

Why Humanity Should Leave Earth

The times when space flight was something unimaginable are long gone. It is hardly something mundane and habitual: each spacecraft launch requires large sums of money and the effort of hundreds of people. But still, when we talk about flying to space, we hardly hold our breath. Thanks to the Internet and modern technologies, anyone can watch broadcasts of orbital stations, with astronauts living there for months. Elon Musk and his *SpaceX* initiative has become something people expect to work out, not just a billionaire's fantasy. Scientists discuss the possibilities of constructing rocket engines able to pierce the fabric of space. Human beings had even set feet on the Moon's surface, which can be seriously called the first step towards space colonization. The latter, by the way, has also turned from a science-fiction fantasy into a vital need. Why?

There are multiple factors pushing humanity into outer space. Some people understand it, some do not, but in several decades, it will become obvious to everyone that there is no other way. The opponents of space colonization often claim there still are problems on Earth that need to be solved before leaving it behind. Another popular opinion is that since humanity has already polluted one planet, it should not be allowed to colonize and pollute other worlds. Arguments against space colonization include other appeals to emotions and reason. For instance, the fact that it will take hundreds if not thousands of years to reach the closest exoplanet suitable for inhabiting is something scientists must yet find a solution to. The absence of cryogenic anabiosis or other similar technologies will make travelling even to Mars (about seven years of flight) a harsh challenge. No one knows how the human body will react to prolonged conditions of zero gravity, or which psychological problems the future colonists will encounter. The sums of money needed to build and sustain even the most basic colony on another planet will be astronomical. And still, there is no other choice for humanity.

To start with, it is already obvious that Earth is suffering from overpopulation. And the problem is not just in over seven billion people walking the surface of the planet. Overpopulation means the lack of food and water, the most basic resources needed for a human being to survive. Why? Because food does not materialize from thin air. In order to produce food, vast territories are needed for farming and cattle breeding. Agriculture exhausts soil and pollutes natural water reservoirs. Pesticides and other chemicals used to grow crops negatively impact the ozone layer of Earth, and saturates the air with chemicals. The more people live on the planet, the more substantial the scales of these problems are. Overpopulation means the lack of living space. Enormous skyscrapers in Hong Kong are built for living, not for business; condensed and crammed Japanese cities with tiny apartments and no free space for trees; slums of India and crowded cities of China—so far, these problems have mostly touched only Asian countries, since the density of population is higher there. However, in about a decade, this state of matters might become common all over the world. In addition, more people mean less jobs, lower life expectancy, the depletion of natural resources, an

increase of crime, and poorer sanitary conditions. Cutting a long story short, overpopulation alone can make Earth a place unpleasant to live.

Natural disasters are another danger many people tend to underestimate. The tragedy that occurred in Japan in 2011, when thousands of people died or vanished without a trace, and a nuclear reactor leaked radiation into the ocean, showed how helpless the humanity is against the forces of nature. One earthquake and one tsunami caused enormous damage to the whole nation, and it took years to eliminate the material aftermath of the catastrophe. Volcanic eruptions are also something no one can feel safe about. For some reason, people believe that volcanoes are mostly dangerous because of spitting out liquid fire and hot air, whereas perhaps the biggest danger is ashes and toxic evaporation. The eruption of Eyjafjallajökull in 2010 led to a transport collapse in Europe—airplanes could not fly because of the air filled with particles of dust and ash. Sulfur and fluorine emissions released in large quantities during almost any eruption can cause serious health problems for people who inhale them. Finally, an eruption large enough can cause severe climatic changes on a global level, leading to weather conditions similar to a nuclear winter and global cooling.

One of such eruptions happened in Iceland in 1783 when a tectonic fissure Laki started spitting lava and smoke for a period of eight months. The river Skafta—a broad water reservoir flowing near the village of Kirkjubæjarklaustur—evaporated; instead of water, the riverbed was filled with lava. Fluorine emissions killed huge numbers of cattle and people in Iceland and northern Europe. The eruption was so intense that it caused climatic changes in Africa, suppressing the Nile's summer floods in Egypt, thus affecting the harvest and causing famine. About 142,000 people died because of that eruption—and who knows what else our planet is capable of.

Besides, it is not only our planet that can be a source of natural disasters, but outer space as well. Perhaps everyone knows what happened to dinosaurs: due to the fall of a large asteroid the whole planet got covered by an impenetrable layer of dust that caused global cooling and led to the extinction of thousands of flora and fauna species, including the dinosaurs. Who can guarantee that no such asteroid will fall on Earth in the future?

In addition, colonizing other planets may lead humanity towards incredible technological and scientific discoveries. The Universe is a place endlessly rich with wonders. The methane seas of Titan, the water frozen right under the surface of Mars, the drifting continents of Pluto—these are just some of the mysteries our Solar System possesses, and it is merely a tiny spot compared to our galaxy. Each new planet the humanity colonizes is a potential source of invaluable discoveries and breakthroughs.

Despite what skeptics think, the colonization of space is something humanity needs to do in order to survive as a species. Overpopulation and the problems originating from it such as famine, pandemics, and crime, is perhaps the most pressing issue so far. However, the possibility of natural disasters such as an asteroid falling on Earth, or a massive earthquake causing tsunami and volcanic eruptions, can cause millions of deaths worldwide. For the sake of generations living tomorrow, people should start thinking about leaving Earth today.