

# The Dark Side of Space Colonisation

By Taiba Maniar & Eliza Contra

## Introduction

Humans have always been captivated by the immenseness of space and its mysteries. From ancient civilisations to the present, space exploration has been a catalyst for human innovation and advancement. Recent breakthroughs have led to the [discovery of new stars and planets and a deeper understanding of dark matter and black holes](#). As we continue to push the boundaries of understanding space, we can study space in hitherto unimaginable ways by utilising advanced technologies such as spacecraft, satellites and telescopes. However, the negligence exercise of our curiosity may have contributed to the significant changes in our solar system's environment. For instance, the launching of spacecraft, satellites and extensive debris have led to the [contamination of our outer space](#).

While we continue to explore and utilise space, it is immensely significant to take accountability and consider the impact of our actions in the long run. [New issues are arising](#) and gaining momentum as space technology advances and becomes more available to public and private companies. Outer space has become the target of commercial advancements, yet it lacks the regulatory structures that would prevent space from turning into a realm of pollution, corporate exploitation, and unmanageable debris. This blog will delve into the historical context of space exploration and its current state, as well as the EU's space legislation proposal and the ethical aspects surrounding space preservation and conservation. By shedding light on these issues, we can assess the extent to which space law regulation has been inefficient in addressing space junk.

## Emergence of Space Law

As early as 20 years ago, most space missions were primarily governmental or scientific. However, some investors saw the untapped commercial potential in space and space exploration. Private companies such as SpaceX did not take long to appear and helped galvanise interest in novel areas such as space tourism, asteroid mining, and lunar colonisation. One such example is SpaceX's creation of the Dragon spaceship, enabling spacecraft for both cargo and crew missions. This marks yet another significant turning point in the [business's quest to transform space travel](#). Unfortunately, technological developments have outpaced existing legal frameworks.

In order to understand how outer space is regulated, it is vital to understand the concept of space law. Space law consists of several treaties, international agreements, conventions, [UN resolutions and laws of other international organisations](#). The [main objective of space law](#) is to deal with space-related matters, including the preservation of the space environment, liability for harm caused by space objects, international collaboration, dispute resolution and astronaut rescue.

The concept of space law can be traced back to the Cold War Era when the USSR launched the first artificial satellite, [Sputnik, in 1957](#). This marked the beginning of the [space race](#). As such, the international community recognized the need for rules to ensure that the use of space will be conducted peacefully and for the benefit of all humanity. One such example is the [EU AI Act regulation](#) which came into force in August 2024. This is one of the significant legislative advancements made by the EU as it not only creates an identical regulatory and legal structure for AI and space technologies across the EU but also takes a risk-based strategy.

The international legislation for space-related activities consists of: the Outer Space Treaty, [The Rescue Agreement](#), [The Registration Convention](#), [The Liability Convention](#), [The Moon Agreement](#) and the [International Space Law](#). The [Outer Space Treaty](#) (1967), which established principles like the prohibition of nuclear weapons in space and declared space as the "province of all mankind" is considered to be the "constitution" for Space-related activities. For instance, Article 1 of the Treaty deals with the liberty of exploration and use of space. However, Article 2 prevents the misuse of this freedom by prohibiting ownership of celestial bodies and outer space. Furthermore, this treaty, among other matters, addresses liability and responsibility. Article 6 of the Treaty emphasises states' responsibility for their space activities. As an illustration, [China has been under fire for several uncontrolled rocket reentries](#) in which rocket debris fell close to populated areas, sparking questions about carelessness and possible liability.

Another relevant Convention that aligns with Article 7 of the Outer Space Treaty, is the [International Liability for Damage Caused by Space Objects](#). Given that humans have polluted and continue to pollute outer space with their waste, it is essential to establish state liability in order to ensure that they compensate for the harm imposed by their space object. However, these foundational laws did not anticipate the rapid commercialisation of space or the environmental impacts of space activities as a result of technology innovation.

### **Harmful Activities**

The act of "throwing stuff in space," in the form of satellites, waste, cars, or even human remains, has raised legal and ethical questions. NASA's Peregrine Mission One, launched on [January 8, 2024](#), carried capsules containing human remains and DNA samples to the moon. The gesture naturally sparked debate about the ethical implications of depositing human remains on celestial bodies such as biological contamination and desecration.

The absence of clear laws allows corporations to exploit space resources with minimal oversight. Today, outer space is sometimes referred to as the new "Wild West" because the rush to mine asteroids, harvest lunar resources, and establish commercial ventures unchecked in space prioritises short-term profits over long-term sustainability. Moreover, one of the greatest issues we face is space pollution and debris. Defunct satellites spent rocket stages, and fragments from collisions threaten operational spacecraft and the safety of astronauts.

The [current guidelines for debris mitigation](#) are voluntary and often disregarded, leading to an unsustainable accumulation of orbital junk.

Materials sent into space are rarely subject to approval processes. This increases the use of hazardous substances that pose risks to the space environment and future missions. The increase in satellite launches, such as the Starlink network, has led to overcrowding in Earth's orbit. This congestion [exacerbates the debris problem and increases the likelihood of collisions and interference with scientific observations](#).

### **EU Space Law Proposal**

In response to these issues, the European Union (EU) has prepared to release a [space law proposal](#), which aims to address safety, sustainability, light pollution, greenhouse gas emissions, and space debris management, notwithstanding the present regulations described above. Through this EU space law proposal, the EU is working on creating a broader legal framework that governs responsible space exploration and conserves the space environment by focusing primarily on the growing number of satellite constellations and their impact on light pollution. In addition, with this proposal the EU is ensuring the [safe handling of space debris returning to Earth](#). Unfortunately, despite growing concerns, the release of the EU's legislative proposal has been [delayed until 2025](#).

### **Conclusion**

To summarise, various facets and an intricate relationship exist between humans and space. Despite the remarkable progress in the field of technology and science, space exploration poses grave challenges in terms of protecting our planet, as well as conserving the space environment. Hence, it is paramount to be proactive in tackling these issues as we extend the limits of exploring space and ensure our activities in space are sustainable and accountable. The Space Law proposal by the EU is one step closer towards constructing a legal framework that directs responsible space exploration and safeguarding our space environment. The proposal's delayed release, nevertheless, underscores the haste to take action to address the mounting concerns regarding space pollution and debris management. It is imperative that we prioritise the preservation of our planet and space. Taking initiative and responsibility, while approaching space exploration, can lead us towards a sustainable and advantageous future.

## References

- United Nations Office for Outer Space Affairs. (2024). Retrieved from <https://www.unoosa.org/oosa/en/aboutus/index.html> (Last accessed Aug. 2, 2024).
- European Union, (n.d.) AI Act | Shaping Europe's digital future. Retrieved from <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai> (Last accessed Aug. 2, 2024).
- International Space Law, Space Foundation. Retrieved from [https://www.spacefoundation.org/space\\_brief/international-space-law/](https://www.spacefoundation.org/space_brief/international-space-law/) (Last accessed August. 4, 2024).
- "Outer Space Treaty." United Nations Office for Outer Space Affairs, [www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html](http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html) (Last accessed August. 12, 2024).
- Phys.org. (2024, April 3). Private companies exploiting outer space: The need for regulations. <https://phys.org/news/2024-04-private-companies-exploiting-outer-space.html> (Last accessed August. 11, 2024)
- Malik, T. (2023, August 14). SpaceX's Starlink satellites: Everything you need to know. Space.com. <https://www.space.com/spacex-starlink-satellites.html>
- Sputnik. (n.d.). NASA History. Retrieved from <https://www.nasa.gov/history/sputnik/index.html> (Last accessed August. 11, 2024).
- Foust, J. (2024, January 30). EU space law proposal due in March. SpaceNews. <https://spacenews.com/eu-space-law-proposal-due-in-march/> (Last accessed August. 11, 2024).
- Holland, M. (2024, June 6). EU wants to make space safe with new law, but label it 'boring'. Politico. <https://www.politico.eu/article/eu-wants-make-space-safe-law-label-boring/> (Last accessed August. 11, 2024).
- CNN, 'China rocket debris: Risky reentry highlights concerns over growing orbital junk' (9 August 2024) <https://edition.cnn.com/2024/08/09/science/china-rocket-stage-orbital-debris/index.html> (Last accessed November. 28, 2024).
- Scientific American, 'Space Junk Is Polluting Earth's Stratosphere with Vaporized Metal' (20 April 2023) <https://www.scientificamerican.com/article/space-junk-is-polluting-earths-stratosphere-with-vaporized-metal/> (Last accessed November. 28, 2024).

New Space Economy, 'SpaceX: A Revolution in Space Exploration' (12 September 2024) <https://newspaceconomy.ca/2024/09/12/spacex-a-revolution-in-space-exploration/> (Last accessed November. 28, 2024).

SpaceNews, 'Further Delays and Hurdles for EU Space Law' <https://spacenews.com/further-delays-and-hurdles-for-eu-space-law/> (last accessed November. 28, 2024).