effect does this have on the accepted form of government?
42. What does it mean to have civil liberties? Describe the ways in which an authoritarian regime makes your life un-free. Is it better for everyone's well-being and the nation's progress if we do or don't have civil liberties?
43. If both the Democratic and Republican Parties in the U.S. employ the same marketing techniques of testing and polling, will that mean that both come to the same conclusions, become indistinguishable, and merge into a single party?
44. The communist system existed for just a few generations. Describe how the children of each new generation viewed communism as part of their culture. What would their parents have told them about the



new system? How many generations would have to pass before your religion would be forgotten if it were to be outlawed by your government? When the communist system ended, did the oldest people feel that only the ended system was the natural form of government?

45. What percentage of your daily conversations involve domestic politics, and what portion concerns foreign politics? How do these portions compare with the citizens of other nations, or during revolutions?

46. How many generations are required to pass under a dictatorial regime before a subjugated people decide that it is the only "natural" form of government? Does the number of generations differ for democracies, chiefdoms, or kingdoms? (Political Scientists refer to the cultural adoption of political ideas as "Rustow's concept.")

47. Describe an aspect of a suddenly changed political system that a people will adjust to within a few years.

48. Can you relate the number of elapsed years during a transition from an old to a new system with the longevity of that new system?

49. How many years elapsed after the revolution of 1776 before the citizens of the U.S. stopped pointing out those aspects of government that worked better under the old system?

50. Can it occur that everyone in a nation agrees about priorities and policies? Can you relate the number of popular viewpoints to the size of the population?

51. Will the economic expansion of the communist state of mainland China result in a transition from an authoritarian to a democratic regime? Since both Taiwan and the Mainland are of the same people and culture, a comparison of the two through time might give clues to the range of political development that can occur from similar beginnings (its Lyapunov exponent). You might like to track and compare the future developments in the two nations.

52. Do modernization and economic growth turn authoritarian regimes into democracies? What is the role of an authoritarian leader?

53. Does a newly industrialized nation always suffer an increase in wealth and income inequality? (Political Scientists refer to this possibility as "Kuznet's trap.")

54. The economic development of some early cities of Greece and Rome occurred as they produced products for export to the older states of the Middle East and Mediterranean region. Can you compare this with the economic growth of any Eastern Asian nations after World War II?

55. Communist governments might discourage religion but have so far been unsuccessful in its elimination. What are their exact religious policies and laws, and how effective have they been in reducing religious activities and beliefs?

56. Compare Dr. Sun Yat-sen's Principles of the People with the ideals of Confucianism.

57. Why do you vote? The article by King includes a chart by Fu and Ying-Long listing possible reasons for which an individual might choose to vote. They asked people to choose one or more of the listed motives as a reason for voting and to choose one or more of them as the most important. The choices were to exercise civil rights, perform civic duties, express your own view, support the candidate you like, to influence governmental policy, was instructed or advised by parties or other political groups, was urged by family members or relatives, was urged by neighborhood associations, was urged by an organization you belong to, because you are acquainted with the candidate, was urged by colleagues of the organization you work for, or other. Why did you vote? Which items would you choose from this list?

58. Compare the political interest or apathy of the U.S. citizens prior to the Revolution, industrialization, Civil War, labor strikes of 1890s, depression, World Wars, Civil Rights Struggle, wars against communism, New York Bombings, and today.

59. How thoroughly are the characteristics of democracy imbedded in the beliefs of the citizens of the long-democratic United States? Has their level of belief increased or decreased through time? During the Revolution, were the U.S. citizens aware of the full set of characteristics of democracy described above? Has the full set of characteristics become ingrained into the beliefs of most citizens today? What portion of U.S.

citizens are tolerant of the views of others and want to reach a consensus through a blending of views? How much does the typical educational curriculum teach us about the long list of characteristics of successful and continuing democracy? After the New York Bombings, politicians, news reports, and news personalities—who were in a position to influence many persons—proposed many responses to terrorism, including long-term detention of suspects without being charged of given "a speedy trial" (about 1,000 persons were held), torture of suspects, retraction of client-attorney privilege for suspected terrorists, ignoring the rules of the Geneva Convention concerning the treatment of prisoners of war, governmental monitoring of client-attorney conversations of suspected terrorists, trials of suspects by secret military tribunals that allow no review or appeal, murder of suspects in foreign lands, secret activities by the U.S. government, asking Arab visitors who are temporarily in the U.S. on visas to "please come into the FBI voluntarily for questioning to help us find terrorists" (the U.S. citizen who revealed the internal note suggesting that authorities hold them indefinitely for any visa problem deserves a special democracy award), citizens encouraged to report suspicious activities of other citizens, military personnel encouraged to report suspicious activities of other military personnel, retaliatory bombing of any nation suspected of playing a role, bombing of nations of certain ethnic or religious groups due to imagined stereotypes but also toleration of ethnic and religious groups, a ridicule of stereotypes, and some talk of presumed innocence until proven guilty. Discuss the democratic principles involved in each of these proposed responses. Which of these proposals were put into action, and for how long? What was the range of reactions by U.S. citizens to these proposed responses? Are the people of the U.S. learning or forgetting how to be democratic? If the rights of a citizen represent moral obligations and statements of human dignity, should these rights be extended to or denied from foreign peoples? What portion of U.S. citizens believes in racist and imagined stereotypes? What portion of the U.S. citizens believe "It is ok to kill the world's Muslims because they are all terrorists and inferior persons?" What portion of the U.S. citizens wanted to begin World War III between one billion Christians and one billion Muslims? Why? How many terrorists were there? Did the media investigate and present all views of the possible attackers, their goals and motives? How many alternative solutions did the media present? Did television news attempt to inform the U.S. citizen about Islamic culture and history in order to generate understanding amid the accusations? Did any media portray the culture of Afghanistan as inferior to that of the U.S.?

60. The government of India has passed laws against discrimination of all types. This means the abolition of the prejudices of untouchability existing under the ancient Hindu caste system. Describe the changes in society and culture that have occurred so far due to the elimination of this prejudicial aspect of the caste system.

61. What was the role of Hinduism in Gandhi's philosophy of nonviolent, civil disobedience?

62. Compare the Indian and U.S. Constitutions.

63. What portion of a democratic nation has to become politically apathetic before its government can perform authoritarian actions? What if a branch of the power-balanced government becomes complacent, or if the nation's leader does (as in the Iran-Contra affair)?

64. Compare the reasons for colonial activity of the European kingdoms, with those of the ancient city-states. Are colonies social, political, or economic enterprises? Do the colonies generally mix into the local societies, conquer them, or remain separate from them? What sorts of reactions occur in the colonized areas?

65. Is the democratic, authoritarian, or communist form of government closest to our biological background of parenting mammals and social primates? Are individual needs biologically older than community needs? Did our social primate ancestors place more emphasis on community needs or individual rights? How about bands, chiefdoms, and democracies? Describe some situations where one is more important than the other.

66. The purpose of an empire is the extraction of payment from others. Can you relate the emergence of empires to the size of population centers? To the size of their storehouses? Do individuals within bands have surplus items?

67. Why do the citizens of a nation choose to change their leadership? Hy do they choose to change their type of government? Does the current leaders, elites, or the people initiate and accomplish the change?

68. Which factors should determine U.S. foreign policy? Describe some aspects of U.S. foreign policy that have made the people of another nation mad, and some aspects that have made them grateful.

69. What was the role of the elites and the masses in the revolutions of U.S. and France?

70. Can authoritarian or democratic states more-rapidly accomplish needed changes? How are the "needed changes" selected?

71. Describe a few recent interest groups in your nation.

72. Dr. Hamid Latifi asks: Since the U.S. president today can affect the lives of everyone on the planet, should every person vote in this election?

73. Does your leader explain the government's motives in terms of emotions or facts?

74. What is the stated role of the United Nations? What should it be doing?

75. In Chapter 17, we saw that many global corporations are owned by a mixture of U.S., European, and Japanese citizens, and that the concept of export and import is blurred because half the "imports" simply involve transfer between segments of a single global corporation. If U.S. foreign policy is meant to protect its economic interests by increasing profits from overseas commerce, by increasing exports, and by promoting a corporation's sales in other countries, what portion of that corporation should be owned by U.S. citizens, and how should we measure "exports?"

76. What are the security interests of the United States?

77. List some elements of each of the religious views from Chapter 8 visible in the activities of our political leaders, and give some examples of the Golden Rule at work in politics.

78. We saw that the U.S. Civil War meant a temporary absence of the Southern legislators who preferred state power to federal power. During the war, were the Northern legislators able to act as a single-party state and have their own way?

79. Why do people become terrorists? What are their goals? Why do the majority of terrorist bombings against U.S. corporations occur in Latin America? Why did terrorists bomb New York City? Discuss any possible role in promoting or reducing terrorism in each of the following situations. Does U.S. foreign policy—for example, in the financial support of a harsh ruler who might not otherwise exist—play a role in creating terrorist reactions? When global business enters a nation only to increase inequality, does this play a role in creating terrorist reactions? Why do some people hate the government and corporations of the U.S.? Some persons in the world despise the invasion of foreign cultures brought through movies, television shows, and corporate products—especially when they depict and encourage behaviors which are opposite to those of local custom (just as some of our grandparent's were opposed to the changes in culture which occurred in the U.S. as we first industrialized.) Does the invasion of foreign culture generate terrorism? Does the invasion of foreign government, commerce, or religion generate terrorism? Out of the 3,000 families who lost loved ones in the New York bombing, how many do you think became mad enough to kill someone, or gave money to support revengers who would kill someone? There might be a few such persons but most of the family members just hoped to get through months of grief as they waited for justice for the criminals. When the U.S. recently bombed a Sudanese factory, and the nation of Libya and such, how many persons who lost a loved one do you think were angered to such a degree that they wanted to kill Americans? Maybe a few but not everyone. Should we just continue trading bombs or should we find out what has made each other mad enough to trade bombs? We saw that infants feel angry when they believe they have been treated unjustly. Are terrorists angry because they believe that their people have been treated unjustly? What is the percentage of us humans who have murdered another human? What is the difference between a terrorist and a freedom fighter? (For a while in 2001, I wondered if Christian nations would go to war with Islamic nations over nothing but stereotypes. I can tolerate a certain amount of racism but not when it threatens to generate World War III. Except for those few hundred Muslims who are terrorists, the other one billion of us humans

who are Muslims just want to raise our children and pursue life.)

80. Many civil wars occurred in the world in 1850 after the Industrial Revolution was in full growth. Compare the reasons for civil war in the U.S. and elsewhere.

81. Imagine camping for several years with six families. What sort of difficulties and problems might arise that would require group decisions? For most of our past we lived in groups of about six families who had to compromise and develop solutions because we knew we were all better off remaining in a group than separating and going it alone. We might decide that instead of separating we will expend more effort trying to remain together. Our species lives by forming into groups. In the same way spouses expend effort to remain together during difficult times because the combination is worth the trouble. Our species does it this way because we live longer and so do our kids. We don't think of it that way as we do it: we just do it. Compare the reasons for forming and maintaining marriages with the reasons for forming and maintaining small groups of gatherer-hunters, and large, nation-sized groups. Are there any reasons to form a species-wide and planet-wide group?

82. In nations today, public discussion of injustice occurs whenever public discussion is allowed. For example, in the U.S. during 1840s there were discussions about the injustice suffered by women, slaves, and sweat-shop workers. Was there injustice, and debates of injustice, in ancient Mesopotamia, or in the sloshing empires of the Middle East around 1000 bc? Was discussion forbidden? When did authoritarian systems learn to forbid discussion and assembly of groups? How big does a group have to be to threaten an authoritarian leader?

83. What are the historical layers of political culture in Europe, Asia, Africa, and Latin America?

84. Which elements of a people's culture and history influence the type of government they feel is "natural" and will support for the long term? Why do you feel that your nation's government is appropriate? Is it simply because "it has always been that way?"

85. Compare the role of government in an ancient city-state to that of a nation today.

86. In recent years, corporate media mergers have resulted in the situation that most news that is seen, read, or heard by people in the U.S. comes from but a handful of sources. Which is more important for our nation, efficient corporations "purged of redundant reporting" or the democratic debate of all voices? Will the internet save the Freedom of the Press by providing a full range of views and opinions to feed our public policy debates?

87. Create a piece of art that describes political systems or their evolution.

88. In what ways can a sovereign nation govern international corporations? In what ways is it unable to govern them?

## **Chapter 18 Today's Big Business, Big Government, monopolies, banks, globalization, wages, inequality, healthcare, China, franchises, cars, climate, war, and education**

Nothing about today's world of Big Business and Big Government—or even our neighborhoods—makes any sense until we look at the changes in our way of life as we switched from being farmers to being wage-earning, factory workers who not only made goods but purchased them, too.

Throughout human history, we have had only these three ways of life. Our hominid ancestors lived as gatherer-hunters for a few million years until human civilization began 10,000 years ago as a changing climate forced gatherer-hunters to become full-time farmers. Farmers became factory workers and began to live as industrialists for the last 250 years.

Throughout the several thousand years of civilization prior to the development of the factory around the year 1760 ad, 90% of us were farmers and only 10% worked as crafts-persons. Business consisted of crafts-people who made objects by hand, one at a time. For example, one-day's work might result in the production of one spoon, maybe two. These items were expensive and were sold only to the most-wealthy of us—not to the general public which consisted of subsistence farmers. The home of each farmer contained only twenty possessions—including a few spoons, plates, and cups—and these were of the lowest quality. Our homes were unpainted, had dirt floors and no glass windows. We often used sticks as forks and stumps as chairs.

This Industrial Revolution begins with the development of the factory around the year 1760. The first factories brought together, into one building, all the persons and steps needed to turn, for example, cotton or sheep hair into cloth. Later factories produce many types of things and bring low cost items into the homes of the farmers. What does the Industrial Revolution mean to people? The number of items in the home increases from twenty to two-hundred, including wall paper, mirrors, glass windows, carpets, curtains, pictures, and paint, but community ties were greatly reduced among factory workers, and we loss control of our continued income.

1800 ad

Business in the early U.S.: Each shop serves customers in a village-sized region having a 10-mile (16 km) radius.

When the United States first became a nation, business consisted of nothing but crafts persons and sole proprietors who typically made a profit of 12% of their total sales.

Each shop serves customers in a village-sized region having a 10-mile (16 km) radius. and sold items to the farmers who lived within one day's walk of the shop. If a customer walked ten miles or fifteen kilometers to the shop then the customer might spend the night in the home of the business owner, be fed by that owner, and help with wood-chopping chores and such.

Each shop consisted of its owner and perhaps a live-in apprentice who becomes part of the family.

Every product, from apple-pie to shoes and wool shirts, is unique to that shop. Throughout the nation, a customer has thousands of varieties of, for example, apple pie to choose from.

The business person is part of the community and not just hoping to become rich from them.

Before a transaction was made between the proprietor and the customer, both persons would inquire about each and every member of the other's family.

Prices are set by competition and supply and demand. Sole proprietors *compete* by selling the most products and services for the least amount of money that will allow them to continue operating and to pay their own living expenses. Consumers want nothing but to pay the lowest price. This was the background world for the reasoning of Adam Smith's "invisible hand" economics, which he published in 1776. Many of today's proprietors continue to compete in this way.

1850 ad

Larger businesses serve customers in a state-sized region having a 100-mile (160 km) radius. Some "competitors" secretly divide territories or agree to raise prices.

The railroad companies were the first businesses needing to invent a large-scale organization able to administer an extensive enterprise spread across hundreds of miles or kilometers and directing thousands of employees. This is in contrast to the business enterprises, since Mesopotamian times, which operated in a single building and village.

1900 ad

Largest businesses serves customers in a nation-sized region having a 1000-mile (1600 km) radius.

Business becomes nation-sized entities that single states can not govern. The federal government creates anti-trust laws to maintain competition.

1950 ad

Each industry begins to be dominated by a few large corporations. To obtain more income and profit, these simply raise prices on a frequent basis and cause inflation to become permanent. In previous centuries, prices could remain steady for one hundred years at a time.

2000 ad

Largest businesses serve customers in a planet-sized region having a 10,000-mile (16,000 km) radius. These global corporations can not be governed by one nation acting alone. Business dominates government in the U.S., Italy, Japan, and Israel. International mergers occur between those corporations that had already been dominating the industry of single nations. In 1999 alone, there were about 5,000 international mergers, which together, involved 10% of global trade.

Ever larger companies are made by the repeated sale and merger of other companies.

For example, the Jack in the Box restaurant chain has 2200 locations in the western U.S. and was sold to Ralston-Purina, which makes animal food and also owns the Eveready battery Company, the Van Camp Sea Food Company and its Chicken of the Sea tuna, and Continental Baking Company, which owns Wonder Bread and Hostess. Ralston-Purina was sold to Nestle, which is a Swiss company, and then to British Petroleum, who had the 2014 oil spill in the Gulf of Mexico, and then to Land O'Lakes, who sold it to Cargill, which controls 25% of all United States grain exports, 22% of the US meat market, produces all of the eggs sold by McDonald's restaurants in the US, is

the only producer in the U.S. of Alberger-process-salt, which is used in the fast-food and prepared food industries, is the largest poultry producer in Thailand, had revenues of \$140 billion and earnings of \$2 billion in 2013, and employs 140,000 persons in 66 countries.

Today, about 500 global corporations dominate the planet's economy and own over half of the world's production facilities. This means that a few thousand persons control half of the world's production assets.

By 2016, the Gross World Product (GWP) was \$120 Trillion. The gross sales of the 100 largest corporations was \$24 Trillion, but their value-added accounts for just 4% of the Gross World Product. The world's 500 largest companies employ 65 million people and are based in 36 countries. The world's 500 largest companies generated \$31.2 trillion in revenues and \$1.7 trillion in profits in 2014.

This ever-increasing concentration of wealth serves no purpose for humanity, fueled in part as our business leaders pay non-living wages on a global scale. This unjustly delays the increase in well-being that would otherwise occur for all eight billion of us.

A global corporation does not "belong to any one nation," and is owned by a mixture of U.S., European, Japanese, Chinese, and Middle Eastern individuals. In the 1980s, foreign persons owned 5% of U.S. stock, and by 2016, it was 20%.

Fifty years ago, each hotel and each restaurant was locally owned and operated by one family, and every food product was a unique, local creation. Now every exit of the highway has the same collection of nation-wide hotels and restaurants. Twenty years ago, there were 100 brands of ice-cream, of beef jerky, and of every other item. Now, every grocery store in the country contains the same brands and products, so a customer is lucky to find one dozen choices in the entire nation. The monopolized world is less interesting. If it distributed today then it has been monopolized.

Monopolies have put an end to free market competition

When only a handful of companies account for half the sales within a particular industry—such as the television, cell phone, internet access, or airline industry—then that industry is said to be monopolized. We often hear of capitalism being "the competition of the free market," but a few decades ago in the U.S., nearly every industry became monopolized and the free market essentially ended. A rare exception is the home construction industry, which can not be monopolized today because it necessarily involves local workers and a hand-made product, but we will soon have a 3D printing machine for this, too.

Those few companies of a monopolized industry do not compete in that they do not try to sell the most products and services for the least possible price but instead mutually search for the highest possible price that "the market will bear." This produces the largest possible profit percentages. They are happy to share the industry market because to risk further competition is to risk being the one out of three that would disappear. Supply and demand affects prices only when the supply is errantly controlled. Price wars do not occur.

The highest possible price results in the highest profit percentage but not the largest possible income. If one-tenth of this highest-possible price is charged, there may be twenty times as many customers willing to buy, and this would double the total income but at a lower profit percentage. Henry Ford said that every time he lowered the price of a Model-T car by \$1, an extra 1,000

customers would buy one.

An industry has little competition, but there is some competition between industries. For example, the housing, food, entertainment, utility, automobile, and healthcare industries each want to have 50% of your monthly income.

The U.S. had few roads before there were automobiles. In the early 1900s, car buyers demanded that the government build paved roads to “get us out of the mud.” Road construction and maintenance made the government larger. In a typical year, the U.S. government spends \$50 billion on roads. Coincidentally, the annual profit of U.S. automakers has also been about \$50 billion.

Every brand-new industry begins with numerous competitors and will have early competition that is soon followed by a series of successively larger mergers. The all-out attempt at monopoly creates a few large companies. For example, Merrill explains that 2,200 car models were made during the years 1895 to 1905, including 125 steam-powered and 125 electric-powered cars. Within a few decades, just a handful of companies remained and those would no longer compete. When was the last time that you saw a price war among automakers or an ad that brought attention to the shortcomings and flaws of another brand of car?

The Bank of Italy originated in San Francisco in 1904 to service the immigrant community. It bought the smaller company, Bank of America, but switched to their name.

#### Local banks, world banks, and repeated bailouts

Until 1980, laws required U.S. banks to be small institutions that took in and loaned out money to the neighborhood for the good of local residents. Local savings were used to finance home purchases and to develop local business. U.S. banks were dwarfed in size by the banks of Japan or Europe. During the 1980s, deregulation was meant to make the loan companies more profitable, and allowed many to begin gambling local money on high-risk, overseas endeavors rather than funding local home purchases at low profit. Through that decade, one-third of savings and loan companies went bankrupt, costing taxpayers hundreds of billions of dollars. This was followed by the financial crises and banking bailout of 2007 that cost taxpayers hundreds of billions of dollars. We can expect the next crises to cost trillions.

By 2015, the five largest banks held half of the \$15 trillion U.S. market, which means that the U.S. banking industry is monopolized by a handful of banks said to be “too big to fail” or to compete. In their book *Global Dreams* Barnett and Cavanagh explain that banking became global by 1989 as one-fifth of home purchases in California were financed by banks in Japan, without the customer knowing the source of the loan. That home loan could be bought and sold many times by banks in various nations. The home-loan industry set off the financial crises of 2007. In 2016, each of the twenty largest banks in the world had assets of \$2 to \$4 trillion for a combined total of \$40 trillion. The Gross World Product was \$120 Trillion.



# The twenty largest banks in 2016

Rank	Assets (\$trillion)	Nation	Name
1	3.5	China	Industrial and Commercial Bank of China
2	3.0	China	China Construction Bank Corporation
3	2.8	China	Agricultural Bank of China
4	2.6	China	Bank of China
5	2.6	Japan	Mitsubishi UFJ Financial Group
6	2.5	US	JPMorgan Chase & Co.
7	2.4	UK	HSBC Holdings PLC
8	2.2	France	BNP Paribas
9	2.2	US	Bank of America
10	1.9	China	China Development Bank
11	1.9	US	Wells Fargo & Co.
12	1.8	France	Crédit Agricole
13	1.8	Japan	Japan Post Bank
14	1.8	US	Citigroup Inc.
15	1.8	Japan	Mizuho Financial Group
16	1.7	Germany	Deutsche Bank
17	1.7	Japan	Sumitomo Mitsui Financial Group
18	1.5	UK	Barclays PLC
19	1.5	France	Société Générale
20	1.4	Spain	Banco Santander
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\$40 trillion			

Credit card companies have managed to receive 1% to 4% of every purchase made using the cards. The merchant paid this fee until 2013 when contracts began allowing the merchant to charge a fee to the customers. Digital money will put an end to this.

Until 1978, the interest rate on credit cards was limited to 12% in nearly every state. Then the Supreme Court ruled that a bank could charge the interest rate allowed in its home state. South Dakota and Delaware had no limit on interest rates, so credit card companies moved to those states. Many customers today are charged as much as 30%, and the so-called “PayDay loan companies” receive 300% to 3000%.

Cigarettes were sold for \$1 per pack in 1980, and then the tobacco industry spent ten years searching for the highest price that the market would bear. To reduce costs while raising prices, tobacco companies made contracts with small farmers around the world. The company converted the farmer’s crop to tobacco, all of which had to be sold to the company at its price.

You pay higher prices because every industry is monopolized in the U.S. Altogether, this costs each person a few thousand dollars per year in higher prices, and enables billion-dollar profits for each of those industries. Where 100 companies used to share an industry and its profits, now five or ten companies do and divide its increased profits among fewer owners and executives. The higher fees that you pay go straight into the pockets of a handful of owners.

For example, persons in the U.S. purchase internet access from their choice of four providers and pay five times as much as do people in Britain where customers can choose from dozens of providers. Internet speeds are higher in many nations outside the U.S., and there is no difference between upload and download speeds.

For example in 2005, in searching for the highest price that the market will bear, the price of a fruit drink was raised by five cents every five weeks through two years, taking the price from \$0.49 to \$1.49. This creates great profit, which is the income of the company owners.

In Europe, customers choose from many airlines, and find \$50 fares for flights that cross the continent. In Southeast Asia, \$50 flights cross oceans. In the U.S., there are now just three major airlines and three smaller airlines. When you go to an airport today, nearly every airplane that you see can be from one company. This is what monopolization looks like in the U.S. airline industry where \$50 flights do not exist, and six airlines control 94% of the market. Teresa Cederholm says that “Airlines have realized that price wars are detrimental to their interest.” When European and Asian airlines are allowed to operate in the U.S., then there will be \$50 fares for flights that cross the continent. In a typical flight, airlines pay a few thousand dollars for fuel and for labor costs, and have two-hundred customers, each paying a different price. The purchase-price of a flight changes everyday, and this can mean that no two passengers pay the same price while taking the same flight. Feeder airlines pay pilots as little as \$10 per hour. Your three-hour flight in the U.S. includes one-half ounce (14 grams) of pretzels or nuts. We can imagine that an executive was outraged when someone suggested that the packs should contain a full ounce.

A bus in Eastern Europe costs \$10 to go from Tallinn, Estonia to Riga, Latvia. Each seat has wireless and a TV screen, and you can order a hot meal from an attendant.

An airplane costs \$1 billion dollars and lasts for twenty years and thousands of flights. On a common flight, the airline pays \$3000 for fuel and \$3000 for the wages of attendants and pilots. When an airplane crashes, the manufacturer might pay \$0.1 billion, which is 10% of the selling price of the airplane, in retribution to the families who lost loved ones.

Nearly every industry has been monopolized, which means higher prices for consumers and greater profit, which is the income of the owners.

Larger companies try to squeeze out smaller companies in many ways. For example, a retail store might sign a contract with a manufacturer to sell brand A, but this contract requires that retail store to stop selling brands B and C. Such contracts are required by the manufacturers of anything from electronics to tractors. You know that each soda company prefers contracts that require a restaurant to sell only its one brand of soda.

Here are some examples of monopolized markets

Proctor & Gamble and Colgate-Palmolive sell 70% of toothpaste, whose price can be \$5 per tube. The Visual Capitalist explains that five companies control the world's beer industry, and fourteen companies control the World's auto industry.

In other nations today, news events are still being covered by many news companies, each placing a microphone at the table, but that no longer happens in the U.S. Six companies control 90% of media. It turns out that corporate profit was more important than freedom of the press. One journalist recently said that there is freedom of the press today only if you own the press, and that each day, executives tell TV news anchors which stories to emphasize and in which way.

A few decades ago, whenever a politician was interviewed on television, he or she had to debate a person who had an opposing view. Today, we are mostly given the single view of one politician because politics has become the science of getting one's way.

Media monopolization means that, for example, you might be in Lincoln, Nebraska listening to your favorite local FM radio station, but the DJs are sitting in a building in New York City, and tell you nothing about the tornado in the area.

Broadcast news on television stations in the U.S. insist everyday on listing the murder and robbery that happened among the two-million residents of the region. This frightening report sells lots of oatmeal commercials and increases media profit but misleads citizens into thinking that everyone is a criminal. This reduces the faith in fellow citizens that is necessary for successful democracy. TV news does not do this in other nations.

A few companies control 91% of soft drinks, 64% of coffee, 80% of cereals, 72% of peanut butter, 76% of crackers, 81% of the chocolate market, 82% of the tortilla chip industry, 55% of ice-cream, and 76% of potato chips.

A single company owns many brands. The Luxottica company owns these eyewear brands and shops. It has 8000 retail outlets and is now merging with the lens-maker Essilor, which was created by the merger of Essel and Silor.

Coffee retailers buy coffee from farmers in Africa and South America for \$1 to \$2 per pound and then sell it in the U.S. for \$10 per pound or \$4 per cup at a restaurant.

By 2011, four companies controlled 82% of U.S. beef packing, 85% of soybean processing, 63% of pork packing, and 53% of broiler chicken processing.

The three companies Cargill, Archer Daniels Midland, and Zen Noh control 81 percent of U.S. corn exports and 65 percent of soybean exports.

The U.S. government's economic census includes industry concentration data, and shows that, for example, in the food processing industry, the eight largest companies account for 78% of

sugar, 84% of dog and cat food (100 brands of cat food are made in one plant), 67% of grain and oilseed milling, 68% of flour milling, 98% of wet corn milling, 91% of soybean processing, and 92% of breakfast cereal.

Meanwhile, truck-ripened fruit travels across continents, and 20% arrives in a state of poor taste. Food typically travels hundreds of miles before reaching your neighborhood, so political leaders should recommend that we plant home gardens.

On farms outside the U.S., global food corporations can use pesticides that are illegal in U.S., and then transport that food into the U.S. In his book *When Corporations Rule the World*, Korten explains that trade agreements have brought such regulations down to the lowest common denominator among nations.

A typical grocery store sells 10,000 items, but “the majority of products come from just ten manufacturers.” Numerous brands are actually made by one corporation. Unilever owns 400 brands, including Hellmann’s Sun detergent, Surf detergent, mayonnaise, Slim Fast diet products, Breyer’s ice cream, Ben & Jerry’s, Best Foods, Sunsilk hair shampoos, Lipton teas, Ragu sauces, ThermaSilk shampoos, and Dove soap. Unilever is the merger of the British soap maker, Lever Brothers, and the Dutch margarine producer.

Kraft Foods Group has hundreds of brands, including Cadbury, Jacobs, Kraft, Lefèvre-Utile, Maxwell House, Milka, Nabisco, Oreo, Oscar Mayer, Philadelphia, Trident, Tang.

Grocery retailers have a total profit in the billions of dollars even though their average profit is only 1.7% of sales. Fruit is more profitable as it has a 65% markup.

By 2012, people of the U.S. bought half of their groceries from the four largest retailers: Kroger, Target, Safeway, and Walmart, which sales 29% of all groceries (see Grocery Goliaths). Those of us who earn under \$10 per hour, such as many Walmart employees, spend about 35% of our income on food. This means that Walmart is getting back 29% of 35%, or about 10% of the wages that it pays to those workers. Walmart sales increase when Walmart increases wages. To encourage Walmart to hire more employees, you might avoid the automated check out line and leave the shopping cart in the lot. Similarly, leave your fastfood debris at the table for an employee to discard. Very soon, these jobs will be done by robots.

Those burdensome, frequent shopper cards are used to raise profits 2% by tracking your purchases, and learning, for example, how many extra pennies you are willing to pay for the name-brand items that are more profitable, and what you chose not to buy that was sitting next to the item that you did buy. Such analysis predictably finds that people buy strawberries and whip-cream together but it also misleadingly suggests that people buy strawberries and tobacco together. Companies then place strawberries and whip-cream on opposite ends of the store in the hope that customers will grab extra items while having to walk across the store.

These shopper cards are an example of the lengths to which corporations will go to get an extra 2% from you, but when asked why the CEO is paid so much money, the corporation responds “well, his salary is only 2% of gross sales.” In the U.S. today, women hold 5% of CEO positions at S&P 500 companies.

Binder paper in Europe has no printed margin-line. In the U.S., the margin was added in the hope that you would not use the left-most 15% of the paper and instead buy 15% more paper.

What do you do with the last sliver of soap? Press it onto the next bar of soap. This will reduce your soap purchases by 2%.

Bananas were first cultivated 7,000 years ago in Southeast Asia and Papua New Guinea, and then spread along the Islamic equator about 1,000 years ago. Korten explains that when bananas began to be sold in the U.S. in the 1950s, fruit companies told customers not to refrigerate bananas. The fruit would then spoil faster, be thrown away, and, it was hoped, cause you to buy more. In reality, the interior fruit of bananas last longer when refrigerated, even though the cold darkens the outer skin. By the way, it works much better to open bananas by pinching the end that doesn't have the long stem.

When people would plant grass lawns in the 1940s, they always included some dandelions to make the lawn more attractive. Weed-killers were developed during research into biological weapons in World War II. When commercially available weed-killer was developed for lawns, it was found that the chemical also killed dandelions. So the corporation redefined dandelions to be weeds. If you apply weed killer today, you'll have to re-seed the dandelions.

This monopolization has occurred in every country. For example Olam International was founded in Nigeria and controls 16% of global cocoa processing. Brazil's Copersucar controls 12% of world's sugar and 12% of world's ethanol. Glencore is a British-Swiss company that controls 60% of zinc, 50% of copper, and 9% of grains.

How does a large, monopolizing company squeeze extra profit? For example, large meat-processing companies pay farmers less money for a hog than occurred during the Great Depression, but sell the processed meat at an increasingly higher price. This also forces family-sized farms to disappear and be replaced by large scale, farming factories. Where one cow used to roam a square mile of land to obtain enough food, now instead, they are crammed along with their food and wastes into small yards. Profit increases but selling prices do not decrease.

Putting profit above Free Speech, an ALEC bill makes it a criminal act to film animals being cruelly treated and slaughtered by the meat and poultry processing industries unless that industry gives permission to film. Corrupt legislators go along with this.

Bill Moyers explains that ALEC is the corporate-funded, American Legislative Exchange Council. ALEC drafts pro-business and conservative bills that legislators introduce into their state assemblies. About 200 of these bills become law each year as ALEC bills can dominate a state's legislation. This means that your state legislators might write fewer bills than does corporate-funded ALEC. Recent ALEC bills involve corporate taxation, stand your ground gun laws, privatizing of education and prisons, and repealing labor rights.

## Globalization

The globalization of the food industry makes a government less able to control its own food, health, and environmental standards. For example, food can be grown in another country using pesticides banned from use within the U.S. but that food can still be exported to the U.S.

Just a few companies make many brands and share the U.S. cigarette market. A few decades ago, a tobacco profit explosion occurred as tobacco companies paid small farmers in Africa and Brazil to switch their crop to tobacco and agree to sell only to that company and at its price. Tobacco is bought for \$1 or \$2 per pound but sold for several dollars per pack. the price is so high that in poor neighborhoods of inner cities, cigarettes can be purchased individually. Korten explains that the tobacco industry raised cigarette prices through years because it found that it could. They had cost

\$0.62 per pack in 1980, but were \$1.78 in 1991, and \$6 in 2019.

Tobacco has been a 500 year long, worldwide addiction. Since there is nothing else that has worldwide practice through centuries, I take this as proof that tobacco is addicting. Here is the famous moment in 1994 when tobacco CEOs testified before congress that they believed that tobacco is not addictive. They were speaking to their shareholders, whom they wanted to reassure, and did not care what the legislators or public thought.

#### Summary of the History of business

- 1800: Each shop serves customers in a village-sized region having a 10-mile (16 km) radius. Small shop consisting of its owner and a live-in apprentice who becomes part of the family. Prices set by competition and supply and demand, earn 10%-15% profit. Every product, from apple-pie to shoes and wool shirts, is unique to that shop. Throughout the nation, a customer has thousands of varieties of apple pie to choose from. The business person is part of the community, and not pursuing the road to riches.
- 1850: Larger businesses serve customers in a state-sized region having a 100-mile (160 km) radius. Some “competitors” secretly divide territories or fix-prices. Invent a large-scale organization.
- 1900: Largest businesses serves customers in a nation-sized region having a 1000-mile (1600 km) radius. Business becomes nation-sized entities that single states can not govern. The federal government creates anti-trust laws to maintain competition.
- 1950: Each industry is dominated by a few large corporations. To obtain more income and profit, these simply raise prices on a frequent basis and cause inflation to begin.
- 2000: International mergers, global corporations that nations can not govern, globalization, factories are shut down in the U.S., moved to Southeast Asia then to China. Global companies operate throughout a 10,000-mile radius. Monopolies allow price to be set to the highest that the market will pay. Every highway exit contains an identical set of hotels and restaurants. Throughout the nation, every grocery store contains the same brands and products, so a customer is lucky to find one dozen choices in the entire nation. A nation can not set its own interest or exchange rates because the global response swamps the attempted change.
- 2050: One single corporation? That is unworkable because profit can only come from wages paid.

#### Wages and inequality

Many children live in a home where food costs more than one-third of family income. This defines the child poverty rate. It is a secret that through recent decades in the U.S., about one in five of our children live in a home whose income falls below the poverty line. The U.S. is performing poorly compared to other nations. Where are our efforts instead going? This percentage has been reduced in Europe as a result of a few decades of effort.

The U.S. population in 2014 was 320 million persons, about 46 million are living in poverty, of which 20 million are white persons. Persons living in poverty are more likely to be white persons. There are twice as many white than black persons living in poverty. In the U.S., one in seven of us are earning minimum wage and one in seven of us are living in poverty. Those of us human beings who are poor are not stupid and lazy, and the rich are not geniuses and hard-working. The same percentage of rich or minimum-wage-earners have high talent for engineering, surgery, or sculpture.

We are born either poor, middle class, or wealthy. Very few of us become billionaires despite the constant mantra. Economic mobility is lower in the U.S. than it is in many other nations. Poverty can be greatly reduced by doubling the minimum wage. Minimum wage means maximum profit for the person who owns the business but it means an economically miserable life for the working person who is paying in this way for the easier life of the business owner.

What is life like when trying to live on minimum wage in the U.S.? Such an income barely allows a person to pay rent and buy food. It means affording only an annual night out to a restaurant or movie theater and it means that consumer items priced over \$100 are beyond easy reach. On payday, you might have \$12 left to last until the next payday. We do not have enough money to purchase \$100 per month car or health insurance—even if required by law—because we can not afford even to purchase \$1 oranges or eat at KFC. About one in five Americans have trouble affording fresh fruit today. Being poor means buying \$1 but not \$4 items at a fast food restaurant. Did you know that car insurance rates are typically doubled for those persons who could not afford to purchase car insurance in the previous year. Today's poor have a home and a phone, both of which are required for employment, but one in five or ten of us do not have a car, which is troublesome when smaller U.S. cities have no mass transportation. If you do have a car, you buy gas a few dollars at a time once every few days. Did you know that grocery store prices are always highest in poor neighborhoods that have the fewest cars and might have no public transportation. Those of us human beings who are poor are just as smart as everyone else. The existence of poor neighborhoods does not mean that one in seven of us is sub-human, it means that our economic society is ill and not yet fully human. Just 120 years ago, nobody's home had indoor plumbing or electricity and the nation had only dirt roads, so we are making good progress in our civilization but economic injustice has not yet been cleaned from our society.

We all devote our lifetime's effort working our daily job and participating in the society and civilization that we expect to be mutually beneficial. Nobody should participate if it is not mutually beneficial. We can not expect some people to give their lifetime's efforts and still go hungry to make a luxurious life for a few others.

Do you want to reduce poverty, welfare, and high taxes? The first step is to double the minimum wage from \$7 to \$14 per hour. Earning \$7 per hour means living on \$14,000 per year, as was just described. Employers who pay minimum wage are shifting their labor costs to taxpayers. Does it make you mad when you pay extra taxes because some employers pay non-living wages that require taxpayer assistance to their low-wage earners? In many states, employers pay waiters and waitresses half of minimum wage and profit from customers who instead pay wages directly to the waiters. Similarly, a utility company might charge a slightly higher rate because kind persons are donating money to help low-income families have heat and electricity.

After adjusting for inflation, the price of rent plus utilities has doubled since 1950. The poorest 20% of us spend one-third of our income on food and another third on rent, leaving one-third for everything else. Rent, food, and healthcare expenses have continually increased. How about our income?

We are fundamentally nurtured and rewarded by the smiles we receive from our children or from helping other people. We naturally feel rewarded by contributing efforts to our society. That is in our nature. We feel a lesser reward when receiving a paycheck.

Our wages have decreased through the last few decades in the U.S., as recorded in the annual

economic reports of the last ten presidents. Here is a plot from the historical table B-47 that shows the inflation adjusted, weekly wage of non-farm, private workers. We see that our wage peaked in 1972-3 at \$340 and that in 2010 we earned the same as we did in 1980. Our earnings fell with little mention in the press and little debate by our politicians or presidential candidates. The Miringoff's point out that this means that we did not have a raise in thirty years even while business profits grew greatly. This is one-sided. Lower wages make higher corporate profits which becomes the income of the upper 0.1% of us.



For example, in 2007, Goldman-Sachs investment bank had 30,000 employees and paid \$20 billion in all forms of compensation, but the 300 top executives got the “lions share,” including \$12 billion of it received as executive bonuses. Those 300 executives were paid more money than the US government spent on the State Children’s Health Insurance Program serving millions of children of low-paid workers, and more than the federal government spent that year on Hurricane Katrina reconstruction and relief. You can believe that many of those 300 executives complained bitterly that their own taxes would have been \$10 less if the government had spent nothing on Hurricane Katrina reconstruction and relief.

In 2008, Goldman-Sachs sought to pay \$14 million in taxes worldwide by shifting its earnings to subsidiaries in low- or no-tax nations such as the Cayman Islands. This was an effective tax rate of 1%.

In the U.S. a few decades ago, CEO pay was 30 times greater than worker pay, but today it is 300 times greater. This has not occurred in other countries.

The CEO of Disney once managed to pay himself two-thirds of the company’s annual profit from all customers. To be CEO requires the belief that you deserve to take all of it for yourself, but the CEO requires these employment conditions for workers. These conditions did not exist twenty years ago.

When applying for a job, we are given a 100-question psychological exam asking questions like Does it make you mad when criminals get away scot-free on a legal technicality? Does this mean that we now have only picture perfect employees and that everyone believes in the constitutional



right to due process?

About 320,000 persons (0.1%) in the U.S. average \$6 million in annual income, and own 25% of the property and assets of all 330 million of us. They've hogged most of the nation's income and are mad that they have to pay most of the taxes. Taxes would be lower if wages were increased for low-income families who receive the Earned Income Credit as an indirect wage from taxpayers.

About 32,000 persons (0.01%), or 16,000 families, have an annual income of \$10 million and own 5% of the wealth. For example, six members of the Walmart family have \$150 Billion in wealth, which is as much as the least wealthy, 160 million citizens of the U.S. This wealth is partially accomplished by paying non-living wages such that taxpayers have to pay a few billion dollars in food stamps and healthcare for Walmart employees. The U.S. economy is working very well for 16,000 families, pretty well for 160,000 families, not so well for 145 million families, and terribly for 15,000,000 families.

The world has 7 billion people. In 2014, the world had 1400 billionaires, 400 of them lived in the U.S. In 2019, 650 of 2500 [billionaires](#) live in the U.S where the average wage has dropped 15% from its 1973 peak and one in 6 or 7 of us earn the non-living, minimum wage. In the U.S., we are told that we will be billionaires if we are self-reliant and hard-working. What is really required is a monopoly. My friend Hester Amstel explains that in Europe, people instead expect to share a comfortable lifetime. In Europe, the wealthiest 0.1% did not manage to hog more of the income for themselves. The economists Saez and Piketty shows that through the last few decades, those of us in the U.S. who are very wealthy have managed to hog more of the income for ourselves and most of the entire nation's financial gains. There is no such thing as a trickle down economy.

This upper-income grab occurred in the U.S. because of wealth-friendly legislation and lowered tax-rates. Who wants to have lower taxes for the most wealthy of us in the U.S.? Those 650 billionaires and their political and media advocates. Ever since Reagan's administration, each time government has reduced taxes for the wealthy, the nation instead borrowed more money to replace the lost tax revenue, and this increased the national debt. Saez explains that upper wealth increases when upper tax rates decrease. As the top marginal tax rate goes down, the upper income share goes up. This occurred in the 1920s and since the 1980s.

Business owners could pay zero wages if they could convince taxpayers to pay the entire income of workers. This would be indirect wages paid through higher taxes, but if the owner's taxes were less than employee wages would have been then the happy owner will have more profit after all.

This wealth and income grab has occurred in the dark and in silence. In response, we'll now require that product labels, ads, and websites state worker and executive pay along with profit percentages, the numbers of workers and executives and totals for all forms of compensation, the executive/worker pay ratio, company sales, company profit before executive pay, company profit after executive pay, number of shareholders holding 75% of all stock, company profit per major shareholder, share of industry market by this company and by the ten largest in the industry. To combat monopolies, the name of the CEO and of the most-parent company, and the number of businesses and brand names under that parent.

In 2017, the richest eight persons in the world had as much wealth as the poorest half (3.5 billion) of us, and those eight persons would fit in one car. Wealth concentration is increasing: in 2010 it was 388 rather than eight persons. The priority of our civilization can be the health,

happiness, and education of our children or the priority can be to turn a few hundred millionaires into billionaires before they die, just like the rest of us. One of our billionaires can shout, I have as much wealth as the poorest one-billion persons, but extreme wealth is nothing but proof of your ability to take money from other people.

In New York City in 2015, the securities industry paid \$25 billion in bonuses to 17,000 persons, which is an average of \$150,000 per person. These bonuses were great enough to raise the pay to \$15 per hour for all 2.6 million fast food workers in the U.S.

In 2015, the top 10% earn an annual income of at least \$140,000. The top ten percent have 80% to 95% of stocks, bonds, trust funds, and business equity, and almost 80% of non-home real estate. G. William Domhoff explains that financial wealth is what counts as far as the control of income-producing assets.

The richest persons and companies juggle money everyday between stocks, bonds, and currency and such as they continually try to outguess each other's reaction to daily events. They can think alike enough for the daily news to state that "the Dow Jones changed today in response to a specific event."

Currency speculation is a humongous, daily activity. In 2015, the gross world product was \$80 trillion per year or \$0.2 trillion per day, but currency trading amounts to \$5 trillion per day, of which less than 1% involves the sale of actual goods and services.

Alex Andreou explains that "On a daily basis, the financial institutions of the City of London make speculative currency trades worth nearly as much as the entire nation's GDP for a whole year," and that of this daily currency trade, "...the \$2 trillion per day spot market is controlled by fewer than 100 individuals, working for a dozen large banks." With such concentration of business, illegal market manipulation can easily occur. In the Forex scandal of 2013-4, some 15 banks, including Citibank, HSBC, JPMorgan, Royal Bank of Scotland, and UBS Ag of Switzerland paid \$5.7 billion in fines for selling or buying for themselves just before fulfilling large orders. Only forty employees were fired due to this scandal.

The daily profits and losses are huge. For example, a London bank finds out that a Russian bank is buying British pounds, so London buys \$1 billion worth and sells it a few hours later for \$200,000 in profit while another company might lose \$200,000. Annual profits or losses for one bank can be \$100 million

Due to the volume of this daily speculation, a single nation can no longer control the value of its own currency. All of this will end when a global currency is created, but for that to occur, nations must learn that the stability of the global economic system is of greater importance than the mere prestige of a nation having its own currency.

In 2014, the average Wall Street CEO made \$16 million. The retirement accounts of the top 100 CEOs are worth a combined \$5 billion, which is more than the entire retirement savings of over 115 million Americans.

The nation's 650 billionaires and their political and media advocates would like to end the U.S. government's social security system, saying that each person should fund their retirement by speculating on stocks, bonds, and currencies and such, but for most of us, our entire weekly income is spent on the daily needs of food and rent and such. Ending the public social security retirement system would leave our elders in poverty after they are too old to work. Such poverty occurred until the social security system was created in 1935.

A measure of income or wealth inequality is given by the Gini Index, which goes from a low value of 0 to a high value of 1. The value 0 means that one person has all the wealth and the value 1 means that every person has equal wealth.

The increasing income inequality since the 1972 peak in U.S. wages is shown by a plot of the Gini Index. In this international comparison, we see that income inequality is falling in Mexico but growing in Brazil.

In Mexico, every company is partially owned by its employees as law requires 10% of pre-tax earnings to be distributed among employees. Employees and management share equally in policies involving health, safety, training, productivity, seniority, and work rules.

Our businesses also became more profitable though automation and increasing productivity since the 1970s, but family income did not grow with business profits. To increase family income, both parents began working in the 1970s though it meant that less time could be spent with children.

The economic system consists of wage-earners who are paid to work in one company and who purchase goods and services, mostly from other companies. The middle class is both wage-earner and consumer. The total income of all businesses can be no more than the total of all wages paid to employees. The size of the economy depends on the number of workers and the volume of purchases. Today, the size of the middle class is 270 million people in the U.S. but 350 million persons in India. When wages decrease then factory sales and production both decrease. In response, factories lay off workers, and in turn, this further decreases purchases and factory production, causing a downward spiraling economy. During the Great Depression of the 1930s, we learned the hard way to have unemployment insurance so that people will have money to continue purchasing goods. In this way, unemployment insurance is also factory production insurance, and it enables unemployed people to buy food and pay rent, too. Some legislators have actually complained about the cost of unemployment payments, and say that U.S. companies could enjoy \$1 per hour wages if the minimum wage were eliminated. \$1 per hour wages would mean great profit for a few months but U.S. workers would not have enough money to buy anything, all factories would close, and the economy would collapse. Company sales and profits increase when wages increase. One businessman doesn't care too much if sales are decreased at other companies, so wages are kept as low as possible. As the average wage has been cut by 15% since 1972, wage-earning customers have had less money to buy goods and services. Wage-cutting business owners have strangled their own sales and profit, and helped to cause recession.

Business profits grew as tax-rates were decreased, starting with Reagan in the 1980s. As the U.S. reduced taxes for the wealthiest and for corporations, it began borrowing money. The national debt grew greatly with Reagan and then Bush, decreased with the democrat Clinton, grew with George W Bush and his trillion-dollar war in Iraq, and continued growing with Obama. The debt peaked at 10% of GDP in 2009's recession. U.S. military spending doubled from 2000 to 2015 as it went from 300 to 600 billion dollars per year, so in 2019, 750 billion dollars was requested.

Just after World War II, the upper income tax rate was 90%, the corporate tax rate was 50%, and business was booming in the U.S. The capital gains tax occurs on profit from stocks, bonds, precious metals, and property. At its 1952 peak, the U.S. government obtained one-third of its revenue from corporate taxes, but this became 11% in 2015. Though the corporate tax rate is 33%, in practice, many corporations pay a tax rate of 10% to 20% because of loop holes that were placed there by those who wanted them.

These nations have money in the bank, but these nations are in debt. The national debt of the U.S. dwarfs that of all other nations. It is suicidal policy for the U.S. to decrease taxes on the wealthy, borrow money instead, and then spend 6% of its income on interest due to debt. About half of this debt is owed mostly to China, Japan, Belgium, the Caribbean banks, and the Middle East who have been funding that portion of the U.S. government, including its military.

The nation's 650 billionaires and their political and media supporters call to reduce tax rates on business and the wealthy. When presidents and legislators lower taxes then they also increase borrowing from the world to make up for the reduced taxes, and this increases the national debt.

During the years 2008 to 2012 of a study by CTJ found that numerous, large companies paid no taxes.

The 288 companies in this study earned \$2.3 trillion in pretax profits, paid an average tax rate of 19%, and were exempted from paying a \$400 billion portion of their taxes due to government subsidies. Wells Fargo received \$21 billion in subsidies. The amounts shown here are given in millions of dollars. Goldman Sachs received \$4 billion during this time period. To make up for the \$400 billion worth of avoided taxes, the U.S. government must instead pay less money on children's well-being or borrow more money while growing the military.

## Healthcare

Your local doctor works hard to maintain your health and charges about \$100 for your visit, but the average cost of a three-day hospital stay is around \$30,000. The huge expense of our healthcare system is not in local doctors but in hospitals and surgery.

In the last few years, hospitals have been buying independent providers to forge regional monopolies. In 60% of regions, only one or two hospital entities exist, so they increase prices. They might also "force health-care plans, including those run by large insurance companies and large employers, to sign contracts in which they promise not to steer patients to lower-cost hospitals."

Some cities, counties, or regions have a single hospital entity. For example, Niran Al-Agba, M.D., reports that in Kitsap County, Washington, every cardiologist, oncologist, pulmonologist, urologist, and vascular and orthopedic surgeon are employed or under contract with CHI Franciscan Health.

Kaiser Health News reports that chain hospitals use their market power to charge 25% more and reduce costs, but they keep the savings for their own profit rather than reducing prices.

Pharmaceutical companies promote myths to explain why they charge higher prices in the U.S. than they charge in other countries but their CEOs and owners simply want half of your monthly income.

One way to raise the retail price of a drug is for to purchase competing manufacturers and then raise prices by 600% or even more. For example, the drug maker Horizon manufactures Duexis, which inhibits stomach acid production. After Horizon bought its competitor, customers now pay \$1500 per month though the drug is made for \$40. Israel-based, Teva Pharmaceuticals buys companies who manufacture competing generics.

Through acquisitions, Mylan became the second-largest generic and specialty pharmaceuticals company in the world. It bought India-based Matrix Laboratories, bought a division of the U.S. company Abbott Laboratories, tried to buy the Irish pharmaceutical firm Perrigo, and

also tried to buy Mylan, which operates from the United Kingdom though it is registered in the Netherlands so that it can pay lower taxes. Mylan next bought the Swedish company Meda, who recently bought the Italian company Rottapharm. Mylan thus gains market share in China, Southeast Asia, Russia, the Middle East, Mexico, Brazil, and Africa. Meda says that it does not invent drugs, instead, new products are secured through acquisitions.

For healthcare, U.S. citizens pay 5-10 times as much as the people of other nations and twice as much as Europeans, who are living healthier, longer lives.

A few decades ago, U.S. citizens were spending 2% of their income on health care. In 2015, health care per person was \$9500 as the health industry managed to grab 18% of the GDP and already dreamed of getting 50% or 100%. Hospital stays that cost \$100,000 in the U.S. might cost \$5000 in Asia. Because of these costs, about 1% of the U.S. population accounts for 25% of all of the nation's health care expenditures. Staying a few days in a hospital can cost you a few year's wages. The U.S. hospital system is the best that a person can buy with a lifetime's wages. We have learned that our healthcare system is no place for profit-seeking. Neither are police and fire-fighting services.

Two corporations control 70% of the health insurance market in each state, and "charge what the market will bear." In fact, about 20,000 of us die every year because we can not afford to go to the doctor; this is about 1% of the two million persons who die every year in the U.S. The health industry is taking money from education.

Since 1993 in the U.S., state Medicaid programs have been confiscating the homes of deceased persons to recover money paid by Medicaid to nursing homes. Nursing home prices have doubled every fifteen years while the real wages of their nurses changed little.

To obtain healthcare, the people of the U.S. should travel to another country. There, they will pay much less for the same procedure using the same technique by equally talented doctors.

#### Medical Procedure

	USA	India	Jordan	Korea	Colombia	Thailand
Heart Bypass	\$144,000	\$5200	\$14,000	\$29,000	\$15,000	\$15,000
Angioplasty	57,000	3300	5000	15,000	4500	4000
Heart Valve Rplcmnt	170,000	5500	15,000	44,000	18,000	21,000
Hip Replacement	50,000	7000	8000	14,000	6500	8000

from

[http://medigateway.blogspot.com/2012\\_09\\_01\\_archive.html](http://medigateway.blogspot.com/2012_09_01_archive.html)

Nothing matters more to us than the well-being of our newborn children.

We, the human beings of the world, state that the first priority of our efforts is to ensure that our babies do not die. We gauge the success of our leaders and of our civilization first of all by our infant mortality rate. We want to see second-by-second figures, not for stock prices but for our infant mortality rate, which states the number of children per thousand births who die before reaching their first birthday. Out of 220 nations, the U.S. is number 58. What could possibly matter more to us than the lives of our infants. The United States international ranking in infant mortality was 12th best in

the world in 1960, and then fell to 23rd in 1990, 30th in 2005, and 56th in 2016.

The Miringoffs explain that the infant mortality rate is a sensitive measure of our society's sanitary and health conditions and of our ability to protect the most vulnerable of us. This rate has been found to be sensitive even to small changes in technology and public policy, so it is also a measure of the effectiveness of those policies and in applying our base of technical health knowledge. A poor rate has been seen to be easily improved.

The U.S. is performing poorly in education and infant mortality rates because of its wealth and income inequality. The poor of the nation have rates that are among the worst in the world.

We can't let unelected business leaders run the education or healthcare aspects of our civilization because first, that goes against democracy and second, free market competition ended a few decades ago as every industry became monopolized.

We have all seen images of manufacturing plants closing throughout the U.S. while business was booming elsewhere. First in Japan, as seen here, and then in Korea, Indonesia, Malaysia, India, Brazil, and the Middle East. Here is a 2001 video of construction in Dubai that just goes on and on. No U.S. city is building like this.

U.S. and European corporations moved their factories where wages were \$1 per day, but notice that this did not mean, for example, that the price of shoes was reduced to pennies. The lower cost of labor instead meant increased profit for the people who own the corporation. The person in Asia who is paid \$1 per day to make shoes cannot afford to buy the shoes that are instead transported to the U.S., Europe, and Japan where they can be sold for \$100. That is globalization.

Barnet and Cavanagh explain that to advertise Nike products in 1992, Nike paid the basketball star Michael Jordan \$20 million dollars, which was more money than all the workers were paid to make them in Indonesia.

Nike sells half of all sports foot ware bought in the U.S., but Nike does not make shoes, it buys them from the companies that made them in Asia and then sales them in the U.S., Europe, and Japan. In 2015, its gross margin was about 50% of an annual sales of \$30 billion, and it paid \$0.7 billion in taxes worldwide for a tax rate of about 22% on its net income of \$3 billion.

In the last decade, corporations have also been moving engineering and science out of the U.S. Your medical x-rays and such might be evaluated by a doctor in Asia. Today, about 90% of the world's engineers are in India and China, and today, Dubai has the tallest building in the world, the Burj Khalifa, and a futuristic system.

## China

Throughout the last decade, China has been doing much of the world's manufacturing but is receiving a profit of only about 10% of the sales. Most of the profit is going to the U.S., European, and Japanese companies who order the manufacturing from China and then transport the products to those countries where the products can be sold for the greatest profit.

Workers in Chinese factories today mirror many miseries that workers had in the U.S. textile industry during the 1880s, as described by Riis. The largest migration ever has been the 100 million persons who left the farming villages of China to work in factories in the cities. In comparison, it took one-hundred years for 30 million Europeans to migrate to the U.S.

As in today's U.S., every small town in China has been drained of people aged eighteen to

forty. In her book *Factory Girls*, Leslie T. Chang describes life for workers in the factories of China. She explains that people leave the village by taking their first-ever bus ride, which might make them car sick just like your first ride may have done for you.

As a girl leaves the village, she will be finding her way alone in the big city, and learn that she can trust only herself. Parental advice applies only to the world of the village, where everyone helps everyone else, not the big city. Newly arrived migrants must get a cell phone because it is crucial to obtain a job and talk with friends. One girl, Min, arrived when she was sixteen, slept her first night under an overpass, and ran for her life when she interviewed at a supposed hair salon. To run, she had to leave behind her suitcase, ID, and possessions. She hid in a chicken-coop until the next day, and then she begged in the street for money. She found someone's ID card on the ground, and went to work in a factory as she pretended to be that person. Workers must be eighteen-years-old to work, but a small shop that employs just a few dozen persons might blatantly break the law and hire sixteen year-olds.

There are so many factories in China that barkers stand at the factory entrance enticing passer's by to work there because it is wonderful. Factories hire every day at 1:30 pm, and openly discriminate by gender, height, and home province, which is like saying no Irish or New Yorkers and few men need apply. Factories make everything that you buy, including clothing, toys, electronics, cell phones, computers, or maybe just keyboards. Cities are growing so fast that bus routes can not be printed, and bus stops are unmarked. A paid worker shouts destinations from the bus door while newly arrived migrants might still be getting sick from the bus ride. No old people are seen on busses.

Factories are huge, having as many as 70,000 employees who eat in the factory's cafeterias and sleep in the factory's dorms. Workers sleep ten or twelve per room in dorm rooms that have no privacy and use a shared shower and bathroom that is down the hall. Workers dry their laundry by hanging it around their bed. The dorms are unheated and cold in the winter. Meal breaks last one-hour, and there are separate cafeterias for workers, supervisors, and line leaders. Only the children of the leaders can go to the factory's daycare and school. The factory also has its own hospital, fire department, power plant, shops, and movie theaters. Except for Saturday afternoons, city streets are vacant as everyone is working, eating, and sleeping in the factories.

The U.S. sometime brags of creating 100,000 jobs in one month, but that is just two factories in China.

So many factory jobs are available in China that a person could switch jobs every day. To ensure that workers stay for at least six months, their first two month's pay is withheld for six months. After that, the worker can request to receive that money. When a new worker tells the boss that he or she wants to quit, the boss decides whether or not and in which future month the worker will be allowed to quit. The new worker can leave but forfeits those first two-months pay in what is said to be crazy-leaving. Workers say that they eat bitterness and endure, and when they quit the factory then they feel free. After working for a few years, they may have sent enough money back home for their parents to buy a toilet, or television, or even a new home.

The shoe factories of Dongguan make one-third of the world's shoes, including name-brand shoes. Some 60% to 80% of workers are women. A shoe is assembled in ten hours by a series of two-hundred workers, each doing a five-second task about 5,000 times per day. Workers are paid the legal minimum wage of \$2.50 per day (in 2008). Workers are fined one-hour's pay for talking

or being late. They must work sixty hours per week and have Sunday off. If they miss a day of work then they are fined one-week's pay. Ten-minute bathroom breaks are allowed once every few hours and require a sign-up sheet. Workers are on their own when sick or hurt. There are deadly fires, and factory machines that sometimes chop fingers. One girl, Min, told her boss that "Your factory is not worth wasting my entire youth here." The same working conditions occur in Chinese-owned factories outside of China. The government of China has little incentive to protect workers, but wants to keep factory owners happy and actively promotes eighteen-year-olds to leave the village to go work in the factories. The eighteen-year-old villager imagines that factory-work will be a fun-filled, social life.

In 2005, China allowed Airbus to build airplanes in China as long as that company helped teach Chinese engineers to design the airplanes. The executives at Airbus explained that it would be creating its own competitor but was happy to have some years of lowered labor costs and increased profits before that competition took off. All that mattered was having a few years of great profit. In June, 2017, China flew its first home-designed airplane. China is no longer providing just the labor.

Through the last few decades, the U.S. has been switching from manufacturing to services such as retail and healthcare and such. As manufacturing moved overseas, U.S. citizens exchanged their \$25 per hour manufacturing jobs for \$9 per hour service-sector jobs. Within a few years, robots will do these jobs. Remember that decreased wages are followed by decreased purchases by workers, and in turn, this causes decreased manufacturing.

### Monopolization revisited

In every large corporation, a profit of billions is distributed among a few hundred persons. Where 100 companies used to share an industry and its profits, now five or ten companies do, and this concentrates wealth into the pockets of the nation's 650 billionaires and the upper 0.01% or 16,000 families. Industry monopolization enables the size of these profits. Every industry is monopolized in the U.S., and this costs each person a few thousand dollars per year in higher prices. The higher prices that you pay go straight into the pockets of very few persons.

Monopolization is the elimination of competition so that a large company's buying costs can be forced down through sheer volume and its retail selling prices can be set—not by competition and supply and demand—but to be as high "as the market will bear." The few companies that control an industry do not compete to sell the greatest amount of goods and services for the least price. Instead, they prefer to remain being one of the few companies controlling their industry market. Every year there are price-fixing scandals.

Most every business contract includes a "no-compete" clause specifying that the lesser entity can not do business with the competitors of the larger entity. For example, the "dream clause" of car manufacturer A states that you can buy one of its cars only if you agree to never buy a car from another company, and in fact, if your friend is ever seen using a competitor's car then the ignition on your own car will be disabled. Even college recommendation-handlers try to do this.

As a nation industrializes, employers have the upper hand and cause some persons to live under the unjust situation of a precarious existence. In the U.S., this situation started small in 1820, but grew for some decades until the national labor strikes of the 1880s and 1890s. Inequality within the U.S. reached its first peak during the 1920s, and again today where the most-wealthy 1% of us



own 40% of all assets.

When a business reduces costs by laying off workers or reducing their pay, the business executive who thought of it might receive a portion of the savings as a bonus.

Capitalism works great for the 0.01% of us who are greedy enough to behave as if it is “everybody for themselves,” but extreme wealth is nothing but proof of your ability, or that of your recent ancestors, to overcharge other people.

We each contribute our life’s efforts to our industrial ways because we believe that it holds great promise for a better life for all of us in a mutually beneficial manner. Most of us just want to earn enough money to sustain a comfortable, quality of life for our family. Few of us have an interest in accumulating an industrial empire, or having as much money as millions of other persons. As the promise of our civilization increases it does not have to mean an increase in injustice. We will know that we have finished building our civilization when such injustice no longer occurs. If wage-earner-customers decided to return to the self-sufficient life of family farmers who buys no products then business owners would soon have to also.

The total income of all businesses can be no more than the total of all wages paid to employees. Business owners could instead pay zero wages if they could convince taxpayers to pay the entire income of workers. When direct wages from employers are too little then we have indirect wages that are redistributions of taxes collected from all citizens, including employers. In another extreme choice, we could be paid no wages at all and instead be stockholders in “employee-owned” companies that have no labor costs.

Nothing about today's world of Big Business and Big Government makes any sense until we look at the social and economic changes in our way of life as we switched from being farmers to being wage-earning, factory workers who not only made goods but purchased them, too.

We have seen that many U.S. government laws and regulations were created in response to improper actions of many business persons, who loudly proclaim today that there should be no laws or regulations on business. They say this because they hope to have no laws limiting their greed and cruelty. If we were to remove all government regulation, as is the dream of many of today’s 650 billionaires and their political and media advocates, then we would again work 16 hours per day starting at age ten, be paid too little for food and rent, be sold contaminated meat and milk, and have no choice but to abandon 1% of our babies, as described by Riis. If all regulations were removed, I am certain that business owners would strive to take as much as possible as fast as possible before the system were unraveled by their very own actions, as was recently demonstrated in the Savings and Loan fiasco, the California power outage scam, by Enron, and by the 2007 upheaval in our newly-grown financial corporations labeled “too large to fail”– or compete. The unbridled greed of many business persons would unravel the economic system within a few months, causing a global depression, but in response, we might setup a system in which industry competition is permanent, companies are numerous and competing, safety regulations are in place, and living wages are paid. We have already learned that we can not allow our global, economic well-being to be directed by a small number of business persons. We want to have one-hundred–not five–companies competing in each industry. Outside the U.S., retail stores are still tiny, family businesses rather than the supermarkets that are a tourist attraction for foreign visitors.

The Obama administration, the Federal Trade Commission’s Bureau of Competition, and the Antitrust Division of the Justice Department readily allowed mergers as long as five companies

would still exist in the industry and it was not brazenly apparent that the merger would increase prices. The lawyers who represent companies trying to get their merger approved by these governmental agencies, are the same lawyers who later run the governmental agencies. They frequent the so-called revolving door between industry and the government agency which is supposed to regulate that industry. Regulations require using the Herfindahl–Hirschman Index to measure the concentration or monopolization in an industry. This index is high when a few companies control most of the market, the index is lower if several, equally-sized companies control most of the market, and the index is very low if a market has many small companies with no dominance.

The U.S. Social Security Administration uses W-2 data to calculate the national average wage index, and reports that the net compensation of 30% of U.S. workers was less than \$15,000 per year in 2015. The U.S. Census Bureau's Current Population Survey shows that among full-time workers in 2016, 6% of men and of 9% of women had an income below \$15,000 per year or \$7.50 an hour, which is about the minimum wage. Among part-time workers, 48% of men and of 51% of women had an income below \$15,000 per year.

Fast food restaurants try to keep labor costs below 20% of sales. As robots replace human workers, the fast food industry would decrease costs by about 20%. In this case, prices would not go down by 20%, but instead, profit would be increased by 20%. Doubling the current minimum wage from \$7 to \$14 per hour would add 50% to that 20% of costs, which means that the total cost of fast food restaurants would increase by about 10%.

## Franchise operations

Self-employed persons who employ a few other persons, often work night and day, rarely get a vacation, and struggle to get enough sales to cover payroll but are happy to not have a boss and are lucky to earn a profit, which is their own wage, that compares to the income of the average citizen.

Half of U.S. workers are employed by so-called small businesses having less than 250 employees, which includes fast food restaurants and such.

Retail stores, car dealerships, hotels, and fast-food restaurants are often franchise operations. The franchise headquarters manufactures products and sells them to the franchise operators who then retail them to individual customers.

One company, the franchise headquarters, will sell its know-how, brand name, and products to many, independently owned, smaller companies who are franchise operators and retail stores. Each operator runs their own business but the headquarters is often the sole provider of the products sold by the operators, who can be held hostage to the prices—and whims—of the headquarters. The headquarters makes its money by selling items to the operator, and it might receive a portion of the gross sales of every operator. The headquarters does not retail directly to the consumer unless it opens a few retail stores of its own, but some manufacturers are legally forbidden to market directly to consumers; that step is left only to franchise retailers. Some manufacturers are also legally required to buy back the inventory of an operator who goes out of business.

When a retailer of cars, boats, tractors, or electronics and such decides to begin selling an additional brand, its manufacturer might require the retailer to stop selling competing brands.

The startup fees for a fast food, franchise restaurant today is often one or two million dollars. As you start construction of your restaurant, which is identical to hundreds of others, the

headquarters will charge you \$50,000 for its blueprints. The headquarters charges every operator for blueprints. You'll pay about 10% of your gross sales to the headquarters, and you must purchase all of your food and materials from the headquarters—at whatever price they decide to charge. There is a chance that you will get your start-up money back within a few years. The headquarters makes all of its money by selling things to you; it doesn't make its money directly from your customers. As it is said, the Mc Donald's corporation does not sell hamburgers to the public, it sells them to the franchise operator.

The headquarters might set the retail prices that the operator charges customers who walk in the door. Sometimes the headquarters will announce a nation-wide sale having reduced retail prices at the same time that it raises the prices that the operators pay the headquarters. This move increases profit for the headquarters by squeezing the operators. Some operators can choose not to participate in that nation-wide sale.

The franchise headquarters will train you to operate your business according to their ways. From the beginning, the headquarters wants to dictate the size and contents of your retail store. For example, the headquarters might demand that you construct a larger building with a larger display room so that both of you will get more money.

If you will be selling high-dollar items, like boats and such, then you will have to provide a guarantee that you can pay for these items—for example, by allowing the headquarters to hold the deed to your home. As your customers purchase these high-dollar items from you through a bank loan, you will bear responsibility in case that customer fails to make payments to the bank. The bank will hold some of your money for this purpose so that you—not the bank—take the risk. When a tractor is sold for \$100,000, the dealer gets \$3,000 and the manufacturer keeps the rest.

The mechanics of car, boat, and tractor dealers perform warranty work for the franchise headquarters, who pays the dealer a fee that depends on the rating that it has given that dealer. The franchise operator inflates warranty claims sent back to the manufacturer, because the manufacturer expects that and typically pays just a portion of the requested amount.

The headquarters handles national advertising and will send you a monthly bill for your share of the total fee because some of your own income might result from those ads. The headquarters will also pay a portion of your local advertising expense. The headquarters might send you a poster to hang in the lobby and bill you \$200 for it—and bill the other thousands of franchise operators for their copy of this poster. The headquarters will ship anything they can think of to you and bill you for it because they make their money from you. You are the captive customer of the headquarters. If you try to refuse to pay for something that you don't want they will threaten to terminate your franchise. If the headquarters decides to fund a NASCAR racing car that costs \$10 million then they will simply bill \$5000 to each of their 2,000 franchise operators.

Franchise operators often complain that the headquarters acts as a tyrant—telling you to do this or your contract will be terminated. Ford car dealers were already complaining of the headquarters back in the 1920s. When operators end the franchise contract, they might say that life is now easier without the tyrant but it is now more work to get customers into the building since they no longer sell that nationally-known, name-brand.

## Car safety

Worldwide, some 1.3 million people die in road crashes each year and 20-50 million are injured or disabled. In 1965, Ralph Nadar encouraged the auto industry to consider building cars that were more safe. Since the 1970 peak, 30,000 to 50,000 people have died each year in the U.S. Auto manufacturers say that deaths in car crashes are acts of god, but NASCAR drivers travel at triple the highway speed, tumble and roll after collisions, and walk away from crashes. Why aren't personal cars as safe as race cars? I would rather my family member wear a six-point harness than be killed in a car wreck. In the last twenty-five years, one million persons died in car wrecks in the U.S. but there were only 520 fatal crashes in U.S. auto racing. Auto manufacturers have given us one century of avoidable death. The industry could design the automobile to be as safe as are race cars. For starters, the passenger compartment would have maximum strength if it were spherically shaped. The SmartCar is built around a sphere. In one test, after crashing into a wall at 70 mph (160 km/hr), its doors could still be opened. Not so for a pickup truck.

Historically, car manufacturers have shown much more concern in reducing unit costs by pennies than in eliminated deaths. They choose to save pennies per car by removing window halves and outside locks on rear doors, and they prefer to risk a \$300 million dollar recall by saving \$4 per car today even if it means the death and injury of customers. Only savings and lawsuits go into the calculation, not lives.

U.S. car makers typically get \$1,000 profit from small cars but \$5,000 from large trucks, so they strive to sell mostly large vehicles and are racing us toward bus-sized cars. Don't choose a vehicle that gets less than fifty miles per gallon. Even better, choose an electric car whose battery is charged by a windmill.

When a car driver hits a telephone pole and survives, the driver must pay the phone company to replace the pole. Utility companies have not been required to move poles away from roads because that would them cost money.

For many years, China allowed car manufacturers to reduce costs by omitting the smog control device. Today just 2% of people in China have a car, but smog in their cities is as bad as it was in Los Angeles in 1963 before the Clean Air Act began laws requiring manufacturers to reduce pollution from factories and cars.

In the U.S. each year, car companies sell 50 million new and used cars for \$1 trillion, which is three times the total of new home sales.

## Marketing of goods, politicians, and political agendas

Marketing tries to convince you to pay double for a name brand so that its executives and major shareholders will get billions of dollars. Marketing wants you to refer to Pepsi as "real soda," but in real life, the brand of soda that you drink for two weeks straight will become the one that you think tastes "normal." Try it. There is no reason to pay double for a name brand. Some companies spend one-quarter of their income on advertising. About 200 companies account for half of all advertising. Facebook and google make \$100 billion per year on advertising.

When I see or hear an advertisement, it makes me try to chew my own head off to end the unwanted intrusion of nonsense. Whenever I see or hear two advertisements in a row its enough to

make me begin shaking, wheezing, and retching. I run in circles feeling that I'm trapped and can't escape. I begin to chew my own head off in an attempt to end the unwanted mental intrusion. And then I never buy those products. My doctor told me that I have fabricitis and Escherobia, which is a phobia of the impossible. If it were up to me, I'd outlaw the advertising use of adverbs, adjectives, dramatic re-enactments, displays of mood, music, jingles, children, testimonials, and the phrase "order in the next ten minutes." All that would remain is for an ad is to make a statement like "Joe's diner sells food from 2-4, Monday to Thursday."

Today, companies try to get you to advertising for them by clicking the like button or sharing a link to their product.

Today's ads follow us around the internet. While you use the internet, companies track and analyze—and often sell—records of every website that you visit. This information is used by companies in every possible way, without paying you anything. Companies dream that soon, every emotion that you feel and every word that you speak while clicking can be monitored by software that reads facial expressions from your camera and conversations from their 24-hour microphone. They hope to read your mind, determine your interests, personality, and political views, and sell you more of what you should want to buy. This makes maximum profit but minimum privacy and it also fuels dictators. Now companies want to listen to your conversation and send ads that match your current topic. Even the spread of flu is indicated by the use of the word flu in web searches and in twitter and email messages.

Internet search engines are advertising engines that receive money from your browsing and so have turned into shopping lists more than information sources. For example, a search for "boat" begins with a list of websites that sell boats. Search engines show you more of those sorts of websites that their records show you have already visited because your clicking is then more likely to earn income for the search engine company. For example, your web searches show whether you are liberal or conservative, and the search engine will return first those websites selling something that matches your interests.

Tracking your internet usage is identical to having a person walk behind you all day while recording everything that you buy, do, or say. No tracking occurs in internet systems that are open source and public domain. Companies can not profit from your picture unless you sign a contract, but companies profit from recording and selling your browsing history. This is a form of stalking, which is illegal. I'd outlaw this and the unpaid use of your external image or digital records of your internal physiological, emotional, and medical state. Your shopping and browsing history represents your internal state. By the way, when internet usage is analyzed to detect criminals, it generates 14 billion false-positives per day.

Market researchers hire a group of people to use as test-subjects. The marketers try out various products, advertisements, and sales tactics on that group of people, whose heartbeat rates and interest levels are monitored by the second. Additional researchers sit on the other side of the one-way mirror and try to figure out the most appealing name and appearance of, for example, oatmeal.

The marketers sell a mood more than a product, and search for statements and visuals that will push your emotional buttons and get you to buy—or vote.

Politicians and political statements are marketed just like oatmeal. Ever since Nixon, statements that seemed to be made off-the-cuff, had already been test-marketed with a group of people. Marketers tell politicians to be committed and uncompromising, though that is contrary to

democracy, which functions as a blending of views that partially satisfies everyone. Rather than explaining to constituents that democracy works only with compromise, politicians pretend to be committed and uncompromising, even refusing to use the word compromise in public interviews.

The U.S. government is a balance of power among executive, legislative, and judicial branches of government, which consists of about five-hundred persons. We learned the hard way in previous centuries that we can not have a single leader dictate policy and action for all of us. Today, no legislation or policy happens unless a sufficient number of those five-hundred persons agree to it. Much of daily politicking, including the barrage of issue ads, occurs as small groups try to convince enough people to agree to their wishes. In politics, perception is a powerful reality. Many of today's pseudo-news channels promote a single view of priorities for the nation. Politics has become the science of getting ones' way.

One market researcher tested various euphemisms for the phrase "estate tax," which wealthy persons were hoping to end. The researcher found that people did not care about estate taxes but reacted strongly to the phrase "death tax" and would then vote to end the tax.

This same researcher found that people reacted less strongly to the phrase "climate change" than they did to the phrase "global warming." Conservative politicians then switched to that less emotional phrase. In response, the rest of us will now refer to global warming as global death.

For example, if global warming led to the extinction of 600 species of mammals, would that have any affect on the other species? Well, there are only 6,000 species of mammals on the planet, so 600 would be 10% of all species. Should we gamble on this to save pennies in business costs?

Is it climate change, global warming, or global death?

The many factors of long-term climate were described in Chapter 2. In summary, we ask what would be the temperature of the Earth if it had no ocean or atmosphere and was just as far from the sun as it is now? Its temperature would be just like the Moon, which has no ocean or atmosphere. The Moon's surface temperature swings through 500° Fahrenheit (300° Centigrade) from day to night. The Earth's ocean and atmosphere hold heat and reduce the day-to-night temperature swing to just 50° Fahrenheit (30° Centigrade). The equations of physics show that if the Earth had its ocean and an atmosphere of just nitrogen and oxygen but no water vapor or greenhouse gasses, then the surface temperature of the Earth would be twenty degrees cooler than it is. The surface temperature depends sensitively on the greenhouse contents of the atmosphere. The atmosphere is 30 miles (50 km) tall, and its temperature is -450° Fahrenheit (-270° Centigrade) at the top and 80° Fahrenheit (30° Centigrade) at the bottom, where we live. Even on a hot summer day, the temperature of the atmosphere drops to -40° just six miles, which is 10,000 yards or meters, above the ground.

Coal-fired electrical generating plants, cars, and factories dump greenhouse gases and poisonous gases into the lowest one-hundred yards or meters of the atmosphere and raise its temperature. When the wind stops for a few days near industrial centers, entire towns are sickened and many persons die from factory exhausts.

Why do factories have tall smoke stacks? They are used to disperse the poisons higher into the air that might otherwise kill everyone walking past.

Our very lives depend on the temperature of the lowest 10,000 yards or meters of the atmosphere, because that is where we live. We risk global death by altering this temperature with

air pollution.

The temperature of outer space is  $-450^{\circ}\text{F}$  or  $-270^{\circ}\text{C}$ . This is the temperature above the Earth's atmosphere, which is merely 30 miles (or 50 km) tall. That short distance above your head, the cold temperature would kill you.

We human beings are able to live only in the lowest mile or two of the atmosphere, where the temperature is just right.

The Earth's human population of eight billion persons amounts to 35 persons per square kilometer. This means that each person gets a square region that is 160 yards or meters on a side. Out of the entire universe, the only place where you can live above freezing is in this little volume that is 160 by 160 yards or meters and a few miles or kilometers in height. Don't let anyone save pennies by dumping greenhouse gasses and poisons into your tiny little, livable volume of the universe. Factory-made global warming began 250 years ago.

As was stated above, scientists and engineers would be thrilled to design and build factories, homes, and cars that emit nothing into the environment so that we won't be gambling with global death. Factory owners prefer to save pennies by leaving out the equipment needed to keep their factories from emitting pollution and fouling our air and water. Business owners have made obscene profits polluting the world. Had they built proper pollution-less processing facilities, we would not be debating global warming.

The nation's 650 billionaires, and their media and political advocates, care only to save pennies on building and operating costs and have no regard for the lives of eight billion persons, or of any other life on Earth.

The billionaire Warren Buffett said "I personally think that if society is the one that's benefitting from the reduction of greenhouse gasses, that society should pick up the tab," see <http://www.reuters.com/article/us-berkshire-results-idUSKCN0XR0GT>. In response, we personally think that we should fine and jail those business leaders who hope to reduce factory operating costs by emitting green house gases and poisons into the air and water. Even they will benefit if we avoid global death.

Antarctica has one-and-a-half times the area of the U.S., and it is covered by ice that is 6,000 yards or meters thick. Imagine the entire U.S. covered by mile-thick ice. You can believe that the ocean level would rise if all that ice was pushed into the sea and melted. As ice-ages come and go, the ocean surface rises and falls through 100 yards or meters as water cycles between oceans and glaciers.

Each coal-fired electrical generating plant burns 100 to 500 train-car loads of coal per day, and there are thousands of these plants. They emit more radiation than a nuclear-powered plant, they emit the mercury that is in our waters and food supply, and their emissions cause lung disease. Half the world's greenhouse gases are emitted by electrical generating plants that burn fossil fuels. Out of the eight billion of us on the Earth, the only people who want smog, lung disease, global warming, and mercury in our food are the owners of the this industry.

Each coal-fired electrical generating plant burns a mountain of coal every year. In contrast, a nuclear-powered electrical generating plant gets its energy from a piece of uranium that is the size of a beach ball, and each plant creates several truckloads of nuclear waste per year. Which is better for the environment and our health, coal- or nuclear-powered plants? We must be careful to make the correct and fully-informed choice. We all want to use solar, wind, tidal, and other renewables for

as great a share of our energy as is possible. Europe is way ahead of the U.S. in this approach. A great plan is to use windmills to charge batteries that operate electrical cars for every person. It would take a couple decades to switch to electric cars, just as it took a couple decades, back in the 1930s and 40s, to get electricity and plumbing into homes, and gas stations along paved roads. Japan already has more electrical charging stations than gas stations.

Our political leaders have failed us by not planning for our future energy needs and energy systems, and by omitting mass transportation, even sidewalks.

Back in 1975, we should have put wind-powered generators and solar collectors on every rooftop in the nation. To see how passive solar energy works, lay a water-filled hose or container for an hour in the sun or in your closed car and you will quickly have hot water for a shower. Rather than using light bulbs all day long, sunlight should be piped inward for interior lighting. The absence of a U.S. energy policy—since that of President Carter—has accompanied two gulf wars and 500,000 of us humans being killed by other humans.

El Nino is a 0.5 °C (1 °F) warming in a patch of ocean along the equator, and this shifts weather patterns around the globe. Imagine the circulation shifts if the entire ocean was heated, as is now happening. Global warming might raise the entire Earth's surface temperature by an average of 2 °C (4 °F). This also means that the temperature in big cities might increase by 5 °C (10 °F). Throughout the summer, the temperature in your city might be 43 °C (110 °F) instead of 38 °C (100 °F).

We, the human beings of the world, instruct our business and political leaders that, from now on, homes, cars, and factories will be built such that they emit nothing into the environment. That way, we won't be gambling with global death just to save pennies for a few billionaires.

## Conclusion

In conclusion about business, I say shame on those business owners and managers who strive to pay employees as little as possible and take as much money as possible from each of eight billion persons. That's what it means to charge "what the market will bear." The greediest of us seek the slightest benefit for our self by adding a little misery to the lives of eight billion others.

The billionaire dreams 'If I cut every employee's pay by \$1 per hour then I would soon have another \$1 billion for myself. If I cut their pay by half and double the selling price then I would quickly have \$10 billion more for myself.' The billionaire believes that "I deserve this for myself because I have given them jobs and allow them the privilege of being my customer and buying things from me." In reality, our purchases are the income of the billionaires. Corporate profit is the income of the upper 0.01% of us. Whenever you hear a point-oner talk, answer "you just what it all for yourself even if it kills the other eight billion of us."

The billionaire dreams of merging the last few competitors so that they could charge the gouging prices that they deserve to have. While about five companies control each industry, construction is necessarily local so it has not been monopolized. There are about 60,000 homebuilders and remodeling companies in the U.S. There should be 60,000 independent businesses in each industry, but each has only five.

Through 2016, monopolization has made 1800 billionaires on the planet by increasing wealth concentration and inequality. This causes daily misery—and often divorce, too—for one in six of us



in the U.S. who do not have enough income to buy food and pay rent.

Our billionaires would like the sole purpose of civilization to be to turn them into trillionaires before they die. They would like to remove any safety regulation that gets in the way of their own profit. In reality, we all know that the purpose of our mutual civilization matches the meaning of life of a human being, which is firstly to ensure the well being and happiness of our children. What's good for our children is good for the nation, for society, and for human civilization.

War was invented by the first emperor

In Ancient Mesopotamia, each city was necessarily fed from crops grown in its surrounding area, which typically extended fifteen kilometers or ten miles. As neighboring cities grew outward in size, their surrounding areas began to overlap, producing arguments about bordering farm lands, water, and canals. Cities began arbitrating between the arguments of other pairs of cities in short-lived political unions. Such squabbles were recorded in the tablets for several generations before any inter-city argument had brewed into a major fight. The first artistic depiction of warfare occurred around 3200 bc, but it was not a common theme until 2500 bc.

While holding a bureaucratic position in an early cooperative around 2300 bc, Sargon of Agade got the idea that an empire could be created. Sargon was the first of us humans to think of forcibly uniting the cities of a region. Having no empathy for other human beings, Sargon sought benefits for himself by directing the cruel murder of thousands of other persons by tearing off arms, legs, and heads. Such is the character of every would-be conqueror throughout history. Before Sargon, it had not occurred to a person to conquer neighboring cities to extract payments or attempt to be emperor of the world. Such wars of mass murder had never before occurred in the history of our species, which had been unaware of the destructive power that could be harnessed from thousands of people directed by one psychopath. Such leaders have ordered the salting of farmlands or the diversion of a river to destroy a city and kill its people. Normal human beings don't think this way. Only emperors commit mass murder for personal gain. They are not the heroes of history. The leading cause of suicide among today's combat veterans is guilt from having injured or killed another human being. The emperor does not care about soldiers, victims, guilt, or the misery of others.

Our first-ever emperor somehow convinced his people that it would be glorious to go to another city and kill hundreds and even thousands of persons by tearing away arms, legs, and heads. Any wounded person would slowly bleed to death. Imagine what would have been your reaction to news of the first-ever massacre of thousands of persons. It is no coincidence that this is the time in which religion becomes moral instruction. Our most important spiritual leaders, including Zoaster, Moses, Jesus, Buddha, Confucius, and Mohammed, emerged soon after the development of large, stranger filled cities, empires, and wars of mutual mass murder. Our earliest moral leaders re-emphasized our love for each other and our Golden Social Rule.

After the first emperor existed, many other kings said "What, you can do that? I want to have an empire just like him, only bigger." War was invented to create empires. A few generations after the first empire wars, people had already come to assume that war had always occurred. But actually, war has existed only through the second half of civilization, and war has always been the idea of our leaders seeking to expand his own wealth and power for his own benefit at the cost of terrible deaths for other people.

Throughout the 2,500 years following Sargon's empire, the amount of irrigated farmland decreased. Wars disrupted society, and impeded the repair of the canals. A "dark age" occurred from 1600 bc to 1300 bc in which trade nearly disappeared and people once again grew their own food. As local empires and self-seeking leaders constrain some regions of the world, other regions advance civilization. Soon, 100% of us will be contributing to our mutual progress.

From village to city and empire

8000 to 6000 bc: Sedentary farming villages of a few families

5500 bc: First permanent villages with 300 persons

3500 bc: City-sized urban areas of 3,000 persons

2700 bc: Cities of 30,000 persons

2000 bc: Cities have 300,000 persons and wars of mass murder

2000 ad: Our most-selfish leaders continue to make war

Of 10,000 years of civilization, the first 5,000 years saw no wars of mass murder. The last 5,000 years has been filled with the wars caused by our most selfish leaders.

In each region of the world, empires grew in size and duration up through the last century. Once you've seen one pattern of sloshing kingdoms and empires, you've seen them all. Usually, the so-called winning army was simply the largest army.

The purpose of government, ever since the first chiefdoms, has always been to organize our mutual efforts. Together, and with such leadership, we accomplish civilization. But the newly-invented emperor demanded that we kill and be killed so that he can expand his empire. Bronowski and Mazlish point out that a person will not come to your home and say "I must kill you for your food to feed my children." We all agree that this person's lack of food is no excuse for immoral behavior. But some kings believe that morality does not apply to them and will kill to obtain territory, raw materials, or any other objects of interest. For the last 5,000 years, we have let rulers answer to noone while causing much death.

We, the human beings of the world, tell our leaders that we will no longer conduct their wars. We will not let a handful of leaders start war and kill millions of persons this century. We now choose to glorify nurturing and kindness, not war, violence, or profit. Our nature is to be loving and nurturing parents not mortal combatants as a favor for kings. Love and children, not empires, stir our being. We don't care about being emperor. War is not innate human behavior, but love is. We love our children. They drive our very existence. We will do anything just to see them smile. We devote every effort of our lives to the well-being and nurtured growth of our children.

In today's war, family members might have their limbs blown off while eating at the dinner table. In the last century, war kills more civilians than combatants. For example, in just the first Gulf War, several hundred thousand human beings were killed. Most were civilians of which half were children. The next time your leader promotes war and mutual mass murder, simply say no because it always means the murder of thousands of children. Some political leaders seek power through war and do not care that it means the death of one hundred thousand people. Remember, it is not ok for the good guys to kill people.

Do you know how to end war today? Fill the television with images of people screaming and crying because their arms have been blown off and their child's legs have been severed. Do you

know how to keep a war going once it has started? Keep these images off the television. The price of such a terrible lie is a terrible death for innocent people. War and its injustice will occur only for as long as we let our leaders demand it and only for as long as we go along with them.

For way too long, we've been letting leaders cause murder. We, the humans of the world, now agree that the nations of the world must immediately capture and imprison any leader who causes an attack on people in his region or in any other region. There is no reason to conduct war with that leader's military. This causes large numbers of terrible deaths. We will instead arrest that leader. Our would-be emperors can instead live together in one prison. Of the eight billion of us today, only a handful are dreaming of world conquest through war.

In recent decades, our most-monstrous leaders have been attempting mind-control, for example, by periodically killing a few persons in public on main street. This works because the rest of us will then do whatever we are told. We do not gamble with our lives. If our leader keeps everything for himself so completely that we must walk thirty minutes to get daily water then we will just walk thirty minutes per day to get water. We do not resort to rebellion unless there is no food.

We, the human beings of the Earth, direct our leaders today to make rapid and full use of our crimes against humanity court.

Rather than just outlawing guns for the public, let's follow the Dalai Lama's advice and take guns away from every army. In fact, let's remove every army from our planet. Our most selfish leaders will then be less deadly.

What purpose do guns and armies serve today? Mostly, they prolong injustice. As the first group of 100,000 of us head to live on Mars, will we have to take armies, guns, and bombs with us? For what purpose—to protect us from aliens or from conquest-minded leaders? Why do we have armies today?

Of the trillion dollars spent on tanks, planes, and ships throughout World War II, 10% of this money was the business profits that went to a few hundred persons who owned most of the stock of a few dozen war companies. Despite Eisenhower's warning, U.S. military spending has increased such that it now spends as much as does the rest of the world combined.

Since 1950, the U.S. military has conducted actions in 50 of the 200 nations of the world. No other country does this. U.S. politicians constantly state that they should choose the leaders of other nations. This makes people mad at the U.S. While campaigning for president in the year 2000, George W. Bush said that "Foreign policy is easy, just stop doing things that make other nations mad at us." A few years later he said that "Great nations go to war."

In 2001, a 200-member group based in Afghanistan attacked the U.S., so George W. Bush invaded Iraq in 2003. With the trillion dollars spent on the Iraq war, the U.S. could have instead funded complete health care and education for all 80 million of its citizens under the age of twenty, spending \$12,000 for each of them. U.S. military spending was \$0.2 trillion in 2010, it doubled by 2015, and became \$0.7 trillion in 2019—not including the retirement pay of soldiers. As just mentioned above, the U.S. chooses to spend as much on its military as does the rest of the world combined.

We see that we are not yet fully in control of our political leaders when they continue their 5,000 year-old habit of going to war on a whim as they hope to expand their own wealth and power through the terrible death of other people.

Gatherer-hunters were marrying their neighbors, not murdering them. Gatherer-hunters don't

conduct war in which an entire group is murdered because soon there would be no groups left. Only emperors wipe out the residents of entire cities. Gatherer-hunters have few possessions, so there are no “spoils of war” to be taken. Some “tribal” groups would periodically travel several days to harass another group who had previously harassed them. The goal of a such a “war party” might be to make scary sounds outside the other’s village all through the night. If caught, sometimes a kidnapping or murder would be committed. One 17<sup>th</sup>-century European accompanied a Huron “war party” and was surprised that the goal was not to murder the entire village.

Warring militaries operate much through the encouragement of bigotry as they push soldiers to kill people who are said to be sub-human. Individual soldiers return from battle stating their surprise that the supposed inferior enemy was equally adept at killing. At the start of war, individual soldiers find themselves in combat fighting for the lives of friends who are present, and after the death of those friends, try not to know even the names of their replacements. We would never have imagined that a human being can make himself continue day-after-day being surrounded by people having their arms, legs, and heads torn away.

We, the human beings of the world, choose to stop teaching our children to insult others in even the slightest way because silly bigotry can enable terrible war and **mutual** murder over some imagined characteristic. We will instead find something to laugh about that is not so deadly and does not enable our mutual murder. Rather than encouraging our children to hate, we choose to promote their innate love and communal spirit. We choose to combine efforts to end human misery.

The people of the U.S. do not have affordable health care or college; instead, their leaders choose to spend their mutual money on a really big military force.

In 2015, U.S. military spending was \$0.6 trillion, which is the same money that all 50 states spent on K-12 education for 50 million students attending 100,000 public, K-12 schools. These schools are funded by state (45%), local (45%), and federal (5%) taxes. While high school graduation rates are near 100% in Europe and Asia, it has been 75% in the U.S. for years but suddenly grew to 80% in the last few years.

U.S. citizens pay much more than do Europeans in the total spent on taxes, college, healthcare, babysitting, and retirement and such. Europeans chose to share costs for these things that everyone needs in today’s society, and view the fees to be membership dues in a societal contract. Those of us humans and social primates who live in the U.S. are still members of a society but might imagine that ‘It’s everyone for themself.’”

## Education

U.S. students pay \$15,000 per year at public colleges, or \$50,000 per year at private colleges, but students in Europe pay nothing or at most \$3000 per year to attend the best schools. While U.S. students graduate with an average of \$30,000 in student-loan debt and owe another \$30,000 in interest, Europeans graduate with no debt. Many U.S. students borrow \$100,000 and pay back \$200,000. Banks enjoy having no risk as the loans can not be removed even by bankruptcy.

With each new thing that we learn and accomplish, we become a fuller person and are able to contribute a greater amount to our mutual civilization. The accomplishment of human civilization is greatest when all of us receive full education so that each of us can contribute to our full potential. That is why education is mutually beneficial for all of us. Every member of society devotes their

lifetime's effort of their daily job and expects to share equally in the well-being and quality of life that our mutually beneficial civilization produces. Otherwise, some of us would be living a medieval lifestyle while contributing to and being surrounded by 21<sup>st</sup> century civilization.

To be fully educated today requires graduating from college because the harsh reality is that high school prepares you only for jobs that a 6<sup>th</sup>-grader could have done. But going to college requires more money than intelligence. If you grow up in a poor side of town in the U.S., then you have a 9% chance of having college, but 77% of more-wealthy children attend college. This happens because, as we saw above, K-12 schools in the U.S. obtain half their funding from local taxes, and this means that schools in poor districts have less funding for K-12 so its children are taught less. By the way, there is no such thing as smart and dumb people because each of us has the intelligence needed to fit into our brain the 30,000 details of culture comprising our recipes for how to do everything in daily life.

We the people of the world, know that we and our leaders are failing our children if college education is not free and available for every child on the planet. Our civilization has many Rembrandts and Einsteins who can not pay corporate prices for education. We are all better off to have everyone's full contribution to society.

Our K-12 system strives to tailor educational delivery to each individual student, but forces all students to travel through the school years at the same rate. About one-third of our children are interested in learning at a 30% faster pace, shrinking K-12 plus four years of college into twelve years so that we finish college at age 18 and obtain Ph.D.s at age 22. Today, it is our twenty-year-olds who are advancing civilization. If a variable-speed school system existed, one-third of students would finish highschool a few years early.

Some politicians in the U.S. have stated that the government does not belong in the education industry and talk of ending publicly-funded K-12 education. The trouble is that business would quickly monopolize this "widget industry," and create huge profits for a few corporations who would have one live teacher per school and one teacher broadcasting online to all 50 million children in the U.S. Costs would be very little, but the price would be half your monthly income. Charter schools do not compete or submit bids to teach students at lower costs to citizens. Instead, they are simply given the same money that would have gone to the nearest public school.

In those nations that require families to pay directly to attend school, about one-third of children do not attend because the price can be half of family income. The result is that one-third of voting citizens are illiterate, as would also happen in the U.S. were K-12 schools to be controlled by a few corporations.

The nation's 650 billionaires, and their political and media advocates, dream of eliminating the \$600 billion per year taxes needed to fund schools, and instead milking billions in profits from parents who want their children to be educated. As public funding for public colleges decreased by \$10 billion from 2008 to 2016, tuition has rose by 50% to 80%, depending on the state.

Some private colleges became business-like as they sought the greatest tuition price that "the market will bear."

For millions of years, we have learned tasks by working one-on-one with a teacher, watching, asking questions, doing that task ourselves as the teacher observed, and then teaching it to another person. When working one-on-one in math and science, every person can learn everything, and at five times the rate that occurs when class sizes reach twenty students. Beyond twenty, students have

to teach themselves.

Those of us who do not finish high school have little choice in occupation, are forced to take whichever job comes along, and struggle to buy food and pay rent. The Miringoff's explain that our high school drop-out rate affects the lives of individuals and their children through reduced wages, reduced civic participation, and higher unemployment.

The average wage increases and the unemployment rate decreases through educational attainment. The wage of high school drop outs is about the same as the poverty wage for a family of four. Today's minimum wage is below the poverty wage.

The economic benefit of education makes for trite bait compared with the rewards that come from knowledge and knowledgeable citizens. The real purpose of high school is to try every subject and find the one that grabs our passion, knocks us off our feet, and fires us up for the rest of our life. Samples of every subject must be given and taken during high school so that we are not deprived of stumbling onto our passion. For example, we cannot know if anthropology stirs us until we take a course in it and find out what it is about. Each subject exists because it is part of what a human is and does.

Education gives us knowledge from the experience of billions of persons through thousands of years. Education today is more than job training at public expense and more than an introduction to 5,000-year-old skills of reading, writing, and arithmetic (which are the three misspelled 'r's): It produces an understanding of the math and science and the arts and humanities that result in an appreciation of human beings, our cultures, and our civilization and results in a respect for all of us human beings and for the civilization that we humans are building. Knowing something about the nature of humans and the flow of our civilization helps us to better choose our combined future.

An illiterate population is robbed of the knowledge of the extensive accomplishments of humans and instead might imagine that the community appeared from nowhere and that its future is beyond our own control. As stated above, a nation's progress is tied to the education of its citizens. With each new thing we learn or accomplish, we become a fuller person, a more-engaged citizen, and contribute more to our mutual society.

College education for everyone is a meaningful step toward our destination of the fully-empowering civilization that combines all that is possible from every person. Increased education is in the interest of our civilization. No other investment would bring a comparable increase in the quality of our lives.

In the United States, about one-quarter of us complete college, but about one in ten of us cannot afford to attend any college at all and so are not being allowed to contribute all that we can to our mutual community.

Students in the U.S. sometimes ask "What good will this fact do me in life?" What is the answer? "I want to learn this so that I can understand human beings and our world and accomplishments, graduate from high school, go to college, have a job, live a comfortable life with my family, and contribute all that I can to our mutual society and civilization."

While people in the U.S. are taught that they might be a zillionaire, Europeans are taught that together we ensure a comfortable life.

Through the last century, an increasing portion of the world's people have been contributing to our rapid growth in technology. Here is a UNESCO map that shows the number of researchers per nation per one-million inhabitants. Imagine the pace of our progress when every human being on the

planet is allowed to contribute.

Greed is not taking the largest piece for yourself at dinner time. Greed is having as much wealth as one million persons and wanting as much wealth as one billion persons. Only one in 10,000 of us have such greed. There is daily discussion of the greed of the world, but that involves just a fraction of us—for example, the 0.01% of us who demonstrate zero empathy for other human beings. For them, customer deaths matter only in terms of dollars lost in law suites. Ask any person on the planet what drives our existence and they will answer love and children and spouse, family and friends, and community and justice. These concerns were built into our DNA millions of years ago as we are parenting mammals, social primates, and cultural human beings. The business world is a new thing that does not indicate our average genes, and we have not suddenly become independent of our genetic heritage.

What should be the priorities and goals for the mutual efforts that are our society and civilization? These can only match the meaning of life of a human being, which is firstly to ensure the well being and happiness of our children. We live for our children. What's good for our children is good for the nation, for society, and for human civilization.

As mentioned above, about one in five children in the U.S. live in a home whose income falls below the poverty line. This situation has steadily existed through recent decades. The U.S. ranking in infant mortality was 12th best in the world in 1960 but has fallen to 56th in 2016. What could possibly be more important than the survival of our babies and the well-being of our children? But this is not the priority of our politicians. In the U.S., we now have two war departments—Defense and Homeland Security—but we do not have something we might refer to as the Department of Children's Well-Being, or the Department of Life, or the Department of Happy and Healthy Children and Communities. The portion of governmental efforts that are directed at our children's well-being is shown by the portion of last year's legislation, as recorded in the *Congressional Record*, that directly involved children. Very frequently, tell your leaders what you think the priorities should be for our mutual efforts and tell them when their actions and policies do not match our human priorities for healthy and happy children and communities. Should the priority of our government be to turn a handful of our billionaires into trillionaires before they die, just like the rest of us?

For us human beings, our infant mortality rate is of utmost importance, not the Gross National Product, which sums value added and everything purchased, including the money spent on car wrecks, divorce fees, crime, sickness, police forces, and prisons. These expenditures are considered to be economic progress and growth. In contrast, the social health indicators measure our well-being and the quality of our lives.

The Miringoffs quote senator Robert F. Kennedy's full description of the Gross National Product. Here is an excerpt. "The Gross National Product does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages; it measures everything in short, except that which makes life worthwhile."

The news tells us second-by-second changes in the Dow average, but we want to see second-by-second values for hundreds of social health indicators, including infant mortality, child poverty, suicide, income and wealth inequality, high school and college graduation rates, elderly poverty, affordable healthcare, affordable housing and utilities, and even happiness. Bhutan's government states that its purpose is to improve the nation's happiness index, and that this is more important its

Gross National Product.

Each day, ask yourself: What do you want out of life? What are meaningful goals and priorities for the mutual efforts that are our city, national, and global societies, and how should we measure the success of our attempts to reach these goals.

The purpose of government has always been to direct our mutual efforts. Eliminating government would mean that we have no mutual efforts. But a lone person can not accomplish monumental tasks. Even the billionaire needs the other eight billion persons from which money can be taken. How do you define happiness and well-being, and how can they be measured? One might say that they involve surviving birth and infancy and then living a long and healthy life not shortened by a simple curable illness, receiving the desired amount of education, not being abused, and not having such a bleak expectation of the future that we turn to drugs, crime, or suicide. We expect to enjoy our job in that it is rewarding and fulfilling; we do not want to feel that we are being treated as a machine or tool. We expect to work a number of hours per week and spend the rest with our family, friends, and the neighbors of our community. Having hobbies, and time and money to spend on them helps us feel human as does having a quality neighborhood and community—and a quality global community, too. We want to have control of our own life, and have goals in life and goals for the nation. We want to be paid enough that just a portion of our income is spent on food, clothing, housing, utilities, health, and entertainment and to have enough money to handle sudden expenses. We do not want to die in poverty; we prefer to maintain a level of comfort throughout retirement. We do not want to have our quality of life restricted or decreased for the benefit of another person. We do not want to be the victim of crime. Our happiness can be measured indirectly by measuring a large number of such aspects of life. The measurements shown by these so-called social-health indicators help us know if our mutual efforts are or are not succeeding.

The Miringoffs explain that social-health indicators quantify the success of our mutual efforts to make life better for all of us, which is the stated purpose of government. Poor rates indicate problems of society, not private misfortune. For example, one-in-five of the children of the U.S. live in a home whose income is below the poverty line, but politicians rarely discuss this with us, and it appears in the news only on occasion. We should be having a national debate about the priorities for the mutual efforts that comprise our society and civilization.

Using numerous social indicators, we can measure the success of our attempts to govern ourselves. We can even measure our happiness. Which measures of our well-being and the quality of our life are most important to you, to your fellow citizens, and to the leaders of our businesses and government?

The Miringoffs explain that a national debate about social-health indicators would strengthen our democracy, help guide public policy, make more specific our vague notions of well-being, increase our understanding of the fabric that joins us as a society, re-emphasize that we are defined not only by a series of achievements but also by the quality of our social interactions, inspire us to greater participation in government, make us feel that our government officials are once again concerned about us and are responsive to our needs, move us beyond the measurement of nothing but money lost or gained, expand our concern for the essential conditions of society, and help us to see our society as a whole that is composed of health, religion, urban and rural life, birth and retirement, recreation, arts, family, and social and economic matters. We would then better see that public policy is a mutual agreement about mutual concerns and that our policies are able to change



the quality of our lives. This effort requires measuring, monitoring, debating, policy making, and law-making to continually improve the lives of all of us.

The United Nations says that human development is about much more than the rise or fall of national incomes. It is about creating an environment in which people can develop their full potential and lead productive, creative lives in accord with their needs and interests. People are the real wealth of nations. The most basic capabilities for human development are to lead long and healthy lives, to be knowledgeable, to have access to the resources needed for a decent standard of living and to be able to participate in the life of the community. Without these, many choices are simply not available, and many opportunities in life remain inaccessible.

The social-health indicators tell us if our governmental policies and actions are or are not making life better for all of us. This is the only reason that each of us contributes our lifetime's effort in building and operating our mutual civilization. Do you know how to tell if your government is doing a good job and expending efforts for everyone? There will be improvements in our social health indicators. The indicators enable us to find the policies and actions that prove to minimize social and economic injustice and maximize the well-being and the quality of life for as many of us as possible. With each successive generation, we will move closer to the most-just form for our civilization. We are not there yet, but we human beings will not rest until we have obtained the fully-just civilization.

A quantitative measure of the injustice of our civilization is given by the percentage of us who live in poverty or are constrained from pursuing the limits of our talents and capabilities and by the percentage of us who are imprisoned or are employed in military and police forces or have our lives upset by war, as some of our leaders still amuse themselves by going to war on a whim. Injustice and the selfish greed of some of our leaders is curtailing progress and holding us back from the level of well-being that we could have already attained.

For the first time in the history of civilization, we are able to tell our leaders what should be the priorities for our local, national, and global pooling of efforts. We no longer have to let our political and business leaders set priorities to simply expand the wealth and power of only the wealthiest of us. It's a safe bet that within a few years we will use the internet to vote "by a show of hands" for priorities for our government, even to choose budget sources and expenditures, and to choose which quality-of-life indicators will be used in measuring our progress toward our goals for our well-being, the quality of our lives, and our unrestrained opportunity to pursue life in a just society. With each successive generation there will be a continued shift in the concerns of government and civilization toward the concerns of a human—which are love and families, and community and justice—and away from the attempt to amass power and wealth for a few of us.

Nature made us human, and from this beginning we continue to form the culture and build the civilization of our own choosing, constrained only by human imagination and human nature. Our civilization is made by us humans, for us humans, and it represents us humans. Our civilization will be whatever we choose to make of it.

If you ask every person on the planet what our first global tasks should be, most will answer that water, food, toilets, and shelter are needed to keep us alive. Worldwide, about one in six of us must go to the bathroom outside on the ground. Such basic necessities of life are missing even though we can remedy this problem with little global effort and tremendous reward. A greedy landlord actually charges rent to live in such homes.

One in six of us human beings live in the world's slums, and this means that one in six of the world's Rembrandts and Einsteins live in the world's slums. When our civilization restrains lives then those persons can not contribute all that they could and our civilization is less than it could be.

College education and health care for all eight billion of us is a meaningful goal for our mutual efforts. These are not luxuries; they have become part of civilization. To not have college education and health care takes us back to the world of previous centuries. They are not meant to be a way for business to gouge us of half our income. These global tasks are easily accomplished when all of us, especially our leaders, decide to begin.

Community work projects would do much in rebuilding a sense of community. This is the way that we paid taxes throughout most of civilization.

By thinking only of themselves, some of our political and business leaders are unnecessarily holding us all back from more-rapid progress on the goals most meaningful to all of us, and we are unnecessarily holding ourselves back by not telling them that we know what they are up to. Eight billion of us are burdened with extra gouging from the non-empathetic point-o-one-per-centers. Eight billion of us measure success in life in term of happy and healthy children, families, and communities. For us, daily life means the constant exchange of loving kindness—as we have been doing for millions of years.

Our scientific and technological understandings have recently made life easier and less-often shortened—for some but not all of us. When a person's income today is so low that phone, car, antibiotics, education, and healthcare are unaffordable, then that person is being forced to live a medieval lifestyle while being surrounded by twenty-first century benefits. Our Industrial Revolution has also brought increased inequality and injustice and lessened social ties in the community. Cities had minuscule-sized police forces before industrialization, and we now have a mechanical ability to kill people by the millions during war.

Typically, around the world there are many wars and millions of war refugees but little of this is discussed in the U.S. news.

We don't fight crime by continually increasing the size of our armies and police forces. We truly fight crime by striving to minimize hopelessness, the unequal access to the benefits of our civilization, and social and economic injustice because these things are the sources of misery and the resulting crime. Together we will look carefully at the unjust causes of poverty and despair and use the strength of our human character striving to create a more just civilization for all of us. As we begin to use hundreds of social health indicators to measure the success of our attempts at governing ourselves, we will find the approach that minimizes hopelessness and injustice, crime, poverty, and escape through drug usage. The increasingly just society requires that every governmental policy and action prove to reduce measured social and economic injustice and improve our mutual lives. Allowing people to simply laugh and joke with their family, spouse, friends, and neighbors and to pursue life and raise children. Achieving the fully just civilization is a meaningful goal for our mutual efforts.

We are not there yet but we human beings will not stop until this is the character of our civilization. We can safely predict that the characteristic of the last version of our government of people will be that its concerns fully match the concerns-of-life of individual persons, which are our children, spouse, family, friends, and community not wealth, power, or war. We will then have built the core of our civilization and be able to put our mutual efforts to full use on anything we can

imagine, even expanding into the galaxy.

We, the human beings of the world now direct our leaders to instead harness our mutual efforts to overcome today's lack of food, water, sanitation, housing, education, and health. We now choose to glorify nurturing and kindness, not war, violence, or profit. For millions of years, we have lived in a social group, exchanging assistance on tasks seen to be larger than one person can accomplish alone, because that makes life better for all of us.

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## Questions

1. The nations of the world are becoming more interconnected by economic agreements. Will this end war?
2. The budgets of many corporations have grown to be as large as that of the nation in which their plant is located. In this case, should the corporation or the government choose economic and social policy for the people of that nation? Should the people make these decisions? Which is more important, the corporation, the nation, or the person? How are these things interrelated?
3. Describe the changes of the last century in the contents within the home of a Canela family and in those of city and rural families in Asia and Africa.
4. What portions of medieval industrial products were sold to each of peasants, urban-dwellers, and nobles? What sort of products were being produced?
5. Has the industrialization of the world, with its spread of factory-made products, or the globalization of the world, with its spread in the brands of particular products, caused a larger change in our homes and in our culture? Which historical development has caused the world's 10,000 cultures to become more alike: the spread of farming, farming villages, cities, nations, industrialization's factories, democratization, or the globalization of brands of products?
6. List some global issues that are beyond the control of a single nation. List some things that will be made worse and some things that will be improved by a global cooperation among nations.
7. List good and bad things that result from each week's new record-breaking sized merger.
8. The family role and the chores and concerns of a teenager varies from one continent to another through time and culture. How much more do the world's teenagers share in common now that many of them can purchase some of the same brands of products?
9. What portion of us are unemployed? How is this number measured and what is the error in its measured value? What portions of us are employed in government, by small business, by global corporations, and by our own business? What is the spectrum of wages and total wealth in each of these?
10. Compare the reasons for the mass migrations of the past, including the first spread of us humans into the regions of the world, the movements of the first population-increasing farmers, the waves of people into Europe around the year 1,000 and the waves of Europeans, Africans, and Asians to the New World. For the last five hundred years we have been migrating as individual persons and families around the world in search of a better life. The ancestors of many readers who live in the U.S. today had migrated to the new world in search of either their own farm land or a factory job. During differing decades those ancestors likely arrived

from differing nations. Describe the experiences of your family ancestors who moved from other nations around the years 1650, 1700, 1750, 1800, 1850, 1900, 1950, and 2000. What were some differences in their experiences? Are there any differences in the reasons that each of your own ancestors migrated? Did your ancestors speak English when they arrived? Did their children soon learn to speak English? Compare their reasons for migrating with those of others who are moving to one of the world's big cities today in search of a factory job in Asia or Latin America. Are there any differences? While feeling adventurous, do you ever consider migrating somewhere today? Why would you do this?

11. Compare the lives and working conditions of Nike's shoemaking girls of 1985 with those of the 1820 factories in Lowell Massachusetts.

12. Compare the cost of shipping an electrical product from Asia to the U.S. with the cost of shipping this same broken product back to Asia where it could be repaired and re-shipped to the U.S.

13. Compare the number of advertisements you see every day to the number of daily reminders you see about the events from our civilization's past or of its capabilities. How many hours per week do you see live demonstrations of the most talented of us performing an art? How many violent acts do you witness each day on television? How many such acts do you see occurring in your community? Which aspects of our civilization do we most depict or discuss? Which of these aspects are the most important to us?

14. Compare the boasts of the advertisers with the boasts made by the ancient kings and queens as writing was first used to record the self-proclaimed feats of those leaders. Why do we believe such claims? Are they believed?

15. Is it true that every product and every brand is "the best in the world?"

16. Do you think we should place legal limits on executive compensation or on profit percentages? Should we require that the profit percentage of an industry decrease whenever its monopolization increases?

17. What portion of your nation's wealth and income is owned and received by the lowest one-fifth of the population? How about each of the other fifths?

18. List some elements of each of the religious views from Chapter 8 in the activities of our global businesses today, and give some examples of the Golden Rule at work in business.

19. Describe a world in which there is a single global corporation that sells everything from homes to cars, electronics, movies, food, airline travel, computers, internet access, and books. What portions of your weekly budget is spent on each of these things? Which of these things are more profitable? If that single global corporation sets prices for each of these things, how will the portions within your weekly budget change?

20. Compare the percentages of humans living in different times and places who suffer from famines. Have these famines been due to war, crop failures, unemployment, or the loss of food in their gathering region?

21. Go to five grocery stores and compare the number of available brands for bread, drinks, soup, shampoo, and candy and such. How many brands are there for other common items including home appliances and cars and such? How many manufacturers are making those brands?

22. Should government charge automakers a fee for building the roads that enable the use of their product?

23. Should the governments of the world manage our food supply or should our global corporations do this? What are the benefits and drawbacks of each approach?

24. Compare the efficiencies and costs of governments and corporations.

25. Korten suggests we place a 50% tax on advertising to finance consumer education on the merits of frugality. He also suggests that we eliminate all taxes on the income needed for comfortable subsistence and instead tax resource extraction, international movements of money, luxury consumption, and upper-level incomes and their inheritances. He also describes a successful Brazilian approach to regional hunger that encourages individuals to go into the neighborhood, find a hungry person, and do something about it. He says we should have a twenty-hour work week so that we can enjoy our lives, and two-child families so that our expanding population will stop threatening our future. Discuss Korten's suggestions.

26. Say something good about business. Say something bad about business. What do we do about it?

27. What are some differences between small business and big business?
28. List some ways in which small business and big business are and are not being governed.
29. Compare the variety of food in gatherer-hunter, farmer, and wage-earner lifestyles. Has the daily food quantity and variety changed for the people of every nation due to our recent ability to move food around the planet? When did we begin to move recipes around the world? Describe the first tomato fashions of Italy.
30. Create a piece of art that describes business.
31. Compare Yoruba business practices from the year 1937 with those of today.
32. What portion of your nation's income tax is paid by corporations? What portion is paid by the owners of corporations? What portion of corporate owners are citizens of your nation?
32. Compare corporate creation and merging, legal maneuvering, and sizes in the years 1850, 1900, and 2000. (We saw that those of 1850 mostly involved railroads, some of which were companies existing only on paper and only long enough to be sold.)
33. Will our corporations merge into a single global corporation? Should we turn the operation of our entire civilization over to our corporations?
34. Our corporate leaders make decisions affecting our lives but are not democratically elected by us. Some have said that our corporate leaders show the most concern for the social effects of their operations when the leader is held legally responsible for specific and harmful results. What sort of increased legal or democratic oversight might our corporations have in the future?
35. The Enron scandal and its role in evaporated pensions and in the power-industry-engineered California power outages and such, has made a few persons wonder if the greed of our corporate owners and operators has no bounds. Would they continue such activities while obviously causing the destruction of society in general? Would they continue grabbing money right up to the moment of societal collapse and then "skip town"? If so, then this may mean that if we turn over the operation of our entire civilization to our corporations, they would quickly generate several new trillionaires just before the collapse of society. Present some arguments for and against this view. If this collapse occurred, what sort of business-governing legislation would then be adopted to ensure it didn't happen again?
36. Compare the system of international currency and its exchange today with that used at the Medieval fair in Troyes, France.
37. Do you experience a mood change when you purchase something either for yourself or for another person? If so, which innate behavior or emotion is involved in your mood change? Do you feel the same when buying either new or second-hand items? Do you buy name brands or bargain brands? What influence does advertising have on your shopping habits?
38. List some elements of each of the religious views from Chapter 8 visible in the activities of our corporate leaders, and give some examples of the Golden Rule at work in business.
39. Discuss the pros and cons of Mexico's mandatory profit sharing law in which employees receive 10% of the company profits.
40. What is the effect on the just-in-time system when goods must be transported from China to a plant located in the U.S.?
41. What are the average hourly wages around the world today? An international comparison is given at [www.ilo.org/public/english/employment/strat/kilm/kilm17.htm](http://www.ilo.org/public/english/employment/strat/kilm/kilm17.htm).
42. The people of a nation give a corporation a license to exist. Instead of the purpose of that corporation involving the maximization of the income of its owner and operators (its profit), can the license dictate a broader purpose involving the well-being of more persons?
43. In what ways can a sovereign nation govern international corporations? Do the nations of the world need to form some sort of cooperative government? Which aspects of business should be governed nationally and which should be governed internationally?
44. To promote competition in the U.S., can we require that there be at least one hundred companies in every

industry or that no single company can handle more than 1% of the sales within an industry? Would this simply result in the horizontal spread of each giant company into a large number of industries? Have they already spread out in this way? If U.S. companies in each industry then remained small, would they then be bought up by larger foreign companies?

45. Compare the monopolistic practices of the Medieval Chinese government as it funded itself through the sale of certain products, the medieval lord as he required peasants to grind grain at the village mill, the mercantile system of eighteenth-century European nations, and those of today's corporations who set prices by not competing. What benefits and drawbacks do we consumers experience from these monopolies? Are these actions just or unjust?

46. Our humans greedy by nature or do the capitalists just lead us to think we are? Will 5,000 years of greed-promotion make greed genetic? Do the most greedy of us have the most children?

47. Lists today's empires and kingdoms. Are they at war? If so, why are they and whose idea was it?

48. Shortly after World War I, some soldiers who had bayoneted the head of another person developed uncontrollable head-ticks; if they had bayoneted another person's shoulder then they instead developed a shoulder tick. What sort of ticks did ancient clubbers and choppers develop? Do you think news reports should include pictures of mangled and dying persons?

49. Create a piece of art explaining how war makes you feel.

50. When is it ok for the people of one region to harm the people of another region?

## Chapter 19 Humanism

Humanists believe that people should not lie, cheat, steal, or kill. Humanists state the Golden Rule as “We live and combine efforts in a mutually beneficial way.” Proper behavior is what matters. We are all born humanists and learn different names for the things that we hold in common because they are innate to all of us. Innate things include those emotions, feelings, and behaviors that are the most impelling and hence the most rewarding. Humanists believe in the capability, responsibility, and dignity of people and in the worth of human personality. A humanist has respect for all other humans. People are what matters. This concern for people is not affected by national boundaries. For a humanists, the priorities and goals of our civilization simply involve the mutual lives of us human beings.

Those of us humans who are humanists celebrate the capability, creativity, cultures, and accomplishments of the humans of the world. The views of humanists are not restricted to the details of a single culture or of a single religious or philosophical viewpoint; they celebrate them all. Humanists enjoy all aspects of the human experience, including art, science, literature, and the ideals of the world's religions.

In *The Humanists Alternative: Some Definitions of Humanism*, edited by Paul Kurtz, the authors explain that people are good by nature and that we are responsible for ourselves and for the details of our own way-of-life. The details comprise our culture and our civilization. We humans have built our own civilization and are responsible for every aspect of it. We cannot expect a supernatural being to create or to modify our civilization for us: we must do it for ourselves. By the way, you will find each of these elements of Humanism in Carl Sagan and Ann Duryan's book and movie *Contact*.

In *The Way of Positive Humanism*, Gerald Larue states that “Sanctuaries built to honor a god are really statements honoring the humans who designed, built, and contributed to them.” Humanists believe that truths matter, not dogma or ritual or membership in any particular organization. Humanists feel that we cannot cherish a truth above the evidence on which it rests. The strategy for living is to “learn and adopt and improve” not to “obey and conform.” All persons are free to choose their own pursuits and to find meaning in their own lives.

*The Humanist* magazine is published by The American Humanist Association. In 2012, *The Humanist* described humanism as “a rational philosophy informed by science, inspired by art, and motivated by compassion. Affirming the dignity of each human being, it supports the maximization of individual liberty and opportunity consonant with social and planetary responsibility. It advocates the extension of participatory democracy and the expansion of the open society, standing for human rights and social justice. Free of supernaturalism, it recognizes human beings as a part of nature and holds that values—be they religious, ethical, social, or political—have their source in human nature, experience, and culture. Humanism thus derives the goals of life from human need and interest rather than from theological or ideological abstractions, and asserts that humanity must take responsibility for its own destiny.”

Since we are parenting mammals and social primates, it is in our nature to care for our children, family, friends, and society. We can tell that this is true because it is seen that we do not live as solitary animals. It is our nature to form a mutually beneficial society in which we exchange help rather than choosing to go it alone. We exchange help in any task requiring more than the efforts



of one individual. Our social interactions are guided by our innate Golden Rule to do as the other did and to expect the other to do what you did. We react against anything less as an injustice. We have morals and are good by nature, that is, we share social behaviors. "Good" behaviors are those that are common to us all due to our common humanness within our social group, while "bad" behavior is any that is uncommon and one-sided.

Throughout most of our past we lived in bands of twenty persons who cooperated in life. Today, we live in a band of some eight billion persons who are cooperating in life. The form of our cooperative civilization is of our own choosing.

Humanists believe that the universe is understandable even though it contains a seemingly endless variety of natural phenomena—human beings, for example. The workings of the universe can be understood through the scientific method of performing repeatable experiments. This enables us to understand how atoms and molecules naturally form into the self-directing, self-duplicating, and self-building combinations that are life.

We humans are conscious little molecule machines that have rational capabilities and a tremendous future. We use our minds and hearts to create many things, including our cultures and civilization. It is quit a rare privilege to be this combination of atoms and molecules—as opposed to being a rock, for example. We must take advantage of this opportunity and do something meaningful with our existence.

Every person on the planet agrees that it's great to be alive, to share life, and to enjoy the little things.

A humanist friend of mine said that one day when he was at a Christian church, the preacher expressed her love of God and the joy it brings her by saying "Isn't it great to have the Lord in you." In the same way, humanists love humans and say "Isn't it great to be human." We feel great joy in being human and for having the opportunity to be alive and to share in our civilization. The Christian reader can now understand what it is to be a humanist. For the Christian, God is important. For the humanist, humans are important.

A Humanists says that whenever any pair of humans meet, they should jump up and down and say "Isn't it great to be human." In fact, all the peoples of the world should share in our mutual celebration of our opportunity for life, for cooperation in building our civilization, and for finally beginning to understand ourselves as parenting mammals, social primates, and cultural humans. We're a lucky bunch of atoms.

The motivation behind most every thought or action of every human being involves our love for our children, spouse, friends, and extended family along with our concern for our community and for the just exchanges that create our community. The utmost concerns of parenting and social humans, who recognize their extended family and social group, are love and children, family and friends, community and justice. We know that these concerns are common to each of us because we share a common humanness. These few things comprise human existence, explain the world of us humans and our myriad of activities, and are the priorities of our civilization. It is no accident that these are the topics of most every conversation and of most every artwork. Our arts express and communicate these cares and emotions, our religions emphasize these most-important aspects of ourselves and society, and our governments legally define and defend them. This means that religion, government, and science all agree about the most important aspects of a human and of human society. It could not occur that these three activities of humans would each come to different

conclusions, just as it could not possibly occur that our culture, religion, government, or civilization is unrelated to our nature. The nature of a human and the necessarily matched goals of human civilization are summed up as our concern for our children, families, friends, and society and its justice.

As it has been said, the best hope for humanity is a belief in humanity along with trust, mutual respect, a concern for one another's well-being, and a belief in the fundamental good of each person. The belief in humanity is also a spiritual thing that comforts our mind and heart, gives us a sense of purpose, and inspires us to greater accomplishments. (Spirituality is that warm feeling we get in many circumstances.) Respect for our fellow humans will reduce the desire for war. The next step in the social system of us humans is going to be the development of a global view of humanity.

Our reputation in the community is both the carrot and the stick for our behavior. It is terrible to experience ostracism. One of the most rewarding experiences in life is to earn the recognition and approval of family, friends, and society. We strive to be a valued and contributing member of our community and a happy feeling floods within ourselves when we have their approval. What makes us happy? Each of us simply wants to laugh and joke with our family and friends, pursue life, and raise children. Most of us feel that success in life is measured in terms of happy and healthy children, families, and communities. We are happiest when our family and group members are happiest.

The urge we feel and the inner desire we have to exchange help today is the same feeling and mental state experienced by our first social-primate ancestors whether we are exchanging help in the primate search for gatherable berries and warning of predators or danger or in the more modern chores of harvesting the hay crop or simply holding the door open for the next person. The urge we feel today to exchange help is the same urge felt by the first humans. What does it mean to be a social primate? We live together in a group and exchange assistance for our mutual benefit on any chore requiring more than the efforts of a single individual. The term "social primate" might not mean a whole lot to you but your emotions and feelings do. Think of a recent, helping situation that you were involved in and recall the feeling you had. The inner feeling that propels you to do this has been occurring within your ancestors for a few million years. As Johnston explained, that feeling is like a little emotional packet that has traveled through time connecting you to the first humans and even to your more-remote, social primate ancestors. Today's individual acts of mutual assistance are due to the same innate drive to cooperate that has existed since we first became social primates.

Some of us become choked up whenever we see the exchange of assistance occurring as traffic makes way for an ambulance. In an example of our innate, predisposition for mutual exchange, the Amish still prefer today to work together as a community, even using hand tools, rather than have one person work alone with a machine that does the work of many persons but reduces communal ties.

Throughout the history of civilization, our continued, mutual exchange of help merely occurs in a less directly visible manner as each of us contributes our live's efforts to the operation of human civilization by working our daily job and constituting one generation of change. Our civilization is the sum of all our efforts. Our lives seem more independent of the other members of our community but our mix of specialized occupations actually makes us more interdependent today than we have ever been in the past. For us to have food, clothes, tools, and decorations requires the combined efforts of all of us, not only our farmers, artists, processors, and retailers. We are all in this together. It is not each person for themselves. While aging from 10 to 100, we realize that there is something

greater than ourselves and that we are a member of a whole. That whole is the mutually beneficial pooling of efforts that comprise human society and civilization. Our interdependence is visible as the traffic comprised of everyone going about the daily jobs that combine into our civilization.

The next time you sit in your car cursing the stop lights and traffic and looking at a thousand or so other atom- and DNA-filled persons doing the same thing, you might amuse yourself by considering the hundreds of occupations being performed that day by those visible persons. Each of these persons has nearly identical DNA but differing personalities and life histories. Each person you see has had an entire life before passing you at that moment in time, and each of them looks forward to a pleasant future full of love and laughter. During the few minutes that elapsed before you encountered each of those persons, each of them had thoughts about spouse, family, and society—just as you did. Since each person is so similar, you can imagine that the traffic consists of nothing but copies of yourself. Chat and interact with all persons as if they are yourself because they nearly are yourself.

We human beings have demonstrated tremendous talent and capabilities by making rapid progress both in our understanding of nature and in building our civilization of arts, government, religion, business, science, and technology in just ten-thousand years, which is five hundred generations, and in doing it with nothing but our animal minds. An ancestor from 30,000 years ago has the same bones and brain as we do today, and, if somehow transported to today, would be equally adept as any of us at contributing to the progress of humankind. Our global, human civilization is the sum of all the techniques, procedures, and understandings that all of us have contributed. Human progress occurs as techniques and understandings bounce from one person to another, each taking what was known and adding something to it. Now it's our generation's turn to add to our mutual development and make the world a better place for all eight billion of us.

Beginning about 10,000 years ago we learned to farm, to build villages, and to build social structures larger than our innate band of a few extended families. At any time or in any place around the planet, whenever hundreds of us humans got together to form a tribe or chiefdom, we would build earthen mound structures like the one in Newgrange Ireland that is 5,000 years old, or rock buildings, such as at Great Zimbabwe. We would build irrigation systems like the canal first dug in Timbuktu, Mali some five hundred years ago, and we would build stone monuments, such as this one in Spain. Louisiana's Poverty Point Mound was built four thousand years ago in the shape of an eagle and from its summit gives an eagle's eye view of the treetops. One of the first things such a group of people will do is to try to find how big a rock they can carve or move or how large a mound of earth they can create. Whenever tens of thousands of us get together, we build temples, palaces, cities, and city-states. The city of Cahokia near today's St Louis had a population of 20,000 persons about 1,000 years ago, several centuries before the voyages of Columbus. The earth and rock structures we build express our inner drives and our inner view of the world. During construction, each person within the group typically spends one week per month working on these structures, as at Chichen Itza in the Yucatan Peninsula of Mexico or the Temple at Angkor-Wat. After finishing these structures we all stand back and admire our mutual accomplishment, such as the Taj Mahal, or the Pyramid of Cheops. What can billions of us build today? Make a list. Discuss your list with others. Our mutual efforts can build anything that any of us can imagine, and we can make our civilization into any form we want. What are we now building? The humanist Josua Mitteldorf has asked if our ancestors from five or even fifty thousand years ago would be proud of us? Will we be

proud of the accomplishments of future generations?

Notice that our monuments are also works of art, from the art deco of the Hoover Dam to the Opera House in Sydney. In fact, most every tool we make, from a bowl to an automobile, is also a work of art. We leave few things undecorated. Alice Walker says that our body needs food to live but our minds and soul need beauty to survive. Our artists help to fill our lives with beauty and inspiration and help us to experience and communicate our emotions and nature. The physicist Richard Feynman explained that scientists use their imagination to guess the true reality of nature while artists use their imagination to invent a reality that does not otherwise exist.

The scientific method is our way of building facts and understanding from repeatable measurements. Through the last few centuries, a million scientists spent their lifetimes studying millions of natural phenomena. At first, these numerous phenomena seemed to be unrelated, but through our combined efforts we have figured out that each of these is simply a different aspect of a mere handful of fundamental phenomena. That is, a few scientific principles explain millions of phenomena and billions of repeatable measurements.

In the year 1687, Isaac Newton figured out a single equation that numerically describes all motion. The equation states when a force  $F$  is placed on a mass  $m$  then the mass will speed up or accelerate. Mass resists the acceleration. Any motion that you have ever seen is described by Newton's single equation. It describes the motion of cars and trains, the motion of the air over a wing that lifts an airplane into the air, and it describes the trajectories of space flight and the orbits of planets around the sun. In the year 1687, nobody could believe that a mere human being could find an equation that even the heavens obeyed. Every mechanical device that will ever be made is created by using Isaac Newton's motion equation. Heat phenomena and heat engines are also described by Newton's equation because heat is due to the motion of the atoms comprising a material.

In the year 1864, James Maxwell figured out a set of equations that describe all electromagnetic phenomena, every aspect of light, from rainbows to radar, and every electrical device that will ever be made. In 1864, nobody could imagine the endless uses of these equations that today, are used to create computers, electric letter openers, x-ray and MRI devices, cell phones, cameras, and microwave ovens. These things benefit everyone.

Newton's equation relates motion to its causal force. Physicists have found that only five forces exist in nature. The five forces are the gravitational force between masses, two nuclear forces that bind matter into nuclei, and the magnetic and electric forces. The electrical force is important to us because we are made of atoms held together by this force. The electrical force binds atoms and molecules, including the molecules of life. It is also the force behind many material interactions that you see every day, including saran wrap, rubber bands, and our sense of touch.

When these five forces are placed into Newton's equation—or rather, a modern, relativistic, quantum-mechanical form of it, such as the Dirac equation—much of the physical universe is explained, including millions of natural phenomena and billions of repeatable measurements. It is incredible that the universe can be mathematically modeled with a handful of simple equations, and it is pretty impressive that we human beings have figured this out. These equations are fundamental truths of nature that will be useful for every person on the planet for all generations to come.

Through recent decades, physicists have been trying to see if these five forces are just different aspects of a single force. Major steps in our understanding of nature are built from many smaller understandings. Scientists work for the thrill of being the first person to understand a new

aspect of nature and to be the first person to think of something that has never before been thought.

Just as nobody could imagine the endless uses of Newton's and Maxwell's equations when they were first worked out in previous centuries, nobody today can imagine the understandings and the machines that will result from the studies in today's physics labs or the understandings and medicines that will result from the studies being done in today's biology labs. It is beginning to look as if many future machines will be biologically based.

Scientists and engineers build understanding, techniques, machines, and medicines that change our daily way of life and make life better for all of us. This is in contrast to people such as Napoleon, who manage only to temporarily rearrange political borders and tax centers. The discoveries of electromagnetism, quantum mechanics, antibiotics, and genes and the inventors of engines, computers, and phones and such have improved our lives. For example, cooking was the same before and after Napoleon but was changed first by the inventor of the iron stove and then by the inventor of the microwave oven.

Through the next few decades, neuroscience, nanoscience, and genetic engineering will continue their Golden Age of fundamental discoveries. On a daily basis, hundreds of thousands of scientists are making incredible discoveries about nature.

Which future tool will be next to significantly alter our lives? Will it be genetic engineering, fusion power, quark-based machinery, the colonization of other planets, or something as unimaginable as were electronic computers 150 years ago when Maxwell finalized the equations describing electricity? You can have a lifelong career in science that is full of adventure and discovery and help humanity to accomplish these things.

By the way, fusion power just might bring megawatts into our homes. With such power, one could place some hydrogen and carbon and such into a machine, apply a few megawatts, and produce a tomato or some such edible, organic food. This machine would be able to produce any other machine, and it could even change one nuclei into another, turning "lead into gold." With such power, will anyone work in a factory? Would we care about gold anymore? How will life be different? Just 100 years ago, nobody could imagine the electric stoves and microwave ovens that would bring kilowatts into our homes.

A single person working alone throughout a lifetime, without ever seeing or speaking to another human being, could advance human knowledge by only a tiny, tiny step. Even if that lone person had one-hundred lifetimes, very little advancement would be made. But if we get 100 persons together, much more progress is made. What are billions of us accomplishing together? Picture a group of just one hundred persons, who can easily stand in single room, and let them represent the sequence of your one hundred most-recent grandmothers who together reach back about 2,000 years—back to ancient Rome and Greece and about to the times of Buddha, Christ, Confucius, and Muhammad. In only one hundred generations we have progressed from that time to today. Our scientific progress and the evolution of our arts and knowledge can be represented by a series of portraits of individuals relaying techniques through those generations. Development occurs as insight and knowledge bounces from one individual to another, with each person adding a little before passing it on. Human capability is demonstrated by the rapid progress in understanding nature, in developing our civilization, by the buildings and institutions we construct, by the quality of daily work done by each of us, and by the incredible talents of our artists. Talent inspires us. If it were up to me, I'd fill our parks and public spaces with artists and art and fill the daily news with examples

of talent. Theatrical plays and musical presentations are the two best examples of what results from the mutual efforts of a small number of us. By choosing to be an artist, you can have a lifetime experiencing and communicating human emotions, senses, and experience.

We human beings celebrate life with music and dance, with learning and discovery, by making and enjoying art, by doing science, by building things and understandings, and by directly experiencing all human senses and emotions. We laugh and cry and are happy and sad. Our set of behaviors, emotions, and morals are naturally matched to our animal, parenting, and social lives. Being human means that one is caring, nurturing, and loving towards others, and it means sharing mutual commitments with spouse, children, extended family, friends, and community—or our social species would not still be here.

Think carefully and often about what makes you happy, about our shared humanness, and what are the character and goals of our mutual civilization. Choose meaningful goals and priorities for your life's efforts and frequently ponder the meaning of life. Many persons have decided that the meaning of life includes seeking happiness and raising children, but we all get to decide for ourselves. Be sure to do something meaningful with your life. Your contributions to the progress of humanity will continue to benefit future generations. Contribute all that you can because the more you contribute, the happier you will be. We are all in this together. The future of humanity is in our own hands.

If you asked persons from each of ten thousand different places in world, they would all agree that we live for our children, and that the most important thing in life is to have happy and healthy children, families, and communities. We all agree that each newborn child is equally important to our society and is equally deserving and capable of a full life, not to mention a happy and healthy life, and we want every child to have the opportunity to contribute all of his or her talents to our mutual civilization.

You can walk up to any person on the planet and ask how is the family and community and you will get an answer because that is about all any one thinks about. As people go through the day, we might ask them to hold up their arm while thinking of their children, spouse, extended family, or the community, and throughout most of the day, all eight billion of us would be walking around with our arm held up. That is how similar we are to each other.

Much of human passion and effort involves love, parenthood, family, community, and justice and guarding against injustice. Being human also means intellectualizing and combining efforts.

Knowing something about the nature of humans and the flow of our civilization helps us to better choose our combined future. We are social primates who care first for our extended family and then for the other members of our society, and we care for our society because our mutual lives depends on its continued existence. It is not every person for themselves. That has been the case since the time of the first society. We are a members of a culture, individuals of unique talents and tastes, and individuals who contribute to our civilization's operation, achievements, and goals.

For a human, life is not lived alone. Our goals and priorities in life involve more than ourselves. We are not creatures who live alone and independent on mountain tops. You can choose to be a lone hermit but we do not have to consciously decide to live in a community, that is what we do naturally. We innately form societies because they are mutually beneficial to all of us. If they were not then we would stop pooling efforts and stop being members. The mutually beneficial exchange of help, described as our Golden Rule, is the glue that creates our society, and our society is re-

created by this glue with each new generation, as it has done for a few millions years.

While aging from 10 to 100, we realize that there is something greater than ourselves and that we are a member of a whole. That whole is the mutually beneficial pooling of efforts that comprise human society and civilization.

Nature made us human, and from this beginning we continue to form the culture and civilization of our own choosing, limited only by our imagination and human nature.

Choosing goals for our lives and for our mutual civilization requires asking what we are, what is our nature, what is important to a human, what are our own goals in life, what life is all about, and what is the nature of our cooperation in life? We agree that happy and healthy children, families, and communities are most important, not war and power. We want to arrange our civilization such that we continually increase the well-being and the quality of life—even the happiness—for the largest possible portion of us. It will then be mutually beneficial for all of us. Why would any of us contribute our lifetime's efforts to anything less? We all agree that anything less is an injustice, and we are naturally adept at recognizing unjust actions. Notice that each time you get angry it is in response to what you believe has been an unfair or unjust treatment by another person: we get angry for no other reason.

How are we doing today on a global scale for our world-wide population of about eight billion persons? The answer is that one in four of us human beings do not have access to clean water and sanitation and go hungry.

By combining our efforts, today's eight billion of us can build anything we can imagine. In fact, we can do much more than the technologically and financially simple task of ensuring our basic needs for food, sanitation and clean water, homes, health, and education. These are the basic priorities for the mutual efforts that are our 10,000-year-old human civilization. But beyond that, we can ensure that all of us have the full and unconstrained opportunity to pursue the limits of our individual and combined scientific, artistic, technological and other intellectual talents, interests, passions, and goals. Together, we will strive to build a just civilization that frees our lives from the simple animal existence of collecting daily food and water so that we free our minds and spirits. We can then spend our lifetimes improving ourselves and our civilization.

How well do you rate our efforts through the last ten-thousand years in building a civilization that matches our innate nature to care for our children, spouse, extended family, friends, and society and to pursue our individual and combined talents, interests, and lives free from injustice? How well do you compare the capacity of our past ages with that of today's in enabling such things as our health, well-being, education, use of talent, happiness, community ties, social and economic opportunity and equality, and hope for the future?

What is human civilization? It is our cultural solution to the problem of coordinating populations greater than the fifty-person bands of our biological heritage. It is our mutual collection of tools and procedures meant to make life better for all of us, and it is the sum of the efforts of each of us combined for our mutual benefit. We are all in this together. All of the humans of the Earth have been combining knowledge since the time of the first humans. Human civilization began with the food surpluses and population expansion that accompanied our climate forced conversion from gathering and hunting to full-time farming. This first occurred some 10,000 years ago for those of us human beings who were Mesopotamians in Ancient Iraq. Human civilization consists of our trial-and-error solutions to a succession of problems. Problems are typically solved after some

stumbling in the dark, sometimes for decades, but we human beings have solved every problem that has developed. The proof is given by the fact that we are still here.

Many of today's global issues cannot be addressed by the independent actions of single nations. Today, our business is global while our government is not at all. Our global businesses are rapidly merging into a few, giant, self-serving organizations but the efforts of our governments are rarely coordinated. After a few more decades of reckless selfishness, our global businesses will be governed.

Too many of our business and political leaders want all human power and wealth for themselves even if it kills every else and all other life forms on the planet. The greediest of us number about 80,000 out of 8,000,000,000 persons, but their dominance of the news misleads us into thinking that everyone is greedy. As stated above, greed is not taking the best piece at dinner time, it is having the wealth of one million persons and trying to take the wealth of one billion persons.

Within the coming decades, our civilization will take an important step as we become able to cooperate on common goals as a single, global group of humans. This changing outlook will be complete within the next century or so because the globalization of relations will be complete by then. This will certainly coincide with an increased single-world view of humanity. This will mean an end to national militaries and war—and to their funding. Together, we can easily ensure food, clean water and sanitation, education, and health for everyone on the planet. Our single-most important effort is to ensure that our newborn children do not die before they are one year old.

In reaction to certain historical injustices, we created laws and contracts between rulers and ruled. These laws institutionalized our ideas of justice and liberty. We won freedom from political and religious intolerance, and we won liberty of home, self, and mind. Others have described our freedom of self and mind to mean that the only thing each of us really owns is ourselves. We might have to pay taxes but nobody can dictate how we think or choose our political party or religious beliefs. We each get to decide for ourselves. We each automatically know our own sexual preference. We require freedom of mind and body. This is liberty. This is tolerance. This is the absence of oppression. This is the only possible future for our civilization.

How did our ancestors from 50,000 years ago spend the day? Just as you do today, they spent the day caring for children and exchanging loving kindness. We assume that we are the first generation to do these things and to have these feelings and emotions, but our ancestors had been doing the same thing for thousands of generations before us.

What is a human being and what is humanity? You. You are a caring and giving person. We feel a great happiness when we do something for another person. When you see another person or speak to another person, you know his or her heart, mind, feelings, emotions, and needs because that person is nearly a genetic clone of you. Everyone is.

The universe is unimaginably large. Out of the entire universe, all we have human beings have is each other, here on this planet. As it is said, the best hope for humanity is a belief in humanity along with mutual concern and respect. The human in me greets the human in you.

We human beings have demonstrated tremendous capability and accomplishment. Look at what we have accomplished in the just the last few centuries. I have full confidence in our mutual efforts as we build our future together and head for the stars.



#### Cited works

*The Western Intellectual Tradition*, J. Bronowski and Bruce Mazlish, originally published in 1960 by Harper & Row Publishers. Reprinted in 1993 by Barnes and Noble Books, New York.

Some of the work by Alice Walker includes *Trust in the Absolute Goodness of the Earth*, 2003, Random House, New York.

*The Humanists Alternative: Some Definitions of Humanism*, edited by Paul Kurtz, 1973, Prometheus Press.

*The Way of Positive Humanism*, Gerald Larue, 1989, Centerline Press.

## Appendix Links to the video version of this book

Word-for-word, the contents of this book, *Human nature, worth, and civilization* by Robert Dalling, have been narrated into some forty-hours of classroom video. Thanks go to two-dozen students who helped with narration. Links to the videos are given below in the order of topics that I cover in the course. Lists of all the videos in this Big History course, can be found at

[www.HumanismWeb.net](http://www.HumanismWeb.net),

or

[www.youtube.com/user/TheStoryOfUsHumans/videos](http://www.youtube.com/user/TheStoryOfUsHumans/videos),

or

[www.youtube.com/channel/UCIQPH2gfuidjdqWNaefxW8Q/videos](http://www.youtube.com/channel/UCIQPH2gfuidjdqWNaefxW8Q/videos).

### Topic 1

Human senses and emotions. The steps that occur as we fall in love. See

<https://www.youtube.com/watch?v=Rz9WKD-3nDs>.

Our innate emotions are happiness, sadness, fear, and disgust, and our social emotions are sympathy, pride, embarrassment, guilt, shame, and anger. We get angry only when we feel that have been wronged. You are born with these emotion. You don't have to be taught emotions, the reactions are innate. Every human being on the planet, past or present, shares the same emotions.

### Topic 2

Kanzi is a Bonobo Chimpanzee who understands hundreds of spoken words. Kanzi tells us much about ourselves and how similar we are to other mammals. See

“Kanzi, an ape of genius,” at

<https://www.youtube.com/watch?v=dBUHWoFnuB4&list=PLB4411A9C9B7CCEEA>.

Kanzi and Panbanisha also write, make stone tools, play musical instruments, and blow out candles on birthday cakes. This is seen in the NHK documentary “Kanzi II” but I can not find it online, so you might instead try NHK parts 1 to 4 at

<https://www.youtube.com/watch?v=TxcJSPHHFso>.

Or watch these three short videos.

Kanzi and Novel Sentences, at

<https://www.youtube.com/watch?v=2Dhc2zePJFE>.

Kanzi makes stone tools, at  
<https://www.youtube.com/watch?v=8ndIW3LsHLY>.

Kanzi with lexigram, at  
<https://www.youtube.com/watch?v=wRM7vTrIIis>.

Here are several other sample videos meant for classroom discussion.

Koko communicates using sign language, and grieves over the loss of AllBall, see  
<https://www.koko.org/kokoflix-video-blog/3869/all-ball/>

or  
<https://www.youtube.com/watch?v=C2oBTdvPUTo>.

Koko Responds to a Sad Movie, see  
<https://www.youtube.com/watch?v=EWxCM6lIL60>  
and  
[www.koko.org](http://www.koko.org).

A chimpanzee mother might carry around her deceased infant for days before losing hope.

Monkey saves dying friend at India's Kanpur railway station, at  
<https://www.youtube.com/watch?v=ulglImcavew>.

Spy Monkey Mistaken for Dead Baby and Mourned by Troop (FULL CLIP) Spy In The Wild BBC Earth, see  
<https://www.youtube.com/watch?v=xg79mkbNaTg>.

Lions and a baby baboon and father, see  
<http://www.greatapetrust.org/after-a-lioness-killed-a-baboon-this-baby-was-left-all-alone-what-happened-next-is-unbelievable/>.

Can animals show mercy? These compilation was created for educational purposes. It shows "Top 7 Best videos on the web that shows how some animals may save other animals from imminent death." See  
<https://www.youtube.com/watch?v=Nubc09jTW-M>.

### Topic 3

Three hundred facts that take us from the Big Bang to human society and its Golden Social Rule. See  
<https://www.youtube.com/watch?v=B-N1OwyBGt4>.

Topic in this video include, the origin of our atoms and molecules, and the sequence of life forms that transformed bacteria into people.

#### Topic 4

How neighbors helped each other in the farming villages of 1820's New England, see <https://www.youtube.com/watch?v=dH8JYcJlDds>.

#### Topic 5

Marketing of products, views, and politicians

Here are some additional videos to discuss in class.

PBS The Merchants of Cool, at

<https://www.pbs.org/wgbh/pages/frontline/shows/cool/view/>.

PBS The persuaders minutes 49 to the end, at

<https://www.pbs.org/wgbh/frontline/film/showspersuaders/>.

PBS Bill Moyer: The United States of Alec, at

<https://billmoyers.com/segment/united-states-of-alec/>.

Homework.

Describe ALEC's call for new state and federal Constitutions.

“How tech companies deceive you into giving up your data and privacy,” see

[https://www.youtube.com/watch?v=4E\\_1AB1rsSw](https://www.youtube.com/watch?v=4E_1AB1rsSw).

“How data brokers sold my identity | Madhumita Murgia,” at

<https://www.youtube.com/watch?v=AU66C6HePfg>.

and search “china social credit score system.”

China, a Three-Digit Score Could Dictate Your Place in Society \_ WIRED, see

<https://www.wired.com/story/age-of-social-credit/>.

Here is an example of two different presentations of the same news report involving student loans. See

<https://www.usatoday.com/story/money/2019/05/29/college-students-fear-they-wont-able-pay-their-student-loans/1258761001/>

and

<https://www.foxbusiness.com/personal-finance/many-college-students-paying-off-student-loans-new-survey-shows>

and the source report

<https://everfi.com/wp-content/uploads/2019/05/MoneyMatters-2019.pdf>

See Outfoxed • Rupert Murdoch's War on Journalism, at <https://www.youtube.com/watch?v=P74oHhU5MDk>

#### Topic 6

From mammals to primates, and a description of primate society in chimpanzees and bonobos. See <https://www.youtube.com/watch?v=FDzQRbf2Xmg>.

Skip the section from 23:33 to 53:45 on emotions, which was seen in topic 1.

Perhaps, in order to watch for these aspects in other primates, you might first see these two aspects of human nature:

1) minutes 53m46s to 59m17s of while lions hunt with their teeth, people use their brains to find exploitable behaviors in other animals. This is an excerpt of “From mammals to primates,” at <https://www.youtube.com/watch?v=FDzQRbf2Xmg>,

and

2) What are nature deities and myths? A video summary of Thorkild Jacobsen's explanation, at <https://www.youtube.com/watch?v=HMsrZi2CT88>.

#### Topic 7

Culture of human beings, and some details of Canela culture. See

<https://www.youtube.com/watch?v=K4bvUmrhbw4>

or

[https://www.youtube.com/watch?v=l\\_73lUc\\_6EQ](https://www.youtube.com/watch?v=l_73lUc_6EQ).

Another choice is to 1) watch the first 15 minutes of this Canela video and then 2) watch the 90-minute summary of cultural details of !Kung, Wampanoag, Pilgrims, and 1820 New England, see <https://www.youtube.com/watch?v=eQ53RpJoLPY>, and then 3) skip Topic 13.

The same human being that made cave paintings 30,000 years ago, now makes space ships – using nothing but our animal minds.

Ralph Linton's essay on the diffusion of knowledge, at

[https://www.youtube.com/watch?v=SF\\_SHdTjkTQ](https://www.youtube.com/watch?v=SF_SHdTjkTQ)

or

<https://www.youtube.com/watch?v=gwPU-hSCkwg>.

Here are some additional videos to discuss in class.

Watch Cave of forgotten dreams and IMAX Space Station, both in 3D.

Will we all be cyborgs?

I listen to color, at

[http://www.ted.com/talks/neil\\_harbisson\\_i\\_listen\\_to\\_color](http://www.ted.com/talks/neil_harbisson_i_listen_to_color).

The profoundly deaf girl who found her voice after brain surgery, at

<https://www.bbc.com/news/health-47974844>.

The new bionics that let us run, climb and dance, at

[http://www.ted.com/talks/hugh\\_herr\\_the\\_new\\_bionics\\_that\\_let\\_us\\_run\\_climb\\_and\\_dance](http://www.ted.com/talks/hugh_herr_the_new_bionics_that_let_us_run_climb_and_dance).

What is so special about the human brain, at

[http://www.ted.com/talks/suzana\\_herculano\\_houzel\\_what\\_is\\_so\\_special\\_about\\_the\\_human\\_brain](http://www.ted.com/talks/suzana_herculano_houzel_what_is_so_special_about_the_human_brain).

Why biofabrication is the next industrial revolution, by Suzanne Lee at

<https://www.youtube.com/watch?v=7pMhqyteR5g>.

## Topic 8

Here is a set of thirty-minute videos that each one of today's major religions. What is the same about all of them? The Golden Rule. Onto that, thousands of cultural details are added.

Judaism

My video is not yet online

Christianity, see

<https://www.youtube.com/watch?v=p8t4cvmDgUo>

or

<https://www.youtube.com/watch?v=5tVEDTVWyMk>.

Islam, see

<https://www.youtube.com/watch?v=pfp34SqVI88>

or

<https://www.youtube.com/watch?v=GoKprlYukE4>.

Hinduism, see

[https://www.youtube.com/watch?v=mTILr\\_SOWBg](https://www.youtube.com/watch?v=mTILr_SOWBg)

or

<https://www.youtube.com/watch?v=JhcnP2DhszE>.

Buddhism, see

<https://www.youtube.com/watch?v=Dekjlpb34-k>

or

<https://www.youtube.com/watch?v=2bLtPeezPfl>.

Confucianism, see

<https://www.youtube.com/watch?v=n9hCihw8DDs>

or

<https://www.youtube.com/watch?v=h2zsQZwbNV4>.

Topic 9

The early political forms of band, tribe, chiefdom, and state. See

<https://www.youtube.com/watch?v=j-jEHXd0VKc>

or

<https://www.youtube.com/watch?v=5IVEOBcLEq8>.

Topic 10

Everyday life in Ancient Mesopotamia. See

<https://www.youtube.com/watch?v=10pC6A68NII>

or

<https://www.youtube.com/watch?v=tfKQrnLL8LI>.

Excerpt: Invention and development of writing and arithmetic. See

<https://www.youtube.com/watch?v=9irKU2FvfZ0>.

Topic 11

Ancient Athenian democracy and rational thought. See

<https://www.youtube.com/watch?v=zRzKbahlJ8U>

or

<https://www.youtube.com/watch?v=68HTKzROcuo>.

Dictators and democracy: A classroom summary of political culture. See

<https://www.youtube.com/watch?v=4xfeEVRZ7U4>

or

<https://www.youtube.com/watch?v=CwnHKQZokmA>.

## Topic 12

### Our medieval world

Cities of Medieval Africa, See  
<https://www.youtube.com/watch?v=A7B9SaTYKb8>  
or  
<https://www.youtube.com/watch?v=ngK6FKBI9qY>.

Medieval China: Everyday life in Hangzhou around 1279 a.d. See  
<https://www.youtube.com/watch?v=-RBOcYb1I8k>  
or  
<https://www.youtube.com/watch?v=ZbICf1ln5Wk>.

Everyday life in Medieval Europe  
Topics include everyday life, social history, Feudalism, Manorialism, Village farmers, childcare, marriage, birth, villeins, serfs, the lord's manor, courts, peasant's revolt, Magna Carta, health, school, wool industry, Gothic, gunpowder, and the contributions of Islamic science.  
See <https://www.youtube.com/watch?v=qVpK6hRgRvI>.

Europe from 1300 - 1800 ad.  
Topics include everyday life, social history, wool industry, Renaissance, Enlightenment, emergence of national democracy, Industrial Revolution, Scientific Revolution, the Petition of Right, worth of individuals over the state, emergence of government for the people, and the origin of civil rights. See [https://www.youtube.com/watch?v=9RN\\_87b8AxU](https://www.youtube.com/watch?v=9RN_87b8AxU).

Have you ever wondered about nature?  
<https://www.youtube.com/watch?v=HKwbdQZbJYY>.

## Topic 13

### Everyday life in North America

1) European-American immigration and slavery in the U.S. See  
<https://www.youtube.com/watch?v=DbY2lo9knTQ>  
or  
<https://www.youtube.com/watch?v=Angi0I267Jo>.

2) Daily life of those of us human beings who are Wampanoag and greeted the pilgrims when they arrived in 1620 near present-day Boston. Told using video of the Wampanoag Homesite. See  
<https://www.youtube.com/watch?v=HtECbKuofGA>  
or  
<https://www.youtube.com/watch?v=mD0JiOjUA-A>.



3) Daily life of Pilgrims during between the 1630s and 1650s. See

<https://www.youtube.com/watch?v=uNsBjQfShA4>

or

<https://www.youtube.com/watch?v= bxQERLutsg>.

4) Life in New England in the Early 1800s. See

<https://www.youtube.com/watch?v=HIOPa2N5GGI>

or

<https://www.youtube.com/watch?v=STWwLzLhXzs>.

5) Home and family life in New England in the Early 1800s, including descriptions of birth, precarious infancy, and childhood. See

<https://www.youtube.com/watch?v=3VMsYfVlSbg>

or

<https://www.youtube.com/watch?v=PAhvGdvjUnY>.

6) Home and family life in New England in the Early 1800s, including school, marriage, storing and cooking food, iron stoves and utensils, spinning, sewing, weaving, and dying. See

<https://www.youtube.com/watch?v=XOmS2qowbDQ>

or

<https://www.youtube.com/watch?v=E2y-TdppvZg>.

7) Home and family life in New England in the Early 1800s, including women's chores, men's chores, superstition, socializing, drinking, dancing, gambling, cruelty to animals, quilting bees, courting, social diary entries, choirs, neighbors help, and snow plowing. See

<https://www.youtube.com/watch?v=wCWnuxBZ4nw>

or

<https://www.youtube.com/watch?v=9RuqlymzFJg>.

8) Home and family life in New England in the Early 1800s, including militias, guns, rights, public hangings - whippings and branding, traveling peddlers and repairmen, freight haulers, entertainers, roads, health and death, wife's inheritance, infant mortality, disease, life span, medicine, barbers, surgery, today's medical industry, social classes, cities, fire fighters, the town, streets, water systems, and fads. See

<https://www.youtube.com/watch?v=tcv2DlAnOHs>

or

<https://www.youtube.com/watch?v=PQSRKCbs1eQ>.

9) Home and family life in New England in the Early 1800s, including shops, street vendors, shop signs, printer, technology, basket-making, shipmaking, objects made from bones and bladders, mechanical mills, and baker. See

<https://www.youtube.com/watch?v=CRMbjovefMY>

or

<https://www.youtube.com/watch?v=HiG2rKuJXFs>.

10) Home and family life in New England in the Early 1800s: technology. From ancient crafts to modern factories, including tanning, cloth-making, block-printing, felt-making, weaving loom, and the spinning Jenny, English mechanics were sought to build the first U.S. factories. See

<https://www.youtube.com/watch?v=yfHboPJOCd4>

or

<https://www.youtube.com/watch?v=69Z1Wri0Bc>.

11) Barrel-making (cooper), pottery-making, pottery firing in the kiln in New England in the 1820s. See

<https://www.youtube.com/watch?v=AoYhjCyV9SE>

or

<https://www.youtube.com/watch?v=AoYhjCyV9SE>.

12) Tinsmith (whitesmith) at Old Sturbridge Village depicting New England during the 1820s. See

<https://www.youtube.com/watch?v=iKKcnnLWxQs>

or

<https://www.youtube.com/watch?v=r1s6pB6G0gY>.

#### Topic 14

##### U.S. Business

Beginnings of business in New England in the Early 1800s, including descriptions of the beginnings of U.S. factories, early history of business, no employees exist for the first U.S. factories, debated benefits and drawbacks of industrialization, role of government, social consequences of our shift from farming to factory work, industrialization requires decades, corporations for pooling funds, Lowell mills, factory clothing replaces homemade, power for factories, and the mixture of economy activities. See

<https://www.youtube.com/watch?v=yDBFXkw59Cw>

or

<https://www.youtube.com/watch?v=adXKAep3woY>.

Expansion of business, and its social consequences. Topics include Industrialization, Lowell factories, women's rights, slavery, and civil rights. What was the Industrial Revolution? It meant that the number of tools and decorations in the home increased from twenty to two-hundred items, but social ties were reduced, we lost full control over our own lives, and there was an increase in injustice. See

[https://www.youtube.com/watch?v=N-0AtWzc7\\_k](https://www.youtube.com/watch?v=N-0AtWzc7_k)

or

<https://www.youtube.com/watch?v=7pYxCpReYXE>.

A classroom summary of *How the other half lives*, by Jacob, A. Riis, which was published in 1890. This is a description of daily life for the first generations of wage-earners in New York City between the years 1820 and 1900, including the conflict between labor and capital. We find that the development of Big Government was a reluctant and late-in-coming response to the social consequences of our shift from working the family farm in socially connected villages to working for wages in the cities.

<https://www.youtube.com/watch?v=iM10FpG5Oag>

or

[https://www.youtube.com/watch?v=F4\\_1nh1xnYs](https://www.youtube.com/watch?v=F4_1nh1xnYs).

#### Topic 15

Daily life in a Chicago neighborhood during the 1980s. Classroom summary of *There are no children here*, the story of two boys growing up in the inner city, by Alex Kotlowitz.

<https://www.youtube.com/watch?v=ad12Zn9q7KY>

or

[https://www.youtube.com/watch?v=MkcfUS4z\\_WU](https://www.youtube.com/watch?v=MkcfUS4z_WU).

#### Topic 16

Democracy compared to authoritarian states.

Democracy is more than voting and free speech. It is firstly a blending of views that partially satisfies everyone. Democracy requires tolerance, participation, the right of dissent, an intelligent distrust of leadership, faith in fellow citizens not rulers, and the desire to compromise rather than suffer civil war. Authoritarian or single-party states outlaw alternative political parties and choose priorities, goals, and agendas without debate. This classroom summary of political culture includes descriptions of single party states and democratic states. An explanation is given for the reason that, after the departure of the European colonizers, India remained democratic and Africa remained authoritarian. See <https://www.youtube.com/watch?v=G6ULRZJmioA>.

#### Topic 17

Today's business. Topics include corporations, Big Business, franchise, social health indicators and our priorities, U.S. worker wages peaked in 1972, wealth and income inequality, upper wealth grab in the U.S but not in Europe, tax cuts grow the national debt, infant mortality, health care, education, marketing of products and politicians and issues, and summaries of war, Ancient Athenian democracy, dictators, democratic peoples, and how community members exchange help.

See <https://www.youtube.com/watch?v=PzfgV4dXkvY>.

#### Topic 18

Summaries of Human nature and of humanism, see

<https://www.youtube.com/watch?v=qenTqUpuhRw>.

Summary poster

[http://www.humanismweb.net/tour\\_2018.htm](http://www.humanismweb.net/tour_2018.htm)

## About the author

For twelve years, author Dr. Robert Dalling has taught a Big History course using this book along with the video version of this book, plus some additional chapters from his other book *The Story of Us Humans, from Atoms to Today's Civilization*. To create the video version, he traveled to fifty nations to record 3D video of people and places, while relying on the kindness of strangers every few minutes. Links to the course-videos are at [www.HumansimWeb.net](http://www.HumansimWeb.net).

The author's Ph.D. is in physics, with an engineering minor involving fluid mechanics and nuclear engineering. He has presentations and publications in chaos, heat flow, laser spectroscopy, and relativistic quantum mechanics. He has a patent for a method of calculating the Lyapunov exponent, which determines the exponential rate of error growth in any system—for example, the weather. It was determined that you get only thirty-hours of meaningful weather prediction when three-significant-figures are measured in the initial conditions of temperature, pressure, and humidity and such. The author has also written *Tour of undergraduate physics*, which is a three-volume, 1350-page summary of undergraduate physics. The three volumes are 1) Workbook and Solutions Manual for Heat, Fluids, Sound, Light, Electricity and Magnetism 2) Workbook and Solutions Manual for Mechanics and 3) Workbook and Solutions Manual for Quantum Mechanics, Mathematical Physics, and Special Relativity

Previously, the author spent fifteen years as a nation-wide software company, providing bookkeeping and database software for retail stores that sell tractors. He wrote a 300-page manual of bookkeeping and accounting procedures for this software. To conduct this business, he traveled one-half-million miles through forty-eight states and learned how major corporations, franchises, and small businesses operate.

The author's hobbies are teaching precious students, traveling our world, learning, and listening to music from around the world.