IAF SYMPOSIUM ON SPACE SECURITY (E9)
Policy, Legal, Institutional and Economic Aspects of Space Debris Detection, Mitigation and Removal (1-A6.8)

Author: Dr. Eytan Tepper
Institute of Air and Space Law, McGill University, Canada, eytante@gmail.com

# POLYCENTRIC GOVERNANCE OF SPACE DEBRIS: AN EMPIRICAL STUDY

**Abstract**

This paper presents a new research project that aims to improve our understanding of the global governance of orbital debris. Significantly, it will do so by conducting an extensive empirical study and analyzing its results using cutting-edge theories on network governance. Orbital debris is a growing problem and mitigation, monitoring and remediation solutions are possible but require international cooperation and hence face the problem of collective action. As so often with global commons, individual countries have little incentive to invest unilaterally in solutions. The project considers how the growing number of space actors and their increasing heterogeneity affect the governance of orbital debris. The existing literature conceptualizes the governance of orbital debris as a problem of collective action akin to the "tragedy of the commons". Scholars have put forward several ambitious policy proposals to overcome the problem, e.g. adopting international regulations, introducing a global tax on satellites and issuing a limited number of tradable debris licenses. This project looks at the governance of orbital debris from a different angle. Instead of modeling an alternative governance system, it sets out to collect empirical evidence to improve our understanding of how space actors really interact. Research on common-pool resources demonstrated that some polycentric networks can self-organize in order to manage their resources sustainably. Network members must be sufficiently heterogeneous in order to combine resources and develop new solutions. They should also have adequate connections to be able to trust each other and adopt the best solution available in their network. The theoretical framework of the research leads us to the following hypotheses: (1) there is a correlation between the heterogeneity among actors and the likelihood of the emergence of new institutional solutions; and (2) there is a correlation between the density of actors' connections and the likelihood of adopting solutions. The empirical research will include a census of institutional arrangements governing orbital debris and qualitative research of process tracing. The results will be analyzed using network analysis theory. Our hypothesis is that the governance of space debris may not require centralized reforms. Instead, polycentric governance might suffice, as long as it maintains a satisfactory balance between heterogeneity and density. If the network is unbalanced, encouraging actors to make new connections in strategic locations might achieve more than centralized reforms. This would be an important finding to be communicated to the community of space actors. The dataset collected in this study will be made publicly available in order to encourage the development of a functional polycentric structure for the governance of orbital debris.