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COPUOS

Mining in Space

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Introduction

As outer space expeditions have been actualized in modern history, humankind started to view outer space as another hope and chance for human conquest and achievements. Bearing in mind that outer space presented new challenges and opportunities to humans, it was important for them to decided how to utilize this seemingly infinite opportunities. In other words, humankind could potentially gear towards the abuse and reckless conquest of this new frontier if they chose to do so since no one was and is familiar with this new territory. Nevertheless, humankind recognized the need for a legal framework to utilize outer space effectively and cautiously as it feared possibilities of world wars, space wars, and chronic conflicts among nations.

Since outer space mining became an emerging plan for many countries, it was critical for COPUOS to determine what the main concerns were and to legislate necessary laws for peaceful outer space. Outer space mining became a more controversial topic because of its vulnerability to breach of many treaties of the United Nations as it promotes ownership and sales of outer space materials which is a main subject of violation for many UN treaties. Therefore, it is essential for COPUOS to discuss outer space mining with caution. COPUOS will discuss international property rights, sustainable mining, and human rights in outer space mining.

Historical Background

History of outer space mining so-called asteroid mining began with heightened interests in outer space and launch of satellites in the late 20th century. As many became concerned with depletion of natural resources on Earth, they began to pay more attention to available resources in outer space. For example, a metallic asteroid can potentially provide with billions of iron and millions of cobalt, nickel and platinum.[1] In fact scientists have been in search of new renewable energy resources and have determined that helium-3 is viable natural resources. It is important to note that this particular resource is only available on the Moon as the Earth only contains extremely minimal amount of it.[2]

In attempt to find new potential resources for humankind, entrepreneurs such as James Cameron, Larry Page, and Eric Schmidt are developing fuel depot program for outer space in order to actualize the dream of asteroid mining for future natural resources and energy by year 2020.[3]

Although this particular project is viewed as an extreme stretch for space expedition, many scientists believe that space mining will become a reality within few decades.[4] One of the prominent firms Deep Space Industries is aiming to send small satellites to research the prospect of minerals and ice for future mining. Another firm Planetary Resources aims to develop telescopes to analyze asteroids for mining.[5]

However, the pressing problem for mining at the moment is the astronomical cost of mining itself and space miners. NASA recently proposed its Osiris-Rex expedition that plans to bring 2 kilograms of asteroid material back to earth by the year of 2023, and this program is estimated to cost 1 billion U.S. dollars. This signifies that despite the global advancement in technology, it is still a challenge for many countries to launch space expedition and mining projects.[6] That is to say that outer space mining will be a more challenging project for smaller developing countries since these projects are extremely

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[1] Sarah Coffey, Establishing a Legal Framework for Property Rights to Natural Resources in Outer Space (HeinOnline, 2009), 121

[2] Coffey, 121

[3] Plans for Asteroid Mining Emerge, BBC.

[4] Asteroid Mining Space Minerals Legal Issues, the Guardian.

[5] *Ibid*, 4.

[6] Asteroid Mining Space Minerals Legal Issues, the Guardian.

costly for rich developed countries. Another obstacle is technology development since recent technologies are not advanced enough to facilitate commercial outer space mining.[7] In short, outer space has become a more promising idea for numerous countries as they anticipate more resources to be found. Not only nations but private mining companies are also closely paying attention to outer space mining at this time. United States and Luxembourg governments attempt to fund outer space mining projects soon, and they put their efforts in to approving legislations that would legalize outer space mining through allowing companies to own, sell, and transport outer space materials.[8] However, it is inevitable for them to face the breaches of the UN treaties such as the Outer Space Treaty and the Moon Agreement since these treaties ban the ownership of resources and planets outer space for the sake of peacekeeping in outer space.

All in all, history reveals that outer space mining is a promising future industry and technology. But at the same time, it can be the root cause of further global conflicts and controversies.

[7] *Ibid,* 4.
[8] *Ibid,* 4.

Definitions

International Armed Conflict:

All cases of declared war or of any other armed conflict which may arise between two or more of the High Contracting Parties, even if the state of war is not recognized by one of them. (https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/7c4d08d9b287a42141256739003e636b/44072487ec4c2131c125641e004a9977)

Civil War:

A war between and/or among citizens of the same country. (https://en.oxforddictionaries.com/definition/civil_war)

Natural Resource:

Useful raw materials harvested from the Earth that can be used to create more complex products. (http://study.com/academy/lesson/what-are-natural-resources-definition-lesson-quiz.html)

Near Earth Asteroid:

Asteroids which spend at least part of orbit between 0.983 and 1.3 Astronomical Units from the Sun (1 Astronomical Unit is the Earth's distance from the Sun). (http://www.planetaryresources.com/asteroids/why-asteroids/)

Externality:

A consequence of an economic activity experienced by unrelated third parties. (http://www.investopedia.com/terms/e/externality.asp)

Labour Law:

The body of law that governs the employer-employee relationship. (http://legal-dictionary.thefreedictionary.com/Labour+law)

Issues

International Proprietary Rights

Space represents a sparsely explored frontier yet to be colonized or claimed by any one nation. Just as has been the case with new lands discovered throughout the history of civilization, the exploration of space will make property claimants of most participating nations. On Earth, the discovery of lands abundant in exploitable resources has historically led to conflict between various states attempting to control these resource deposits. Conflicts of this nature have arisen on all inhabited continents at some point in their history: oil deposits discovered in various regions within Asia, Africa, and Europe have been a source of international dispute for the past century (http://www.energypost.eu/twenty-first-century-energy-wars-oil-gas-fuelling-global-conflicts/; resource deposits in sub-Saharan Africa and East Asia, too, have caused considerable international turmoil. The discovery of useable resources has on many occasions also resulted in the development of civil strife within a nation. There remain active civil wars in both the Middle East and Western Africa fueled by the exploitation of available natural resources (http://www.cfr.org/global/global-conflict-tracker/p32137#!/). The frequency and ubiquity of these conflicts has resulted in the emergence of a field of international law concerned with the creation and enforcement of national proprietary rights when disputed resource deposits are involved. It is part of the UN's mandate to enforce these standards.

Near Earth Asteroids (NEAs) are a natural 'next step' of exploration for those nations that can afford to embark on such expeditions. It is estimated that there are 42 trillion tons of useable resources contained within the roughly 13,000 NEAs identified so far (http://www.planetaryresources.com/asteroids/why-asteroids/). Some cosmologists believe that there may even be up to one million NEAs capable of supporting extractive enterprises. What's more, water scarcity is becoming a major cause for concern for many nations around the globe; some international relations experts suggest that this, too, may lead to significant international conflict (http://news.nationalgeographic.com/2016/07/world-aquifers-water-wars/). The

industry for mining water on NEAs is currently valuated by some at one trillion USD. Clearly there exists a need for debate amongst the to-be space exploring nations of the planet. Until the technicalities of national proprietary rights to resources discovered on NEAs are worked out, there exists the possibility of significant international conflict.

Sustainable Mining

Since large scale mining was first undertaken on Earth, it has become evident that there are significant environmental externalities generated by the process (http://web.mit.edu/12.000/www/m2016/finalwebsite/problems/mining.html). The rise of the environmental movement in the past few decades has seen a heightened level of scrutiny towards these practices. Mining companies have been forced by both regulation and public opinion to alter their production methods. A significant part of this adjustment has been in the making of the mining process more energetically efficient. As NEAs and other celestial bodies are explored and eventually mined for resources, a similar debate will likely emerge for endeavours undertaken in this new frontier. It remains to be determined if environmental damage caused by mining ought to be taken into consideration in space. The nature of the body on which the mining is being done will likely affect this debate, as those bodies intended for long term inhabitation will be subject to harsher scrutiny. Should environmental considerations come into play, the extent to which they should is a potential area of contention, as is which body of environmental law ought to regulate mining practices. A further consideration might be what impact environmental externalities have on the working conditions of those individuals stationed on these bodies.

Enforcement of Mining Labour Standards/ Human Rights in Mining

For centuries, all law and regulation pertaining to standards in the workplace was determined by those individuals considered 'owners of the means of production.' Many workers felt that this power dynamic did not reflect their best interests, and so initiated a political mobilization referred to as the International Labour Movement (http://www.history.com/topics/labor). The key tenets of this movement had to do with the empowerment of the worker, and the inclusion of the so called 'working class' in the legislative process. In many Western nations, the majority of legislation concerned with

conduct, safety, etc. in the workplace was borne of this political philosophy. It is under the purview of national and regional governments to enact and enforce these standards as they see fit. Ultimately, this movement gained varying degrees of traction throughout the world, with the aforementioned power dynamic resultingly existing in a range of states in different countries. As such, and given regional differences in political structure, the creation and enforcement of strict labour standards has been of varied importance for members of the international community. This discrepancy in legislation greatly complicates the construction of workplace regulation in places beyond the jurisdiction of any one country.

The International Labour Organization (ILO) and the World Trade Organization (WTO) have played a significant role in the development of international labour law . This body of law sets out to create internationally enforceable standards for the workplace. An important question for consideration in the exploration of NEAs and other celestial bodies is how labour standards will be enforced in space, which bodies of labour law will be considered appropriate for use in this context, and what special considerations need to be made, and perhaps new laws written, for labour being done in this jurisdiction. This debate will likely be further complicated by the ambiguity of international proprietary rights in space. If international law allows any one nation to lay claim to a resource deposit in space, how will this influence the enforcement of labour/human-rights standards in this working environment? If, on the other hand, international law dictates that resource deposits must be shared by vying nations, what impact will this have on the enforcement of labour law?

UN Activities

There are no specific resolutions or measures that exclusively discuss the subject of mining in outer space as it is yet to be fully explored. However, in the past few years, the United Nations passed numerous resolutions regarding outer space activities. For instance, it passed resolution 68/74 (Recommendations on national legislations relevant to the peaceful exploration and use of outer space) in 2013. Resolution 68/74 specifically clarifies parts of the Registration convention as it encourages appropriate national authorities to be in charge of the registry of space objects and proper authorization of space activities.[9]

As of now, the UN has had reports on a variety of issues such as space debris mitigation, near-earth object (NEO) management, global satellite systems, nuclear power use in outer space, review of the outer space treaties, and capacity-building in space law.[10] As COPUOS noticed a rapid growth in space expeditions and industries, it has decided that it is essential for them to discuss stronger enforcement of space laws and the idea of rule of law. That being said, COPUOS felt an urgency of aligning itself with new developments in space activities, such as mining outer space, so that it would be able to regulate outer space better in the near future.[11]

[9] Resolution Adopted by the General Assembly on 11 December 2013." United Nations General Assembly 68, no. 74 (December 11, 2013): 1–3.
[10] "Report of the Committee on the Peaceful Uses of Outer Space Fifty-Eighth Session." General Assembly Official Records 70, no. 58 (June 10-19, 2015): 1–53.
[11] Ibid.

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