

Privatizing the Moon: Emergent of the Extraterrestrial Property Rights

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Abstract

This research paper analyzes the potential for the privatization of the lunar surface and activities within the constraints of international legal frameworks that prohibit sovereign appropriation. We posit that legal prohibitions against territorial claims do not necessarily preclude effective control, especially when dominant actors, comprising sovereign states and private corporations, hold significant sway over launch infrastructure, orbital and surface-based standards, and resource extraction technologies. This study contextualizes lunar privatization within the broader domains of space law, international political economy, and the escalating commercialization of outer space, highlighting the implications for property rights regimes, regulatory sovereignty, and market dynamics in extraterrestrial resource markets.

Keywords: Moon privatization, Extraterrestrial property rights, Outer space law, Space governance, International Appropriation, Lunar Mining, Commercialization of outer space, Space Private Property Rights, Launch capacity, Infrastructural dominance, Rule-making power, Moon Agreement, Space Commercialization.

Introduction:

Outer space is formally treated as a global commons, yet access to it is highly unequal. The Moon is therefore an important case for understanding how a formally open domain may become practically enclosed through technology, capital, and rule-making power. The central question is not whether a state can claim sovereignty over the Moon, but how control may emerge without legal ownership.

Space is often viewed as a public good because it is difficult to exclude others from using it and it isn't clearly divided into national territories. In theory, anyone can attempt to use space, and no single country claims sovereign ownership. However, the ideal of universal access is challenged by inequality. Access depends not only on legal rights but also on launch capability, technical expertise, industrial infrastructure, and sustained funding. Only a select few states and corporations have these resources. Consequently, even though outer space remains technically unowned, actual use is limited to a small elite.

This focus fosters conditions conducive to privatization. In this context, privatization isn't just about selling space to private companies; it also involves turning space into an economic and strategic realm where access is governed by investment, intellectual property, licensing, launch

rights, and technical standards. Essentially, the participation rules are not neutral. Those who set the rules can decide who enters, who benefits, and who is excluded. While the language of openness might stay the same, the opportunity structure becomes increasingly unequal. This is why scholars and policy analysts warn that granting ownership-like control in space could heighten inequality and concentrate benefits among the already power.

From an international political economy perspective, the issue is more about who can repeatedly operate in space and generate profits, rather than just who owns it. In global commerce, early entrants often gain dominant positions that are hard for later competitors to challenge. Space is expected to follow this pattern. Once a nation or company has established launch systems, orbital platforms, lunar infrastructure, or resource extraction capabilities, they can create barriers to entry for others. Ultimately, this leads to a space that is not legally owned but practically enclosed.

Literature Review

Existing rules on space law begins with the Outer Space Treaty, which prohibits national appropriation while allowing exploration and use. This legal framework preserves openness in principle, but it leaves unresolved how commercial activity should be governed when private actors become central participants [1]-[3].

Studies of the Moon Agreement emphasize the idea that the Moon and its resources as the common heritage of humankind, but the treaty has had limited ratification and weak practical influence. As a result, it has not generated a stable international regime for lunar mining or ownership claims [4][5][6][7].

According to scholar C.P. Lie (2003), emphasis, private property rights in outer space may be established through exploration rights based on a first-come, first-served based. This approach is considered more acceptable and adaptable within the framework of the existing rules by an appropriate contractual arrangement. Furthermore, such exploration rights can be transferred and monetized through appropriate contractual arrangements [8].

More recent analyses focus on the Artemis Accords (2020) and related national policies. These instruments accept resource extraction as lawful under current space law, which some scholars interpret as a pragmatic incentive for investment, while others see it as a legal step toward privatization through national licensing and commercial precedence [1][2][3][8][9][10].

Table 1: Summarizes the main legal and institutional instruments in space

Instrument/Actor	Main rule or function	Implication for privatization
Outer Space Treaty (1967)	National appropriation prohibited	Sets baseline legal openness
Moon Agreement (1979)	Common heritage logic	Supports international regime approach
Artemis Accords (2020)	Resource extraction recognized	Encourages commercial activity under national supervision
Private space firms	Launch and mining capability	Drive commercialization and access control

Discussion:

The U.S. Approach to Space Strategy

The United States has recognized this logic for many decades. Its space policy has often integrated scientific aims with geopolitical strategies. During the Cold War, the “Star Wars” initiative served not only as a defense measure but also as a broader effort to shape technological dominance. Subsequently, these programs main concern was not just protecting against attacks but also maintaining American dominance in technological and security frontiers. This strategy reflects a deeper calculation: if space becomes key for communications, navigation, intelligence, missile defense, and future resource extraction, then controlling its infrastructure offers significant geopolitical benefits. The nation that first establishes launch routes, orbital networks, and legal frameworks is likely to influence global rules. Therefore, the core issue is not just exploration but establishing authority through rule-making. Those who set the rules can turn space into a system favoring national and commercial interests. Additionally, the U.S. has fostered a growing role for private companies in space activity. Companies like SpaceX and Blue Origin now play major roles in launch services, satellite deployment, and lunar exploration. While commercialization reduces costs and boosts efficiency, it also intensifies privatization of access. Although public agencies may formally oversee space policy, private firms increasingly control the technical routes for entering, utilizing, and profiting from space. This results in a hybrid system where state and corporate powers reinforce each other.

The Significance of Shenzhou

China’s recent space operations have been developing rapidly and making great strides. These space accomplishments have transformed the space monopoly landscape. The successful Shenzhou program, particularly Shenzhou V, proved China had joined the ranks of major spacefaring nations. More crucially, it challenged the notion that the U.S. held exclusive dominance in the symbolic and strategic aspects of human spaceflight. China’s advancements questioned the idea that a single country could maintain indefinite control over it. In this way, China’s presence in space helped reaffirm that outer space is a shared domain, not a closed

strategic sphere. This shift is significant because when multiple major powers have credible space capabilities, the political balance will then be shifts. This research paper considers it is vital because the future of space likely hinges on standards for mining, orbital traffic, debris mitigation, safety zones, and resource rights. If these standards are set by one dominant power, it could lead to an unequal system that excludes others from future benefits. The Shenzhou mission also highlights a broader point: space development involves not just technology but legitimacy. A successful national space program proves that space exploration benefits need not be monopolized by one country or bloc. It shows that wider participation is possible and that authority over space governance can be contested. In this way, China's achievements symbolize more than scientific progress; they serve as a geopolitical counterbalance to unilateral control.

Emerging Authority and New Rule

A key issue in outer space governance is the question of rule-making. In traditional political thought, institutions matter because they influence incentives, resource allocation and allocate power. In space, the lack of clear property rights and enforceable territorial borders creates uncertainty rather than neutrality. Often, this uncertainty favors the most powerful players. Without fair and transparent rules, strong states and corporations will establish their own practices through investment, capabilities, and precedents. That's why developing **new space international institutions** is crucial. The challenge rely in balancing openness and order: insufficient regulation can lead to chaos and conflict, while excessive control by one entity could cause monopolies and exclusion. A sustainable framework must recognize space as a global commons that may requires governance, including rules on access, liability, mining, scientific use, military activity, and environmental safeguards. It's also essential to prevent any single country from unilaterally turning outer space into its own territorial extension. Reports on proposed initiatives like a Space Patrol over-sight highlight ongoing tensions. Even when presented as security efforts, these proposals may serve to expand influence into outer space. If all launches or extraterrestrial projects must be approved by a single nation's defense agency, the idea of space being open and accessible becomes conditional and hierarchical. Consequently, many observers see these measures not as neutral regulations but as attempts to dominate the future of space activities.

Future Moon Economy

The economic importance of space is becoming increasingly significant. Satellites now facilitate global communication, weather prediction, and navigation. Additionally, the Moon and other celestial bodies may contain resources that are valuable in the long term. Water ice, rare minerals, and support for future energy systems could make lunar development economically significant. Though these possibilities are partly speculative, they influence current policy discussions. This has sparked intense debate over privatization. Supporters of property rights believe clear ownership promotes investment, innovation, and efficient resource use. They argue that without secure rights, companies and nations might hesitate to invest heavily in exploration and infrastructure. Opponents counter that space ownership could enable wealthy states and corporations to monopolize common resources, exacerbating global inequality and undermining

shared access principles. Both sides agree that space will be economically significant; they differ on who should benefit. A balanced perspective recognizes that market incentives can be helpful but should not override fairness and shared benefits. If private enterprise is involved in space, it must operate within rules that ensure access for the broader international community. Without such protections, space privatization risks replicating the unequal patterns seen in other global industries, where the most powerful reap the largest rewards.

Suggestion:

Private Property Rights for Space and the Moon

Although outer space remains largely unclaimed and accessible, this window of opportunity may not stay open for long. As nations pursue Moon and other celestial body missions, these efforts could shift from exploration to resource competition. Once extraction activities start, they may become self-sustaining and hard to halt. Consequently, private property rights might form sooner than anticipated, beginning on the Moon, where competition could soon switch from exploration to resource extraction and eventually lead to lunar privatization. Such developments could significantly alter the global order and the framework of property rights in outer space. Over time, contractual agreements might expand the concept of private property rights beyond Earth.

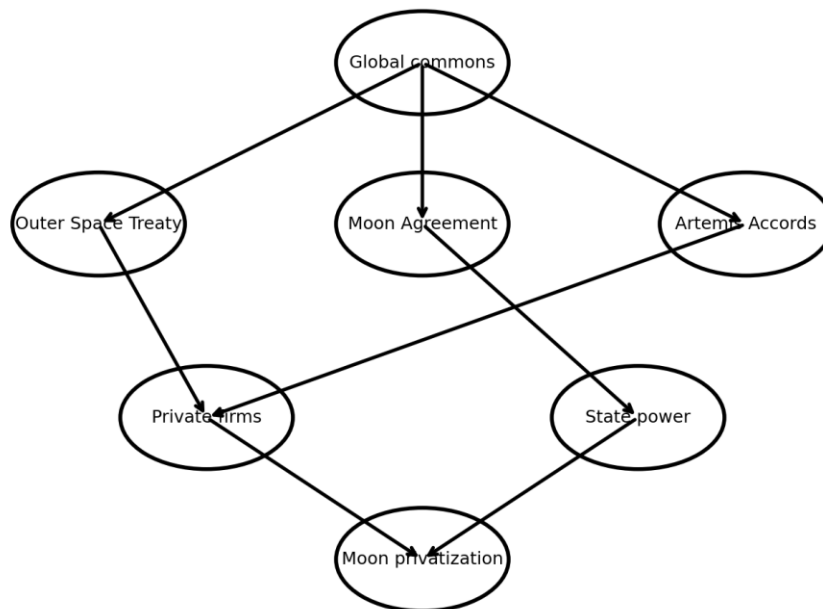


Diagram 1: Maps the interactions between legitimate rules, state power, private firms, and lunar privatization

The Moon is unlikely to be privatized through straightforward territorial claims because the Outer Space Treaty prohibits such actions. Nonetheless, privatization might still happen via control over launch systems, landing sites, communications, mining rights, and technical standards. In practice, powerful states and commercial entities could effectively control the Moon even if it remains legally unowned. We propose that space privatization doesn't need formal ownership but can develop through technological and infrastructural dominance. Outer space represents a key frontier of the modern era, symbolizing human aspiration, scientific advancement, strategic rivalry, and economic opportunities.

Additionally, we propose that private property rights in outer space could be established through exploration rights following a first-come, first-served principle. This method is seen as more acceptable and adaptable within current international space treaties. Moreover, these exploration rights could be transferred and monetized through suitable contractual agreements [8].

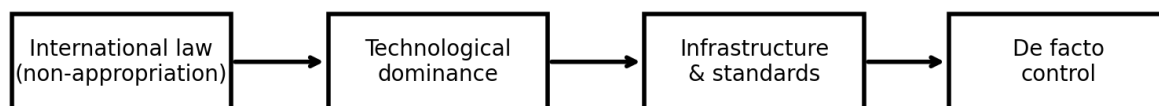


Figure 1: Shows the pathway from formal openness to practical control

Moreover, the Moon can be privatized without formal territorial ownership, if a small group of players controls access and sets the operating rules. A fairer future for lunar development, therefore, depends on governance that preserves openness while preventing monopolies, exclusion, and unilateral rule-making by suitable contractual agreement.

Conclusion

The Moon is unlikely to be privatized through simple territorial sovereignty because the Outer Space Treaty forbids that outcome. However, we suggested that, privatization can still occur through domination of launch systems, space orbital, landing zones, communications, mining rights, and technical standards by **space & orbit contractual arrangement** through Launch and Orbital capacity exploration of Space Private Property Rights. Under such conditions, the Moon might remain legally unowned but practically controlled by powerful states and commercial entities. We argue that space privatization doesn't necessarily require formal ownership; it can occur through **technological and infrastructural dominance**. Outer space represents a key frontier of the modern age, symbolizing human aspiration, scientific advancement, strategic rivalry, and economic potential. However, it remains vulnerable to domination by those with greater resources and political influence. Despite international law's stance against national

claims over the Moon and other celestial bodies, we suggest a practical control can still be established via technology, infrastructure, rule-making, and suitable contractual arrangements. This renders privatization a pressing and complex issue. In-addition, the rise of the U.S. as the top space power, the expansion of private space firms, and the emergence of other capable countries like China, Europe, Russia, India have the potential to reshape the global space landscape. The key question now is not if space matters, but who will shape its future. Viewing space merely as a new market or strategic area risks fostering inequality and exclusion. Conversely, managing it as a shared human frontier could foster cooperation, discovery, and collective benefit. The real challenge is not privatization in terms of ownership, but establishing institutions to prevent monopolization while enabling meaningful progress. Space's future shouldn't belong to one nation, company, or bloc but should be governed in a way that serves humanity's shared interests. We hope our research contributes positively to society and mankind.

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