


A call for Indigenous partnership in the return to the Moon

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In response to concerns raised by the Navajo Nation on treating the Moon as a grave, NASA has a unique opportunity to advance the conversation with Indigenous communities regarding how we interact with space environments, and who gets to decide.

In January 2024, NASA found itself at the centre of a contradiction between its past promises to the Navajo Nation and the commercial framework it is developing for the future of space exploration. Astrobotic, a private company, was set to launch a mission to the Moon supported by NASA's Commercial Lunar Payload Services (CLPS) initiative, representing the first US lunar landing in over 50 years. In addition to scientific instruments from the USA and other nations, the Peregrine One lander also carried art projects, information archives, messages, mementos, and the cremated remains of 70 humans and one dog prepared by businesses specializing in space burial, Celestis and Elysium Space.

The inclusion of cremated remains on a lunar lander was met with concern from Indigenous communities. In late December 2023, President Buu Nygren of the Navajo Nation [requested that NASA and the US Department of Transportation delay the launch](#), calling this practice “tantamount to desecration of this sacred space”, and asking NASA to honour a previous promise of consultation. In 1998, the Navajo Nation objected to NASA sending the ashes of American geologist Eugene Shoemaker to the Moon as part of the Lunar Prospector mission. In response, NASA issued a formal apology and pledged to consult Indigenous communities before any future mission carrying human remains. Decades later, we see history repeating itself with Peregrine One, with responsibility now shared by commercial companies and the US government.

There is currently no regulatory framework for what can be sent to the Moon, looking shrouded in Fig. 1. Although NASA does not have formal regulatory authority over what private companies carry, NASA is entirely responsible for the CLPS initiative, without which Peregrine One and other upcoming missions would not fly. Meanwhile, federal agencies with regulatory power have not engaged in public consultation. The private companies involved simply accept all paying customers, leading to taxpayer subsidization of private space exploration with no democratic control over how we impact space environments.

As space agencies and private companies worldwide act to establish a lasting presence on the Moon and beyond, fundamental questions remain regarding how we interact with space environments, and who gets to decide such interactions. Though Peregrine One ultimately did not reach the Moon due to a malfunction, the issues raised by this incident provide an opportunity for the space community to “become



Fig. 1 | The Moon atop brewing storms above the Earth. Photo taken by the NASA Space Shuttle Columbia crew in January 1990.

well-informed and ethical space actors” as recently discussed by Alvin Harvey¹, and to safeguard the Moon as a “shared cultural space for humanity”. While NASA is not the only government entity with the power to act, we argue that given its visibility, prior promises and pivotal role in lunar exploration, NASA has a unique opportunity to create meaningful systemic change. To understand NASA's role in this call to action, we first discuss how Indigenous consultation has been ignored in the past, and how NASA's future actions can rectify past mistakes, which can set the precedent for all future space missions.

Nearly every culture on the planet throughout history has had a relationship to the Moon. Navigating scientific, multicultural and ethical dimensions of lunar activities is a complex task, but essential if space exploration aims to benefit all of humanity, rather than a small subset of wealthy individuals for whom the shared environment of space implies a first-come, first-claim approach. Leaving decisions regarding how humanity relates to space solely to commercial actors allows the profit motive to govern without public accountability. Although the 1967 Outer Space Treaty (OST) [charges nations with responsibility for overseeing activities in space by non-governmental agencies](#) (such as private companies), US space policy has been uncritically supportive of commercial activity and resource extraction. [Some have argued the US-led Artemis Accords have created a “loophole”](#), enabling land and resource appropriation that the OST was intended to prevent. If space is controlled by whoever can pay or get there first, it is unclear where that leaves the OST's recognition of space as the province of all humanity.

Peregrine One illustrates the disconnect between spacefaring actors and the communities their actions impact. These are not new conversations. Indigenous communities and others have consistently voiced concern regarding the impact that non-consultative activity in the name of science – which include multiple ground-based telescopes, launch facilities and low-Earth orbit satellite constellations – has had on sacred landscapes for decades. A few recent examples include the Starlink satellite constellation (operated by SpaceX) that has [disrupted the essential human right to the night sky](#) and [negatively impacted ground-based astronomical observations](#), and the [proposed construction of the Thirty Meter Telescope in Hawai'i](#) (funded by various governments, academic institutions and nonprofits) at a site sacred to Native Hawaiians – all of which have sparked controversy, discussion and resistance. [NASA's report on their recent workshop](#) to examine the ethics of lunar exploration specifically mentions “issues surrounding flying human remains to the Moon aboard NASA-funded but commercially operated spacecraft” and the problem of “diffuse responsibility” due to a lack of regulatory mechanisms.

Given this broader context, Astrobotic's CEO's comments that [“this conversation came up so late in the game”](#) are disingenuous. At this stage, the continued disregard of Indigenous and other communities' right to space as an ancestral global commons² implies deliberate choice in favour of the status quo rather than ignorance, and will set the stage for how space exploration unfolds in the decades to come unless we use this opportunity to change course.

In a [letter of support](#) for the Navajo Nation's call for consultation, the Coalition of Large Tribes called on NASA administrator Bill Nelson and others to adhere to NASA's previous commitments, Executive Order 13175, and Presidential Memoranda on strengthening relations with Native Nations. [Celestis's CEO's assertion](#) that “if the beliefs of the world's multitude of religions were considered, it's quite likely that no missions would ever be approved” is misleading. Conflating consultation with Indigenous peoples with the derailment of space exploration is not only untrue, but continues a damaging narrative that progress must inherently exclude some perspectives. On the contrary, Indigenous Nations across the world have [long-standing traditions of exploration and relationships to the Moon](#) and sky that we would all benefit from recognizing in decision-making processes.

Truly broadening the conversation around lunar activities will require long-term collaborative, interdisciplinary, and international research and engagement. In the short term, and within the context of the USA, there are existing policies that spacefaring institutions can apply and build on to begin consultation and sustain collaboration with Indigenous peoples.

NASA directly funds commercial providers and is also accountable to the US public, and therefore has both the means and the duty to consult Indigenous communities and sovereign Native Nations. One way to honour this commitment is to build on [existing NASA policies regarding tribal consultation](#) and coordination and formally establish an Office of Tribal Relations³ similar to those established in the Departments of Treasury, Health and Human Services, Department of Agriculture, and others. Such an office should engage in open, sustained, proactive conversations, consultation, and long-term relationship building with Indigenous communities early in developing stages for space exploration planning. The process would also need time and resources for meaningful outcomes for involved constituencies.

NASA, and in this instance the Department of Transportation, which is involved in commercial space launches, should continue to engage with Native Nations and Indigenous communities on the

specific issue of sending human remains to the Moon. We can draw on existing frameworks governing spaces of shared importance on Earth. For instance, scattering ashes in National Parks in the USA is subject to guidelines rooted in public consensus; the Grand Canyon National Park no longer allows the scattering of human remains after consultation with Native Americans who have a longstanding relationship with that land. Despite existing examples, there is currently no action-oriented effort to prioritize Indigenous voices in the framework of US space exploration. As a major global figurehead of space exploration, NASA could choose another approach, and lead a new chapter in space that is truly collaborative with Indigenous communities and Native Nations. Change must also take place at the scale of the workplace, both within the agency and through its partnerships. Those who work at public and private spacefaring institutions – owners, funders, managers, scientists, engineers and other specialists – can raise these concerns within the missions they make possible. Shared solidarity is crucial in compelling institutions to act for the better, and is a more sustainable means for change than reliance on state actors alone. In the absence of action, the issue of sending ashes to the Moon will arise again – as soon as 2025, according to Celestis's website.

The Peregrine One incident builds on a long legacy of dishonoured promises between the US government and Native Nations. As it stands, free license given to commercial companies and the reliance on legal loopholes are also reminiscent of tactics used to displace Indigenous peoples during the colonization of the Americas and Western expansionism. With these practices being brought to the Moon, it is necessary to consider what sort of future we wish to create. If space exploration is to break its lineage with past violent exploratory expeditions of conquest, and be for the good of all humankind, we must include the full range of human history, cultures and perspectives in decision-making. NASA is now in a unique position to support reconciliation and lay the foundation for the best practices needed with regard to Indigenous peoples surrounding the lunar landscape and beyond. Spacefaring agencies often testify that ‘space is hard,’ and requires learning from past failures. This principle cannot only be applied to spacecraft hardware – we should understand that building shared visions of the future is also difficult, and have the resolve and imagination to rise to that challenge. Rather than treat the Moon as a grave, we might ask ourselves how we can co-create, amid our differences and against continuing oppressive systems, an ethical vision for space exploration that encompasses our planet's collective scientific and cultural practices.

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Competing interests

The authors declare no competing interests.