



Adopting a New Viewpoint about Orbital Debris

Amir S. Gohardani

Orbital debris has impacted and continues to affect space activities and the overall space infrastructure. Space debris consistently has been identified as a risk to future space endeavors. Given that orbital debris imposes significant challenges to space missions and operations, it would be beneficial for the wider space community if the overall perception and approach to space debris were subjected to significant adjustments. This statement is rooted in the fact that there have been only very limited space debris removal activities.

Even though space debris mitigation, space situational awareness and active debris removal are commonly perceived as applicable instruments to address the issues associated with space debris, perhaps the very first step in sparking a change with regards to this subject is simply considering orbital debris as an opportunity rather than a risk. In other words, it is possible to acknowledge the existence of orbital debris with a business mindset about space debris removal and mitigation. This is one step further than solely identifying orbital debris as a risk. Following this train of thought, acceptance of space debris as a risk item becomes evident once the major axis for future space missions shifts to unprecedented business opportunities that also include orbital debris.

Undoubtedly, the topic of space debris is more convoluted than solely embracing a new viewpoint. Rather surprisingly, more than half a century after the first satellites were launched into orbit, legal questions still surround ownership rights and legal authority to engage with even defunct objects in space orbits. Orbital debris removal costs, national space policies and technical solutions also weigh in as factors of importance. However, if waste management is considered within the same radar screen as orbital debris, interesting similarities will emerge.

In the pre-modern era, before the onset of industrialization, inadequate waste management procedures were insignificant due to low population densities and low level of exploitation of natural resources. Nonetheless, this trend was short-lived. Following the Industrial Revolution and the growth of large populations in different cities, deterioration in the quality of urban life was reported predominantly due to the lack of sanitation control. Following devastating cholera and plague outbreaks along with other diseases that threatened human lives, measures were ultimately taken to address waste clearance and disposal.

The similarities between space waste and waste management in a pre-modern, modern and post-modern era are obvious. Moreover, there is already an equivalent analogy of the elucidated disease outbreak that within the space debris domain represents the already observed effects of space satellite collisions. In both cases human lives are threatened due to inadequate waste management control either on Earth or in orbit. The international space station, which hosts astronauts, constantly dodges space debris.



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Consequently, the constant threat of orbital debris is neither outdated nor surreal. In the transformational process of perceiving orbital debris as an opportunity instead of a risk, many of the economic, societal, environmental and intergenerational benefits of waste management would be applicable.

Future space activities and space exploration efforts partially depend on the decisions made regarding orbital debris. In this capacity, risk assessment and creation of new methods to map future opportunities is a promising approach.

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