

Expanding Worldviews: Astrobiology, Big History,  
and the Socio-Political  
Benefits of the Cosmic  
Perspective



*“Most progress comes from a change in perspective....”*

**Ian Crawford**



**Birkbeck**  
UNIVERSITY OF LONDON

(Apollo 8/NASA)

A bit of personal history: a course I developed in the mid-1990s: before I had heard about Big History.....

## COSMIC PERSPECTIVES FOR WORLD HISTORY

TUTOR: Dr Ian Crawford

4A.05.04 10 meetings, weekly from Monday 10 October 1994, 6.30-8.30 £36.00

This course will present a short scientific history of the world from the Big Bang to the dawn of civilisation on Planet Earth some 5000 years ago. It is therefore intended to lay a foundation for subsequent studies of world history, and to provide a perspective which is often lacking in such studies. Topics to be covered will include:

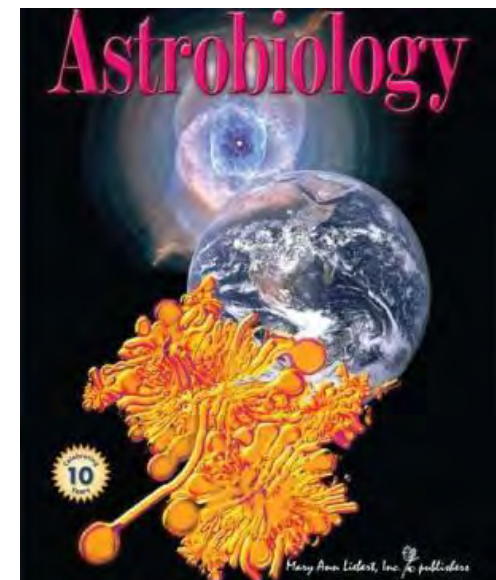
- The Big Bang and the Origin of the Universe.
- Stars and the origin of the chemical elements.
- The formation of the solar system and Planet Earth.
- A discussion of what is currently known about the origin of life.
- A summary of biological evolution, with particular reference to the evolution of the vertebrates through the successive stages of fish, amphibians, reptiles and mammals.
- The evolution of Homo Sapiens, and of culture, agriculture and civilisation.

The course will consist of ten lectures, illustrated with the aid of slides and overhead projector notes.

**Recommended Reading**

# *What is astrobiology?*

“Astrobiology is the study of the origin, evolution, distribution, and future of life in the universe”



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<http://www.bbk.ac.uk/study/modules/easc/EASC064H5>



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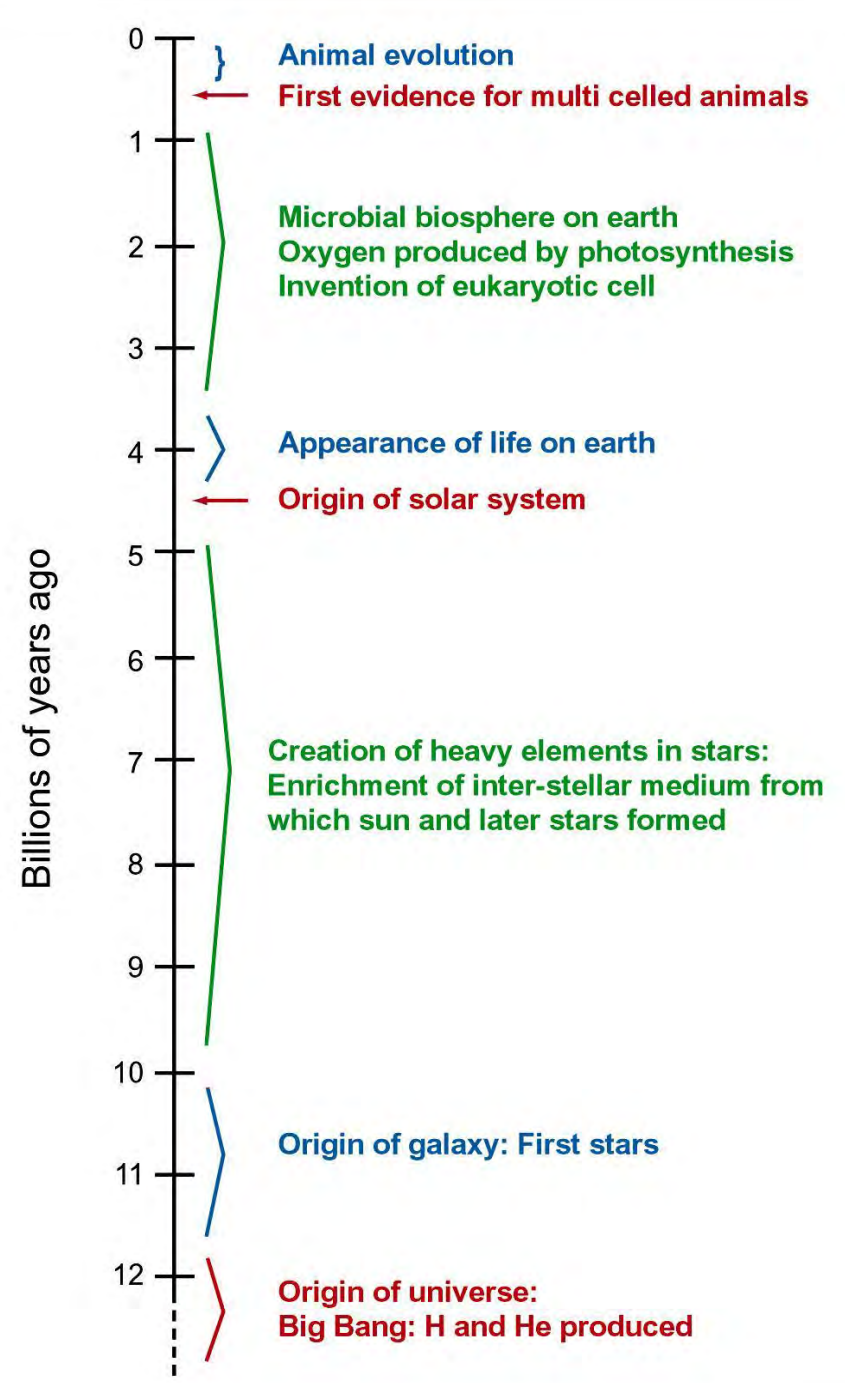
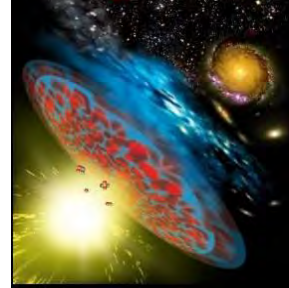
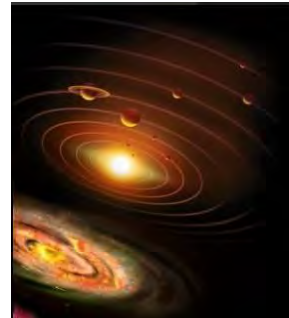
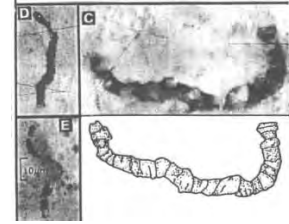
## Introduction to Astrobiology

### Lecture content

- Origin and distribution of biologically important chemical elements.
- Conditions in the early solar system.
- Earliest evidence for life on Earth. Some biological basics.
- Pre-biological chemical evolution.
- Astrobiological implications of the history of life on Earth.
- Requirements for life.
- Prospects for life on Mars.
- Life elsewhere in the Solar System.
- Planets around other stars.
- The search for extraterrestrial intelligence.



# Temporal perspective (aka 'Big History'):



# Historical Forerunners to Big History (and Astrobiology)

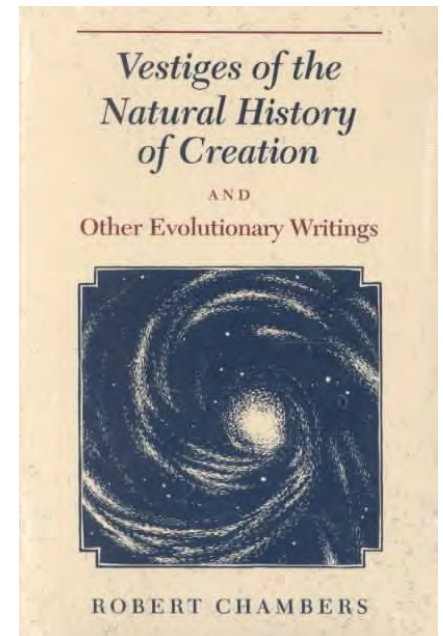
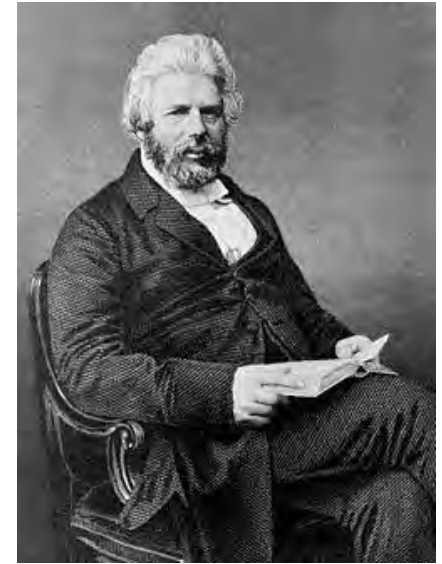
**Robert Chambers** (*Vestiges of the Natural History of Creation*, 1844, and *Explanations*, 1845):

“As far as I am aware [my book] is the first attempt to connect the natural sciences to a history of creation.... My sincere desire .. was to give the true view of the history of nature.”

From which he drew the important ethical implication of:

“....establishing the universal brotherhood and social communion of man. And not only this, but it extends the principle of humanity to the other meaner creatures also. Life is everywhere ONE.”

(*Explanations*, p. 184, Chambers' emphasis)



# Alexander von Humboldt

(*Cosmos*, 1845 -1862)

*“The individual is made to feel that he is connected, by the very nature and substance of his body, with every part of the universe.”*



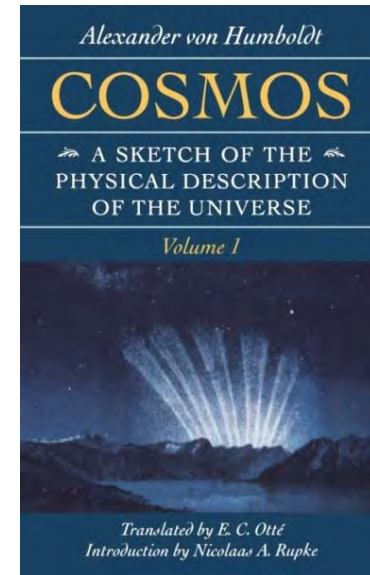
(Eduard Hildebrant, 1856)

J.D. Whelpley, Review of *Cosmos*, The American Review (June 1846)

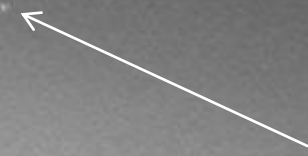
And social implications follow:

*“If the world is ever to be harmonized it must be through a community of knowledge, for there is no other universal in the nature of man.”*

J.D. Whelpley, Review of *Cosmos*, The American Review (June 1846)



Humboldt: *“The most dangerous worldview is the worldview of those who have not viewed the world.”*



You are here



The cosmic and evolutionary perspective engendered by Astrobiology and Big History *ought* to part of the worldview of every educated person, and would yield the following societal benefits:

- Intellectual benefit of (partially) reintegrating the sciences and (also partially) reintegrating the sciences with the humanities (i.e. bringing together C.P. Snow's *Two Cultures*);
- Realisation that Earth is a very small planet adrift in a wider universe and maintaining its long-term habitability is essential;
- Realisation that all life on Earth is related owing to its common origin and evolutionary history;
- In particular, realisation that all human beings and human societies are related by common evolutionary and cultural history, and that tribal divisions (while very likely having an evolutionary basis) can, and have been, be overcome by cultural and political innovations....

The cosmic and evolutionary perspective implies the desirability of a more politically unified world.

As Aristotle noted “man is by nature a political animal”, and we regulate our affairs through our political institutions. An appropriate institutional embodiment of the cosmic perspective would be the evolution of a (federal) world government:



*"This is the essence of world federalism: to seek to invest legal and political authority in world institutions to deal with problems which can only be treated at the global level."* World Federalist Association (1987).

The European Union is an excellent start and needs to continue (despite Brexit!). The next step might be the creation of a UN Parliamentary Assembly (<http://en.unpacampaign.org/>).

Reference: I.A. Crawford "[Interplanetary Federalism](#)", in: *The Meaning of Liberty Beyond Earth*, ed. C.S. Cockell, pp. 199-218 (Springer, 2014).