I.D.E.A. OF THE FUTURE : A POLITICAL LEGAL PERSPECTIVE ON POTENTIAL CONSEQUENCES OF THE ARTEMIS PROGRAM ON INTERNATIONAL EQUITABLE LUNAR ACCESSIBILITY.

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Introduction: In the past decade, the space community has taken significant steps towards establishing inclusion, diversity, equity, and accessibility (IDEA) as a central pillar of outer space research and exploration. As the Artemis Accords enter its second year, its 24 states parties have all in some form committed to this pursuit, one of which being the Program's commitment to landing the first female astronaut on the Moon. While the proliferating number of inter-agency initiatives which aim to expand space opportunities for groups of technologically, educationally, or prejudicially disadvantaged individuals are generally commendable, we must address the looming question of achieving IDEA between what currently are highly asymmetrical space actors on the global scale. This question – which is far too broad and complex to discuss here – is distilled from the ideological foundation of IDEA, as well as Art. I of the 1967 Outer Space Treaty (OST), which affirms the exploration of outer space as the province of all mankind, "irrespective of their degree of economic or scientific development" [2]. Much space law literature has been dedicated to the application and interpretation of existing space law, however, considering the shifting political nature of the production of international law in regards to space activities, it is crucial that we evaluate the new and potential methodologies of law-making for lunar exploration. With the goal of including IDEA in this law-making, it is thus necessary to evaluate the environment in which these norms will be produced. This paper gives a general overview of some identified short-term political legal challenges to the fulfillment of Art. I in light of the Artemis Program and current tensions between established space-faring nations, followed by an evaluation of their potentially detrimental long-term consequences on the integration of IDEA principles into the future political cooperation and legal governance for lunar exploration.

Part I : The Artemis Accords in Light of the Inevitable Gold Rush at the Lunar South Pole: There are several key short-term terrestrial and human challenges to lunar exploration that cumulatively contribute to a division within the global space community and thus limit the participation of underdeveloped agencies/actors, and stifle IDEA.

Artemis Program 'safety zones' and U.S. space resource exploitation policy rely on a contentious interpretation of Art. II of the OST that has drawn a political line in the sand between its objectors and Artemis participants. Unlike most international treaties, the legal gaps within the Artemis Accords were left intentionally vague, likely as a means of collecting international support without approaching controversial subjects ; the most controversial of such being the creation of private national 'safety zone' systems for the deconfliction of concurrent international lunar activities. The dormant – but waking– political dispute between many Artemis participants with pro-private space resource commercialization domestic policies (notably the U.S., France, Luxembourg, Japan), and large space-faring nations such as China and Russia, boils down to two different legal interpretations of the words "appropriation" and "use" of space resources in Art. II of the OST [3]. This conflict has been essentially politically irrelevant for the past 8 years, however when the 'safety zone' system was included in the Artemis Accords without the inclusion of a mechanism for the allocation, approval, communication, etc. of said zones, which raised serious international concerns that the system would be exploited for domestic benefit, thus ultimately accelerating the political division of key space actors.

The ambiguities within Artemis 'safety zones' combined with conflicting American/Chinese/Russian initiatives for lunar resource exploration can induce a dangerous "gold rush" imperative for the most productive areas for in-situ water resource utilization at permanently shaded-regions (PSRs) on the Lunar South Pole. Regardless of the dubious legality of certain domestic commercial space policies in light of the OST, all space-faring nations pursuing lunar exploration (Artemis, Chang'e Project, etc.) will inevitably aim to investigate the most resource-rich lunar regions, primarily the southern polar permanently shaded-regions (PSRs). The vagueness of Artemis 'safety zones' have done little to improve– if not worsened– the state of international confidence building, and the added pressure of limited space that could be potentially put under a 'safety zone' creates a competitive environment damaging to the fundamental goals of exploration.

The myth of a new Sino-American 'Space Race' regresses decades of progress and cooperation in space exploration to an inaccurate and antiquated question of political superpowers. As perpetuated by both SpaceX CEO Elon Musk, NASA Administrator Bill Nelson, and many other significant space leaders, the idea of a 'new' space race (referring to the 20th century US-Soviet Space Race) is not only exaggerated, but politically useful as a competitive motivator for public and private engagement and investment. In reality, although China is

quickly advancing, their space capabilities are highly concentrated in specific areas by comparison to the US. Ultimately, this dramatization distracts from the science at the heart of lunar exploration, and undermines not only the contributions of many diverse public and private actors in the recent space discoveries, but also the cooperation between two of the most capable space agencies at a crucial turning point in space affairs.

Part II : Potential Long-Term Obstacles to Equitable Access to Lunar Exploration. The combination of the aforementioned issues poses the following innate cumulative challenges to the incorporation of IDEA into the very framework of space governance down the line.

With the international community breaking away from conventional forms of international law-making, customary or incident-driven jurisprudence inherently excludes non-Artemis and non-space-faring nations from creating outer space law. As a means to avoid political conflict, the Artemis Program will likely only lay out the most general legal necessities for the successful conduct of the mission, and solve any legal problems on a bilateral case-by-case basis. As the last ratification of a multilateral space law treaty was in 1974, there has been an observable shift in the method of legal norm production away from supranational intermediaries like the UN and towards a more bilateral basis, with the noteworthy influence of the largest space-faring nations setting domestic policies that then diffuse into other agencies (such as the 2015 U.S. resource commercialization legislation). Using Michael Reisman's theory of 'International Incidents'[4], I predict that a case-by-case treatment of legal questions will limit the norm production in outer space to active practitioners, essentially redefining who can (public and private Artemis participants) and who cannot (everyone else) participate in the creation of lunar law and space customary precedent.

Can we avoid monopolies on private commercial space resource exploitation and space economies ? If we operate on the assumption that U.S. interpretation of Art. II of the OST prevails, and that future private exploitation of lunar resources for commercial benefit is the logical next step for space actors, then the conditions of the creation of a lunar mineral market are not ideal for integrating equitable access and benefit. It is important that the international space community recognize the potential threats of political friction on technological transfer initiatives and information cooperation, as only specific actors (U.S., ESA, Japan, etc.) have the capability of engaging in resource mining and potential commercialization. This rapid advancement will raise the entry costs for each new nation or private actor wishing to join the pursuit of outer space exploration, and possibly create de facto monopolies on emerging space economies. These are questions pre-emptive law-making could attempt to address, however the feasibility of designing international regulation to protect actors that have yet to grow to space-faring status in economies that do not yet exist seems an impossible task.

Considering international space knowledge and technology gaps in the pursuit of inclusion, diversity, equity, and accessibility for the future workforce. Regardless of the actual outcome of the legal political disputes plaguing the space community today, one of the most dangerous potential challenges to IDEA in the long-term is an insurmountable knowledge gap between current space-faring nations and Artemis participants, and states. The limitation of participation in space industries exclusive to those with access to the technology and education of the largest space actors is not only a disservice to the potential of the future international space workforce, but also a limitation to the necessary evolution of the space workforce ecosystem. This will disproportionately stifle the emerging student and civil interest in outer space in South American, African, and East Asian nations [5]. Additionally, the on-going expansion of planetary and lunar science outside of the rigid scientific domain and into the study of arts, literature, law, and more would likely be effected as well. IDEA is an essential piece the purposeful human undertaking lunar exploration, which needs to be instilled in the very marrow of space's legal skeleton to assure an inclusive, equitable access to the Moon for all mankind.

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