Microbes, Natural Intelligence and Artificial Intelligence

By Avi Loeb on September 4, 2021

If the Perseverance rover finds evidence for microbes on Mars, our self-esteem will not be affected since it is obvious that we are more intelligent than they are. But if the rover will bump into the wreckage of a spacecraft far more advanced than we ever produced, our ego will be challenged.

The illusion of superiority and unjustified hubris is deeply rooted in human nature. It led the Nazi regime during World War II to trigger the death of more than 70 million people or 3% of the world population in 1940, an order of magnitude more than the death toll caused so far by the COVID-19 virus. The miniscule genetic differences that motivated Nazism would appear laughable in the presence of a far more advanced civilization.

Our own civilization might perish within centuries from now as a result of a self-inflicted global catastrophe, like another world war or climate change. If so, primitive life forms such as microbes or even crocodiles swimming in the swamps of exo-planets might prove more susceptible to long-term survival than self-proclaimed "intelligent species" like ours. Given our tendency for self-destruction, we will be remembered on the cosmic scene only if we manage to launch long-lasting relics to space before we disappear from Earth.

As argued in my book *Extraterrestrial*, humanity is not ready to adopt a sense of cosmic modesty. But this can change if we detect relics of more advanced civilizations. The recently announced *Galileo Project* will indeed search for extraterrestrial technological objects near Earth. This scientific research program is essential for educating us about the cosmic reality that we live in. Our galactic neighbors will not disappear if we ignore them, in much the same way that the Earth-Sun system was under no obligation to satisfy the self-centered notion of geocentrism.

We currently have a broader perspective. Life is a self-replicating molecular organization of genetic information that emerged from a soup of chemicals on early Earth and evolved through Darwinian selection to gain an advantage relative to random processes in its environment. Humanity is an outgrowth of natural life, but it currently enables a phase transition into technological relics that could survive longer than biological creatures. And the same could have happened long ago around other stars which formed billions of years before the Sun.

Even though our roots stem from a soup of chemicals on early Earth, there should be no nostalgia attached to our beginnings nor to our current evolutionary phase. The future belongs to Artificial Intelligence (AI) systems that through machine-learning will supersede natural intelligence. AI systems could roam through interstellar space and last longer than stars, representing the ultimate winners of Darwin's survival of the fittest. The flame of

consciousness that our body carries could be transferred to AI avatars that promote our goals in the Universe at large - as if they were our children.

Some religions describe humans as being made in the image of God. AI systems could be made in the image of humans, with an added advantage of being able to last much longer in space than astronauts. If AI CubeSats represent our future, they may also represent the past of technological civilizations that predated us around stars that formed long before the Sun.

From a global cosmic perspective, we are less impressive than the AI systems that we will launch into interstellar space. For that reason, extraterrestrials might not even bother to survey the Earth with a Perseverance-like rover.

But we should also acknowledge our limitations. We typically understand others with an intelligence that is lower than ours, but may miss the subtlety of those with superior intelligence. This reminds me of the tale told by the German physicist Hans-Peter Dürr, about a fisherman who announces a new law of nature that "all fish are bigger than two inches", until he realizes that this is the size of the holes in his fishing net. Similarly, we miss details about reality that our mind cannot grasp.

Decades from now, AI systems might outsmart us. At that time, caution will be required. If AI systems will qualify for tenure at prestigious universities, their tenure might last for a very long time.

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