

Feasibility Analysis of Interstellar Migration under Current Technical Conditions

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Abstract

Under the current technical conditions Interstellar Migration has a realistic feasibility. Immigration spacecraft carrying a certain amount of human fertilized eggs which were under frozen storage. When the migrant spacecraft arrives at the destination planet, the artificial intelligence robot take out the human fertilized eggs, then starts the artificial uterine hatching system in the spacecraft to cultivate human beings. Once the human babies were born under the artificial uterine cultivation, the AI robots will nurture human babies' growth, and educate the babies properly with all the existing human knowledge. The migrating human will rebuild the human civilization in the new planet under the help of AI robots.

Keywords

Interstellar immigration, hibernation technique, fertilized eggs hatching, cloning technology, 3D printing technology

Subject Areas

IF human civilization is facing incoming crisis in the next few centuries, but without major technological breakthroughs, is there any possible methods we could deal with it? This article is a feasibility analysis of interstellar migration based on the current technical conditions in order to extend and continue human civilization.

Under our present cognition, the ideal main technical conditions for interstellar migration are as below:

1. The spacecraft with speed of light or Faster-than-light speed. Faster-than-light (also superluminal or FTL) communication and travel refer to the propagation of information or matter faster than the speed of light. The special theory of relativity implies that only particles with zero rest mass may travel at the speed of light. Tachyons, particles whose speed exceeds that of light, have been hypothesized but the existence of such particles would violate causality and the consensus of physicists is that such particles cannot exist. On the other hand, what some physicists refer to as "apparent" or "effective" FTL depends on the hypothesis that unusually distorted regions of spacetime might permit matter to reach distant locations in less time than light could in normal or undistorted spacetime. According to the current scientific theories, matter is required to travel at subluminally Slower-than-light (also subluminal or STL) speed with respect to the locally distorted spacetime region. Apparent FTL is not excluded by general relativity, however, any Apparent FTL physical plausibility is speculative. Examples of Apparent FTL proposals are the Alcubierre drive and the traversable wormhole.

2. Perfect Cryonics technology. Cryonics is the low-temperature preservation (usually at -196°C) of people who cannot be sustained by contemporary medicine, with the hope that resuscitation and restoration to full health may be possible in the far future.

3. Superluminal communication technology. Superluminal communication is a hypothetical process in which information is sent at faster-than-light (FTL) speeds. The current scientific consensus is that faster-than-light communication is not possible, and to date it has not been achieved in any experiment. Superluminal communication is believed to be impossible because, in a Lorentz-invariant theory, it could be used to transmit information into the past. This contradicts causality and leads to logical paradoxes. A number of theories and phenomena related to superluminal communication have been proposed or studied, including tachyons, quantum nonlocality, and wormholes.

At present, none of these three above technologies are available. The limited key technologies we have for interstellar migration are as below:

1. As to the cryonics technology. We are able to bring people to hibernation, but unable to thaw and bring them back to life.

2. Weak artificial intelligence is available. Weak artificial intelligence (weak AI), also known as narrow AI, is non-sentient artificial intelligence that is focused on one narrow task. Weak AI is defined in contrast to either strong AI (a machine with consciousness, sentience and mind) or artificial general intelligence (a machine with the ability to apply intelligence to any problem, rather than just one specific problem). All currently existing systems considered artificial intelligence of any sort are weak AI at most.

3. 3D printing technology is available. 3D printing, also known as additive manufacturing (AM), refers to processes used to create a three-dimensional object in which layers of material are formed under computer control to create an object. Objects can be of almost any shape or geometry and are produced using digital model data from a 3D model or another electronic data source such as an Additive Manufacturing File (AMF) file. STL is one of the most common file types that 3D printers can read. Thus, unlike material removed from a stock in the conventional machining process, 3D printing or AM builds a three-dimensional object from computer-aided design (CAD) model or AMF file by successively adding material layer by layer. The term "3D printing" originally referred to a process that deposits a binder material onto a powder bed with inkjet printer heads layer by layer. More recently, the term is being used in popular vernacular to encompass a wider variety of additive manufacturing techniques. United States and global technical standards use the official term additive manufacturing for this broader sense. ISO/ASTM 52900-15 defines seven categories of AM processes within its meaning: binder jetting, directed energy deposition, material extrusion, material jetting, powder bed fusion, sheet lamination and vat photopolymerization.

4. Fertilized eggs hatching and cloning technology are available, but artificial uterus isn't viable now. An artificial uterus (or artificial womb) is a hypothetical device that would allow for extracorporeal pregnancy or extrauterine fetal incubation (EUFI) by growing an embryo or fetus outside of the body of an organism that would normally internally carry the embryo or fetus to term.

Here we will discuss the various possible options.

At first, we analyse the cryonics technology. Under the current interstellar navigation technology, it would take hundreds of years for the migrating spacecraft to reach the destination and start to revive the immigrants. So theoretically we have a few hundred years to realize cryonics technology. Due to the presence of AI robots and 3D printing technology, we could use them to execute the manufacturing and assembly of cryonics system in the migrating spacecraft after receiving the well-completed cryonics technology. There are possibilities the cryonics technology

can not be realized or the execution of the cryonics can not be carried out in the spacecraft even hundred years later. But this is only a possible solution, we still have the following alternatives in case it failed.

Followed by the artificial uterus of human fertilized eggs for human hatching technology or cloning technology program. That is, the immigration spacecraft carrying a certain number of human fertilized eggs under frozen storage, once the migrant spacecraft arrived at the destination, the artificial intelligence robot will take out the human fertilized eggs and start the artificial uterine hatching system to cultivate human and monitor human growth. Also they will take the work of educating mankind to help mankind rebuild human civilization on the new planet. Artificial uterus technology is not feasible at present. But in this program it is not indispensable. There are several possible alternatives below.

1. Are there any varieties of hatching animals that can be used as carrier for fertilized eggs to hatch? Bear is a hibernating animal and is also a mammal, it could be frozen by Cryonics technology and be revived for breast-feeding human embryos. This program should be much easier than manufacturing artificial uterus technology if it does work. Of course, this program is may not be practical due to the limitation of the Cryonics technology. But we still have the alternatives below.

2. As long as there is a corresponding temperature, the oviparous animals can be hatched out. Large oviparous animal are turtles, ostriches, pythons, crocodiles, Komodo lizards and so on. Incubate these large oviparous animals and then transform their bodies into an incubation carrier that can nurturing human embryos. But it is much harder compare to revive the hibernation bear program.

3. Mystical nature provide us with such a creature, she is the only mammals that lay eggs instead of giving birth. This is the platypus. The mammal can be incubated at a suitable temperature and transformed into a fertilized egg hatching carrier with the help of AI robot. The difficulty of this program lies between the reviving of hibernating bears and the transformation of large oviparous animals, which is most likely to be viable. Of course, a period of artificial selection and breeding is necessary, so we could cultivate a much larger platypus for nurturing human embryos.

As mentioned above, these three programs do not conflict, can be carried out at the same time. That is to say, respectively, to bring human under cryonics, hibernation bear, large oviparous animal eggs and improved platypus eggs.

The three above plans are based on the fact that we do not need 100% fertilized eggs hatch success rate, even one ten thousandth or less success rate is feasible.

Result

Under the current technical conditions interstellar immigration has a realistic feasibility. This is not to say that it is time to launch an immigration spacecraft, although it is theoretically possible. This envisage is based on a possible civilized continuation of the crisis that mankind faces in the coming centuries without major breakthrough in technology.

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