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Developing a Space Ethic Respectful of Indigenous Cultures

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Key Points

- Ethical problems may emerge from conflicting values and priorities in space. A space ethic that outlines how to resolve these problems is critical and remains to be fully developed.
- Greater consultation is needed to address value conflicts advocating sociocultural preservation and outer space economic development. Indigenous sovereignty should be considered in creating an international legal order for space. A regulatory framework for space activities must involve states and peoples, including those without space access, respecting their right to self-determination.
- A legal system must govern space occupation and mining before claims are made. As more actors enter space, reaching agreements will become more difficult. A system to recognize and adjudicate claims is necessary, and Indigenous frameworks that govern how to use land without owning land may potentially serve as a model for the shared international use of outer space.

Introduction

Ethical considerations regarding the exploration of outer space will reflect competing and conflicting values among stakeholders and the pursuit of resolution to these value conflicts. A central ethical problem for space exploration is determining who has the right to decide what is permissible in space when there are conflicting interests. This policy brief will begin by considering the perspectives of Indigenous peoples and then outline a space ethic incorporating these insights. The aim of this brief is to provide a preliminary framework for understanding and predicting conflicting values. Developing a comprehensive space ethic to resolve these conflicts will be the task of a more extended paper.

About the Authors

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Madeleine's advocacy, professional and governance work shows her dedication to and passion for the development and delivery of programs assisting Indigenous and Inuit people, northerners and Canadians that reflect their values, needs and priorities. Madeleine received the Indspire Award for Public Service to acknowledge and celebrate her hard work, commitment and many contributions.

Indigenous Perspectives on Outer Space Exploration

Outer space holds special meaning to many Indigenous peoples, who have a history of observing space and using it as a tool to predict the weather and the seasons. The Moon (*Tipislawi Pisim* in Cree) is also part of many creation stories. A 13-moon cycle (corresponding to lunar months) is used by many Indigenous tribes, with the lunar calendar depicted on the back of a turtle shell. The Moon is often connected in creation myths from tribes of the Great Lakes area to the figure known as the Sky Woman. For the Haudenosaunee, the Moon was created from the Sky Woman's breasts and was tasked with guarding the night sky (Shenandoah and George-Kanentiio 1996). According to variations of Haudenosaunee beliefs, and for the Anishinaabe, the Sky Woman became the Grandmother Moon, who watches over the Earth and regulates the tides (McLester 2021). Inuit believe the northern lights are the spirits of our ancestors. Several Inuit elders across the polar north from Alaska to northern Nunavut have noticed that the Sun rises in a different place, that the Moon and stars have shifted and/or that the Earth's axis has tilted.

The land, water, seabed, sky and space all form part of our natural environment according to many Indigenous perspectives, including those of the Inuit. Everything in the universe is continuous and without separation. In essence, everything is part of everything. The interconnections can be real, at times obvious, but also invisible and ethereal. Space is therefore not understood as a new frontier because it is neither new nor a frontier. By the same token, harm to the natural environment represents harm to ourselves. The requirement to respect nature, the environment and life is tantamount to seeking protection and securing abundance.

These mindsets, including the idea that our norms of ethical behaviour include the ecosystem rather than being separate from or above it, impose a requirement of respect for nature and to ensure sustainability for the well-being of future generations. Regarding the ethics of space exploration, many Indigenous peoples say that our decisions and actions need to

be considered for seven generations in the future. This is to ensure that we act in a way that is mindful of those who will follow us.

Outlining a Preliminary Space Ethic

Environmentalist Aldo Leopold (1949) coined the phrase "land ethic" to describe the ethical relationship between humans and the land. While outer space may be part of the natural environment, its unique properties suggest a need for a distinctive space ethic to define our relationship with the universe beyond Earth. In outlining such a space ethic, this policy brief will seek ways to incorporate Indigenous ideas about environmental stewardship.

Do humans have reason to value outer space beyond its capacity to contribute to human flourishing or for other life on Earth? Does anything in space have value when it conflicts with our interests on Earth? Environmental ethics debates contrast anthropocentric views, valuing the environment for human benefit, with views asserting nature's intrinsic value. However, the typical arguments lack relevance in outer space, which has no life, ecosystems or biological cycles. Unless, as Murray W. Hunt (1980) suggests, moral considerability follows from mere existence rather than something's capacity to support life, space, we might be led to conclude, is valuable only as it serves our interests, and we are free to use it as we please.

A space ethic will inevitably reflect human perspectives, but that does not mean that it must be human-centred or Earth-centred. Space objects may lack value independent of their relation to life on Earth, but this does not justify unrestrained human action. For example, we might be tempted to think that if the Moon lacks intrinsic value, it is ours to do with as we please, including potentially turning it into a dumping ground. But this may still be wrong because we may have reason to engage in conservation in space even if it is not in our economic interests.

We can seek to understand the intrinsic value of space objects in a different way. According to Jennifer Welchman (2012, 148), to value a thing as a "means" is to make functional considerations a priority, while to value a thing as an "end" is to value it from a perspective where functionality is not a priority. Earth's moon and other celestial bodies have such cultural, religious, historical or aesthetic significance to humans beyond economic interests, that make it incumbent on us to preserve certain natural objects such as the lunar surface or the night sky, for their own sake, particularly for future generations. Treating space merely as an instrument for economic ends is ethically problematic, from both an Indigenous and a broader rights perspective, as it could ultimately undermine human flourishing.

From the perspectives of many cultures, including many Indigenous peoples, respect for nature, the environment and life is of paramount importance, for cultural reasons as well as to safeguard future abundance. Simply put, the failure to respect nature eventually hurts us. Human virtue often requires moral humility, which involves recognizing our place in the natural world and valuing things for their own sake (Hill 1983). Therefore, turning the Moon into a dumping ground out of convenience may be morally wrong, as it constitutes vicious behaviour and prevents us from maintaining humility. The point is that, even if the value of space objects derives from human interest, that does not justify using space in any way that happens to serve short-term human gain, or economic or national ambition.

The authors' space ethic notes three types of value conflicts prompting an ethical response:

- **Preservation versus development (intrinsic versus instrumental):** These conflicts will involve those who desire to develop or use space against those who wish to preserve it in its natural state. In 2024, the Navajo Nation objected to plans by the National Aeronautics and Space Administration (NASA) to place cremated human remains on the Moon, on the grounds that the Moon is sacred to many Indigenous cultures, and that such an act would be a desecration (Rickert 2023). Similar conflicts may develop between those who may want to colonize or economically develop a site and those who believe it should be preserved for scientific purposes. Such conflicts have already emerged over the issue of depositing a form of life (the tardigrade) on the lunar surface (Silk 2019).

- **Competing uses (instrumental versus instrumental):** Competing instrumental uses, particularly when it comes to disputes that might arise over exploitation of the same geographical region, could give rise to the most significant ethical disputes (including economic, political and military disagreements). Where should mining be conducted; who gets access to what resources; where can space stations be built; and to what degree, and on what basis, could a party lay claim to exclusivity over an area? There are also issues relating to maintaining access to orbital pathways and avoiding space pollution.
- **Competing visions (intrinsic versus intrinsic):** A final source of value conflict comes from competing ideas about how to use space due to scientific, cultural, religious or aesthetic differences. For example, scientists may wish to study an area that others want untouched. Attempted efforts at crashing satellites into the Moon for burial purposes already raises disputes about desecration versus reverence, as noted earlier in the case of the Navaho objection (Bartels 2024). How should we handle incompatible views about shared outer space?

A comprehensive space ethic would need to thoroughly describe the specific ethical problems that such conflicting values will likely generate. Some problems will no doubt have overlap between the categories of conflict posited above.

Perhaps the most obvious and pressing example is the disposition of Earth's immediate orbit. Orbital debris fields, however caused, can create a cascade effect that increases the chances of further collisions (the "Kessler syndrome") and might render parts of Earth's orbit impassable and unusable. We must curb the spread of space junk for practical reasons, or simply because we value the night sky as it is. Either way, it is imperative that we minimize debris in space.

Space Use Without Space Ownership

An enduring space ethic would also ideally indicate either which categories of values ought to take precedence or indicate how value conflicts can be mitigated to make them compatible.

On Earth, such disputes over land use have historically been settled via the concepts of ownership and property rights. However, the 1967 Outer Space Treaty, signed by 116 countries and adopted with the intent to limit nuclear weapons in space, states that no nation can claim sovereignty over outer space or any celestial body.[1] But the 2020 Artemis Accords explicitly allow for mining in space, holding that such extraction is not considered to constitute national appropriation. Further, the 2015 Commercial Space Launch and Competitiveness Act condones "the commercial exploration of space resources."[2] NASA has even spoken of a "lunar gold rush" (Northey 2023). Japan, Luxembourg and Saudi Arabia have passed similar laws. Without mechanisms to resolve disputes, competing ideas about how space should be used will inevitably drive ethical and perhaps other forms of conflict.

The essence of the problem is that, in the absence of an ability to claim sovereignty, there is no clear legal basis to claim ownership of materials or determine where and under what conditions someone should be able to mine them. While the Artemis Accords reject national appropriation, they, and the Space Resources Working Group at the Hague, call for the development of "safety zones" so that one nation does not engage in harmful interference with the activities of another (Mallowan, Rapp and Topka 2021). In essence, this is an attempt to allow for the use of space, without its ownership. Russia and China have already expressed the view that this is a violation of the Outer Space Treaty (Stirn 2020).

Even the Artemis Accords are vague about resolving some of these very basic questions

1 *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, 27 January 1967, Res 2222 (XXI), UNTS 610 (entered into force 10 October 1967), online: UNOOSA <www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html>.

2 *US Commercial Space Launch Competitiveness Act*, Pub L No 114-90, 129 Stat 704 (51 USC 10101) (2015).

about ownership. At what point does a mined mineral become the property of the party that mined it (O'Brien 2023)? Should competing claims be decided on a first-come, first-served basis? What sort of framework should arbitrate when there may be disagreements between nations that may wish to mine cobalt on the Moon and the Navajo who would object on cultural grounds? If resources mined in space are to be shared equitably among all humanity, how will this practically be determined? How can we ensure that Indigenous peoples have a voice in space wealth distribution?

An appropriate analogue to this problem might be deep sea mining in international waters. Like the 1979 Moon Treaty,[3] the 1982 UN Convention on the Law of the Sea establishes the International Seabed Authority (ISA) to regulate nations' ability to mine in international waters. The ISA asserts that the open ocean is the "common heritage of mankind" and seeks to ensure that the economic benefits of ocean exploration and exploitation are equitably shared.[4] However, even in this case, the United States is not a signatory, in part because the convention requires that countries engaging in mining also share the profits with developing nations (Bonner 2013, 141). Indeed, in 2012, former Defense Secretary Donald Rumsfeld opposed the United States signing the sea convention because it might set a precedent for mining in outer space (Wong 2012). Also, the ISA has yet to license widescale oceanic mining. While the ISA might serve as a model to apply to space exploitation, it is unclear whether such a system would receive international support.

This tension between use and ownership of land echoes long-standing concerns voiced by Indigenous peoples, who have historically rejected the commodification of land and instead emphasized stewardship, relationality and shared responsibility. Indigenous perspectives regarding shared land use may serve as a useful global governance guide for resolving the issue of developing and benefiting from resources in space.

Conclusion

The moral and ethical arguments most likely to emerge as the authors seek to develop a fuller space ethic can already begin to be anticipated. Many of these disputes will involve fundamental differences over the nature of space and how it should be used, given that it is supposed to belong to all humankind. Greater consultation from a wide range of perspectives should occur before governance frameworks are established. While NASA agreed to consult the Navajo about its space missions, the agency has also stated that this does not apply to privately funded missions (Tingley 2024).

To have a hope of lasting impact, a future regulatory framework will need to ensure that the concerns of all cultures, including those of Indigenous peoples, are heard and taken into consideration. A space ethic that ignores these principles risks repeating colonial patterns of appropriation under a new guise.

3 *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, 5 December 1979, Res 34/68, UNTS 1363 (entered into force 11 July 1984), online: UNOOSA <www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/moon-agreement.html>.

4 *United Nations Convention on the Law of the Sea*, 10 December 1982, 1833 UNTS 397 (entered into force 16 November 1994).

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