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Big History
Association

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David Christian

CO-FOUNDER OF THE BIG HISTORY PROJECT

Origin Story



A Big History of Everything

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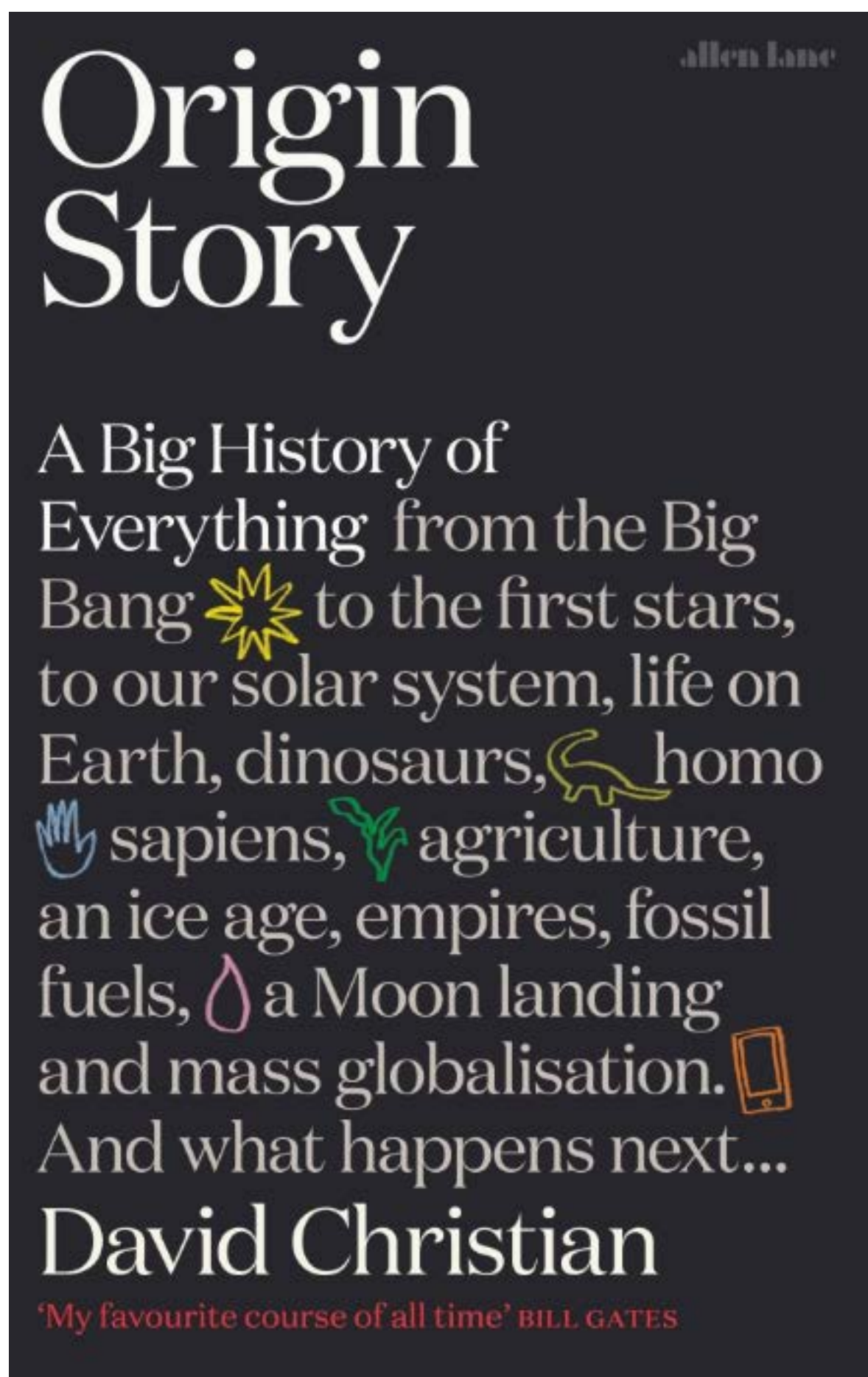
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David Christian is a distinguished professor in history at Macquarie University in Australia and the co-founder, with Bill Gates, of The Big History Project, which has built a free online syllabus on the history of the universe and is taught in schools all over the world. He is also co-creator of Macquarie University Big History School, which provides online courses in big history for primary and high school students. He received his Ph.D. from the University of Oxford. He has delivered keynotes at conferences around the world including at the Davos World Economic Forum, and his TED Talk on the history of the Universe has been viewed over 7 million times.

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The Study of All Existence:

SSLA Conference on Interdisciplinarity and Big History

March 23rd and 24th, 2018

Symbiosis School for Liberal Arts,
Pune, Maharashtra, India



Interdisciplinarity & Big History

Introduction to the Conference

by

Nivedita Nair

Symbiosis School for the Liberal Arts
Pune, Maharashtra, India

Roland Barthes describes interdisciplinary work as “not about confronting already constituted disciplines. Interdisciplinarity consists in creating a new object that belongs to no one.” I must bring your attention to the fact that he specifies interdisciplinary work that leads to interdisciplinarity as a model of thought. Indeed, interdisciplinary work as a form of work and methodology in research has given rise to new thought and shares this origin story with that of most fields of scientific studies and social sciences as well. *Research*, is what guides a drive to inform ourselves, to apply thought and effort into creating something new.

When he speaks of this work, he writes about how language, thought, and hence texts are limited in their structures and frameworks, and which seem to *use us* to produce information that fits its own understanding, and hence not anything new. He speaks with a tone of assertion, suspicion, and scrutiny. I believe these three qualities are what make the students of this institute potentially different. And I also personally believe that these qualities are virtues, but one can't ignore that these also bring to us all, as students, things that are potentially difficult. Just as Aijaz Ahmad adopted a tone of hesitancy in confronting Fredrick Jameson, not only politically but also as someone acknowledging the body of work of another, and hence having to confront a whole body of thought, we as students are bound to face similar notions that will crumble our convictions. I believe that is what liberal arts is about.

As students of various fields engaging within them from one class to the next, the prime value of interdisciplinarity and its objective of confronting specialized branches of knowledge cannot be simply

accepted as the be-all and end-all of knowledge creation, since we must account for the *structures that play* in the knowledge construction. It is these structures and models of thoughts, of various fields, that bring us to their own conclusion (for good reason, of course) that further enable us to doubt the reason, logic, and rationality which we so adhere to in our quest to understand the world.

Interdisciplinarity has been viewed as a ‘battle cry within a battle zone of thought’. Especially because it is an approach towards multiple contexts meeting with the same desire to understand the world. It has, as Barthes seems to have estimated its potential to, have had to question its phenomenological basis. We have seen schools of thought like Marxism and Freudism attempt these developments without necessarily being deterministic of the future per se but have had to identify the deterministic assumptions by which we confront our futures. These changes have occurred if not within their own frameworks, then by approaching other schools of thought to encounter some new form of objectivity that has to hence depend on none of the fields involved in the first place.

Here we ask ourselves the question that every school of thought, social science, hard science, academic field, teacher and even student (especially at the end of a class) asks: Where do we carry this new information? Back within the framework of thoughts that were pitted against each other? To formulate new methodologies of research? To assert even newer contexts and narratives that might become a matter of dispute with every other field, leading us to *the same dialectic* all over again?

It is this uncomfortable mutation of thought that we subject ourselves to that must not be overestimated nor underestimated via mere scrutiny. We have participated in the history of repetition. Today, we have the opportunity to participate in the *displacement of authority* over the fields we consider central to our process of meaning creation. Whether it was the dismantling of God and religion, to the rise of science, to the idea that science is the new religion, or simply the overarching suspicion that we just still seem to need a story to tell ourselves to make up our understanding of the world. This deep-rooted retrospective introspection which has taken all shapes and forms through time is evidently just our need to be able to confront a future.

The thing about the way we live, is that we seem unable to truly confront contradictions. The idea of a synthesis, or any notion that implies harmony is

actually the kind that terrifies us to our core. When we think of the future, we seem to adopt lenses and filters (whether by way of choice or otherwise) that gives us idealist backing and determinant, absolutist notions of how to act in the Now for the sake of a Better Tomorrow. When we look at the past, we live every moment measuring each move we make in relation to actions of the past, in some desperate desire that in the future, we can look back at our past and be satisfied. We just do not live in the present.

And the present – is not a pretty sight. This present is a war zone of thought, the cost of which ranges from no universal or reliable standards of living, to the loss of the dignity of human life. What then is the story of our present that we so desperately crave to tell the people of tomorrow?

It is this crisis that I put in front of you, to encourage you to see interdisciplinarity as a potential to creating sustainable narratives. Revolutionary and radical, to idealist and wholesome – these value judgements shall stand the test of time, but I urge all of you to derive meanings that you can adhere to in the Now.

As students, we navigate spaces. Our reflections and convictions are more apparent in conversations in the corridors during breaks between classes, as opposed to discussions that happen within classrooms. We’re the generation that can write essay style commentary on the happenings of day to day life on social media with ease, and also try to put great thought into attempting to understand Hegel and write a response essay for class. This is us, in all our multiplicity and our contradictions. For the next two days, we have an opportunity to put all of ourselves and none of ourselves, against the arguments, research, and theories that panellists and presenters for this conference have brought to us, both at the same time. Let us navigate these spaces together and engage in a way that we may leave with perspective and return yet again with knowledge – of a new kind.

This conference has brought together people from all walks of life, with their experience spanning through time and space, in a unifying effort to discuss the many meanings that we can also carry into our future in the hopes that even if these meanings were to be created and destroyed, their traces will encourage our future selves to begin again. This conference is going to contain stories, suggestions, radical ones at that, that will stay with us all in our personal efforts as students within this institute to confront the contradictions and overarching similarities within the spaces between things.

Suggestions for a Global Guideline for Humanity *

Anaga Krishna

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A Global Guideline for Humanity is a sort of code of conduct for the global population based on the best cultural traditions of various communities. These traditions could possibly help enhance equality, ecology and value systems which is why there is a need to disseminate such knowledge worldwide.

Reflections on a Global Guideline for Humanity

Introduction

“We need to have a vested interest in each others’ success.”¹ The relevance of this line in the contemporary world cannot be understated. At a time when the survival of the human race is threatened, we must realize the importance of cooperation and collaboration. This is where the terms “Mutualization” and “Mondalization” come into play. They refer to the creation of both networks and relationships that help promote a more fruitful and sustainable lifestyle amongst the global population.² In order to stir people into action, the urgency of such sustainable and viable practices needs to be clearly communicated. Only if one is aware of the current global scenario will they be willing to take up these endeavors. To ensure cooperation amongst various groups of people, the benefits of cooperation for each group needs to be heavily emphasized. It is basic human nature to work towards a certain target only if it yields suitable rewards. This is where a “superordinate” goal can be introduced, one that is a common and overarching goal for all parties involved. It is one that transcends all individual concerns, and can only be achieved through collaboration and cooperation, ultimately benefitting all the participants in some manner. Making the “Global Guideline for Humanity” a superordinate goal for the human race, could yield extremely positive results. If the benefits of participation are emphasized, different groups of people will be willing to work together to achieve it.

Combining Diverse Views

When it comes to proposing various cultural practices to create the basis for the Global Guideline for Humanity, one needs to be open-minded. The importance of taking a

stance and choosing one particular extreme and sticking to it, has become essential in today's world. Those who are more neutral and diplomatic are often viewed as “disinterested” or “insubstantial”. It is not about being neutral or resolute, but about being open to a diverse array of viewpoints and willing to incorporate them into one approach. Distinguishing between conservative and liberal approaches has its own advantages and disadvantages. Although, this division provides some form of clarity, there exists an inherent need to choose one approach over the other. Conservative approaches are commonly associated with African and Asian societies, while more “liberal” approaches are attributed to Western countries. With the advent of “Westernization” and “Urbanization”, traditional practices are being overlooked in favor of more “desirable” and “liberal” Western practices. The cause of this phenomenon can be attributed to the Western mass media, with its far-reaching influence that spans across the globe. It is as if communities are forced to make a choice between being “conservative” or “liberal” in their general outlook. Through open communication and exchange of ideas, different viewpoints can be combined. For example, although it is important to acknowledge the technological advances that have been made by Western countries in the field of medicine, it is also important to realize the value of traditional methods of treatment such as Ayurveda and Homeopathy. Another example could be population health and control, where certain cultural traditions in India, such as child marriage are not conducive to the overall health of the population. Similarly, in certain Western faiths, birth control and family planning are not “natural” methods of procreation, and are often looked down upon. It is at this stage where a comprehensive judgement call must be made, a decision to be taken based on the effects on the overall well-being of the population and environment.

Ecology & Equality: An Ideal Combination

Looking at the possible suggestions for a “Global Guideline for Humanity”, it is evident that these ideas broadly aim to tackle two issues, which are ecological challenges and concerns in gender and race equality. There is quite an interesting outcome if there existed a single solution to confront both these problems. Observing certain traditional practices and industries from my hometown, I was able to conceptualize an appropriate solution. The commodification or promotion of a traditional activity that has a relatively positive impact on the environment, one that also promotes gender and race equality through financial independence. An interesting statement that supports my claims is “Hierarchy and social inequality are income based”.³ To explain this, I will use two examples from my state of origin, Kerala.

The Coir Industry: Coir is a natural product obtained from coconuts. The husk of the coconut is beaten and the coconut fibers are extracted from it. These fibers are then spun into yarn and workers are recruited to dye and weave this yarn into mats, rope, bags, accessories and so on. These coir products serve as “eco-friendly” alternatives to products made out of non-biodegradable materials. Not only is coir biodegradable and harmless to the environment, but it is resistant and durable, and can be reused and recycled for long periods of time. The usage of coir-based products is ideal in the tropical state of Kerala, given the abundance of coconut trees in the region. Interestingly, the coconut tree has been attributed a divine status or “Devavriksha” according to ancient Indian tradition, as it was able to support the livelihood of entire populations. The production and export of these exotic products has helped supplement the state's income to a visible extent. Not only has it positively impacted the state's economy, but the self-sufficiency of women and those belonging to lower castes, as well. Unfortunately, Kerala has historically had issues with alcohol abuse and domestic violence, as well as dispute amongst those belonging to different castes and religions. Financial independence has the ability to create self-sufficiency and increase one's standing in society. Women employed in the industry are able to provide for themselves and their families, and those belonging to lower socio-economic backgrounds are able to increase their societal status. In this manner, employment opportunities are able to transcend the barriers of social institutions like gender and caste. Similar to this example, the same can be said for other traditional industries such as the “Pulpaya” and “Pattu Saree” making industries. “Pulpaya” making refers to the ancient tradition of weaving mats using strands of long grass and “Pattu Sarees” refer to the sarees and other articles of clothing woven from natural substances such as banana fiber.

Organic Farming: Although this practice is not endemic to Kerala, organic farming employs traditional methods that do not harm the environment or the population. The organic farming movement gained traction in Kerala, after the rates of diseases (such as cancer) saw a visible increase. This was due to the import of vegetables from

neighboring states, where artificial pesticides and fertilizers were used in cultivation, severely contaminating the produce and endangering the health of the population. Spreading the knowledge of organic methods of farming that could be done in individual households, for personal consumption as well as commercial purposes, had a positive impact on the state. Many traditional Indian farmers used “Neem” and its oil as a natural pesticide to rid their produce of certain insects. Similarly, rather than using chemical fertilizers, manure was used instead as it is high in nutritional value. A result of these self-sufficient modes of production, vegetable imports to the state were drastically reduced. “Kudumbashree” a famous women’s organization from Kerala decided to jump on the bandwagon, using the mass movement as a means to get hundreds of housewives involved. The organization was apparently able to recruit around three lakh women, helping further income and social equality.⁴ Ultimately, women were able to take care of their families as well as run a business from home. Quite the ideal situation!

It is evident that these examples provide an opportunity to close the gap of social inequality based on caste, gender and economic background. These examples also denote cultural traditions that can be used to challenge ecological issues. It should be noted that this concept of “solving environmental concerns using methods that tackle inequalities in gender and race”, can be applied worldwide. Traditional products and methods of production that are eco-friendly should be expanded into industries that are capable of employing workers from all sections of society. This idea was received positively by other students, with one commenting on the importance of modern industries (like the Information Technology sector) that do not differentiate employees on the basis of gender or socio-economic background. This is interesting, but it is important to remember that these industries need to practice eco-friendly methods of production in order to complement their non-discriminatory hiring standards. Kerala has recently witnessed an “eco-friendly” movement, with the government laying emphasis on environmentally-viable methods of production and minimal industrial waste and pollution. Interestingly, there has been an application of a “green protocol” on the social institution of marriage⁵. A few months ago, the government of Kerala implemented a ban on the use of plastic utensils for serving food at weddings. This move would help prevent the mass disposal of non-biodegradable utensils, which would normally lie in garbage dumps for extended periods of time, polluting nearby resources like soil and water. The social institution of marriage is widely celebrated across

the world with much pomp and glory. Regardless of the religion or ethnicity, weddings are usually a very extravagant affair, involving hundreds of guests. No expense is spared and the amount of money and resources acquired for just this one occasion is alarming. In fact, in India, weddings last up to a whole week, with multiple processions and functions based on cultural traditions taking place. If communities were conscious of the impact such huge ceremonies have on the environment, it would help save a lot of resources from going to waste. In south Indian ceremonies, meals are traditionally served on large banana leaves. In Kerala, this meal is called “Sadhya”. Rather than buying plastic utensils that are non-biodegradable, these banana leaf “plates” serve the same purpose and cause no harm to the environment. This is a good example of an eco-friendly tradition!

Awareness: The Key to Success

Some other interesting suggestions for a Global Guideline for Humanity that were discussed include the significant role of mass media, polytheism, monotheism and traditional forms of healing and medicine. While examining the various suggestions/solutions, the most common terms were “awareness” and “education”. Clearly, the amount of exposure and liberal education one has, affects their ability to be open-minded and accepting of various ideals, beliefs and approaches. One cannot deny that knowledge, truly is power! And with power, comes great responsibility! Being aware of oneself, one’s family, community, and culture, equips an individual with the power to be adaptive and change with the times, while still staying true to his/her roots. As stated by Professor Jonathan Rudy, a lot of reasons why structural violence occurs in societies is due to the existence of institutions and ideologies that benefit only certain groups of individuals, at the expense of others. When the existence of cultural differences is not taken into account while taking political and economic decisions, it can have dire consequences on the population.

Traditional View of Conflict Resolution

What could the Global Guideline for Humanity have to say about conflict resolution? It is important to take different traditions and practices into account while understanding how to transform a conflict. We have learnt that the concept of relational resilience depends the ability to communicate honestly and clearly, be empathetic, respect the other parties and their views and have trust and faith in everyone involved in the process. In order to negotiate and come to a consensus

during a conflict, all these actions should be respected, ultimately transforming the conflict into cooperation and acceptance. If one were to look at traditional methods of negotiation, the Indian concept of “dharmayuddha” (which refers to the more “ethical” nature of relations between different parties) can be applied. It emphasizes on the importance of following norms and codes of conduct during mediation between various bodies. Transparency and accountability are essential here, and there lies great significance in practicing principles of “neethi”, which refer to ethical guidelines of mutual respect. As a child, I attended classes that discussed the Bhagawad Gita (the holy scripture for Hindus), which describes the importance of “dharma”, duty and responsibility. It spoke about the ethics behind the great “Mahabharatha” war, and which ideological path should be taken while pursuing victory. Interestingly, I find that certain of these principles can be applied in negotiation and conflict transformation, instead of war. An example of these principles could be sticking to a clear set of guidelines based on objective ethics and morals, for example honesty, accountability, dignity, fairness and so on. Another Indian perception of ethics is given by Chanakya, a political philosopher from ancient India. He emphasized the concept of “Shukra-Niti”, one that denotes various theories about moral practices.⁶ The most striking quote by him was “An action which is religious but disapproved by the people does not lead to heaven”.⁷ This thought draws an interesting division between morality and religion, a division that many believers of various religions in today’s world are finding difficult to embrace.

Conclusion

Upon discussion and analysis, it is evident that there exists a need to create a Global Guideline for Humanity. The human race has become extremely vulnerable to extinction, due to its collective overuse of ecological resources that are only depleting, contrary to the high rate of population growth. Rather than choosing one traditional practice over the other, an optimal combination of various practices must be made, based on a set of objective ethical guidelines. I believe that the usage of one common method to tackle the problems of ecology and inequality can efficiently minimize their overall impact on the world. These methods can be adapted and modified according to a country’s cultural practices, traditions, geo-political scenario and economic standing. The spread of awareness and knowledge regarding different traditions and approaches is key to changing narrow mindsets and initiating responses and suggestions for a Global Guideline. In fact, if one were to observe the United Nations’ “Sustainable Development Goals” and the themes of poverty, hunger, climate change, education and sustainable peace that are addressed, they would notice many similarities to the themes that the Global Guideline for Humanity examines. However, the Global Guideline for Humanity places emphasis on individuality and social identity to suggest ways to achieve these goals, a method that takes into account the various aspects of one’s personal and social life. One of the Japanese students spoke about a view of the world that divides it into four layers, which are local, regional, national and global. The importance of incorporating all these views before making a decision that would affect the world population and environment, cannot be overstated. The power to make a positive difference truly rests at the four levels of individual, relational, structural and cultural change!

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1. Barry Rodrigue, ‘An Emergent Future: Evolving A Global Revolution’, in *Universal Studies and the Modern World: Becoming Global and Cosmic Humanity*, ed. Osamu Nakanishi, Yokohama: Institute for Global and Cosmic Peace, 2017, p. 201.
 2. Ibid, p. 206-207.
 3. Ibid, p. 201.
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 6. Amritlal Buch Manganlal, *The Principles of Hindu Ethics*, Baroda: M.A. Buch, 27 September 1921, p. 26, <<http://www.australiancouncilofhinduclergy.com/uploads/5/5/4/9/5549439/principlesofhinduethics.pdf>>, Retrieved 5 December 2017.
 7. Ibid, p. 27.

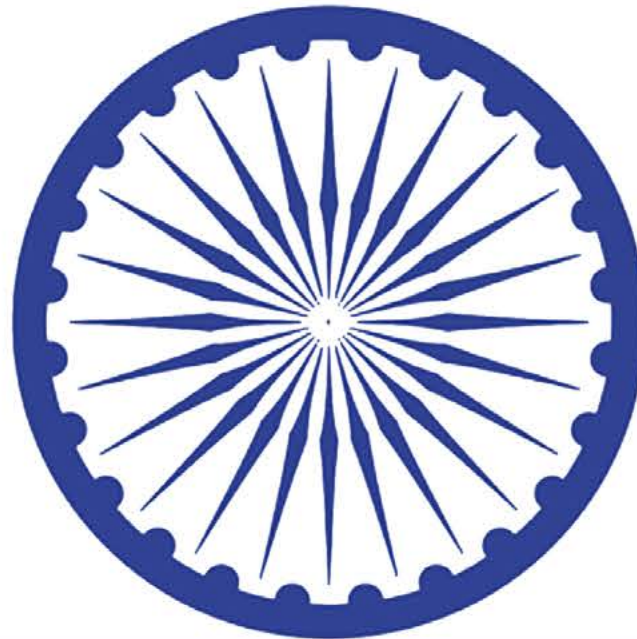
* The topic of this essay, “Suggestions for a Global Guideline for Humanity”, is based on an essay written by Professor Barry Rodrigue titled “An Emergent Future: Evolving a Global Revolution”. Simply put, a Global Guideline for Humanity is a sort of code of conduct for the global population based on the best cultural traditions of various communities. These traditions could possibly help enhance equality, ecology and value systems which is why there is a need to disseminate such knowledge worldwide. This essay is also based on educational exchanges our “Peace and Conflict Studies” class had online with students from J.F. Oberlin University, Japan. Anaga may be contacted at anagakrsna@gmail.com.

Snapchats from Maharashtra in March

by Lucy B. Laffitte



Barry Rodrigue



Lowell and I stepped down the push stairs to the tarmac of the Pune military airport and followed the leader through the diesel farm tractors pulling the bag carts and moving the planes. We'd finished with customs in the Mumbai airport so we were free to weave through the busy lobby to see the big smile of Barry Rodrigue awaiting us. We had been in transit 38 hours, gaining 33.5 hours. It was 11:30 AM Friday in Pune, but our biological clocks told our bodies it was two AM Thursday. Barry was sure a sight for sore eyes.

Our guest house rooms were a mere 500 meters from the airport but Barry graciously had a car waiting for us. We all hear about the driving in India, but it has to be experienced to be appreciated. With no turn signals on vehicles, stop signs, traffic lights, or rules for which lane to drive in or where to turn around, the fact that all size of motorized vehicles actually get where they are going to has to be the most chaotic example of functional complexity in the known universe. It works. Our car moved through a sea of rickshaws moving in every direction and delivered us to Symbiosis School of Liberal Arts. Barry squired us to our rooms where we dropped out bags and then took us to the cafeteria for lunch. We didn't have much time. We had an hour before we were to climb on a bus for a five hour drive to Aurangabad.

Everything in the cafeteria was gleaming stainless steel--the tables and seats, the lunch trays, the lunch service area. My stomach growled as I walked over to the buffet. I saw a bin of rice and multiple bins of different colored chunky, creamy or pasty substances. When I looked inquisitively at the server, he said a word I couldn't even repeat much less comprehend. The lunch tray had at least six pre-molded pockets so I just ladled in a spoonful of each. This response to the unrecognizable food, I quickly discovered, was the BEST way to approach Indian food. Throughout the entire nine days, there was never anything I couldn't eat and most of it I raved about. At the end of the meal, Barry walked us over to some sinks and mirrors at the back of the cafeteria. He told us to wash our hands with soap, scoop up a handful of water and swirl it around our mouths, spit it out, and then check the mirror for any lettuce in our teeth. There were no napkins on the tables nor towels near the sinks. Holding my dripping hands out in front of me, I discovered why everyone in India wears a shawl, stole or a scarf.



Cafeteria and dorm room at Symbiosis School for the Liberal Arts



*Nobou, Lucy
& Lowell on
the bus.*



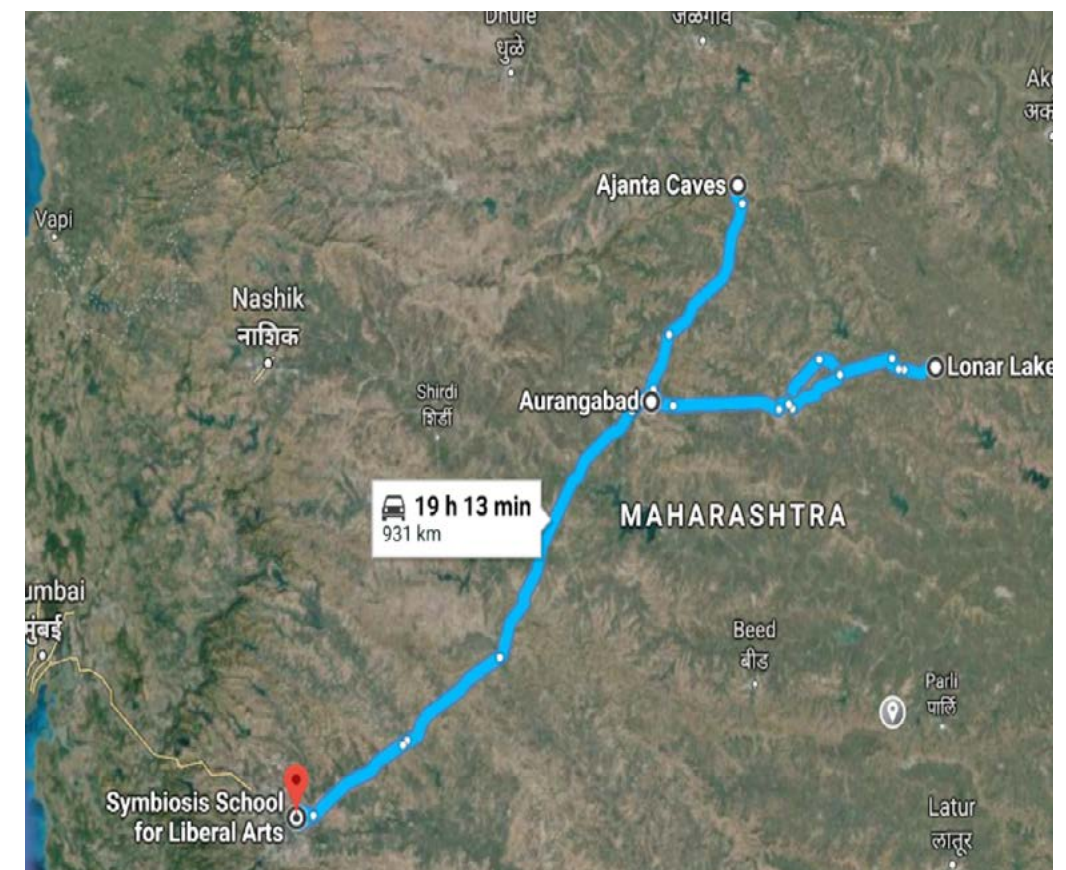
Lunar Crater



Fresco at Ajanta Caves



Less than an hour after drying my hands on my clothes, I was seated on a bus, one of two, carrying eight adults and 50 students for a 580 mile journey. Barry brought his wife, his ten year old son, and a longtime friend, two SSLA faculty members, and three IBHA board members: Nobou Tsujimura, Lowell and me. Despite the fact that Lowell and I were running on fumes, sitting on a bus looking at the tapestry of India out the window for the next 3 days was just what the doctor ordered for jet lag. In between visiting the impact of a meteorite 50,000 years ago at Lonar Crater and the 2000 year old frescoes and sculptures at the Ajanta Buddhist Caves, we soaked up the tapestry of Maharashtra and dozed so that when we arrived back in Pune, we were substantially refreshed, thoroughly awed, and very ready for the conference Barry had arranged. For a description of The Study of All Existence: SSLA Conference on Interdisciplinarity and Big History, see Origins volume VIII, number 2, p. 21.



The Bus Route from SSLA to Aurangabad to Lonar Lake back to Aurangabad to Ajanta Caves then back to SSLA.

IBHA conference

Big History, Big Future: A Cosmic Perspective

July 26 - 29, 2018

Please plan on participating in the 2018 IBHA conference from July 26 - 29 at Villanova University, near Philadelphia, Pennsylvania, USA. Here are [directions to Villanova](#), which is a half hour train ride from Philadelphia on the “Main Line.” Take a [virtual tour](#) of Villanova here. Panels and plenary sessions will be in the Connelly Center. You may reserve an attractive room on west campus or stay at nearby hotels.

Before or after the conference, you will enjoy the [Philadelphia area](#). [Independence Hall](#), the birthplace of America, is where the Declaration of Independence and later the US Constitution were signed.

Great museums include the [Philadelphia Museum of Art](#), The [Barnes Foundation](#), [Rodin Museum](#), The [Academy of Natural Sciences](#), and the [Museum of Archaeology and Anthropology](#). The [Liberty Bell](#) has inspired many in the struggle for freedom. Among [Eastern State Penitentiary's](#) celebrated prisoners were Al Capone. A few ideas for restaurants are [here](#), another one is [here](#), and [here](#).

Villanova University is proud to host the 2018 International Big History Association conference. The integration of the natural sciences, social sciences, and humanities has been central to the university's mission from its beginning.

Our science building in the College of Arts and Sciences, which houses our departments of physics, astronomy, chemistry, biology, and computing sciences, is named for Gregor Mendel.

Mendel was the nineteenth century Augustinian friar who is generally recognized as the founder of the modern science of genetics. He conducted his famous pea plant experiments between 1856 and 1863 in which he established many of the rules of heredity, now referred to as the laws of Mendelian inheritance. Each year, the university gives the Mendel Medal to an outstanding scientist.

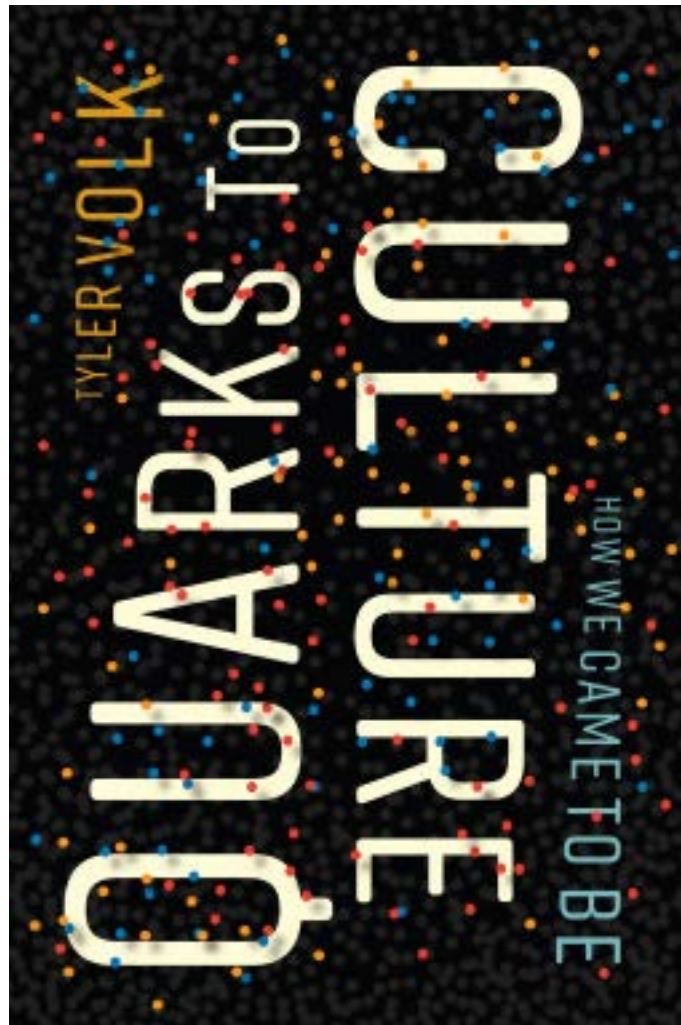
Villanova's Mendel Medal was given to the Belgian Catholic priest Abbé Georges Lemaître, Ph.D., D.Sc. in 1934 for his ground-breaking article on the primeval atom – what later became better known as the big bang. He was the first to derive what is now known as Hubble's law and made the first estimation of what is now called the Hubble constant, which he published in 1927, two years before Hubble's article. His work was controversial at the time. Albert Einstein, who was committed to the steady state or eternal universe, told Lemaître, "Your calculations are correct, but your physics is atrocious." Once Edwin Hubble's observations confirmed Lemaître's theory, Einstein accepted the new view of the beginning of our universe. As astrophysicists have honed Hubble's Law, a beginning for our universe was dated at about 13.82 billion years ago. Big History begins with the "primeval atom" (even as we examine theories of the multiverse, cyclical universes, and other hypotheses).



The 1937 Mendel Medal was awarded to Dr. (Rev.) Pierre Teilhard de Chardin, S.J. for his work on key developments from the origin of the universe to the present and into the future. He argued that the universe had not been created originally as it is now, but that it evolved through stages. Big History investigates the periods of time from which there are transitions from one to the next.

In 2008, the award went to the evolutionary biologist, [Kenneth Miller](#). The Mendel Medal was given to Dr. George V. Coyne, S.J. in 2009, when he was the Director of the Vatican Observatory. [His lecture](#) at the award ceremony was an account that is familiar to big historians. Villanova's astronomers and physicists teach and research the origins and evolution of the universe over the past 13.82 billion years. Our earth scientists investigate the history of the earth since its accretion 4.6 billion years ago. Our bio-chemists and evolutionary biologists in Mendel Hall work on the origins and evolution of life over the past 3.8 billion years. Our departments in the humanities and social sciences pick up the story of humanity over the past thousands of years. The contributions to big history of all of these scholars have been of great importance – and make Villanova University a great place to hold the 2018 IBHA conference.

Because of all of this, the IBHA conference enjoys the support of Villanova's University President, Associate Vice Provost for Research, the Dean of the College of Liberal Arts and Sciences, Dean of the Graduate School of Liberal Arts and Sciences, and the Departments of Biology, Physics, and Astrophysics & Planetary Science, and the Campus Minister for Liturgical Music.



Our plenary speaker to open the conference on Thursday evening, July 26, is **Tyler Volk**, who has just published *Quarks to Culture: How we came to be*. He argues that the world is nested, both physically and socially, and at each level we find innovations that are necessary for the next. He argues for a universal natural rhythm—building from smaller things into larger, more complex things—resulted in a grand sequence of twelve fundamental levels across the realms of physics, biology, and culture. He introduces the key concept of “combogenesis,” the building-up from combination and integration to produce new things with innovative relations. He explores common themes in how physics and chemistry led to biological evolution, and biological evolution to cultural evolution. Volk also provides insights into linkages across the sciences and fields of scholarship, and presents an exciting synthesis of ideas along a sequence of things and relations, from physical to living to cultural. The resulting inclusive natural philosophy brings clarity to our place in the world, offering a roadmap for those who seek to understand big history and wrestle with questions of how we came to be.

Tyler Volk is professor of biology and environmental studies at New York University and a recipient of the University’s Distinguished Teaching Award and Golden Dozen Award. His books include *Metapatterns: Across Space, Time, and Mind* (Columbia, 1995); *Gaia’s Body: Toward a Physiology of Earth* (1998); and *CO2 Rising: The World’s Greatest Environmental Challenge* (2008).



Our after dinner speaker will be **Craig G. Benjamin**, who is an Australian-American historian and Professor of History in the Frederik J. Meijer Honors College at Grand Valley State University, where he teaches East Asian civilization, big history, ancient Central Asian history, and world history historiography. Benjamin has presented lectures at conferences throughout the world, and he is the author of several published books, and numerous chapters and essays on the ancient history of Central Asia, Big History and world history. He has recorded lectures for the History Channel and the Discovery Channel, and has been a lecturer for the Big History Project, and on cruises sponsored by both Scientific American and the New York Times. Benjamin has recorded two courses for the Teaching Company’s Great Courses series, the Foundations of Eastern Civilization and the Big History of civilization. Together with David Christian and Cynthia Brown, he is the author of the first Big History textbook, *Big History: Between Nothing and Everything*, which was published by McGraw-Hill in August 2014. Benjamin has been a board member of the International Big History Association since 2011. He served as IBHA Treasurer from 2011 until 2016 and now as Vice-President. He is a consultant for the College Board and current co-Chair of the Test Development Committees of the SAT World History exams. In 2014 and 2015 Benjamin served as President of the World History Association.

A vibrant cosmic nebula in shades of red, orange, and blue, with bright yellow and white stars scattered throughout. The nebula's wispy, ethereal structure fills the background, creating a sense of depth and wonder.

Emergent Universe Oratorio

Main Line Symphony Orchestra
Directed by Don Liuzzi

Saturday, July 28, 2018, 7:30 pm
Villanova University Church
800 Lancaster Avenue, Villanova, PA, 19085
(in front of the bridge across Lancaster Avenue)

Composed by Sam Guarnaccia

Free Admission for registered conference
participants

From 13.82 billion years ago
until today - and into the future

The *Emergent Universe Oratorio* creatively integrates science with beauty from superb musical direction, choral singers, and orchestral players. Performed by the Main Line Symphony Orchestra (MLSO), now in its 72nd season, the oratorio will be a highlight of the 2018 IBHA conference. The MLSO is directed by Don Liuzzi, who is also a member of the Philadelphia Orchestra.

The Oratorio, by Vermont composer Sam Guarnaccia, gives expression to the awe inspiring narrative of the universe from the big bang to the emergence of humanity's global and universal consciousness. It is a series of alternating intensively scored recitatives with major lyrical choral sections.

The oratorio will be introduced by Ursula Goodenough, Professor Emerita of Biology at Washington University in St. Louis where she has engaged in research on eukaryotic algae. She authored the best-selling book, *Sacred Depths of Nature*, participated in a *Mind and Life* dialogue with the Dalai Lama in 2002, has participated in television productions on PBS and The History Channel, and contributed to the NPR blog, *13.7: Cosmos & Culture*, from 2009 to 2011. Goodenough was instrumental in the writing of the libretto for the oratorio.

The oratorio will be performed in the beautiful church on the campus of Villanova University, the location for the 2018 conference of the International Big History Association.

Emergence describes the appearance of new properties in the new levels of complexity that have developed over time. The sciences have provided us evidence of a beginning of our universe 13.82 billion years ago. Almost immediately, quarks formed relationships that produced protons and neutrons. Since then, there has been a process of relationships within ever more complex relationships from protons to atoms,

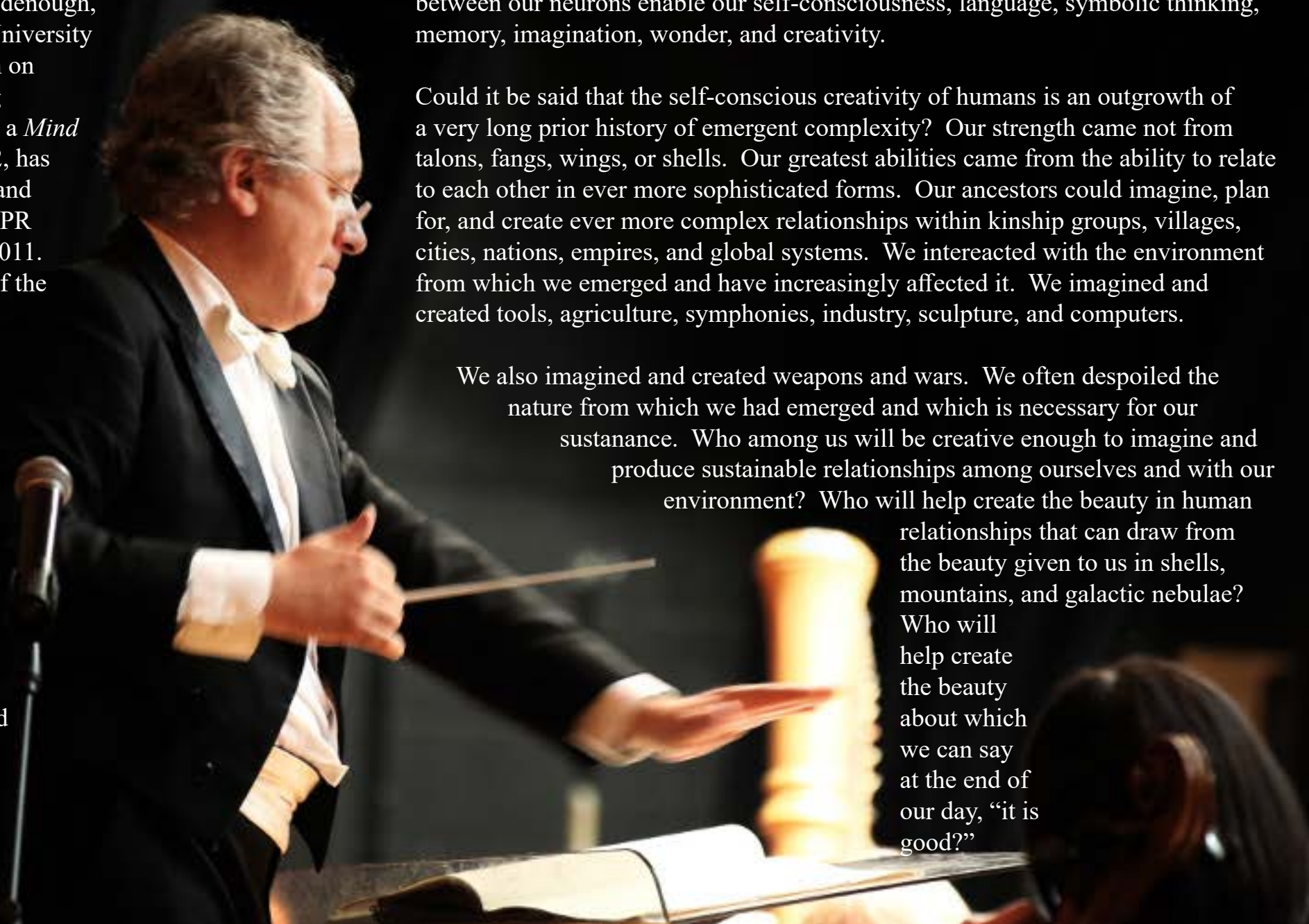
stars, galaxies, chemicals, our solar system, our Earth, tectonic plates, changing oceans and continents, amino acids, cells, multicellular life forms, a stunning variety of plants and animals in the sea and on land, and – some 200,000 years ago – humans. Our human nature emerged from a very long past in which at first there had not been any of those relationships and things mentioned above. But atoms, cells, and much more did develop and eventually came together in us.

Among the relationships within us were the 100 trillion synapses between the 100 billion neurons within each of our brains. Our brains are the most complex relationships of matter in the universe of which we are aware. We are that part of the universe that is able to reflect on itself. The electric and chemical exchanges between our neurons enable our self-consciousness, language, symbolic thinking, memory, imagination, wonder, and creativity.

Could it be said that the self-conscious creativity of humans is an outgrowth of a very long prior history of emergent complexity? Our strength came not from talons, fangs, wings, or shells. Our greatest abilities came from the ability to relate to each other in ever more sophisticated forms. Our ancestors could imagine, plan for, and create ever more complex relationships within kinship groups, villages, cities, nations, empires, and global systems. We interacted with the environment from which we emerged and have increasingly affected it. We imagined and created tools, agriculture, symphonies, industry, sculpture, and computers.

We also imagined and created weapons and wars. We often despoiled the nature from which we had emerged and which is necessary for our sustenance. Who among us will be creative enough to imagine and produce sustainable relationships among ourselves and with our environment? Who will help create the beauty in human

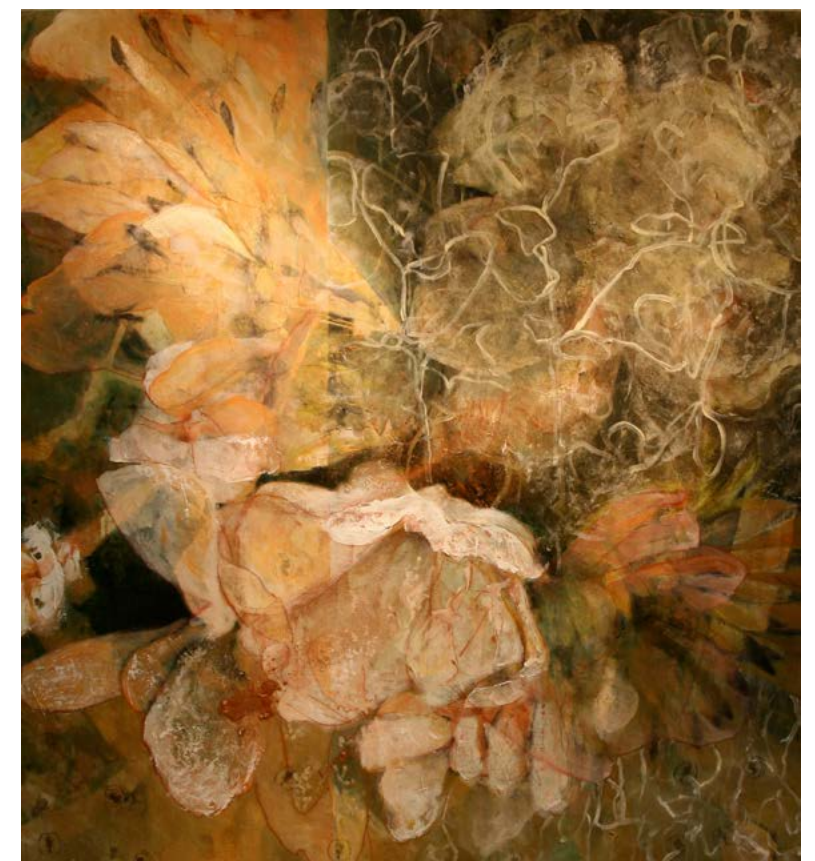
relationships that can draw from the beauty given to us in shells, mountains, and galactic nebulae? Who will help create the beauty about which we can say at the end of our day, "it is good?"





Cameron Davis' paintings will be exhibited at the IBHA conference in conjunction with the Emergent Universe Oratorio. These paintings explore wholistic aesthetics; art, science and imagination, as contributing to our capacity to create a life affirming future. Her collaboration with the Oratorio continues to evolve; including the original Emergent Universe Oratorio paintings, Endless Spring, the series Airs, Waters, Soils (Places) and her new work exploring the language of plants, mycelium, soils and bedrock across felt & temporal conceptions --- "Deciphering the Lyrics of Lichens," and the "Meter of Eternity" based on the writings of Ursula LeGuin. We need to "learn the languages of mountains... rivers... trees, ... of birds, animals and insects... and the languages of the stars." (EUO, Recitative: Emerging Earth Community).

camersondavisstudio.com



A photograph showing a group of people in a room, participating in a movement practice. In the foreground, a woman with long dark hair, wearing a white shawl over a dark purple long-sleeved shirt, has her arms extended horizontally to the sides. In the background, other participants are visible, some with their arms raised, suggesting a collective movement exercise. The setting appears to be an indoor space with a patterned curtain in the background.

COSMIC MEDITATION

The word ‘meditation’ calls to mind a state of stillness or silence in an isolated environment. This unusual, unique type of meditation, based on tapping into our innate body wisdom, involves improvised movement, music, story-telling and stillness done in community in a mood of mindfulness. Like yoga it integrates body, mind, heart and spirit into harmony but does not involve intricate poses or intense discipline. Nor does it involve any type of performance. It fosters awareness of our body interconnected with others and the cosmic body in a playful, childlike way. It is great fun but not frivolous. This is not meant for a privileged few. Anyone who has a body can participate. Participants invariably share that they feel deeply relaxed and energized at the end of a session. They are amazed at the experience of Cosmic Oneness and profound peace.

This unique form of meditation is based on a worldwide movement called InterPlay (see interplay.org). In India we have workshops for groups like teachers, students, religious, doctors, nurses, sex workers, indigenous, terminally ill, homeless, survivors of abuse, physically and mentally challenged.

At the conference, Prashant Olalekar from India will lead a session on Cosmic Meditation inspired by Teilhard de Chardin. 20-30 participants are an ideal number.

Conference Housing

VILLANOVA UNIVERSITY Dorm Apartments

Guest Apartments - Air-Conditioned (West Campus) Daily Rates*	
Bed Linen*/Towels2 etc. and Private Bath (1.5 or 2 baths per apt) included Includes a Kitchen (w/out cookware) and Living/Dining Room	
2- or 4-bdrm apt, shared by 4 guests (quad occupancy)	per person \$50.00
2- or 4-bdrm apt, shared by 2 guests (double occupancy)	per person \$70.00
2- or 4-bdrm apt, not shared, occupied by 1 guest (single occupancy)	per person \$95.00

*above rates include breakfast

You may extend your reservation before or after the conference in order to visit locations in the Philadelphia area. Please contact Donna Tew at tewd@gvsu.edu to reserve a dorm apartment.



Villanova's west campus apartments



Conference Housing in Philadelphia



Home2Suites by Hilton Philadelphia Convention Center

\$169 per night plus tax (this rate includes breakfast)

This location will be approximately a half hour train ride to Villanova campus

- Downtown Philadelphia hotel just blocks from Rittenhouse Square
- Two blocks from Jefferson Station and easily accessible to public transportation
- Indoor saline swimming pool

Your HiltonLink is: <http://home2suites.hilton.com/en/ht/groups/personalized/P/PHLCCHT-IBH-20180725/index.jhtml>

Pre-Conference Tour (Option #1)

If you want to look around Philadelphia before or after the conference, we'd like to invite you to consider participating in couple of events that can offer a little structure to your explorations of the Philadelphia region.

The **Barnes Museum**, on the Parkway in Center City Philadelphia, has one of the outstanding collections of Post-Impressionist Art in the world. The collection was the work of Albert C. Barnes, who bought his first paintings in 1911. In 1912, he visited Paris and met Gertrude Stein, Matisse, and Picasso. Today, the collection includes 178 Renoirs, 69 Cezannes, 60 Matisses, and 44 Picassos. The Barnes was located outside the City, in Merion, PA, until 2012, when it moved to its present location, which recreates the initial site's unique presentation.



We plan to take advantage of a self-guided tour the museum offers, with a half-hour introduction. We'll begin with the introduction at 2:00 PM. After that introduction, you'll have an hour to explore the museum, with the help on an audio tour. This tour costs \$33.00. A similar tour without an introduction, but with the audio guide, is also available for \$23.00.

If you are interested in the tour with an introduction, please let us know as soon as possible. We will cap the group at 60 participants.

Then, also on Wed., we're planning to send a party to dinner at the opera-themed **Victor Café** in South Philly, "The Music Lovers Rendezvous". This Italian Restaurant is located in what had been, starting in 1918, an RCA gramophone outlet, quickly becoming a gathering place for audiophiles. In 1933, with the end of Prohibition, owner John Stefano, transformed it into the restaurant, decorating its walls with signed photos of opera composers and stars and other opera memorabilia. Up front is a larger-than-life replica of Nipper the Dog, listening to a gramophone, which was once RCA's icon.

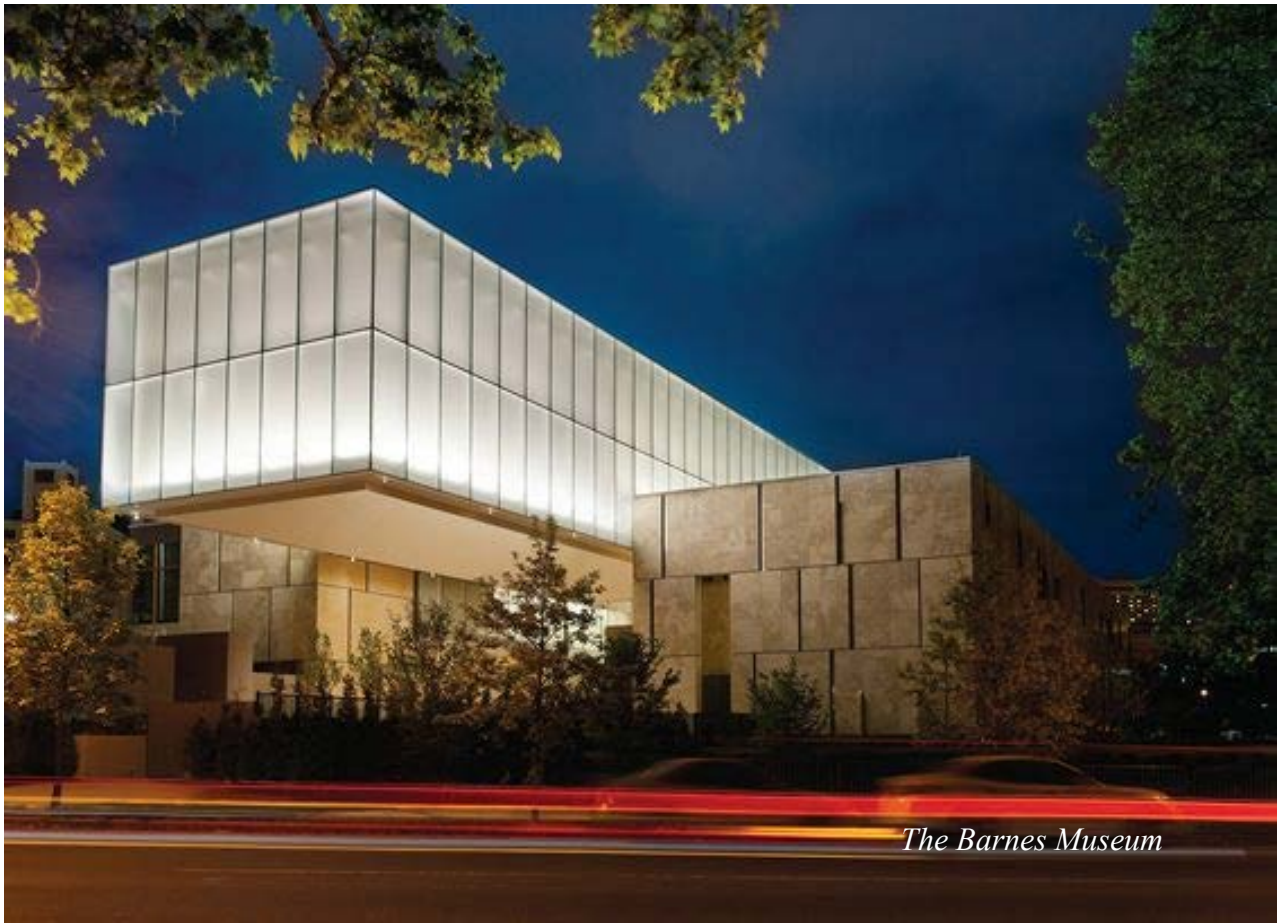
The food is good and sometimes excellent. But the real reason to go is the atmosphere. Not only is the restaurant decorated in an opera theme, but all the

waiters and waitresses are opera singers or students. Opera music plays throughout the night, but every once in a while, one of the waiters/waitresses will ring a bell and sing an aria. To get the most out of the experience, we'll reserve several tables, around 7 pm, rather than have a banquet room. The sooner people let us know they want to attend, the more control we have over those reservations. We've taken several groups and the response has always been positive. The Victor is a unique experience we hope to share with you. Again, please let us know if you plan to join the group as soon as possible.

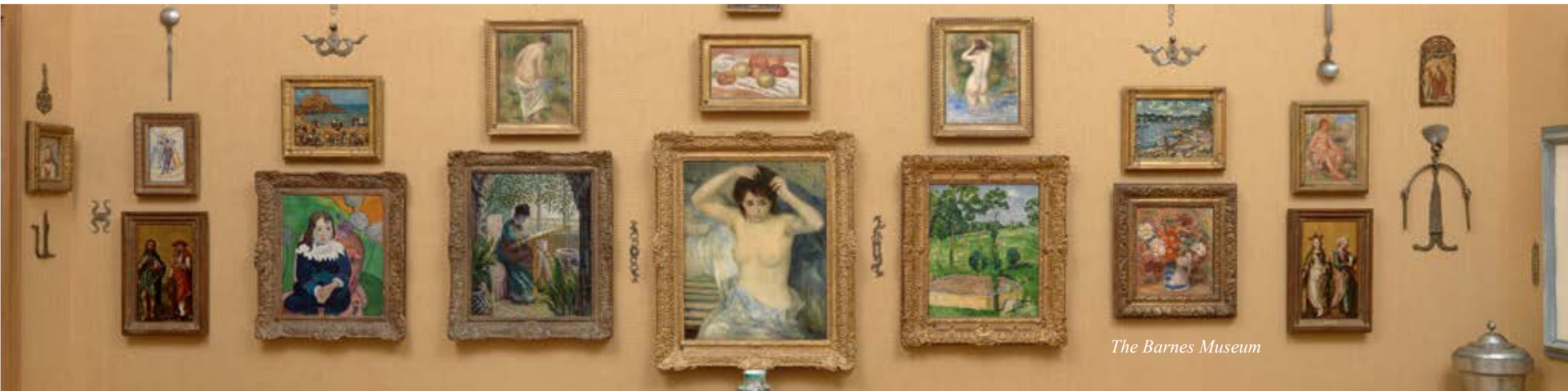


The Victor Cafe

Looking forward to seeing you in Philly next summer,
Please [contact Ken Baskin](mailto:baskinman47@yahoo.com) (baskinman47@yahoo.com) to make your reservation!



The Barnes Museum



The Barnes Museum



Post-Conference Tour (Option #2)

Founded in 1887, the **University of Pennsylvania Museum of Archaeology and Anthropology** has always been one of the world's great archaeology and anthropology research museums, and the largest university museum in the United States. With roughly one million objects it encapsulates and illustrates the human story: who we are and where we came from.

Your guide will be Dr. Brian Spooner, who is Professor of Anthropology and Museum Curator for Near Eastern Ethnology. He has done ethnographic research in Iran, Afghanistan and Pakistan, and has been an IBHA member since 2011. The train leaves right from the campus of Villanova University. You would transfer at the 30th Street station and get off at University City Station, which is right in front of the museum.

Please contact Dr. Spooner (spooner@sas.upenn.edu) to make your reservation!



Post Conference Tour (Option #3)

Rowan University Big History Fossil Park Dig

Monday, July 30th, 2018
Mantua, NJ

Join Paleontologist Ken Lacovara, Dean of the Rowan University School of Earth & Environment, on a post-conference field trip into an old sand quarry that is revealing secrets of the extinction event that ended the reign of the dinosaurs. Unassumingly located behind a shopping center in suburban New Jersey, the site is in the process of becoming a living laboratory and future science museum for the University. Dr. Lacovara will lead the field trip participants to the depths of the pit going back in time 65 million years to dig up the past and learn what the past can tell us about our future. Participants will be invited to dig for their own fossils which they are welcome to keep. The site is rugged with no utilities and little shade so expect to get dirty and wear appropriate clothing. The field trip includes transportation between Villanova and the Rowan Fossil Quarry and a food voucher for a resident food truck. **Contact John E. Hasse at <hasse@rowan.edu> to reserve your place!**

Cost: \$50 – (includes roundtrip bus transportation from Villanova to Rowan and a \$10 lunch voucher).

Itinerary

8 AM pickup Villanova Campus

9-12 fossil lecture and quarry activities

12:00 PM – 12:30 PM lunch

12:30 PM return to Villanova (arrive ~ 1:30)



Candidates for 2018 IBHA Board Election

Background

The members of the IBHA Board of Directors hold staggered three year terms. Each year, a few seats become open. Since the IBHA was founded, there have been a number of Board members who have cycled off the Board, a number of new people who have joined it, and a number who have stayed on. This year, three seats became open and need to be filled. An on-line ballot for the elections was sent to IBHA members on June 1; the election will remain open until July 1, 2018. These three new Board members' terms will run from July 26, 2018 through the July 2021.

In the interest of fostering continuity, change, stability, and inclusivity, the IBHA selects Board candidates in two ways:

- (1) IBHA members identify names
- (2) and the existing Board proposes a list of names.

Between December 7, 2017 and April 1, 2018, IBHA members could log on to the IBHA website and post the names of any members they recommended for Board membership. Nominees who were endorsed by at least 10% of IBHA membership before April 1, 2018 would become candidates. The IBHA Board also discussed and decided on its list of candidates.

As a result of this process for selecting nominees for the board, the slate of candidates for the IBHA board seats in 2017 is below. The election will begin on June 1, 2018

David Christian

I am honored to stand again as a member of the Board of the IBHA. I take great pride in the achievements of the IBHA during its first four years and am proud to have been the organization's founding President when the organization was founded in August 2010 in Coldigiocco, Italy.

In the 8 years since our founding the IBHA has held three very successful conferences and planning is under way for a fourth, it has created stable organizational and financial structures, it has established a very successful bulletin and journal, it has built an international network of supporters

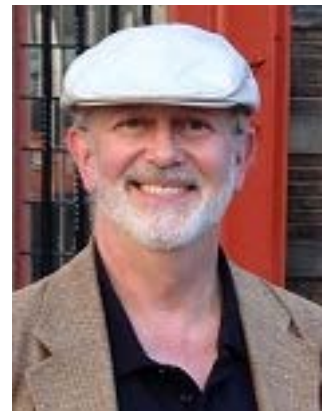


and members, and its members have produced a number of publications in big history.

I am keen to keep serving on the IBHA board and to take part in planning for the 2018 conference in Villanova. I am currently based in Sydney, where Macquarie University is giving very strong backing to Big History and has created a Big History Institute, which held a research conference on "The Idea of the Anthropocene" in December 2015. In 2015 Macquarie University launched the first MOOC in big history. The Big History Institute, of which I am Director, will support the teaching of big history both in Australia and in the Asia-Pacific region. It is undertaking other new initiatives in big history. These are exciting times for all of us engaged in big history.

J Daniel May

It's an honor to be nominated to serve on the IBHA board. I began teaching Big History at Dominican University of California in 2011, and since 2014 have served as the program director for Dominican University's Big History Program, a required sequence of courses for all first-year students. I'm particularly interested in developing the pedagogy of Big History, both for its own sake, and as a framework for larger curricular design. I regard understanding of our universal history as essential foundational knowledge for any educated person in the 21st century.



I've been teaching a variety of English courses at Dominican University of California since 1996, including Linguistics, Writing, Literature, and English as a Second Language. No matter what subject I've taught, I've always seen the importance in making connections to other topics, bringing in bits of history, archaeology, hard science, and whatever else I thought could put a particular course into a larger context. Big History is as large a context as one could wish for, the ultimate opportunity to connect the dots and see the whole picture. I also have a passion for storytelling in its many forms: folklore, mythology, live theatre, film, literature, and more. Big History is the biggest story we can tell, and presents challenges and choices about how best to tell it, and how best to teach it.

If elected to the IBHA Board, I hope to further the practical pedagogy and applied knowledge of Big History.

Barry Wood

A Canadian by birth, Barry earned an interdisciplinary doctorate in literature, humanities, and religious studies at Stanford University and is now in his 46th year at the University of Houston. His publications began fifty years ago with a high school teaching edition of Huckleberry Finn (1968), followed by more than twenty articles in *The Stanford Daily* attending the first Earth Day in 1970. In 2009, Barry designed an interdisciplinary course called Cosmic Narratives, now a core-curriculum course offered every semester at the University of Houston. The following year he discovered his course fell into a new interdisciplinary field known as Big History; subsequently, he became a founding member of IBHA, and a presenter at IBHA conferences. Barry has sixty publications, including two books written while he was in graduate school, and *Malcom Lowry: The Writer and His Critics* (1980), an edited collection of essays on a prominent Canadian writer. His publications contribute to several fields: literary criticism, the environment, and education. A chapter called “The Seamless Robe of Nature” from his first



book, published in 1970, was reprinted in *Origins* (February 2017); this may be the earliest presentation of Big History by a member of IBHA. The Spring 2018 issue of the *Big History Journal* carried his article, “Imagining the Unimaginable: Narratives of the Big Bang.” The Summer 2018 issue included his book review of “*Cataclysms: A New Geology for the 21st Century*” (Columbia University Press, 2017); his article “Refueling the Magic Furnace” on the first Kilonova collision ever observed (August 17, 2017) and how it has rewritten the element-creation story is scheduled for a forthcoming issue.

Barry’s early adventures include hitchhiking 11,000 miles across the U.S. and Canada, and earning a white-water river-guide license from the American River Touring Association (ARTA). During a four-year teaching assignment in Malaysia, Barry served as Assistant Scout Master, formed a Boy Scout High Adventure SCUBA group, led a number of dives in the South China Sea, and with his two sons (ages 13 and 10) climbed Mount Kinabalu, Borneo—the highest mountain in Southeast Asia. Back in the U.S. he and his sons reached the summit of Lincoln Mountain in Colorado—one of the Fourteeners (elevation: 14,000+ feet).

Beginning and Ending of IBHA Board Members' Terms												
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Walter Alvarez	F			E								
Mojgan Behmand					E							
Craig Benjamin	F			E			E					
Cynthia Brown	F			E								
Eric Chaisson		A										
David Christian	F			E			E					
Javier Collado Ruano								E				
Lowell Gustafson	F			E	E			E				
Seohyung Kim								E				
Andrey Korotayev					E			E				
Lucy Laffitte							E					
Jonathan Markley					A	E						
Esther Quaedackers				E		E						
Barry Rodrigue	F			E	E			E				
Kathy Schick				E								
Fred Spier	F			E	E							
Nobuo Tsujimura								E				
Constance van Hall								E				
Joseph Voros				E		E						
Sun Yue					E				E			

DEEP BIG HISTORY:

Humanity's Journey Within a Living Universe

© Duane Elgin
Duane@DuaneElgin.com

The Provisional Nature of Paradigms

Before exploring alternative paradigms, it is useful to step back and bring a meta-perspective to this inquiry. A paradigm is a self-consistent pattern of thoughts, concepts, and assumptions about the nature of reality. As a theoretical and philosophical framework, a paradigm provides a useful way of viewing reality as long as its concepts are in accord with what is being described. When our understanding of the nature of reality changes, so too will the paradigm change.

This essay offers a perspective of Big History based upon a living systems paradigm. In offering this perspective, I recognize that *all paradigms are provisional* and evolve as our understanding of the universe grows and deepens. Therefore, I consider a living universe paradigm as provisional and open to change as our knowledge of the universe develops.

We are in a time of deep change in how reality is understood and described. Scientific materialism is no longer a fully validated paradigm as some of its underlying assumptions are being questioned by science. Science has become so powerful that it is challenging itself and its own deep assumptions regarding concepts as fundamental as “time,” “space” and “matter.” Likewise, neither is the paradigm of a living universe fully validated as many of its assumptions are also questioned by science. This is a time of exciting discovery and change. Openness to discovery is vital for developing a scientific paradigm that fits most closely with our evolving understanding of the universe. With an appreciation for the developmental and evolving nature of *all* paradigms, let's explore the worldview of a living universe.

Big Differences Between “Big History” and “Deep Big History”

Currently, Big History is based upon a paradigm of “scientific materialism” which makes controversial assumptions regarding the nature of reality.⁸ Materialism is the belief that only physical reality exists and nothing else. In this view, all things are composed of physical matter and all phenomena emerge from the interactions of physical matter, including consciousness. Physical matter is regarded as the sole cause of everything, including human thought, feeling, and action. In this view, the universe is dead at the foundations—inanimate, mindless and without consciousness. The basic assumptions of current Big History can be

summarized as follows:

- Measurable matter is the only reality and is essentially mechanical in its workings.
- Matter is without consciousness or subjectivity.
- Because there is no underlying consciousness, nature has no guiding purpose and evolution has no inherent meaning.
- Consciousness is a by-product bio-chemistry, is largely unique to humans and is confined within the brain.

The view that measurable matter is the only reality is being questioned by science which regards this as a very limited view which leaves out the vast majority of the known universe. It is now widely recognized that 95 percent of the known universe is invisible and is not directly measurable. What comprises the 95 percent of reality is often described as “dark matter” and “dark energy.” These two, foundational aspects of reality are called “dark” because they cannot be observed directly by our physical senses. Therefore, *the current foundation of Big History is based upon a description of reality that includes only 5 percent of the known universe and excludes 95 percent of the known cosmos.* In contrast, “Deep Big History” seeks to take into account the larger known universe, including that which is knowable with capacities that reach beyond the physical senses and are extra-sensory in nature. For example, scientific experiments have demonstrated that consciousness has non-local properties and that “remote viewing” (gaining meaningful information regarding about people and locations that are beyond the reach of our physical senses) appears to be a normal part of human capacities.⁹ Simplifying, here are contrasting assumptions that describe the universe as a living system:

- Reality is comprised of both matter that can be measured directly as well as other forms of matter and energy that can only be measured indirectly.
- All material forms have some degree of “centering subjectivity” or consciousness as an integral aspect of their functioning.
- Consciousness or a knowing capacity is integral to the ecology of the deep universe and it is scientifically valid to explore the nature of meaning and the purpose of living.

Deep Big History looks beyond the shallow descriptions of reality offered by scientific materialism and seeks a more inclusive understanding of reality.¹⁰

A Living Systems Paradigm for Big History

The idea of a “living universe” is not a new perspective. More than two thousand years ago, Plato described the universe as a single living creature that encompasses all living creatures within it. To begin, it is helpful to contrast the assumptions of a non-living universe with those based on a living systems perspective. The prevailing paradigm of Big History assumes that for something to be considered “living,” the system must include four key capacities:

- **Metabolism:** the ability to break matter down as well as to synthesize it
- **Self-regulation:** the ability to maintain stability in its operation
- **Reproduction:** the ability to create copies of itself
- **Adaptation:** the ability to evolve and fit into changing environments

These four capacities can be found, not only in plants and animals but also in the functioning of the universe:

Metabolism: Black holes exist throughout the universe, continuously breaking down the matter that is drawn into them. The universe also has the capacity for synthesis as simple matter, present at the formation of the universe (helium and hydrogen), is converted through supernova explosions into carbon, nitrogen, oxygen and sulfur—the essential constituents from which we are made.

Self-regulation: The universe is able to endure and evolve over billions of years as a unified system and produce self-organizing systems at every scale, from atomic to galactic, that can persist for billions of years.

Reproduction: Many cosmologists theorize that on the other side of black holes are white holes giving birth to new cosmic systems.

Adaptation: The universe has evolved over billions of years to produce systems of increasing complexity and coherence woven together into a self-consistent whole.

Because these properties of a living system are integral to the functioning of the universe, it suggests it is proper to describe the universe as a living system. Looking more deeply, here are six, key attributes of our universe that lend further support to a living systems perspective:

1. A Unified Whole—In the last several decades, scientific experiments have repeatedly confirmed ‘non-locality’ and the understanding that, at the quantum level, the Universe is a deeply unified system which is able to communicate *instantly* across impossibly vast distances. To illustrate, at the speed of light, it takes more than eight minutes for a photon to travel from the sun to the Earth and more than 14 billion years to travel across our visible Universe. Yet, quantum physics demonstrates these unimaginably vast distances are traversed and transcended, instantaneously, in the quantum realm. Science no longer views the Universe as a disconnected collection of planets, stars, and fragments of matter. Instead, the Universe is fully unified and connected with itself at every moment. This does not mean that scientists understand how this connectivity works—only that it is real and, at a fundamental level, the universe is a unified system.

2. Immense Background Energy—Scientists used to think that empty space was essentially “empty” and was characterized by the absence of everything. However, scientists have discovered there exists an extraordinary amount of background energy permeating the universe, including empty space. Empty space is not empty. The physicist, David Bohm calculated that a single cubic centimeter of “empty space” contained the energy equivalent of millions of atomic bombs.¹¹ Even in a complete vacuum, there exist phenomenal levels of background energy sometimes referred to as “dark energy”—an energy that comprises roughly 73 percent of the known universe and is viewed as the force responsible for the increasing acceleration in the expansion of the universe. We live within an ocean of subtle energy of such immense power that it is virtually incomprehensible.

3. A Co-Arising Universe: At every moment, the entire Universe is emerging freshly as a singular orchestration of cosmic expression. Nothing endures. All is flow. In the words of the cosmologist Brian Swimme, “The Universe emerges out of an all-nourishing abyss not only fourteen billion years ago but in every moment.”¹² There is one grand symphony in which we are all players, a single creative expression emerging freshly at each moment—a uni-verse. While an evolving Universe provides a stunning narrative of ‘horizontal’ unfolding *across* time, the insight of an emerging Universe adds the ‘vertical’ dimension of the Universe continuously arising *in* time. Despite outward appearances of solidity and stability, the Universe is a completely dynamic system.

4. Consciousness at Every Scale: Scientists are finding evidence for consciousness or a centering subjectivity throughout the Universe. From the atomic level to

the galactic scale, a self-organizing, centering capacity appears to be in ways fitting for each scale. In turn, the capacity for centering self-organization points to the presence of some level of knowing consciousness. The physicist and cosmologist Freeman Dyson writes that, at the atomic level, “It appears that mind, as manifested by the capacity to make choices, is to some extent inherent in every electron.”¹³ This does not mean that an atom has the same consciousness as a human being, but rather that an atom has a centering subjectivity appropriate to its form and function. Max Planck, developer of quantum theory, stated, “I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness.”¹⁴ An ecology of consciousness seems to permeate the Universe.

5. Freedom at the Foundations: Quantum physics describes reality in terms of probabilities, not certainties. This means that uncertainty and freedom are built into the very foundations of existence. No individual part of the cosmos determines the functioning of the whole; rather, everything is interconnected with everything else, weaving the cosmos into one vast interacting system. In turn, it is the consistency of interrelations of all the parts that determines the condition of the continuously emerging whole. We therefore have great freedom to act within the limits established by the larger web of life.

6. Able to Reproduce Itself: A vital capacity for any living system is the ability to reproduce itself. A widespread view in cosmology is that our Universe reproduces itself through the functioning of black holes. Physicist John Gribbin writes, “Instead of a black hole representing a one-way journey to nowhere, many researchers now believe that it is a one-way journey to somewhere—to a new expanding Universe in its own set of dimensions.”¹⁵ Given the presence of billions of black holes in our Universe, there could be countless other cosmic systems continuously being born by ‘budding off’ from our Universe through the birth canal of black holes. Gribbin writes that Universes are not only alive; they also evolve as do other living systems: “Universes that are ‘successful’ are the ones that leave the most offspring.”¹⁶ The idea that there have been countless Universes evolving through time is not new. A precursor can be found from 1779 when the philosopher David Hume wrote, “Many worlds might have been botched and bungled, throughout an eternity, ere this system was struck out; much labour lost, many fruitless trials made; and a slow, but continued improvement carried on during infinite ages in the art of world-making.”¹⁷

When we bring these attributes together, a clearer picture of our remarkable Universe comes into focus. As a provisional paradigm, the most meaningful description of our Universe seems to be that of a living, cosmic hologram—a unified super-organism that is continuously regenerated at each moment and whose essential nature includes consciousness, or a knowing capacity, that enables systems at every scale of existence to center themselves and exercise some measure of freedom of choice. In addition, the Universe appears able to reproduce copies of itself via black holes. This suggests our Universe exists within a vastly larger cosmic garden or multi-verse and is but one among countless others cosmic systems. Overall, the vision of our Universe emerging from science and cosmology is that of a magnificent super-organism evolving in complexity and consciousness. We humans are completely immersed within this regenerative, holographic superorganism. While these scientific properties do not “prove” the universe is a living system, they clearly point in the direction of aliveness and invite a much deeper inquiry into how a living systems perspective could inform humanity’s evolutionary journey.

Contributions of a Living Systems Paradigm

What does a living systems paradigm bring to Big History? One major contribution of a living systems paradigm is the inclusion of co-evolution of culture and consciousness as an integral aspect of the human journey.¹⁸ From this perspective, throughout history humanity’s capacity for self-reflective consciousness has developed progressively—from the magical world of the hunter-gatherer, to the nature-based world of the agrarian farmer, then into the dynamic world of the urban-industrial society, and now into a holographic perspective with collective consciousness rapidly awakening within our global brain. Here are other contributions of a living systems paradigm:

1. Awakening to Our Bio-Cosmic Identity: In the paradigm of scientific materialism, we are no more than bio-chemical beings—evolutionary accidents whose consciousness and aliveness are separate from the rest of the non-living and unconscious universe that surrounds us. In contrast, from a living systems perspective, we are both biological beings and cosmic participants in a vast field of life-energy. In this view, our identity is immeasurably deeper and larger than imagined by scientific materialism: Physicist Brian Swimme explains that the intimate sense of self-awareness we experience bubbling up at each moment, “is rooted in the originating activity of the universe. We are all of us arising together at the center of the cosmos.”¹⁹ We thought that we were no bigger than

our physical bodies, but now we are learning that we are participants in the flow of continuous co-arising of the cosmos. Awakening to our larger identity as both unique and inseparably connected with a co-arising Universe transforms feelings of existential separation into experiences of subtle communion as bio-cosmic beings. We are far richer, deeper, more complex, and more alive than we ever thought. To discover this in our direct experience is to enter a new age of exploration and discovery that transforms our description of human history.

2. Discovering Our Cosmic Purpose: A non-living universe is without consciousness and is therefore oblivious to any sense of human purpose. As existentially separate life-forms, we may strive heroically to impose some reason for our existence on the universe, but this is ultimately fruitless in a cosmos unaware of life. In striking contrast, a living universe seems intent on growing self-referencing and self-organizing systems within itself at every scale. We are expressions of aliveness that, after nearly 14 billion years, enable the universe to look back and reflect upon itself. A living universe paradigm brings a profound shift in our evolutionary purpose: We are moving from seeing ourselves within a fragmented and lifeless cosmos without apparent meaning or purpose, to seeing ourselves on a magnificent journey within a living and unified cosmos whose purpose is to serve as a learning system. If the cosmos is a learning system, then a primary purpose is for us to learn from both the pleasures and the pains of existence. If there were no freedom to make mistakes, there would be no pain. If there were no freedom for authentic discovery, there would be no ecstasy. In freedom, we experience both pleasure and pain in the process of developing our identity as beings of both earthly and cosmic dimensions. After nearly 14 billion years of evolution, we stand upon the Earth as agents of self-reflective and creative action who are engaged in a time of great transition and consciously learning to live in a living universe.

3. Awakening to Deep Meaning: If the universe is dead at its foundations, then, in its depths it has no feeling for us as human beings nor does it offer a sense of meaning and purpose. Because a non-living universe is unconscious at its foundations, it is indifferent to humanity and unknowing of our evolving creations and conditions. Nothing will ultimately matter to non-living matter. All will be forgotten. An old saying goes, “A dead man tells no stories.” In a similar way, “A dead universe tells no stories.” In contrast, a living universe is itself a vast story continuously unfolding with countless characters playing out gripping dramas of awakening.

If we regard the universe as dead at the foundations, then feelings of existential alienation, anxiety, dread, and fear are quite reasonable. Why seek communion with the cold indifference of lifeless matter and empty space? If we allow ourselves to drop into life, won't we simply sink into existential despair? However, if we live in a living universe, then feelings of subtle connection, curiosity, and gratitude are understandable. We see ourselves as participants in a cosmic garden of life that the universe has been patiently nurturing over billions of years. A living universe invites us to shift from feelings of indifference, fear, and cynicism to feelings of curiosity, love, awe, and participation.

4. Developing Ethics of Compassion: If we are no more than biological entities, then it makes sense to think we could disconnect ourselves from the suffering of the rest of life. However, if we are all swimming in the same ocean of subtle aliveness, then it is understandable that we each have some measure of direct experience of being in communion with the larger fabric of life. Because everything shares the same matrix of existence, the totality of life is already touching each of us and co-creating the field of aliveness within which we exist. A felt ethics emerges from our intuitive connection with the living Universe in the form of a ‘moral tuning fork.’ We can each tune into the non-local field of life and sense what is in harmony with the wellbeing of the whole. When we are in alignment, we experience a warm, positive hum of wellbeing as a kinesthetic sense that we may call ‘compassion.’ In a similar way, we can also experience the dissonant hum of discordance and dissatisfaction. In recognizing we can contribute with discernment to the unfolding story of cosmic evolution, we shift from existential disconnection to feelings of intimate communion and regard for all that exists.

5. Fostering Sustainable Ways of Living: If we regard aliveness as the only true wealth, then it is only natural for us to choose ways of living that afford greater time and opportunity to develop the areas of our lives where we feel most alive—in nurturing relationships, caring communities, walks in nature, creative expressions, and service to others. In seeing the Universe as alive, we naturally shift our priorities from an ‘ego economy’ based upon consuming deadness to a ‘living economy’ based upon growing aliveness. An aliveness economy seeks to touch life more lightly while generating an abundance of meaning and satisfaction.

6. Bringing Bio-Cosmic Ethics to the Bio-Genetic Revolution: Rapid advances in genetic engineering will soon create a new array of human species and a

radically new trajectory for Big History. Humans will be genetically enhanced for increased intelligence, disease resistance, resilience to stress, and more. Within a few decades, the Earth will be inhabited by genetically augmented humans whose great advantages could make them both essential and unstoppable—almost instantly, producing a bio-genetically stratified society. Each generation of super-humans could establish a new base line for upgrading the next generation, thereby producing radically different types of humans. If augmented capacities are grounded in the shallow paradigm of scientific materialism, they seem likely to create a bleak future for humanity. To illustrate, Yuval Harari is the author of *Homo Deus* and his views are widely quoted in the mainstream. In his view, augmented humans will be honored for “the contribution we make to the data streams that various computer-assisted algorithms are using to generate value and create production.”²⁰ Scientific materialism provides the foundation for this impoverished and shallow view of humanity’s evolutionary potentials. In his book, Harari writes that, “In the future, we may see real gaps in physical and cognitive abilities opening between an upgraded upper class and the rest of society.”²¹ Harari describes how we soon could have “upgraded superhumans who dominate the world” thereby creating “a new superhuman caste that will abandon its liberal roots and treat normal humans no better than nineteenth-century Europeans treated

Africans.”²² In turn, he states the most ruthless evolutionary strategy might be to let go of the useless third class—the world’s poor and unskilled—and dash forward with the first class only. With that approach, we may need “a handful of upgraded superhumans far more than millions of healthy ordinary workers.”²³ Without a bio-cosmic perspective as a transcending ethical context for guiding the emerging bio-genetic revolution, there is the great danger of creating a new caste system—and a profoundly diminished and distorted Big History for humanity. A similar caution seems to apply to the revolution in artificial intelligence now underway.

In conclusion, as a provisional paradigm, a living systems perspective brings with it a transformed description of humanity’s bio-cosmic identity, purpose and journey. It also elevates a compassionate concern for sustainable ways of living and a natural ethics for guiding the development of a future with bio-genetically augmented humans. These capacities are of immeasurable value to humanity as we seek to grow through a time of profound planetary transition and come together to build a thriving species-civilization. *In summary, it is scientifically valid, critical to our pathway into the future, and enormously enriching to bring the depth of a living systems paradigm into the understanding and development of Big History.*

Endnotes

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9 My personal experience with remote viewing is relevant to this conclusion: In the early 1970’s, over a period of nearly three years, I was a subject in the earliest remote viewing experiments funded by NASA at the Stanford Research Institute (now SRI International). There I had the opportunity to learn first-hand about extra-sensory capacities that all humans seem to possess as a natural ability. Results from the formal, rigorously controlled experiments have been reported in some of the most prestigious science and engineering journals in the world. See: H. Puthoff and R. Targ, “A Perceptual Channel for Information Transfer Over

Kilometer Distances: Historical Perspective and Recent Research,” *Proceedings of the IEEE* (March 1976): 329-54. R. Targ and H. Puthoff, “Information Transfer Under Conditions of Sensory Shielding,” *Nature* 252 (October 1974): 602-7. Also see: Russell Targ, Phyllis Cole, and Harold Puthoff, *Development of Techniques to Enhance Man/Machine Communication*, Stanford Research Institute, Menlo Park, California, prepared for NASA, contract 953653 Under NAS7-100, June 1974. R. Targ and H. Puthoff, *Mind-Reach: Scientists Look at Psychic Ability*, Delacorte Press/Eleonor Friede, 1977. Based on the success of the first three years of experiments, the psi research became a secret project of the CIA that continued for another twenty years (according to information obtained from the Freedom of Information Act). When the research was taken over by the CIA, I dropped out because of ethical considerations.

10 This essay draws upon books I’ve authored in the area of Big History including *Awakening Earth: Exploring the Evolution of Human Culture and Consciousness*, New York: William Morrow, 1993, *The Living Universe: Where Are We? Who Are We? Where Are We Going?* San Francisco: Berrett-Koehler, 2009. Also see the extended essay: “The Living Cosmos: A Theory of Continuous Creation,” in the journal *ReVision*, Vol 11, No. 1, Summer, 1988. For further information, see my website: www.DuaneElgin.com For recent writing see: “Humanity’s Journey Home: We Are Bio-Cosmic Beings Learning to Live in a

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