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Title

Managing Space as a Global Commons

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Abstract

The landscape of outer space utilization and exploration is expanding from primarily scientific research to include economic outcomes, and private-sector space technology. Simultaneously, the space industry is experiencing dramatic growth. The future of space exploration likely includes additional space stations, exploration of other planets, and in-situ resource utilization. Mismanagement of space could result in Kessler syndrome or monopolies of rare space resources. These changes in the space economy demand consideration of space as a global commons. However, perspectives on space as a global commons vary widely and have economic, legal, and political implications.

Beginning with Lloyd [1] and Hardin [2], I examine commons criteria and apply them to terrestrial and extraterrestrial domains. Using a rivalry and excludability continua I show differences between three separate space domains (earth orbit, celestial bodies, and interplanetary space) and compare them to common pool resources on earth. These earth domains include the oceans, atmosphere, and Antarctica. I evaluate space management strategies already in place like the Outer Space Agreement, the Rescue Agreement, the Liability Convention, and the Registration Convention. I also consider why other agreements like the Moon Treaty and the Bogota Declaration have been less successful. I evaluate space domain management with Ostrom's institutional analysis [3]. Identifying management deficiencies, I show the need for additional policy agreements. I also consider hybrid management approaches with conventional commons management, privatization, and novel governance concepts.

References

- [1] Lloyd, W. F. (1833). Two Lectures on the Checks of Population.
- [2] Hardin, G. (1968). The Tragedy of the Commons. *Science*, 1243-1248.
- [3] Ostrom, E. (1990). *Governing the Commons: The evolution of institutions for collective action*. Cambridge University Press.