

# Life in the Universe: from future to societal perspectives

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The far future

The question « Are we alone? » in different cultures

# The far future

- Suppose we have detected biosignatures on exoplanets
  - Biogenic gases (O<sub>2</sub>, O<sub>3</sub>, CH<sub>4</sub>)
  - A generalized « Vegetation Red Edge » (any non mineral colour)
- We than can (and will):
  - Increase ad infinitum the spectral resolution (==> industrial-made gases and other technosignatures etc)
  - Make multi-pixel (>100, 1000) cartography of planets to look for
    - Natural « forests »
    - Artificial agricultural fields

# The far future

- But:

That will not inform us on the morphology of beings (« trees », « animals », « skilled animals ») involved in these biosignatures and cartographic features

- To make a 3-pixel image of a large « animal » or « tree » (~10 m) on a planet around alpha Cen, a ~1 AU wide aperture is required, and it would provide ~a few photons/year.

- A solution: go there?

But then, damage by interstellar grains limits to speed to ~500 km/sec ==> a 2500 year trip

==> Same delay between and and these future times than between Epicurus and now.

(« There must be an infinite number of worlds » *Epicurus 2300 BC*) <sup>3</sup>

# The question "Are we alone?" in past and present cultures

From the compilation by M. Crowe « the extraterrestrial life debate » (1986):

Democritus (400 BC), Epicurus (300 BC), Bruno, Huygens, Fontenelle, Kant, Goethe and hundred others.

e.g. Epicurus: « There is an infinite number of worlds, some like this world, others unlike it. ... Nobody can prove that [...] there could not possibly be seeds out of which animals and plants arise. » (Letter to Herodotus)

(Note a very few skeptics: Aristotles, Hegel, Schopenauer).

**No reference to extraterrestrial life in any african, asian, arabic, hebrew, persian, pre-columbian litterature.**

==> Only in « western » culture.

(a few apparnt exceptions: « The Guide for Perplexed » (Maimonid), Mahabharata)

**Why?**

# Why has the questioning on alien life been restricted to « western » culture ?

A hypothesis:

Complex story, sustained by one guiding principle:

« Alien life » means life elsewhere.

« Elsewhere » pre-supposes some **distanciation, differentiation.**

Two types of distanciation/differentiation:

- **Distanciation/differentiation by concepts:**

« Western culture » = culture of concepts and their mathematization

Concepts created by the words naming them: nominalism (Abélard, Berkeley...)

What is not subject of language cannot be imagined **different**: to imagine that things are different you must give them names AND detach the word from the designated object.

==> from given objects to universal abstraction

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Two types of distancing:

- **Spatial distancing:**

Homogeneous euclidian space:

« here » is not a center, not « **the** » center

==> decentration

Mathematization of space by Thales:

introduction of « ratio »

(ratio = proportion and reasoning).

==> allows **extra-polation**

Later in Europe: Earth not the center of the universe  
- silent about extraterrestrial life).

==> opens the possibility that terrestrial life is not (the center of)  
all life.

By essence, concepts have an « universalizing » structure

Different from empirical recipes.



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A political note:

Greece has also **democratized** science.

Concepts, by nature, are not the property of political power (King, Emperor etc)

The King is not the source of concepts:

concepts are their own, impersonal, source: they are the, impersonal, power.

==> That is why science and democracy go together in Greece.

==> Socio-political decentration:

Montaigne « If something is good for my family but bad for the nation, I reject that thing »

Voltaire: « Point of view from Sirius » (Micromegas)

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A political note (II):

China: « Zhongguo » (Empire of the Middle)

Greece/China:

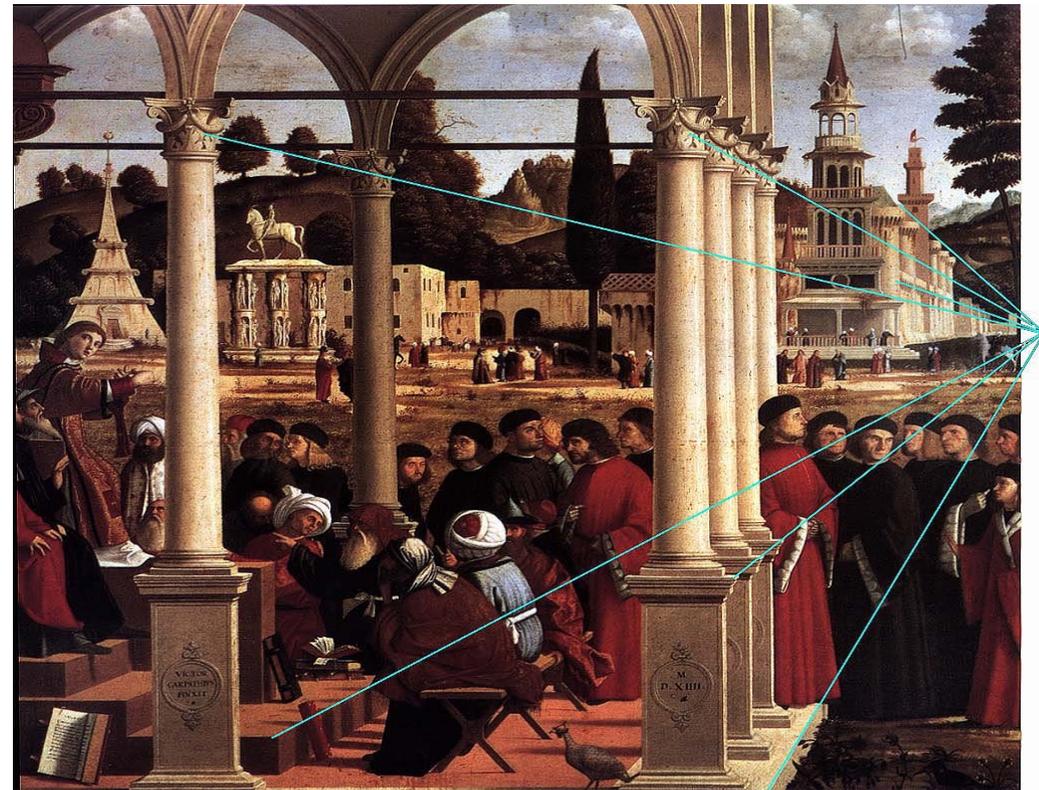
- Greece: concepts, argumentation are public <==> democracy
- China: science (astronomy, knowledge of eclipses, calendar) private property of the Emperor

Europeo-centrism?

- It is an objective fact that rational concepts have been adopted by all cultures
- Other approaches fruitful for other purposes: Kabbalistic (==> psychoanalysis), ying/yang (==> politics), ethics

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## Chinese painting and Italian perspective



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Another asian view

Extraterrestrials and boudhism:

« Why should be enter into contact with extraterrestrials?

We already have contact with the whole Cosmos in ourselves »

(quote from a conference)

==> Question of distinction between interior and exterior

Why has the questioning on alien life been restricted to  
« western » culture ?

Why has all that started in Greece rather than elsewhere?

No causal material (climatic, geographic, economic etc) reason.

Pure « genuine fortuitness », because emergence of new ideas is causeless:  
ideas come from nowhere.