

Advanced Extraterrestrials as an Approximation to God

Abraham Loeb

Our first encounter with an advanced extraterrestrial technology may be as shocking as the encounter of ancient cave people with a modern cell phone.

By Abraham Loeb on January 9, 2019

Despite the impression one gets from textbooks, our current scientific knowledge represents a small island in a vast ocean of ignorance. The scientific enterprise is all about expanding the land mass of this island. And it is fun to be human and engage in the activity of gaining knowledge. It would have been much more boring to know everything in advance, like God. But given that, it would be shocking for us to suddenly learn much more by meeting the product of an alien civilization that had billions of years of scientific exploration instead of merely a few centuries, and hence appear to us as a pretty good approximation to God.

Meeting a piece of advanced technological equipment that was developed by an extraterrestrial intelligence may resemble an imaginary encounter of ancient cave people with a modern cell phone. At first, they would interpret the phone as a shiny rock without realizing that it is a communication device. This will be no different than our gut reaction to the first detection of an interstellar visitor to the Solar System, 'Oumuamua, which showed [six peculiar properties](#) but was nevertheless [interpreted as a rock](#) by mainstream astronomers.

Because of its likely small dimensions, most advanced equipment could only be recognized in the darkness of space when it comes close enough to our nearest lamppost, the Sun. We can search for technological "keys" under this lamppost, but most of them will stay unnoticed if they pass far away. More fundamentally, one may wonder whether we are able to recognize technologies that were not already developed by us. After all, these technologies might feature subtle purposes - like the cell phone communication signals which a cave person would miss.

Is there something we might be missing already here and now? When looking around us, the most mysterious phenomenon we encounter routinely is the sophistication of complex life. Some scientists wondered whether life itself was seeded on Earth by an alien civilization in a process called "[panspermia](#)". One can imagine a probe that brought the seeds of life in the form of microbes or instead a 3D printer that produced these seeds out of the raw materials on Earth based on a prescribed blueprint. The [universal left-handedness \(chirality\)](#) of all life forms on Earth with no exception can be interpreted as stemming from a single panspermia event, be it natural (through a rock arriving from space) or artificial in origin. Even in this context, our imagination of what aliens might do will improve once we are able to produce [synthetic life in the laboratory](#).

The number of targeted probes that are needed to seed life artificially in the habitable zone of a planetary systems is far smaller than the number of natural rocks that serve the same purpose on random trajectories. The advantage of 3D printing of life from raw materials on a target planet is that natural DNA samples live a finite lifetime and may eventually disintegrate in a few million years, whereas artificial machinery can be constructed to last much longer.

At this time, our civilization is highly vulnerable to annihilation by self-inflicted wounds, such as nuclear wars or climate change, as well as external threats such as asteroid impacts or evolution of the Sun. As much as the Earth appears to be a comfortable home for us right now, it would be prudent not to keep all our eggs in one basket. We should venture into space and seed objects beyond the Earth with life as we know it, thus reducing the risk of complete decimation and securing the longevity of things we care about.

If we ever find evidence for life on other objects and it all looks the same or if extraterrestrial life would appear to be unusually [clustered in space](#), we might realize that it has a common ancestry and panspermia is at play. The situation would be just like recognizing that too many kids in the neighborhood resemble the milkman.

If life was seeded artificially on Earth, one may wonder whether the seeders are checking on the outcome. And if so, the fact that we have not heard from them may indicate that they are disappointed. The experiment may have failed or we are simply too slow to mature. Well, this may not come as a surprise given the irresponsible way we behave sometimes. Perhaps if we only knew that someone is looking over our shoulders, we would do better. It is not too late for us to find out, by using the best telescopes at our disposal.

ABOUT THE AUTHOR



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Credit: Nick Higgins

