A Case in Point: Communication with Unknown Intelligence/s

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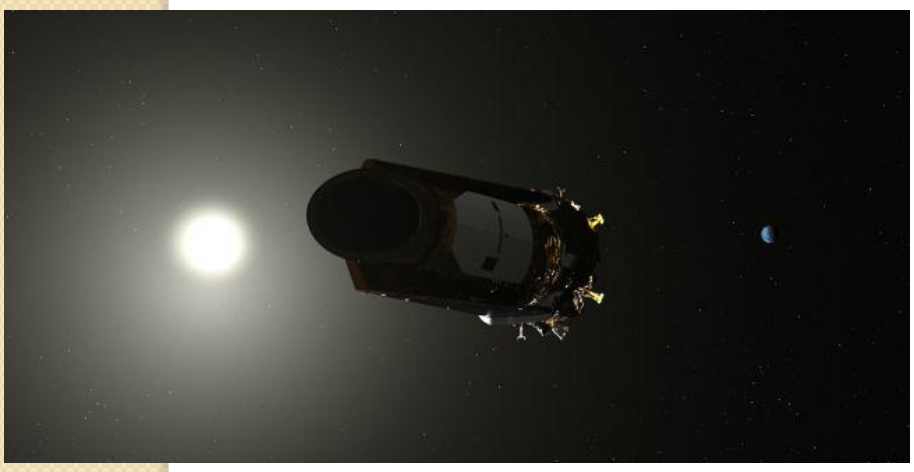
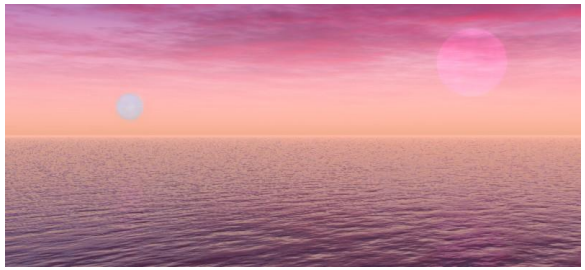
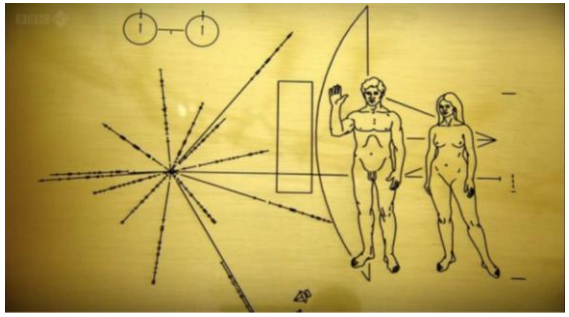




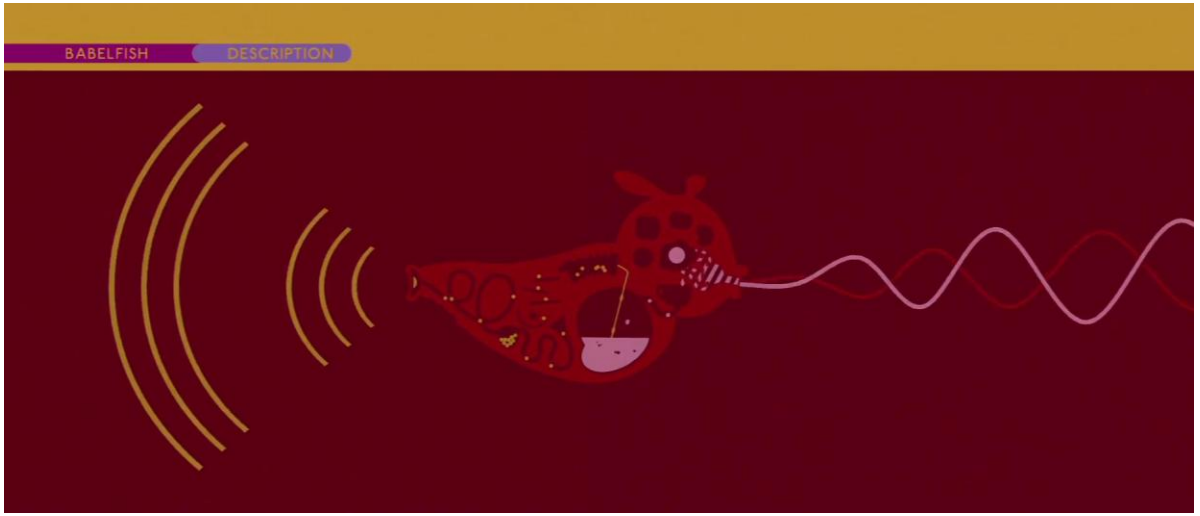


This presentation is not the after-result of the UFO-craze, or watching film and television dramas starring creatures from other worlds or mutant life-forms from Earth.

An actor in rubber suit starring as a mutant from planet Metaluna in the motion picture ***This Island Earth*** (1955), see Dickinson and Schaller (1994, p. 13, right image).

Thanator – a top predator animal – as featured in James Cameron's ***Avatar I*** (IMDb, 2009)

Babelfish: a fictional species of "leech-like" fish (*The Hitchhiker's Guide to the Galaxy* [= H2G2], Douglas Adams (1979 / 2005 film) – fictional zebrafish *versus* real zebrafish (*Danio reirio*, *Cypriniformes* order)



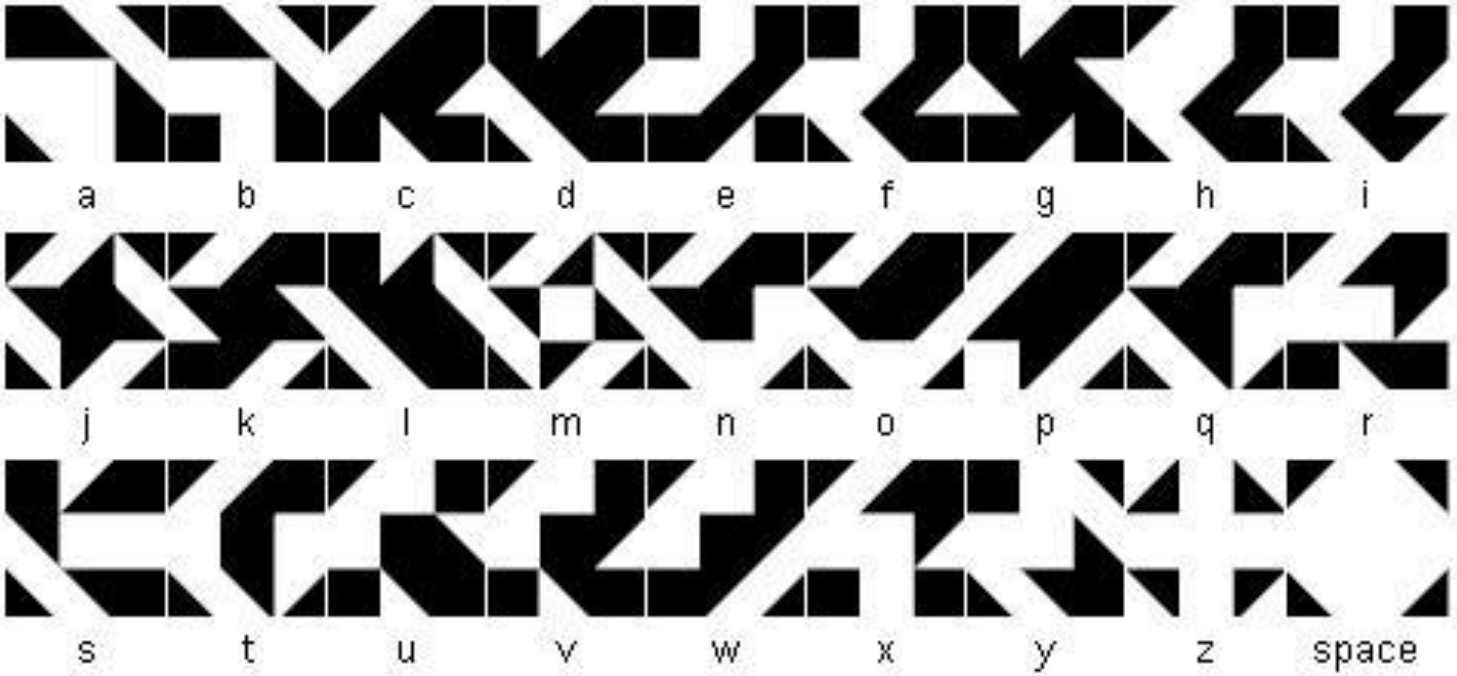
The idea for this study emerged from continuous research in various symbolic and writing systems (real-word / constructed)

The *rongorongo* script of Rapa Nui (Easter Island). **Current status**: despite a plethora of serious and flamboyant claims,* *rongorongo* is not deciphered. Year 1864 CE marked its "discovery" by a layman missionary, Brother Joseph-Eugène Eyraud. **Pre-missionary time-span**: unknown. (Below) illustration of one *side* of the "*Small Santiago* Tablet".

* Should any of them be right, the future scholars will know for sure.

Pintaderas (Gran Canaria, Canary Islands, Spain) – a pre-European symbolic system attested on baked clay and occasionally on wooden stamping seals, with surfaces covered in a number of stylized and abstract designs. **Current status**: interpreted in part, not fully understood.

Betamaze, an artificially constructed script – Terrana Cliff (2003).



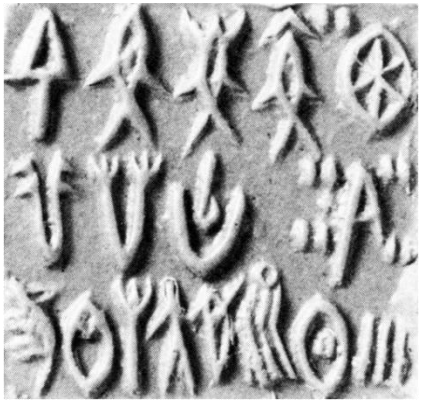
S C R I P T A — M A N E N T

Indus Valley signs / markings – Harappa, Mohenjo Daro, and other centers (mainly) in modern day Pakistan and India.

Below - Ruins of the ancient town of Harappa in Punjab, Pakistan

Active production *ca*. 1900 – *ca*. 1550 BCE. **Current status**: non-deciphered.

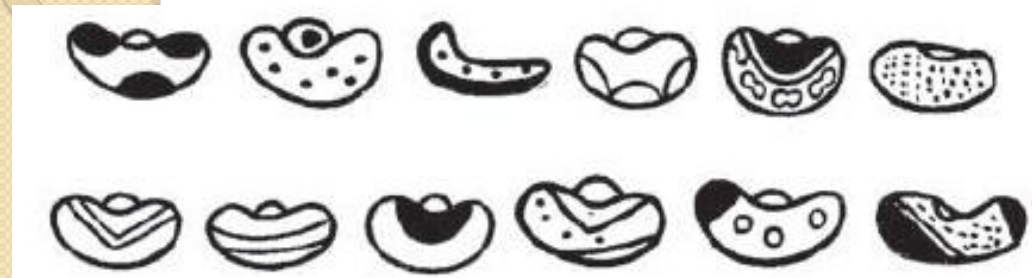
Obstacles: very short and brief texts. The average number of symbols on the seals is 4.6 – 5, and the longest (so far) is only 26; the "underlying" language is unknown; lack of *bilingual texts* (← if there can be such a thing).

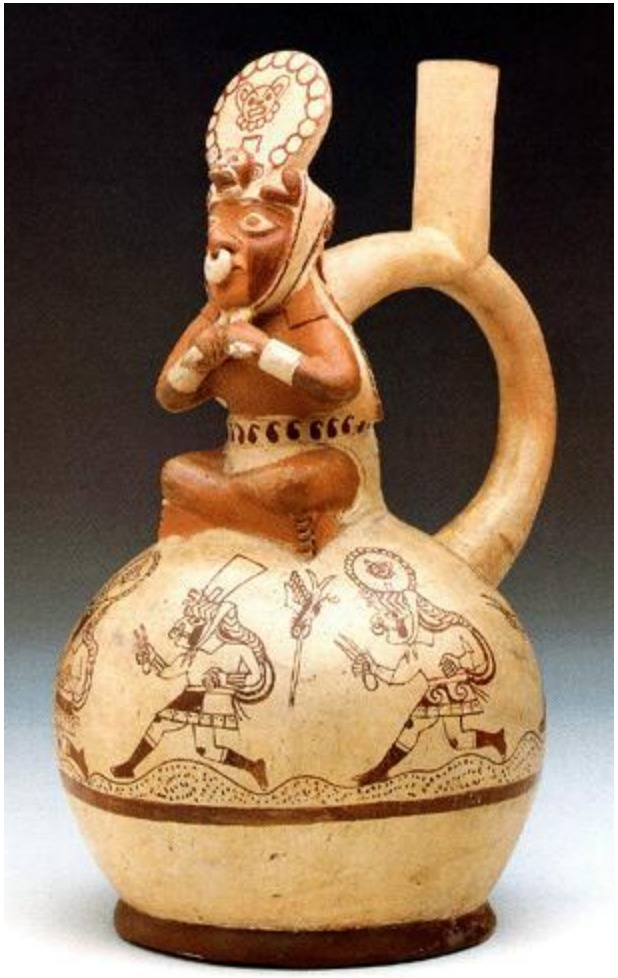


T'oqapu – a pre-European system of geometric-like patterns that compressed information of a semantic quality present in the Inqa sphere of influence and conquest (modern Peru, most of Bolivia, parts of Ecuador, Argentina, and Chile) (= Late Horizon period of the Andean culture/s, *ca*. 1476–1532/34 CE, based on an earlier extended tradition). The larger image shows in all probability a royal *unqu* (Stone, 2007, p. 394), a rich and precious apparel according to Inqa standards, with a mixture of *t'oqapu* motifs corner to corner.

The <*Cretan hieroglyphic script*> (Aegean Bronze Age [cf. Karnava, 2000]; *ca*. 2100-1900 to 1600-1500 BCE [note that the precise dates are debated]), as initially dubbed by Arthur Evans in analogy to the Egyptian hieroglyphs. **Current status:** a non-deciphered system. The script appears on seal stones (e.g. steatite, green jasper, agate), and other supports. The recent scholarly top concern is to study the intersection between iconography (= "pictography") and the manifestation of phonetic elements (word-signs [= morphograms], rebus puns [= homonymy], semantic classifiers), cf. S. Ferrara (2018).

Currently, the iconographic system of **Moche Lima beans** appears painted / incised / marked / depicted - essentially – on earthenware vessels (= baked clay containers, ceramic pots) and textiles. The Moche civilization spans from *ca.* 150 – 100 BCE to *ca.* 800 – 850 CE and developed in the northern coastal valley areas of what is today modern Perú (South America) – Melka (2010). **Current status**: interpreted in part, not fully understood.





Ancient scripts and systems (whether mixed or purely symbolic) are subtle and complex due to the different levels of mapping between articulated speech / semantics and their representative symbols / signs / glyphs.

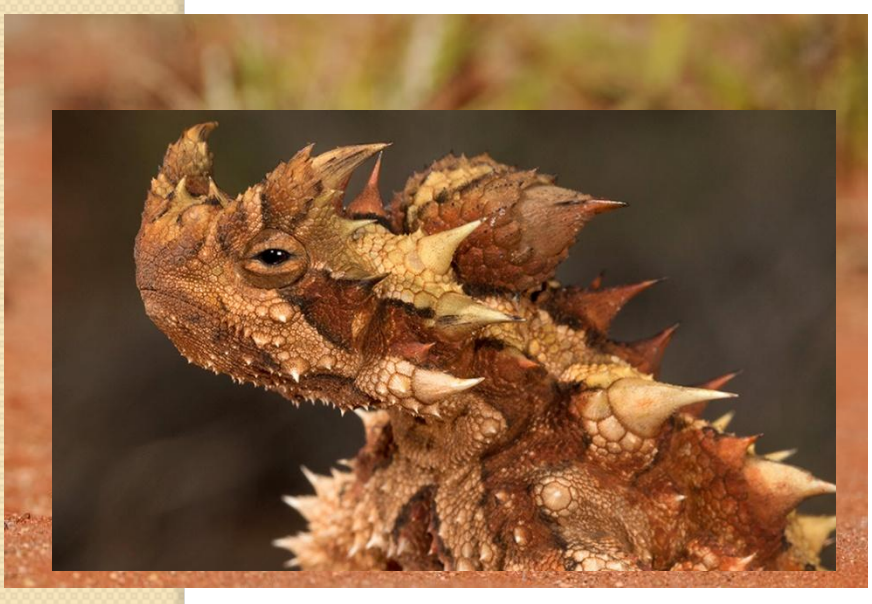
To fully understand such scripts • systems it is necessary to have insights into their cultural and historical contexts. Without such a context (lost or largely contaminated, as the centuries went by), it may be very difficult or virtually impossible to decipher them or share their understanding with the original users.

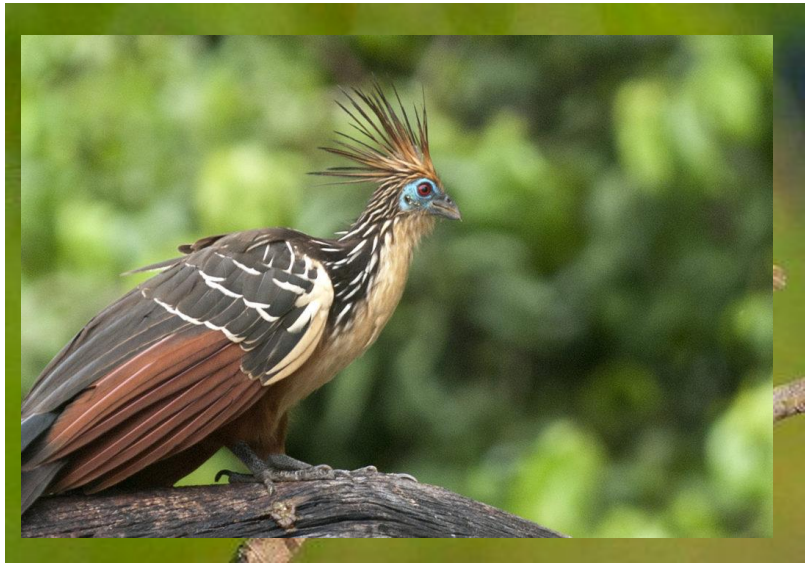
If modern humans do not consistently capture and interpret cogently the information (symbolic / semantic / phonetic) *made by an earlier human culture, how can they proceed with truly alien cultures, products of very divergent developmental pathways, and bound* (very likely) *to unrelated bio-chemical and/or cultural parameters*?

Pause for Thought: Even on planet Earth, the roster of stunning and "outlandish" life-forms / species that exist is considerable,

e.g. thorny lizard [= thorny devil] (*Moloch horridus*) Australia;

hoatzin [= stink-bird] (*Opisthocomus hoazin*) South America.

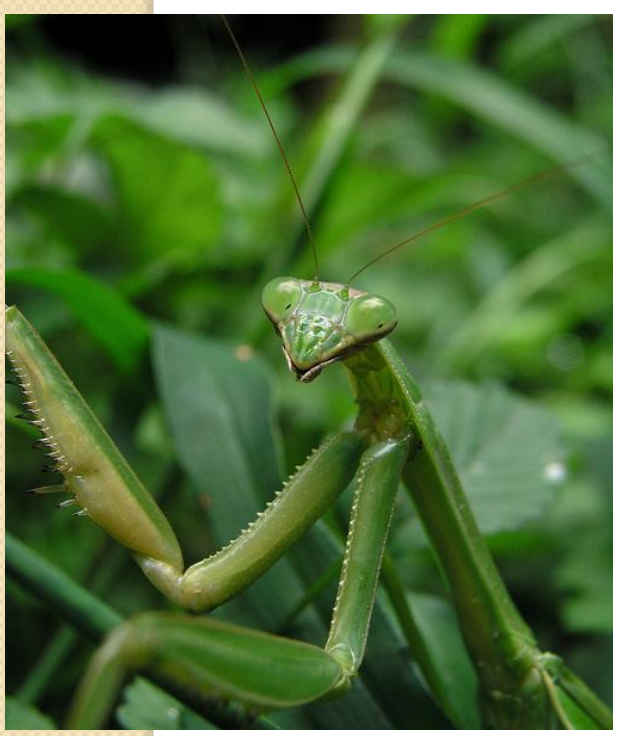




Cuttlefish (*Sepiida* order) (Earth's oceans) ;

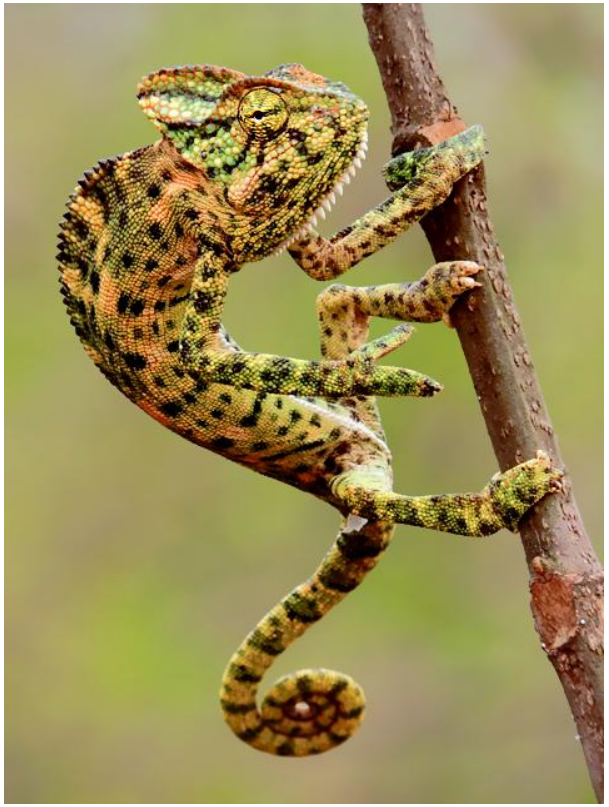
Praying mantis (*Mantodea order*) ;

Peacock spider (*Maratus karrie*) – *Australia*.



Giant anteater [= ant bear] (*Myrmecophaga tridactyla*)

– chameleon (*Squamata* order) – Indian chameleon, *Chamaeleo zeylanicus*, in Mangaon, Maharashtra, India .



Some basic terms / notions:

ETI / alien – deciphering / decoding – anthropocentrism

(1) *the abstract idea of extraterrestrial intelligence* (2) *individuals who are both extraterrestrial and intelligent* (*as in 'There's an ETI in the closet'*) (3) *the hypothesis that there are ETIs* (cf. André Kukla, 2001).

ET – the Extraterrestrial film (1982) Dir. Steven Spielberg

Alien film (1979) Dir. Ridley Scott

Decipherment (epigraphers, linguists, archaeologists, paleographers, historians)

Decryption / *Decoding* (cryptanalysts, intelligence specialists, computer and security systems experts, mathematicians)

WHAT IS DECIPHERMENT? (CF. GERALD PENN, 2007: SLIDES 2-3)

Exploration – learning more about the structure and cultural context of the writing system under investigation

Discovery – of a means of reading and understanding samples written in the system

Validation – ideally with additional samples, but in any case, it generally involves testing...

Apparent **Problems**

Consider that even if the source language underlying an unknown system is equally unknown, there is "human" Universal Phonology (cf. Knight, 2007, slides 67–68)

People (in many places of the world) might generally be inclined to say P I ZZ A or S U SH I.

People won't generally say K L G R K T G R T K G T R S R G R K P G R K L G R T K G R T K G R S. Not everyone speaks a "click" or a "G–R–T–G–K" language on Earth.

But in theory, we cannot be certain in the case of ETIs – their phoneme inventory, for instance, may be a 100 times larger than the human one*; ETIs may have "crazy" syllabic combinations; physiological (vocal) constraints (as we know them) may not exist, with the syllable sonority structure being next to impossible to tell (cf. Donald Moffitt's book "*The Jupiter Theft*", 1977).

Not to mention the ET mapping of an unknown symbol / character over an unknown support (= channel) with an unknown phoneme (consonant / vowel).

* As it is possible that some extraterrestrial species may have no spoken language (cf. Jack Vance's novella *The Gift of Gab*, 1955). Certainly, we may argue *in absentia*, but erring in the safer side may still be productive.

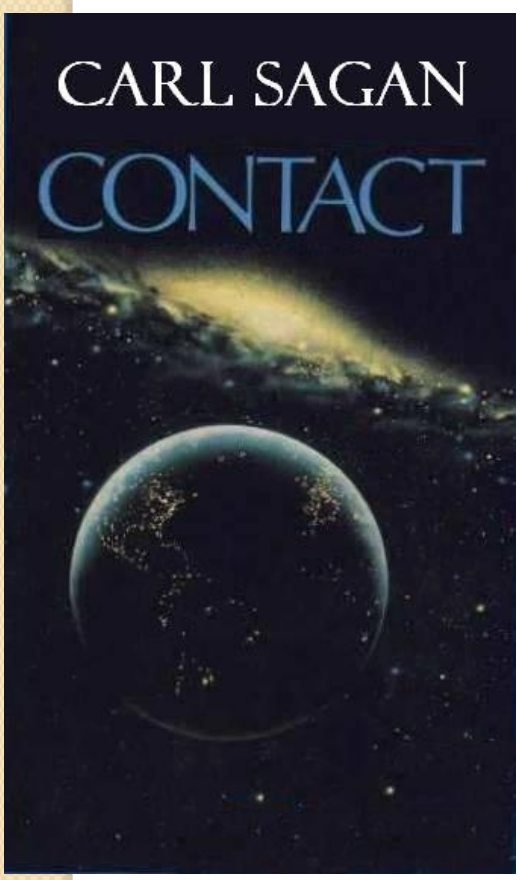
Consider also (that) the decipherer's task is to extract meaning out of a retrieved document / an intended message rather than putting meaning to it.

ATHANASIUS KIRCHER 'S (IN 1667) READING / INTERPRETATION OF A SEREKH (= A "CARTOUCHE" CONTAINING THE NAME OF A PHARAOH) APPEARING ON THE MINERVAN OBELISK (ROME), "*THE PROTECTION OF OSIRIS AGAINST THE VIOLENCE OF TYPHO MUST BE ELICITED ACCORDING TO THE PROPER RITES AND CEREMONIES BY SACRIFICES AND BY APPEAL TO THE TUTELARY GENII OF THE TRIPLE WORLD IN ORDER TO ENSURE THE ENJOYMENT OF THE PROSPERITY CUSTOMARILY GIVEN BY THE NILE AGAINST THE VIOLENCE OF THE ENEMY TYPHO*". TODAY'S ACCEPTED READING IS SIMPLY THE THRONE NAME OF WAHIBRE PSAMTIK I OF THE 26TH DYNASTY! 664-610 BCE (ROBINSON 2002, PP. 53, 55)

Every assumption or hypothesis between written symbols and linguistic units (phonograms, determinatives, logograms [= morphograms], etc) must be justified and verified in terms of consistency in more than one text, preferably by independent researchers who are not emotionally nor gainfully committed to their working model.

<Deciphering> may also refer to "*alien messages / signals / footprints*" from outer space, or from local denizens (cf. Knight, 2007, Slides 25-26)

Contact film (1997) with Dr. Ellie Arroway Dir. Robert Zemeckis – C. Sagan (1985) hard sf novel

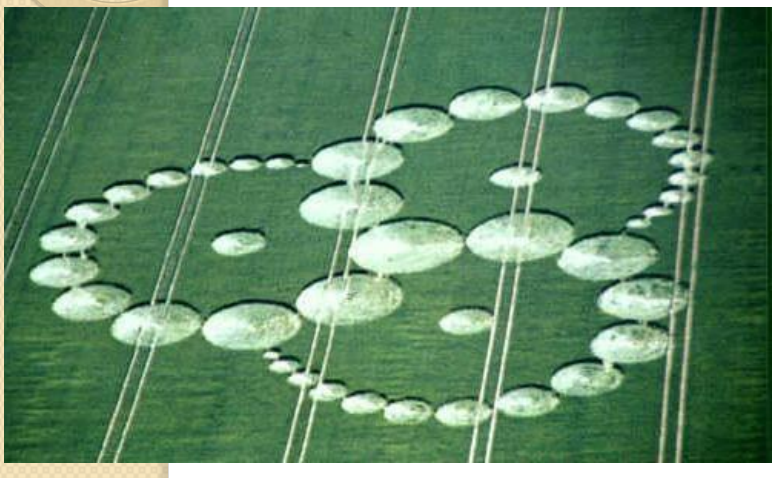


Likewise, emitted signals / behavior of intelligent earthly “aliens” are still awaiting “full decipherment” from human researchers.

However, it would be appropriate for many of us to avoid at this juncture the full "decipherment" of crop circles.

A triskelion-like design – (Image credit: Thomas J. Sutter, Jr., public domain, southern England)

(Image credit: Public domain, 2020)



Anthropocentrism → employed in our context as the *human-centered cognitive and moral abilities / attitudes…* with *all other beings and whole systems* [terrestrial and non-terrestrial] *mattering* [only] *for their instrumental value to humans* (Goralnik and Nelson 2012, p. 150, Figure 1) – A belief in human supremacy / in the prevalence of human values, morality, and experiences.

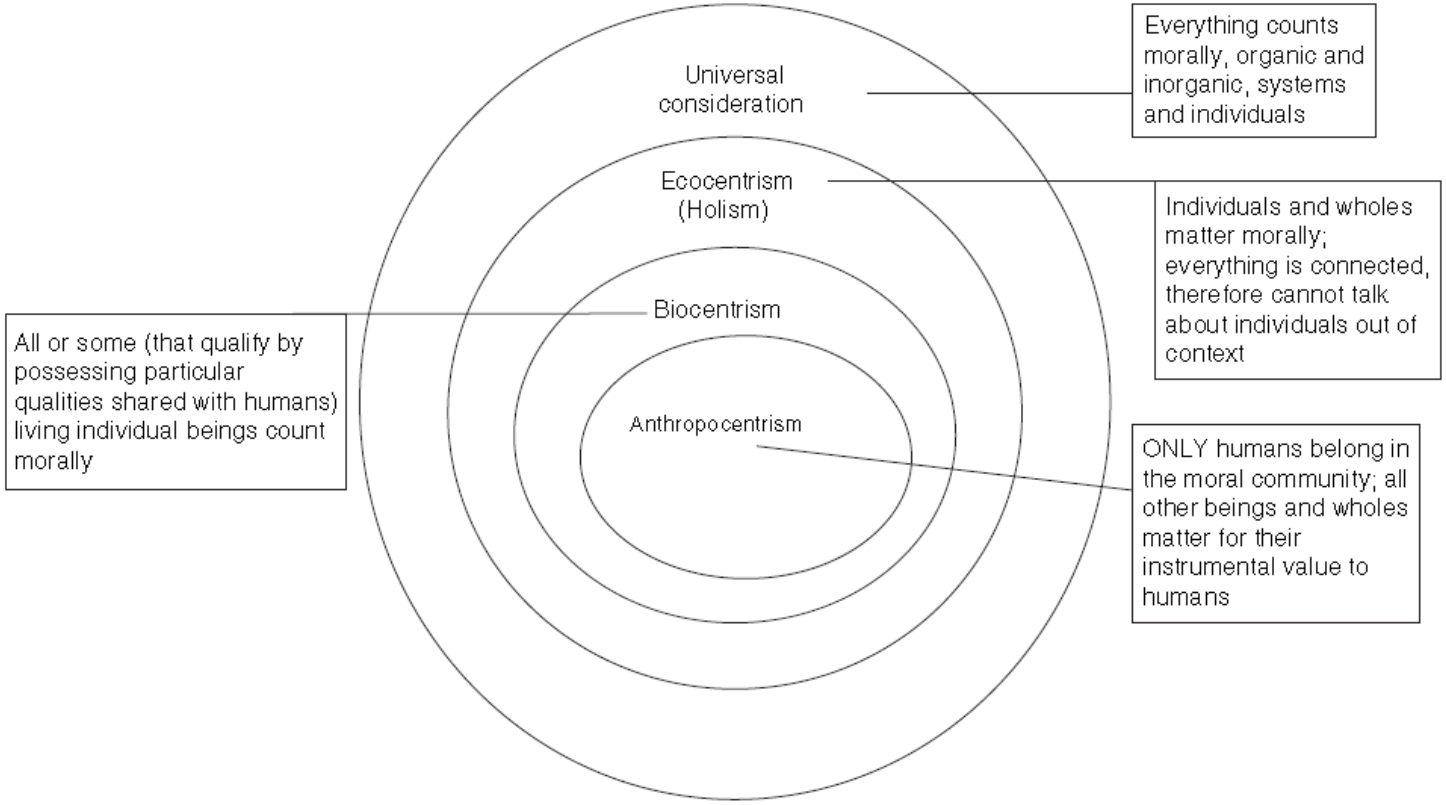
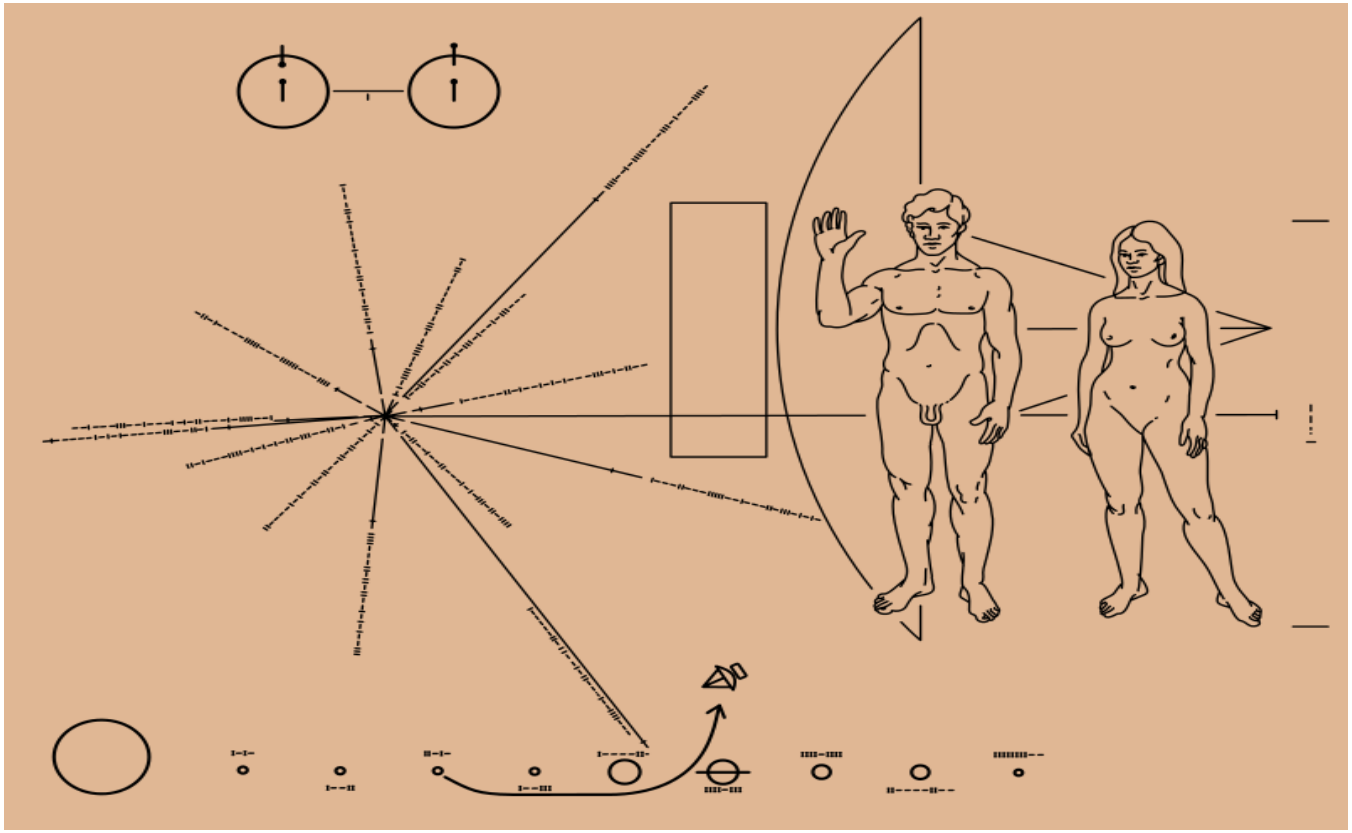


Figure 1 Moral community expansion across prominent theories in environmental ethics.

A number of default premises related to the discussion of the *Pioneer 10* plaque and other examples (shown below) are offered at this point.

(Image credit – Wikipedia, 2020)



- *First*, it is anticipated that Earth is not an orphan planet. In the vastness of known space, thinking that other planets do not exist (indeed, thousands have been identified, cf. NASA Exoplanet Archive, 2020) or that properties of life are unreal proves utterly wrong (cf. Clark, 2000; Bertka, 2009).

- *Second*, consider that cosmos is not human- or communicative-friendly in itself. Signals, automated probes, and/or human beings may degrade there due to many (predictable and/or unpredictable) factors.

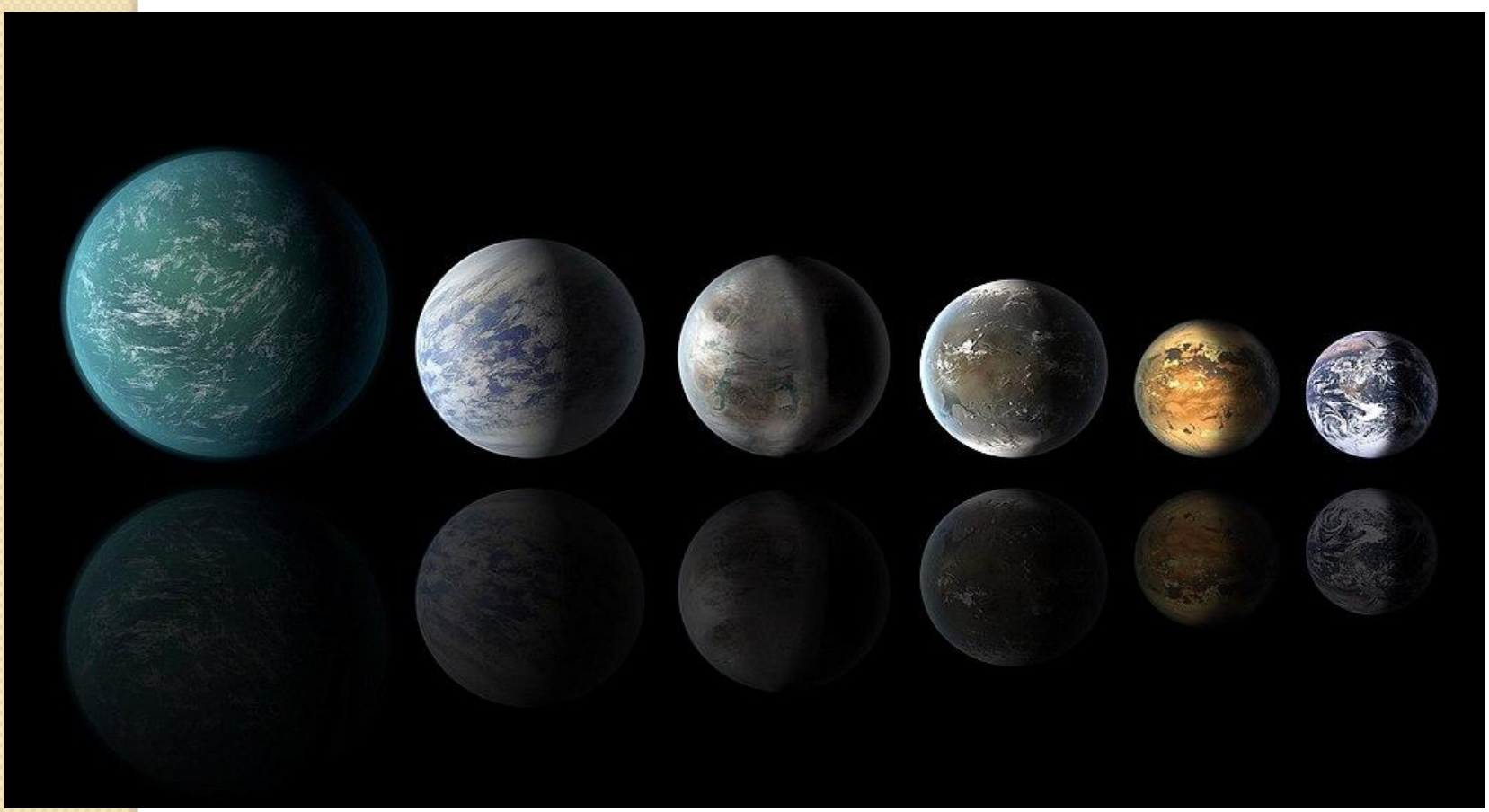
- *Third*, it may be assumed that the potential intelligences are multi-cellular (or the ET equivalent of multi-cellular) and engaged in complex, technologically-driven structures and not equivalent to single-celled organisms on Earth. Bigger brain-power requiring physical support from more-than-a-single cell equivalent body appears necessary to process intelligence, at least at a complex conscious level.

- *Fourth*, it is uncertain if the ETIs, in any possible habitat, with a different biochemical metabolism than ours, would find more accessible the included pictures about human reproduction or human predation habits, than e.g., a message composed in the ancient Cretan 'hieroglyphs'.

Artist's illustration of exoplanets

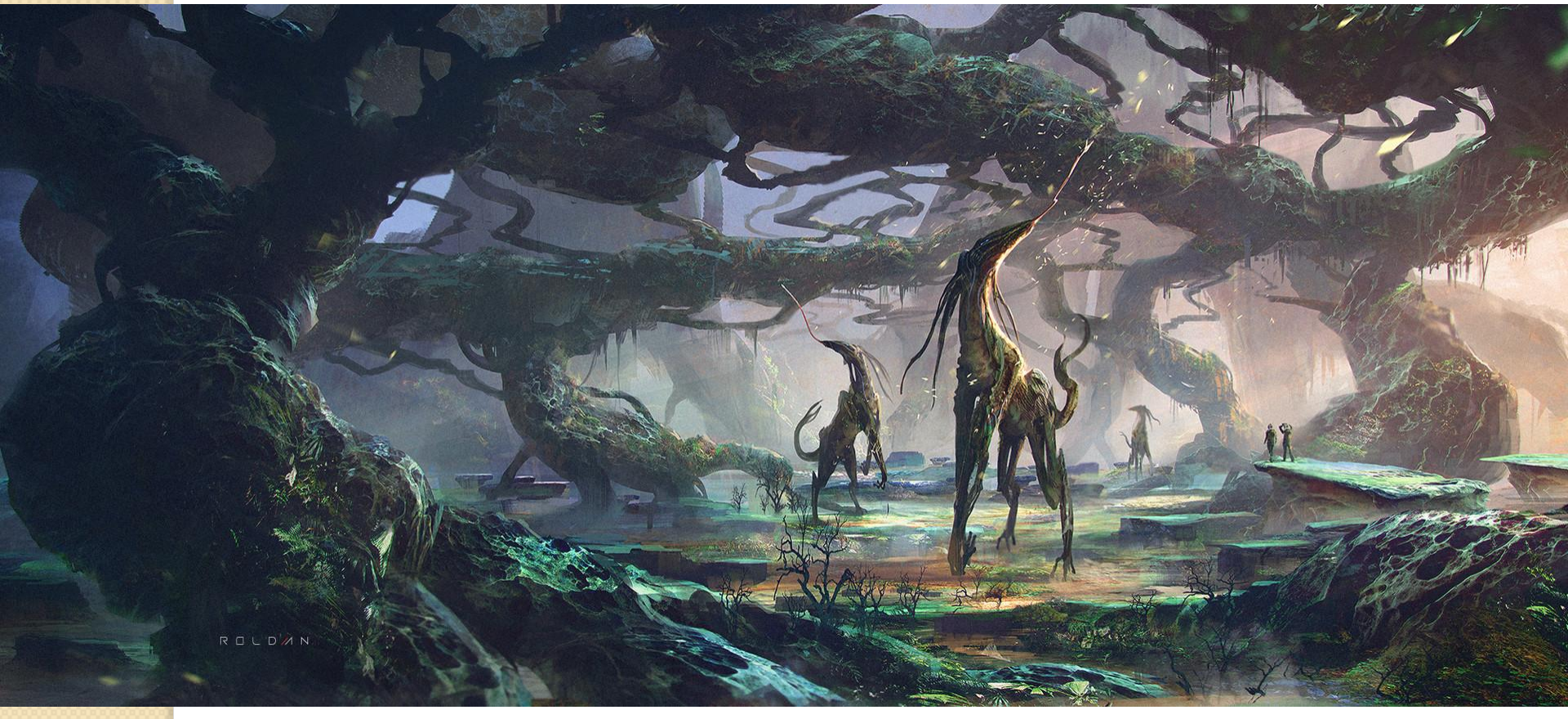
(Image credit – Wikipedia; cf. also NASA Exoplanet Archive, 2020)

Artistic renderings of "alien" biotopes follow…

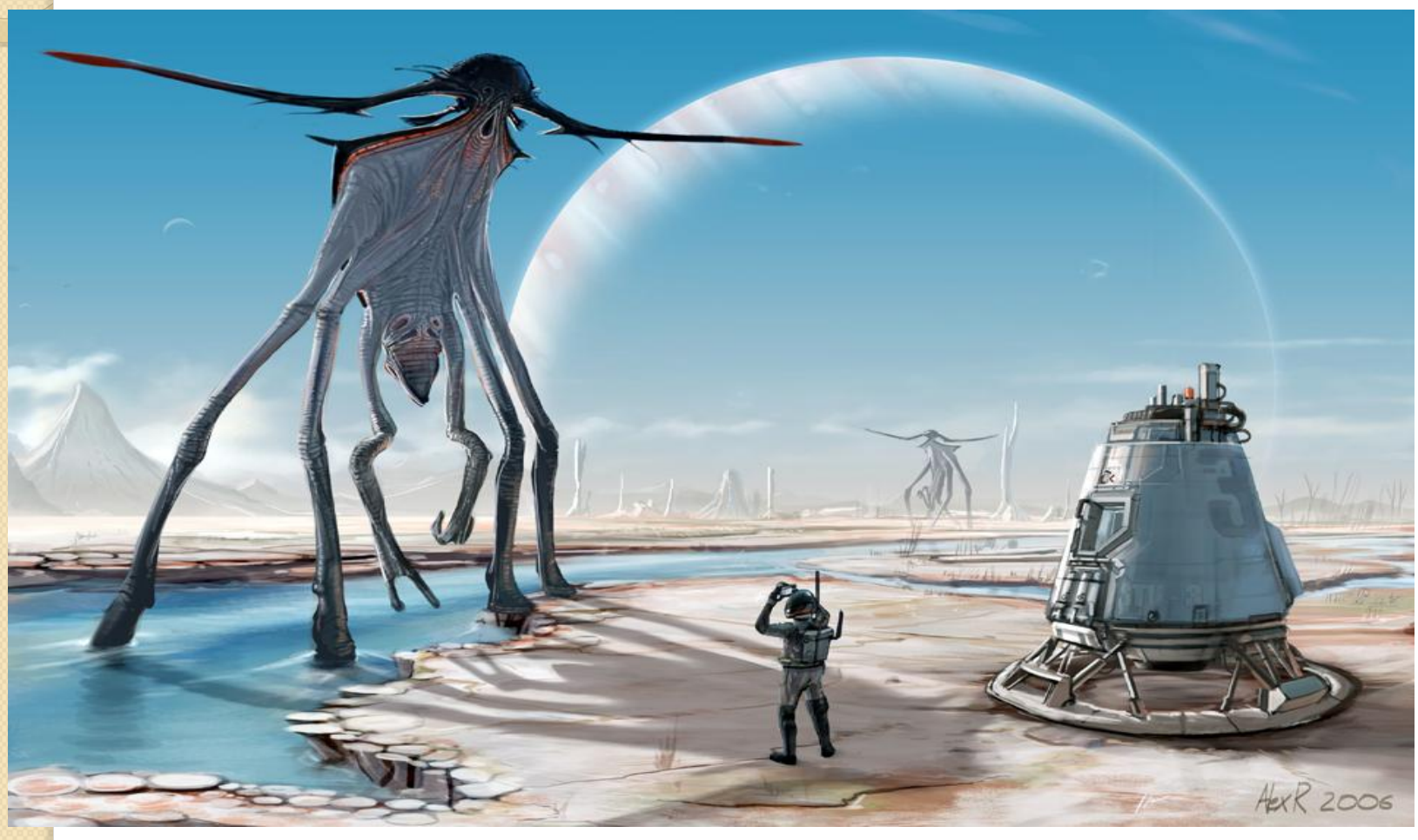


Artistic rendering of an “alien” biotope – Inga Nielsen –

Another artistic illustration of an “alien” biotope, including multi-cellular life-forms – Juan Pablo Roldán - Juan-Pablo-Roldán-Alien-World-Avatar-Inspiration

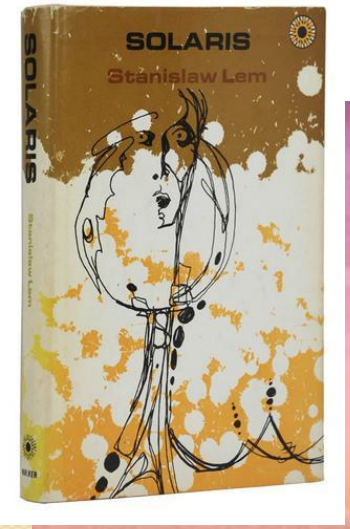


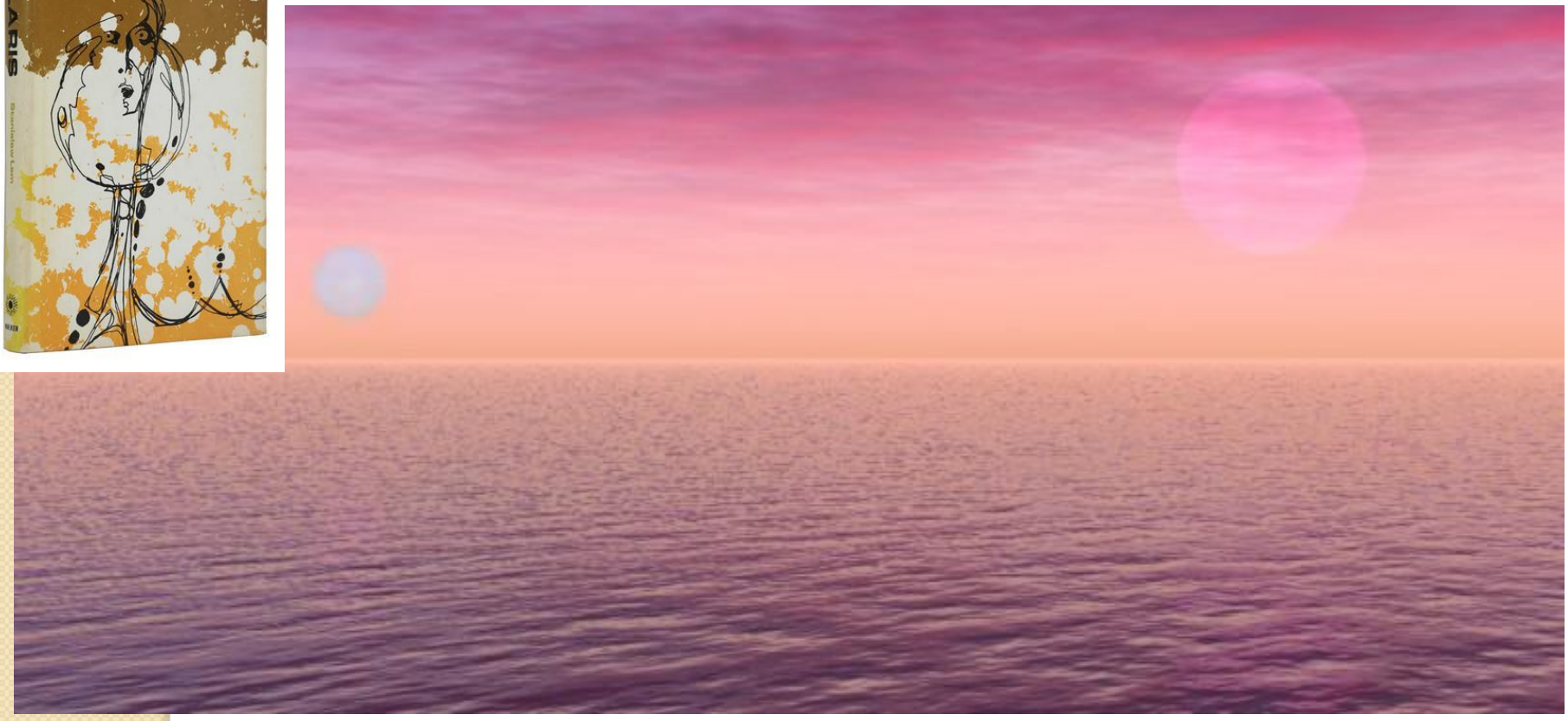
Another artistic illustration of an “alien” biotope, including multi-cellular life-forms compared to human explorer(s) – Alex Ries



The “alien” biotope / the alien mega-organism after Stanislaw Lem’s “***Solaris***” – An artistic illustration of the “colloidal-like sprawling ocean”.

Cover book of “***Solaris***” - The “alienness” (= non-human nature) of aliens is a key theme of S. Lem’s works - the Polish author “mocked” the portrayal of aliens as “humanoid(s)”, and highlighted the remoteness and “strangeness” of outer space, plus the seclusion, indeterminacy, and utter difficulty in communicating with other-than-humanoid life-forms.





- *Fifth*, there might be a particular scenario which cannot be ruled out. If the message is received by a civilization located at the range, say, of 1200 light years (= ly) away, and an affirmative answer is released, at the time it reaches Earth, some things may have changed.

- Excluding the problem of interpreting ET language/s or symbols, humans will face a home-grown one: the uses and meanings of symbols are not consistent across cultural and time boundaries. Signs may shift in mode over time due e.g. to further stimuli from the natural environment, technological obsolescence, or from socio-political pressures (cf. Chandler, 2007 [2002], p. 45; Fontana, 2003, p. 27).

- An example from the area of lexicology: *flabellum* would not be understandable to many modern humans, without consulting a fine, thick dictionary, or a real specialist in the celebration of the Eucharist (a *flabellum* is a type of fan used practically to drive away insects, and also has honorific connotations); its very specific context tends to dissipate or may be lost if not refreshed or carefully investigated.

Bottom line: start searching for the ETI in the vicinity of our Solar System.

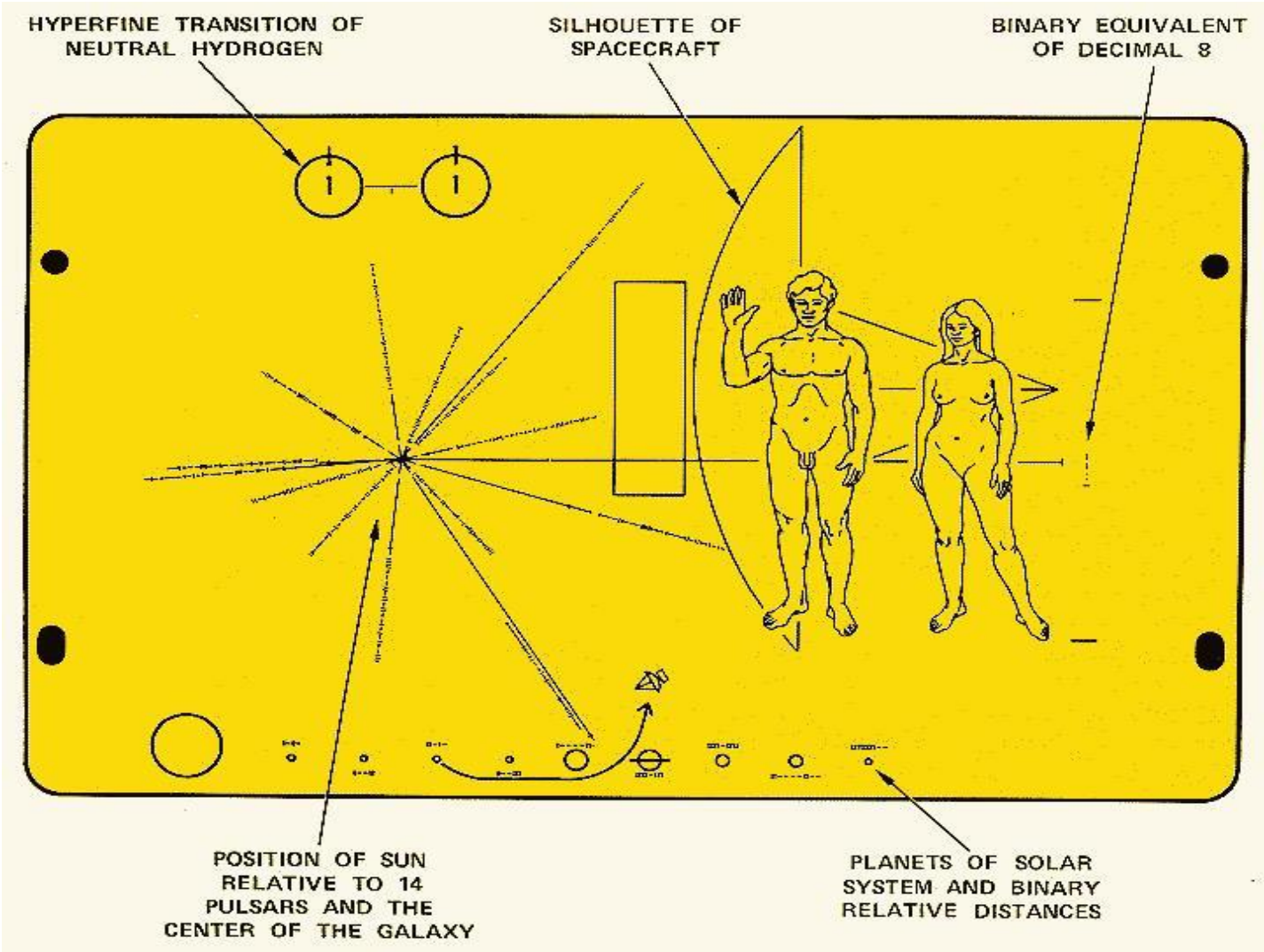
- *Sixth*, the alleged ET civilizations may be in different stages of development. Is there the possibility of finding "out there" what is already available on Earth?

The average alien, comparable to the Earth-based intelligence, *not too dumb and not too smart* (Gardner, 2007, p. 102), with whom scientists have good odds to interact and benefit, may simply *not* exist. It is unlikely that circumstances have been flawlessly "cooked up" to give rise to the sought-for symmetrical intelligence (cf. Musso, 2012, p. 49, for a differing opinion).

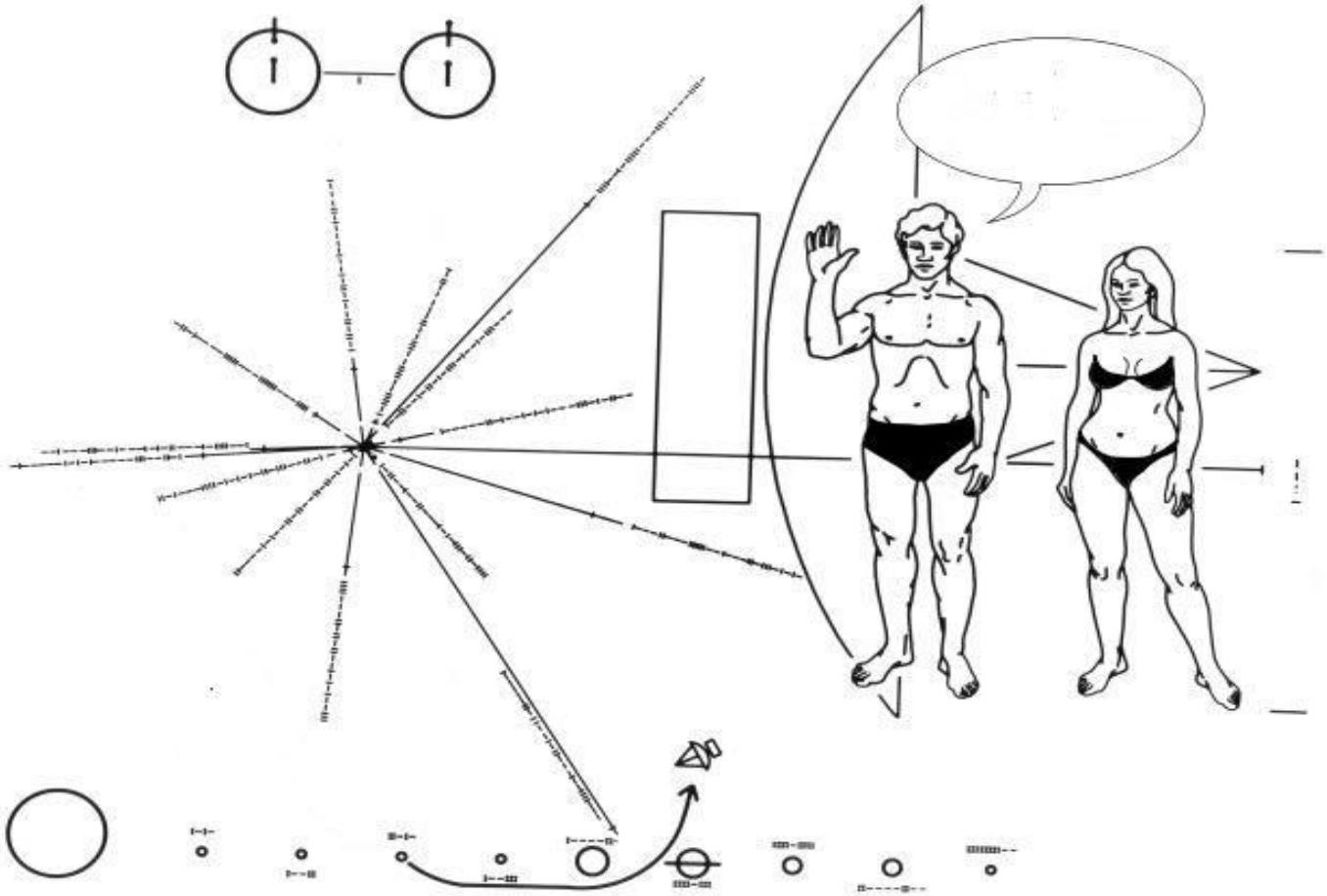
- *Seventh*, by stating all the above, we must consider the theorists' side that endorses poor chances or the utter improbability of communication due to the uncommonness of shared evolution and/or technologies. It is awkward to perceive matters in absolute terms, as it is awkward to unilaterally perceive them.

While agreed that this might be inevitable in certain cases, on the other side, there should be circumstances where joint channels of interaction can be found.

The non-manned space probe Pioneer's (1972) plaque, has reached an iconic status to-date (Image credit: NASA, see Howell, 2012).



A section of the message may be viewed from different perspectives: humans depicted in their natural state (= nudity) may convey better their anatomical features (criticism – eroticism and soft-core pornography); semi-dressed humans may increase the odds of recognition of intentional clothing technology (subjective bias regarding the model / fashion of the chosen lingerie; different ethnic groups avail themselves of different accessories based on their cultural heritage). Not to mention the "arrowhead", typical of many of Earth's cultures…



Supposing the message makes it through space against all detractors' reasoning and falls in the "hands" of the recipients, the next issue will be *meaning* retrieval. The ETIs will get better estimates of it as long as their biochemistry is / was (quite) similar to the human one and the knowledge of astronomy, physics, chemistry, and mathematics are / were substantially close to that of the senders.

WITH ENOUGH PRACTICE, THE DECODING MAY / CAN BECOME TRANSPARENT… BUT THE "ALIENS", TO BE SURE, WOULD NEED FAR MORE SAMPLES THAN THE SINGLE TABLET OF *PIONEER 10*. HOWEVER, THERE CANNOT REALLY BE MUCH DONE TO CORRECT THIS NOW, ASIDE FROM EXPANDING THE SAMPLING IN FUTURE MISSIONS.

THIS OPTION IS POSSIBLE, BUT EXPERTS NEED TO MULL OVER THE FACT THAT – *FOR NOW* – THESE ARE ONE-WAY SHIPMENTS.

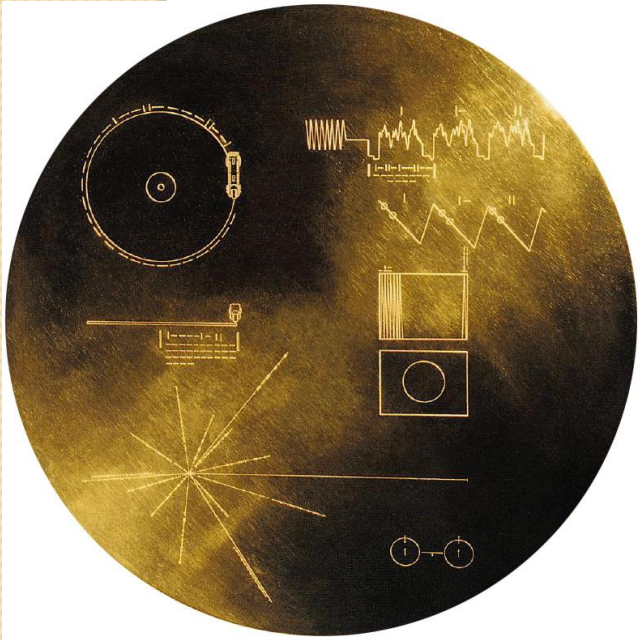
Regardless of whether or not the unmanned Pioneer 10 spacecraft (together with its message) will ever be recovered by intelligent recipients, the whole concept has to do with its …*largely* …*symbolic significance* (Davies, 1995, pp. 56) in the endeavor of interstellar communication (see also Shostak and Barnett, 2003, pp. 87–137; Frank Drake in BBC's 2010 documentary).

Corpus criteria / Larger samples – *Voyager* space probes 1 and 2 (1977)

The "*Golden Record*", a phonograph record in a 12-inch gold-plated copper disk – intended to communicate the "life story" of Earth to intelligent extraterrestrials.

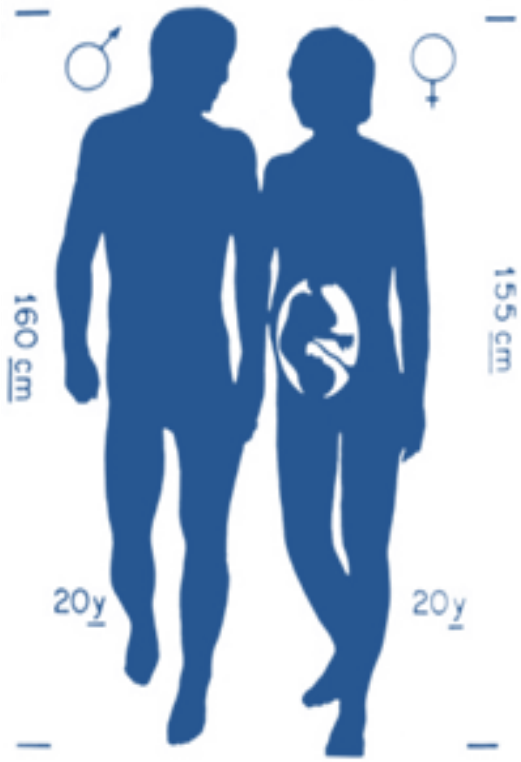
Richard Saint-Gelais (2014, p. 93) highlights the importance of the "…*number and the variety of messages*" sent, which "…*will give the recipients more opportunities to compare and test their abductions*…"

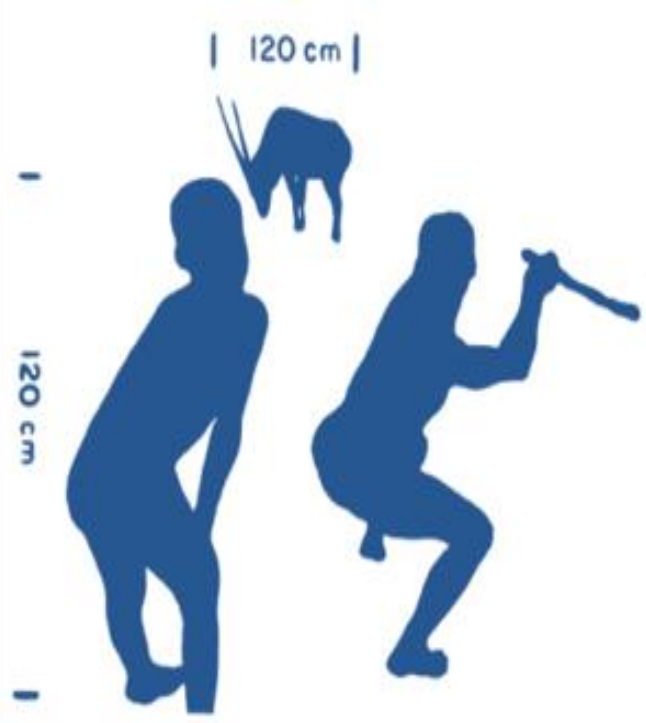
Jean Heidmann (1993) advocated previously for sending the entire *British Encyclopedia*, a huge buffet of scientific and cultural data from Earth.



These are two images (part of the package [= "*Golden Record*"] of the *Voyager* space probes 1 and 2 (1977), including diagrams, pictures, and sounds from Earth (Evamy, 2003, pp. 60–61; cf. Shostak and Barnett, 2003, p. 89; Nasa.Gov, 2020).

Granted that *ETIs* stumbled across the "Golden Record' (plus the existence of proper record-players in their home-world) *they would have to discern for themselves* (in the silhouetted image/s below, left) *the meaning of* '*160cm*', '*155cm*', '*20y*', *gender symbols, and the concept of male and female*.





However, skeptics might claim that matters are quite complex in terms of elucidation. Whilst deeming the satirical mood of the Scottish artist Banksy a few scholars may speculate whether ETIs would have had it easier (or harder) in explaining the image below when compared with that of the previous slide.

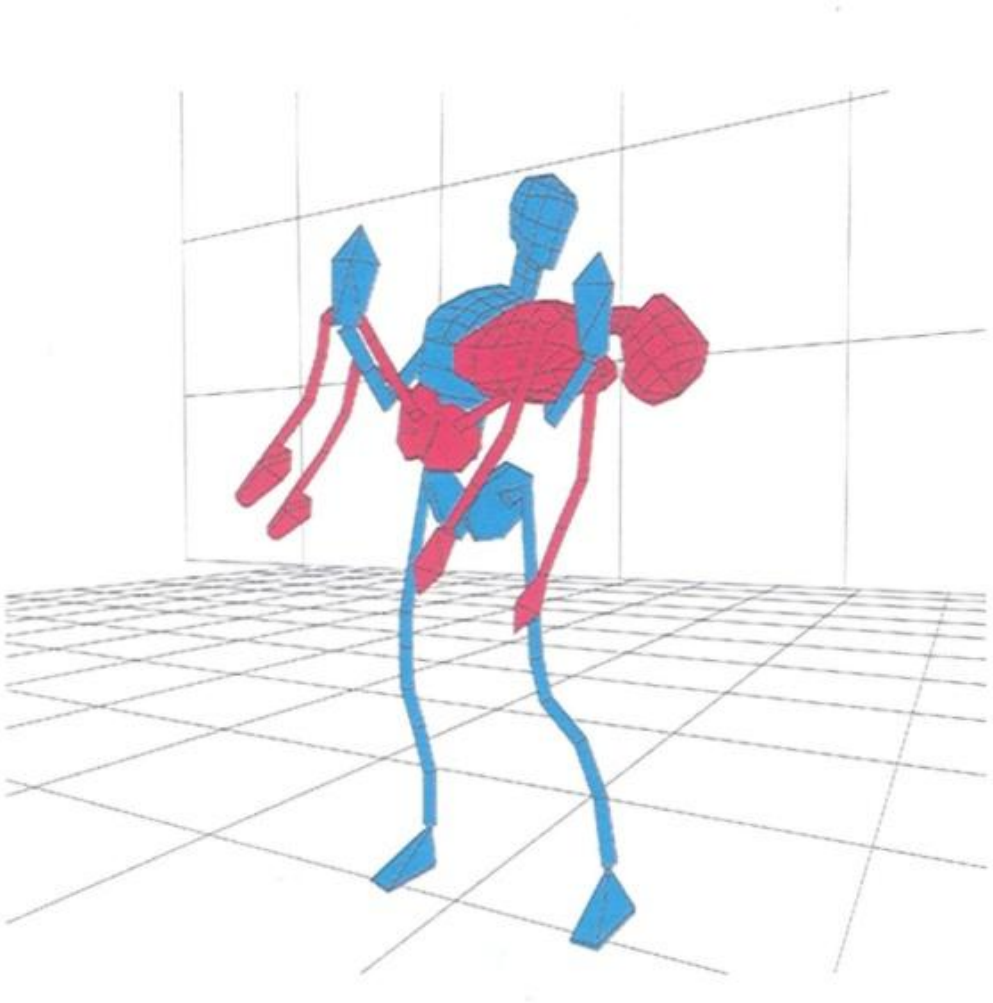
Trolley Hunters, screen-print by street artist Banksy (2007; see Artificial Gallery, 2006–2010).

In defense to critical voices, it may be alleged: since other (supposedly) intelligent beings on Earth, such as dolphins, whales, crows, octopuses, chimpanzees, or orangutans, are not keen on building radio-telescopes and space probes, then, the task is left to the *Homo sapiens* breed with all his current baggage of knowledge, preferences, and whims.

Furthermore, if most technological civilizations adopt the stance that *listening* (= Search for ETI) is way better than *transmitting* (= Messaging to ETI) for a bevy of motives, then it is hard indeed to consider a practical interstellar communicating.

However complicated or nearly-impossible the task may be, the message compilers are required in the end to reduce "*anthropocentrism*" and strike a balance with self-interpreting symbolically- and mathematically-inclined signs, where systematic interplay of repetition and variation between them will / may give recipients opportunities to make a series of correct conjectures (see Saint-Gelais, 2014, pp. 91–92).

Another example of designed communication – after Shostak and Barnett (2003, p. 153)



A “blue” human being holding in her/his arms another “red” one touches upon the concept of *altruism*, as a means to convey human (and universal) values (Shostak and Barnett, 2003, p. 153). Although a glimmer of hope may exist in a potential interstellar communication, the key disincentive here is the uncertainty about the anatomy, cultural patterns, plus the communicative and emotional frames of the recipients, eventually undermining this powerful message.

EVEN IF THE ALIENS RECOGNIZE THE MESSAGE AS AN INTENDED PLATFORM FOR COMMUNICATION AND ITS PHYSICAL DIMENSIONS, ALTRUISM *MAY* (OR *NOT*) BE A NOBLE, TRADITIONAL NORM AMONG THEM. COHEN AND STEWART (2002, P. 300) SUGGEST THAT *EMPATHY IS HEAVILY INFLUENCED BY CULTURE*, AND SO COULD BE *ALTRUISM* AS A SYNONYM TO UNSELFISHNESS. SELFISH URGES, BY ANALOGY, MAY (OR NOT) PREVAIL AMONG ETIS AS A BEHAVIORAL PATTERN, THOUGH THESE URGES HAVE PERHAPS A BETTER CHANCE TO BE (VERY) ACTIVE (CF. BRIN, 2011), AS THEY MAY BE TIED TO A UNIVERSAL SELF-PRESERVATION MEASURE / INSTINCT.

An inverse approach is taken by René Heller (2017)

After simulating the receipt of an alien message, the researcher challenged in English via two social networks anyone who could decode it. It should parenthetically be inserted that the author presumes that the altruistic aliens (from a star about 50 ly from Earth) have great scientific abilities and similar logistic resources for the dispatch in question.

Consider, however, that the real-life experts might not always agree on how best to measure the conditions for sending (or receiving) effectively a transmission that spans across 50 (fifty) light years*.

* Translated into kilometers the selected distance (= 50 ly) would be *ca*. 473,040,000,000,000 (= *ca*. four hundred seventy-three trillion forty billion kilometers). If the conception and processing of this digit is somewhat difficult for a normal human brain, we have to contend with celestial bodies that surpass the range 1000 ly, or more. Such digits, e.g. the 1000 ly span converted to kilometers, *ca*. 473,040,000,000,000 × 20 = 9,460,800,000,000,000, i.e. *ca*. nine quadrillion four hundred sixty trillion, eight hundred billion kilometers, would probably sound as clear as mud to many of the Earth's inhabitants. Human experts, however, will attach to these astronomical distances, a sense of awe and technological impossibility for the time being.

The message was devised of around 2 million binary digits and comprised a representation of the non-terrestrial being, the first 757 prime numbers (serving as a clue for its decoding) and other concise data related suggestively to the aliens' world, planetary system, and physiology. By using some basic physical constants (= believed to be universal meta-concepts in nature and constant in time), e.g. *the speed of light*, *the gravitational constant*, and *the Planck constant*, the author followed a common trend among many SETI researchers in finding an optimal coding method, independent of human-conceived units (in this sense, see also Denning's 2014, pp. 105–108, interesting discussion). After filtering out misinterpretations and errors (over 300), sixty-six submissions (including 71 individuals) were found to be accurate by Heller (2017).

Speed of light

The *speed of light* is a constant, and equals the product of its frequency and wavelength:

$$c = f\lambda$$

c = speed of light = 3.0×10^8 m/s in a vacuum
f = frequency (Hz)
λ = wavelength (m)

G ≡ The Universal Gravitational Constant

It is the same everywhere in the Universe!

$$G = 6.673 \times 10^{-11}\ N \cdot m^2/kg^2$$

Planck relation:

$$E = h\nu = \frac{hc}{\lambda}$$

where:

E = energy
h = Plank constant
v = frequency
c = speed of light
λ = wavelength

In the light of the mathematical code espoused (essentially) by astrophysicists, intended as some "virtual bilingual" in several messaging projects, two questions seem to pop up:

Is the universal language of science a straightforward analogy to the "*Rosetta Stone*"?

Is the "language of math" (commendable as it might be) a specific human projection in an interstellar decipherment venture?

K. Denning's (2014) – a social scientist – counter-arguments:

Even if two different intelligences were expressing the same single scientific principle, understood by each of them in exactly the same way — which seems scarcely imaginable — there would be a good deal of luck and inference involved in establishing this beginning point. And, of course, just as language has a cultural context, so does math. Thus, there is a potential incommensurability problem — perhaps the notion of a universal math is, in the words of historian W. H. McNeill, rather chauvinistic.

- It stands true that modern astronomy and physics use Western mathematics. Yet, other mathematical systems have existed on Earth, with very different ways of understanding and expressing the world, e.g. Sumerians, Babylonians, Mayans, etc. Simply by learning about (radically) different forms of mathematics here on Earth would extend the range of analogies SETI researchers can draw upon, and thus could be of use. It would demonstrate the diverse possibilities for mathematical representation. But if human math and science do not look like extraterrestrial math and science, then the *Rosetta Stone* analogy will not hold up.

- We must also remember that the Rosetta Stone was but one of several pieces in the hieroglyphs puzzle, the others being inscriptions from other artifacts, such as the Philae Obelisk, and Champollion's knowledge of ancient Greek and Coptic Egyptian (see Denning, 2014, pp. 107–108).

- Re-consider that the test was originally devised by a human (cf. Heller, 2017).

As such, it could have involved some *mandatory* or *unavoidable perspective* on how to build and broadcast an interstellar message (*v. supra*).

In this context, how far short are humans in knowing an extra-terrestrial *modus operandi*, their *ethics*, or *ambassadorship*, it cannot be stated at this time (cf. Michaud, 2007, p. 373), but in all probability: *very*, *very short*.

The plus-side of Heller's effort is that collective intelligence seems to be a key driving force in decoding "unknown" messages or signals.

Be that as it might, the missive also reveals or reinforces a few things about human nature, its limitations and hopes in achieving information-bearing exchanges with other technologically capable entities.

Clearly, in quoting these sources, the present authors are not for quitting or “attacking” any project to bridge differences, but rather for adopting any practical and successful strategy based on a cross-disciplinary approach (see e.g. Ascheri, 2001; Race et al., 2012).

Then again, based on Cocconi and Morrison (1959); Drake (1961), and on earlier suggestions of the 20th century, it becomes apparent that scientific SETI is a recent endeavor (Denning, 2014, p. 95, n. 3).

Improved methods and future findings may hold the key to a substantiated contact with ETI. For now, whether passive or active SETI should prevail during the enterprise, we would favor caution. Also, given the status of technological infancy of Earth’s various cultures (cf. Carrigan Jr., 2004), listening (= “eavesdropping”), apparently, would be preferable.

Some concluding thoughts

Researchers should continue examining the Earthly neighborhood and identifying with the *local aliens* (cf. Crichton, 1987, p. 28) through mutually comprehensible channels, before or while venturing successful or satisfactory contact elsewhere - close to or far away from Earth (cf. Paijmans, 2004; Denning, 2014, p. 110; Raybeck, 2014, p. 143; Robinson, 2017, p. 209).

Local aliens do not strictly translate into other-than-human living organisms but also into any lost or unsolved cultural trail left by human beings.

Some remarks may be *somewhat devastating* or *hard to digest* – although *useful*, in the end – for a number of those involved in interstellar or inter-species communication.

So far, a rather restricted, anthropocentric idea of communication is available; and up to now the success in contacting ETIs is null.

A major issue is that the conception by humans of a cross-species, cross-cultural message (linguistic or not), free of any human-related semiotic trace or perspective – sounds for now as the ultimate oxymoron. All in all, this must not deter the implicated parties by renouncing the endeavor, rather than push them to further improve the "traditional" communicative means and look in the long run for novel semiotic and technological channels.

It is unknown whether humans will “get in touch” with safe, cuddly, well-intentioned, or predictable living things out there , or if ETIs will be amoral, callous, resenting, obnoxious, and invasive in proportion to what are understood as civilized standards. *Intelligence* and *morality* have produced – over the centuries – benevolent as well as nasty results here on Earth, too.

The present human values simply are not and cannot be universal, unless projected or imposed in whatever domain that is prospected and taken possession of.

When *communication* with ETIs is mentioned, scientists should come to grips with the human constraints with respect to the many nuances and implications of this very concept.

Additional research and progress in space exploration and technological media will be a bonus.

Additional frameworks that merit further serious analysis are semiotics / linguistics and cognitive psychology, given their potential to loosen and minimize the anthropocentric measure. In the light of the premises, it would be better, even nearly-optimal, to get to know ETIs, their socio-ethical values or artifacts in first person, their home-world, colonized outposts, or previously visited cosmic bodies by them — if not fully, then parts or relics of their existence —, cf. Davies (2012).

Unless sheer serendipity or some unanticipated circumstances favor these scenarios, the more realistic and somewhat less expensive way in 2020 CE would be upgraded, repeated radio-signaling, laser beaconing, and interlocution via the principle of *inverse cryptography*, via *self-interpreting messages*, or *messages with …anti cryptographic properties in mind* (Benford et al., 2010; Billingam and Benford, 2011; Atri et al., 2011; Denning, 2014, p. 102; Saint-Gelais, 2014, p. 89; Sónar 2018, 2020).

Otherwise, matters are still bound to be rated as *intellectual distraction* – valuable and delightful as it may eventually be – or soft *science fiction*.

Many thanks for attending this session!

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