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How humanity may trap itself on earth forever

Space travel is the most ambitious and exiting venture in human history. Future of humanity seems to be bright. Despite that there is one glaring problem that seems to be worsening every year, which if left unnoticed, may put an end to our cosmic adventures before they even had a chance to begin.

Let's discuss the implications of space travel first. To launch an object into the orbit, it needs to have enough energy to resist earth's gravitational pull until it gets into the outer space, where it starts to orbit our planet. Because of that factor, about 70% of standard space shuttle's volume is taken by fuel in specialised reservoirs. To make construction lighter, those containers are dropped one by one as they run out of fuel. After some time, when the main body of the rocket or a shuttle reaches it's destination, there are a lot of other parts of it left to orbit the earth. That is the way that many of our space related technology is being put in place, such as satellites, responsible for navigation, large-scale exploration and research on earth, as well as, space travel.

Despite seemingly being irrelevant, scientists are really alarmed by the amount of so called "space junk" orbiting earth. According to some estimates, amount of it has increased tenfold from 1960s to 2010s. Right now we have information that approximately 2600 defunct satellites, 10000 medium sized objects, 20000 small sized objects, and many more, even smaller particles are orbiting earth at the moment. These objects are circling around our planet at the speeds around 30000 kilometres per hour, and have an enormous potential energy. They are in fact so fast that they have enough power to severely damage, or in some cases, pierce right through metal walls, used to protect our working satellites that are being utilised every day and, moreover, fly at the same altitude.

Due to their unbelievable speed, if only one bullet sized piece makes contact with one of our 1100 working satellites, it can destroy it on contact. Every year, 3 or 4 satellites are made unusable that way. As amount of "space junk" is expected to continue growing in the near future, we are approaching a tipping point. Despite that, the most threatening thing about it is a possible chain reaction that may result from some collision. If two satellites hit each other in just the right way, particles coming from the resulting explosion may spray in all directions, hitting more objects along the way. This creates a domino effect, where destruction grows exponentially. Some researchers conclude that within a decade, earth orbit may no longer be viable for long term satellites or rockets, and even may result in a formation of an impassable barrier around our home planet.

Catastrophe seems inevitable, but right now there are some ideas on how we can quickly and efficiently remove up to 60% of within earth's orbit. Most promising one is a construction, which may use net capture technology to get objects back to earth. It is already being tested, but there are some drawbacks to it. For example, if

object is too small, it can destroy the construction itself, creating more “space junk” in the process. Other ideas include magnetic spheres, which can push out metallic components inside broken satellites, drawing them closer to earth, exhilarating their orbital decay.

Whatever technology we use in the end, we better start doing something now, because if we stay ignorant, our space exploration may end before it is even began.