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ETHICAL ASPECTS OF HUMAN PLANETARY EXPLORATION: ADAPTING HUMAN RIGHTS AND ENVIRONMENTAL PROTECTION TO EXTRA-TERRESTRIAL BODIES

Abstract

The development of a human settlement on the Moon, as well as the exploration of Mars, will offer new perspectives for human spaceflight in the near future. This gives tremendous opportunities for science, but also questions the extent of our current frameworks for such a journey, particularly with regards to protecting the environments we will explore and the people that will explore them.

The concept of planetary protection was initially focused around protecting interests on Earth while exploring space. This was translated into a planetary protection policy aimed at preventing contamination between Earth and celestial bodies, be it forwards or backwards, to ensure the reliability of space material analysis. However, recent projects of developing lunar and martian bases question the definition of contamination. As we investigate the potential of lunar regolith for the production of oxygen, and the building of infrastructures, we should also consider developing an ethical approach to protecting such a resource. As of today, the state of space law is not yet coherent with the activities that humans are imagining for space.

Similarly, sending humans on a long duration spaceflight to Mars, will entail preparing for unforeseen medical needs; the potential end of life of crew; reproductive health issues; and mental health needs. Health standards already exist for space missions however, long duration space flights are likely to be beneath those standards. It will then be up to the entities providing the missions to implement ethical standards ensuring that the risks incurred by the mission do not overlay the benefits expected. Questions such as how to dispose of a body, or how to set human priorities in life-threatening situations when on the way to Mars will have to be addressed.

This paper explores the interest and limits of legal and ethical frameworks in the context of planetary exploration and long-duration human spaceflight. Building on the experience of earth-based situations, the paper formulates a proposal for the evolution of planetary protection guidelines. The resolution of bioethical and legal precedents of ethical dilemmas and emergencies on Earth can indeed offer a basis for the establishment of an ethical framework for long duration human spaceflights.