



Viewpoint

Private property rights on asteroid resources: Assessing the legality of the ASTEROIDS Act[☆]



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ABSTRACT

On June 10, 2014, a bill proposing to establish and protect (private) property rights on asteroid resources was introduced in the US House of Representatives.

Regardless of its effective chances to become law, the presentation of the Bill raises numerous legal questions, particularly concerning the status of extraterrestrial natural resources and the consistency of what the Bill suggests with international space law.

The purpose of the present viewpoint is to address and clarify the above questions.

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1. Introduction

On June 10, 2014, Representatives Mr. Posey (Republican) and Mr. Kilmer (Democrat) introduced to the 2nd Session, 113th Congress, of the US House of Representatives a bill entitled the American Space Technology for Exploring Resource Opportunities in Deep Space Act (or ASTEROIDS Act) [1].

The core of the bill is a provision that recognizes US commercial asteroid resources companies with property rights on the (extra-terrestrial) resources that they have obtained.

The presentation of the bill, which has been covered with great interest in the media [2], raises several questions, mostly related to the legal status of extraterrestrial resources and the legality of what the Bill proposes. The purpose of the present viewpoint is to briefly shed light on the above questions and to suggest an alternative approach to support and enable asteroid mining initiatives.

2. Asteroid resources: what is up there?

Near-Earth asteroids and asteroids located in the so-called asteroids belt allegedly contain vast amounts of metals like iron, nickel, cobalt, magnesium, gold and platinum as well as deposits of water, hydrogen and oxygen [3].

Although the technology to mine and utilize asteroidal resources is not ready yet recent scientific studies indicate that

significant technological advancements have been made and that extraterrestrial mining could begin within 20 years [4]. Theoretically, extracted materials could be transported to Earth in their original, raw, status or refined in site to support further space (mining) activities.

The possibility to remove and commercially use asteroidal resources has attracted the attention of States and, in particular, of private enterprises. Two US based companies, Deep Space Industries and Planetary Resources have announced ambitious plans, including the mining of asteroid by 2020–25 and a the creation of a fuel depot in space by using water from asteroids [5].

3. The ASTEROIDS Act

One should first clarify that the ASTEROIDS Act does not represent the official US position nor does constitute US law. It is merely a proposal for a new law (a bill), that, in order to become applicable, would require to be approved by both the US House of Representative and the Senate and then signed by the US President.

The bill is meant to support the growth of a commercial asteroid resources industry in the United States as well as to stimulate the exploration and exploitation of extraterrestrial resources on a global basis.

The Asteroids Act assigns the US President with a special role in promoting such commercial undertakings. For example, he shall discourage governmental barriers to the establishment of a safe and economically viable extraterrestrial mining industry and shall promote the right of private US companies to exploit and sell asteroid resources. Importantly, the Bill emphasizes that any action undertaken pursuant to its terms shall be consistent with the international obligations of the US.

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The essence of the ASTEROIDS Act is contained in the section labeled Legal framework. Accordingly, entities are conferred property rights on the asteroid resources that they have managed to obtain. Conflicting claims among US entities concerning the right to undertake specific commercial asteroid resources utilization activities shall be settled on a first-come, first-served basis. The commercial utilization of asteroid resources shall be carried out without causing harmful interference to the activities of other space actors. A US commercial asteroid resource utilization entity is entitled to bring actions to the US district court against any other entity that has violated its right to carry out activities free from harmful interference.

The bill also clarifies that the expression United States Commercial Asteroid Resource Utilization Entity refers not only to a person organized under the laws and subject to the courts of the United States, but also to any foreign entity that has voluntarily submitted to the subject matter and personal jurisdiction of the courts of the United States.

In order to assess the legality of what the Bill proposes one shall first analyze how international space law regulates asteroids and their natural resources [6].

4. Legal status of celestial bodies and the (mineral) resources contained therein

International space law clearly defines the legal status of celestial bodies while it leaves rather uncertain that of the resources contained therein. Celestial bodies, including asteroids and the Moon, are not appropriable; pursuant to Article II [7] of the 1967 Outer Space Treaty [8], States are forbidden from extending their territorial sovereignty over outer space or any of its parts [9]. The non-appropriative nature of outer space was one of the first space law principles agreed upon by States at the beginning of the space era and a guarantee to prevent conflict and tensions among space actors [10]. The prohibition to appropriate outer space, including celestial bodies, also extends to private operators. Despite arguments suggesting the contrary, historical, textual and factual elements leave little doubt about the existence of a ban on the private appropriation of outer space [11].

Instead, the legal status of celestial bodies' resources remains controversial. Particularly debatable is whether their removal and commercial utilization is a legally admissible undertaking [12]. International space law does not provide an explicit answer to this question, either positive or negative. Arguably, the analysis of the terms and drafting history of the space treaties [13] as well as of States practice gives room to argue that the mining and commercial utilization of extraterrestrial resources is (at least) not prohibited [14]. To support this claim one may recall that during the negotiation of the Moon Agreement, several States argued that pending the establishment of a legal regime, no moratorium on the extraction and appropriation of celestial bodies resources existed [15]. Furthermore, by analogy with the legal regime regulating another international area, namely the high seas [16], the exploitation of extraterrestrial resources could be viewed as legally possible [17]. Additionally, Article I (2) of the Outer Space Treaty gives States the right to explore and use outer space: the word 'use' can be interpreted to encompass both non-economic and economic use [18]. Importantly, as per article VI of the Outer Space Treaty [19], the right to explore and use outer space also extends to non-governmental entities, provided that they receive an authorization from their national State and such a State supervises and controls the authorized space activities [20].

Having said this, the lack of an internationally agreed consensus on the legality of extraterrestrial commercial mining still remains.

5. Legality of the ASTEROIDS Act under international space law

Notwithstanding the statements made by its proponents, the consistency of the ASTEROIDS Act with international space law is debatable.

Certainly, on one side, if one accepts the admissibility of extra-terrestrial resources exploitation, the (theoretical) adoption of the Act could be viewed as a lawful exercise by the US of its rights and duties under Article VI of the Outer Space Treaty, in particular as a means to enable authorization of private asteroid mining and to ensure that such undertaking complies with international law.

On the other side, however, the eventual enactment of the ASTEROIDS Act could be deemed to violate international law at least on three ground.

First of all, it would allegedly breach Article II of the Outer Space Treaty. Under international law property rights derive from States. In fact, in order to exist, property rights require a superior authority, a State, entitled to attribute and enforce them [21]. This, of course, means that States need to have property rights themselves first before being able to recognize them to other subjects. Thus, any US attempt to confer property rights over asteroid resources to its private companies would indirectly signify that the United States attribute to itself ownership over those resources. Such an arbitrary attribution would collide with the non-appropriation clause, also because, as previously pointed out, no consensus on whether space resources can be removed and exploited exists. Furthermore, while the bill is not intended to extend US ownership over asteroids broadly considered (not only over their resources), arguably this could be its legal effect. Basically, through the ASTEROIDS Act, the United States would confer mining rights on asteroids. Under terrestrial mining law a State allocates to public and private companies the right to exploit the natural resources within its territorial jurisdiction. Such a State has, indeed, the title to do so because the resources are located inside its territory. By attributing to a private company the right to mine an asteroid and to acquire property rights over the extracted resources, the United States could be accused of considering that asteroid as part of its territory, thus violating the non-appropriation principle.

Secondly, the promulgation of the ASTEROIDS Act would likely have the effect to endanger international peace and security, thus violating the terms of the UN Charter [22]. One of the main limits of the Bill is its failure to address the issue of conflicting claims over space resources. By limiting its scope to US entities and their 'mining' rights, the Bill disregards the legal position of other subjects interested in such resources. As a matter of fact, the Bill simply ignores that neither the United States nor its private companies are involved in lunar or celestial bodies' missions, while other States, particularly China, are currently undertaking the scientific exploration of the Moon [23].

One can envision that, if the United States would adopt the ASTEROIDS Act, other States would respond by enacting similar national legislation. According to which rules conflicting claims over the same asteroid resources would then be solved? Which State, or entity would have the right to mine an extraterrestrial site free from harmful interferences from other space actors? Arguably, only an international agreement/regime could provide a satisfactory and acceptable solution for all actors.

The bill proposes to solve claims on a first-come, first-served basis, but only as far as US companies are concerned. The principle of first-come, first-served is not unheard of in space law: for example, it is used to regulate the utilization of the geo-stationary orbit. However, the applicability of the first-come, first-served idea to that context has been agreed upon by States; additionally, requests to use an orbital slot are handled by an International

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