

COMMON POOL LUNAR RESOURCES. J. K. Schingler¹ and A. Kapoglou², ¹Open Lunar Foundation, jessykate@openlunar.org, ²UCL Institute for public purpose and innovation, a.kapoglou@ucl.ac.uk.

Introduction: Article II of the 1967 Outer Space Treaty (OST) famously asserts that the Moon and other celestial bodies are “not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.” [1] The question of how to honor Article II in the face of near future in-situ resource utilization, and how to do so in a way that encourages the sustainable development of economic activity, remains an active topic of discussion. Article II has been variously interpreted as prohibiting sovereignty, ownership, and even resource extraction, on the Moon.

A Conceptual Schema for Property Rights: Part of the challenge in coming to agreement about Article II is imprecise terminology, and lack of a shared framework for discussion. Ostrom and Schlager [2] offer one framework that distills the broad concept of property rights into 5 different “bundles” of rights, each of which are associated with rules and obligations. These rights are categorized as operational level rights (access, withdrawal) and collective-choice rights (management, exclusion, and alienation).

Although many of the major space-faring states have a practice of associating property rights with what Ostrom and Schlager refer to as the collective-choice right of “alienation,” or the right to “sell or lease... [other] collective choice rights,” there are a multitude of property rights regimes that can and have been applied to the management of withdrawal rights, without incorporating the right of alienation [3].

Part I of this article applies the conceptual schema proposed by Ostrom and Schlager to the context of lunar resources under the Outer Space Treaty, and shows that it can be used to structure a more precise conversation about resource utilization on the Moon (access and withdrawal). Further, this schema introduces an important new dimension to the conversation: namely, the design of collective-choice rights. We provide examples of how this schema can be used to construct property rights regimes for the Moon, and show that complete regimes exist which also honor Article II of the OST.

Common Pool Resources: Common Pool Resources (CPR) theory is a specific approach to resource management explored in detail by Ostrom and her colleagues. CPRs are characterized by *subtractability*, where the benefits enjoyed by a given user impact the benefits available to other users, and *non-excludability*,

where it is difficult or costly to exclude other users from leveraging a resource.

		SUBTRACTABILITY	
		Low	High
EXCLUSION	Difficult	Public goods Useful knowledge Sunsets	Common-pool resources Libraries Irrigation systems
	Easy	Toll or club goods Journal subscriptions Day-care centers	Private goods Personal computers Doughnuts

Figure 1: Types of Goods [4]

Part II of this paper argues that the benefit sharing and non-appropriation clauses of the OST (Articles I and II) provide a strong argument for considering resources on the Moon as Common Pool Resources, which roots them in a long tradition of resource management schemes on Earth including water management, grazing lands, and fisheries; and provides a strong starting point for selecting between the vast option space for property right regimes outlined in Part I.

Resource management regimes are important for efficient, effective, and enduring operations, and can operate as confidence-building mechanisms for state actors and commercial investors [3]. We argue that CPR theory can be used to design resource management frameworks for the Moon that balance the needs of commercial, state, and civic actors.

References: [1] RES 2222 (XXI) (1966). [2] Ostrom, Schlager (1992) *Land Economics Vol. 68*. [3] Ostrom E. (1990). [4] Hess, Ostrom (2003), *Law and Contemporary Problems*, Vol 66.