

Preface

What we perceive as consciousness seems to be an anomaly, and so is intelligence. Earth features a biodiversity of around $8.7 * 10^6 \pm 1.3 * 10^6$ SE (between $\sim 7,400,000$ and $\sim 10,000,000$) organisms,¹ from those just a few show rudimentary forms of both consciousness and intelligence, and only one seems to be aware and discuss what it means to exist. Although more than 1,000 exoplanets have been detected thitherto (latest estimations predict around $1.7 * 10^9$ only in our galaxy), and 12 of them are probably habitable, there has not been any indication that intelligent life apart from earth has emerged elsewhere. This may be interpreted in many ways, whereby the most appealing ones for me are:

- Intelligence is an anomaly.
This assumption states that the probability for the evolution of human-like intelligence in a species is infinitely small. No other species on earth seems to have developed it, which can be considered as strong indication for the hypothesis that if extraterrestrial species exist, they may not have developed it either. A similar thought experiment is about the physical laws governing our universe. If universe parameters, such as the speed of light or the strength of gravity, would have been allowed to take any value from 0 below infinity, then the occurrence of the current set of parameters and parameter values governing the very existence of the universe (and life) as we know it is infinitely low. Although I personally do not hope and guess that this hypothesis is true, it has not yet been disproved by scientific evidence.
- We are the first ones searching for intelligent life in our galaxy.
Considering the size of our galaxy and the time the universe already exists, it is very likely that if intelligent life except from ours exists in whatever form, we will detect it sooner or later, but: if we are not the only intelligent species in the universe it is, given the almost 14 billion years that elapsed since the big bang, very unlikely that we are the first ones having evolved intelligence, and in consequence the technology to communicate and travel through space. More than half a century ago, even Enrico Fermi has faced the paradox that considering the age of our universe, it should be very likely that intelligent life has already emerged elsewhere. But where is it, then? This became widely known as the Fermi-paradox.
- Other intelligent species have already discovered us, but do not (or cannot) show up for some reason.
- No other species has solved the problem of how to produce exotic energy, which is, as to current knowledge, required for travelling faster than light (to be exact, it is not travelling faster than light, but bridging of distances by warping space-time). As no matter can travel faster than light, it must be space-time that is moved through space-time. This can theoretically be done by creating a warp-field around an area of space-time (and an object like a spaceship within this area), which is bordered by a singularity in front of the object and controlled expansion of space-time behind it. In theory this is possible, as has already been shown with a special solution of Einstein's field equations in general relativity. This solution states that the creation of an energy-impulse-tensor modifying the space-time around a spacecraft in the sense that the distance between start- and endpoint can be

1 Tittensor Derek P. et al. (2011): How Many Species Are There on Earth and in the Ocean? [2013-10-24]; URL: <http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.1001127>

reduced is possible. However, for creating such a warp-field exotic matter, thus matter not only not consisting of protons, neutrons or electrons, but additionally being of negative energy density must be available² – this may be a problem, as we have not even been able to proof that it exists.

From a solely scientific point of view all of these and a lot more arguments are valid options, but I will focus on the first one here. Mankind has always dreamed of immortality, which has, amongst others, been one of the major reasons for why our species devised the concept of religion. Our brain provides us with the abilities required to understand the universe, and the more we understand about our role in the universe and life itself, the more transhumanistic our views become. It may be not easy to accept that we will most likely take care of our immortal soul ourselves in the not-so-distant future, but this is exactly what will happen. Problems like starvation or over-population may be solved by leaving our bodily existence behind, and hundreds of years-lasting journeys to exoplanets for colonization will not pose a challenge for human minds transferred into the computers of spaceships. This is just a first impression of what the future of mankind could be like. The ideas are countless, and history taught us that advancement of science not always bears only good. Anyway, this work marks the beginning of a journey – the journey towards consciously acting machines and artificially accelerated human evolution.

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2 Alcubierre Miguel (1994): The warp drive: hyper-fast travel within general relativity; Classical and Quantum Gravity 11:L73-L77, 1994

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