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On the Legal Dilemma of Ownership and Exploitation Right of Outer Space and Its Resources and China's Solutions

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Abstract

The principle of common heritage of mankind embodies the requirement of developing countries for the distribution of ownership of world resources (including outer space) that cannot be seized by some countries. The allocation of ownership under the principle of common heritage of mankind contributes to the equitable distribution and use of the world's resources across countries and generations. The principle of common heritage of mankind is essentially the ownership of resources. Facing the increasingly frequent activities in outer space as such, however, there is no chance for international laws to play their role in regulating those activities. The contracting system adopted in the early stage of China's reform and opening up could be used for tackling the dilemma faced by the utilization of outer space resources and the distribution of benefits.

Keywords: common heritage of mankind, a community with a shared future for mankind, contracting system

I. Debate on Connotation of Law and Force of Law as to the Common Heritage of Mankind

The development of science and technology makes it increasingly possible to further exploit the resources of the earth and outer space. More and more countries, corporations, and individuals are becoming part of the ranks exploiting outer space. Legal issues such as orbital debris and geostationary orbit congestion, ownership of outer space and resources, commercial activities in outer space, risk of diffusion of ballistic missiles, private remote sensing systems, and international cooperation in outer space are involved in outer space activities. Among these legal issues, the ownership of outer space and resources stands out. Of the "Five Treaties on Space Law",[1] *the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* (1967) (hereinafter referred to as "Outer Space Treaty"), and the *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies* (1979) (hereinafter referred to as "Moon Treaty") are the two treaties on outer space and ownership system of resources. The Moon Treaty stipulates that the moon and its natural resources are the "common heritage of mankind", causing that no country shall claim sovereignty over celestial bodies in outer space.[2] Outer space is the res communis that cannot be occupied or used by any state, forming the basis for such regulations to a large extent.[3] According to this, the standard, which is used for dividing regions by sovereign states, res nullius and res extra commercium that had been accustomed to by the countries in the world since the Treaty of Westphalia was concluded in 1868, was entirely broken.

The first convention to use the term of "common heritage of mankind" was *the United Nations Convention on the Law of the Sea* concluded in 1958, which finds the contents of "common heritage of mankind" from the following aspects. First, no state is entitled to occupy and appropriate the deep ocean floor and its resources. Second, no state shall exploit and use the deep ocean floor and its resources unilaterally. Third, any exploitation and utilization with respect thereto shall be fallen within the scope of the framework of international development systems, and led by specialized international institutions. Fourth, the benefits arising from the exploitation shall be shared by all the countries in the world.[4] On account of this, adopting the concept of "common heritage of mankind" in the Moon Treaty in 1979 was supported by the vast number of developing countries but strongly opposed by the Soviet Union. Overt agreement though the United State was, it, like the Soviet Union, overtly held a negative attitude towards the concept that any country shall not unilaterally exploit and use the deep ocean floor and its resources.[5]

In the academic circle, there are two completely opposite explanations of the term "common heritage of

mankind". One of the viewpoints is that countries of the world would not directly claim sovereignty over outer space and its resources, as long as the rights of their citizens can be admitted in relevant areas and will not be jeopardized by other countries by means of exercising the jurisdiction and protection. On the contrary, countries can acquire extraterritorial sovereignty through the actions of their citizens.[6] Those who hold the opposite views proposed that countries not claim sovereignty over outer space and its resources, and that the ownership of outer space and its resources be possessed all human beings. Prof. Wang Tieya, the late renowned internationalist and judge of the International Criminal Tribunal for the Former Yugoslavia, upheld that outer space first took human beings as the subject and then property as the object, and finally emphasized the point of 'common'.[7] Prof. Liang Shuying stated briefly that the areas falling out of the area of national jurisdiction and resources there are common areas and the common property of all human beings. For this purpose, their ownership shall belong to all human beings.[8] According to the research of Prof. Liang at that time, there were many scholars in Sri Lanka, Chile and even the United States who held similar views. In their view, even the economic benefits arising from exploiting natural resources within a common area should be shared by the countries in the world. Activities aimed at obtaining commercial profits and private gains, however, should be considered as illegal unless those would be used to advance the common good of all human beings.[9] Furthermore, no country shall claim sovereignty. Pursuant to Articles 2 and 6 of the Outer Space Treaty, nor shall any individual, private organization, international organization (intergovernmental or non-governmental) or other non-governmental organizations make a sovereign claim to outer space and its resources.[10]

Along with the controversy over the connotation of "common heritage of mankind", the force of law of this principle has been disputed as well. In general, views of scholars in this respect can be grouped into four categories: general principles of law[11], jus cogens rules[12], customary law[13], or just political or philosophical concepts[14]. The "common heritage of mankind" has not yet been part of international custom or a general principle of international law; instead, it is only a legal concept in terms of international outer space law.[15] But this does not impede the countries considering the concept as a legal obligation to comply with as long as they "accept" or "recognize"[16] the rule.

Both of the Outer Space Treaty and the Moon Treaty froze claims to sovereignty and adopted the principle of common heritage of mankind. The treaty was established in the historical context of warding off the arms race of the United States and the Soviet Union to escalate to outer space. In addition to this, this rule still has its legal significance in view of the fierce competition in outer space. Just think which country will possess the "bright moon" coming into our eyes today if countries are permitted to claim sovereignty over outer space? According to the way by which countries obtain their territory under international law, which country can exercise effective governance over outer space? Grotius argued hundreds of years ago for the right to freedom of trade and freedom of navigation on the basis of different products in different places and the nature that no trace would be left after a ship passed through. Similarly, opening the land accessible to all nations to all people is stipulated by the jus gentium.[17] Like the oceans, deep sea floor, and the south pole on the earth, outer space is of such characteristics. The arrival of human beings at these areas was not for possession and plunder. In terms of the ownership system of outer space and its resources, we should adhere to the principles of excluding sovereignty and "common heritage of mankind", although the former is clear-cut and the latter is not that unambiguous.

2. The Function of the Principle of Common Heritage of Mankind in the Development of Global Commons Resources

For human beings, outer space and its resources are the same as all things on earth that had been owner-less before the emergence of laws. Outer space and its resources are supposed to be shared by human beings, rather than a certain person or country. It was human labor that turned the owner-less into the possessed.[18] For things that we human beings cannot possess even through "labor", however, they are the "res communis" defined in Roman law. The things commonly possessed by human beings pursuant to natural law shall not be those owned or used by anyone.[19] On earth, the areas in the "res communis" state are limited to the south pole, the high seas, and the deep sea bed, except for the scope of jurisdiction governed by the sovereign of nations.

With the help of the rapidly developing science and technology, human beings can occupy some places including the south pole, the high seas, and the deep sea bed, such as the establishment of research stations in the north pole and the south pole, and the construction of artificial islands in the sea. But changes in natural form did not affect the nature of the res communes in these areas. Nor did international laws permit any "private" or "sovereign" status in these areas. Of course, the resources and benefits of these regions cannot be appropriated. The *Charter of Economic Rights and Duties of States* was adopted by the UN General Assembly in 1974, calling for the establishment of a new international economic order that was based on fairness, equality, interdependence, mutual benefit and cooperation. Under the new international economic order,[20] plundering natural resources in a

manner of infringing the economic interests of developing countries would be impracticable.

However, developed countries such as the United States, the Great Britain and Germany opposed the voting of the *Charter of Economic Rights and Duties of States*, while Japan, France, Italy and other countries abstained. Such voting results just mirrored the stance of developed countries on the establishment of the new international economic order. Likewise, the United States did not become part of the *United Nations Convention on the Law of the Sea* (1982) wherein the principle of common heritage of mankind had been incorporated. When the International Sea-Bed Authority was established, the United States provided for in its newly enacted act (*the Deep Seabed Hard Mineral Resource Act*) that the United States shall be entitled to authorize its citizens to exploit, develop, and benefit from, the international seabed areas, while mutually recognizing the exploitation licenses with other countries.

The problems of wasting resources, destroying the ecological environment, and affecting the global climate should be tackled under the principle of common heritage of mankind.[21] There is no perfect system in the development of the south pole, earth orbit resources and radio frequencies, the moon and other celestial bodies and their resources, although a relatively complete legal system has been established at the international level in the development of the deep sea bed.[22] What's more grievous is that the development of these areas has seriously damaged the environment, for example, accelerated extinction rates of Antarctic species caused by the development of Antarctica[23], threats to the safety of space activities due to increasing debris in earth's orbit[24], and atmospheric pollution arising from soot from rockets.[25] Moreover, another typical case is that the expensive commercial space travel has become rich man's game.

Countries should at least have established corresponding norms of international law in the areas of international seabed, fishing in high seas, and scientific research and development in the south pole. However, there is a dearth of legal norms for a wide range of development activities and benefits of outer space.

3. China's Approaches for the Development of Outer Space and Its Resources

3.1 Guiding Principles and Role Positioning of China's Participation in the Legislation of Outer Space

In the opinions of the author, the force of law of the principle of common heritage of mankind itself, if any, is limited to the ownership of celestial objects in outer space and its resources. In the exploitation of resources, a mechanism such as joint development of the international seabed or development of the south pole should be established to coordinate the activities of countries in the exploitation of outer space. However, western space powers, especially the United States, always conflate the two issues as these will affect the exploitation right and distribution of rights. They even used the solution of the latter to affect the former. A typical case is that the United States believed that a facility can be set up in outer space and maintained for a period of time to establish property rights. Alternatively, safety zones to which other countries are prohibited from entering could be created; further, private charters could be granted by the state for the purpose of indirect occupation of outer space, etc.[26] Is there any difference between this method and first discovery & time-based approach under traditional international law to obtain territorial sovereignty? The practice that a country can unilaterally change the legal status of celestial bodies in outer space and its resources, including the moon, in this way will only benefit space powers and make outer space a "rich man's club". As a result, outer space and its resources have become the economic colonies of aerospace powers, sacrificing the interests of the vast number of developing countries again.

China's aerospace technology has achieved fruitful results in a very short period of time. However, what cannot be ignored is that China should spare no effort to strengthen the theoretical research on outer space law. Apart from the earlier research results mentioned above, Chinese scholars have put forward the following main points. (1) China should strengthen the study of related doctrines. Views in this regard include: common but differentiated responsibilities, fair competition without discrimination, and international open access to space debris data.[27] (2) China should make every effort to advocate the peaceful division of space ownership, establish a unified international coordination agency to manage space utilization, and formulate unified space regulations to prevent the "tragedy of the commons" caused by the "principle of common heritage of mankind".[28] (3) The resource development system with fairness and efficiency should be improved, while paying attention to the practice of the seabed administration.[29] (4) Internationally, China should vigorously curb and postpone the exploitation of outer space resources by countries such as the United States and private individuals. Domestically, the strategy for the development of outer space resources should be actively implemented, including legislation, implementation of space programs, and reinforcement of technological and legal research.[30] (5) Guided by the idea of "a community with a shared future for mankind", China should adhere to the principle of cooperation and sustainable development.[31] These views, however, "seem to be inclined to purely academic research".[32] The

author deemed that the contradiction between the ownership of celestial objects and resources in outer space, and the exploitation, utilization and benefits of outer space is the core of the exploitation of outer space resources. China should, as a signatory to the Outer Space Treaty and a developing country that ranks among the space powers, adhere to the principle of common heritage of mankind. To solve this contradiction, we must first clarify the guiding principles and role positioning to propose a Chinese approach.

The guiding principles of Chinese approach include, first of all, that the legal principle of "common heritage of mankind" be firmly adhered to. The principle of "common heritage of mankind" is highly compatible with the ideology of "a community with a shared future for mankind" proposed by China. Both of them emphasized the common interests of human beings as a whole, and the space law based on the Five Treaties on Space Law constructed a new space order for this purpose. The idea of this order is that human beings will fight for the common good with concerted efforts.[33] The prevention and control of Covid-19, eradication of hunger and poverty, combating terrorism, climate change, and cybersecurity are not only global issues facing the regular international community, but require the joint efforts and cooperation of all countries. The concept of "a community with a shared future for mankind" proposed by China—the highest guiding ideology and principle for it to participate in the solution of international governance and international rule of law—reflects the Chinese government's strategic thinking in facing international issues, of course, outer space activities.

Second, for the following reasons[34], China should serve as a robust and constructive participant in the international legislation of outer space law.[35] (1) China rose in a peaceful era when international rules were already quite complete. Under such circumstances, what China can do is to actively out itself in international rules to comply with and formulate them. (2) Instead of a bystander of international rules who is outside the process of making and changing international rules, China should strengthen the awareness of creating international rules. (3) Due to the legitimacy and rationality of current international rules, China should not challenge the rules. Any challenging behavior will be counterattacked by the existing hegemonic countries, and will directly damage the interests of the country itself, before such legitimacy and rationality are lost. China's high-profile economic achievements after its reform and opening up are directly related to its making much of and deferring to international economic rules. (4) Generally, China has been deeply integrated into the existing system of international rules and benefited from compliance with international rules. Given this, there is no reason for China to attempt to rebuild international rules on a massive scale. On the contrary, China should, in the capacity of a constructive participant, actively improve, guide and mold international rules in a more fair and reasonable direction that is conducive to China. In brief, what China should do is to continue to maintain the existing international rules that are still of legitimacy and reasonability. For one thing, it should play a constructive role in reforming unreasonable international rules. For another, China should actively pioneer the creation of rules in new areas where international rules have not yet been consummated.

Activities in outer space are increasingly frequent. As a major aerospace power and a developing country, China should actively participate in the formulation of new international rules and put forward Chinese approaches for the benefit of China and developing countries.

3.2 Application of China's Contracting System in the Development of Outer Space and Its Resources

China has spared no effort to uphold three positions in the exploitation of outer space and its resources: the principle of "common heritage of mankind", the principle of separation of ownership of outer space and celestial bodies and the right to resource exploitation, and the principle of integrated planning and free exploitation of outer space resources under international law. China has adopted specific mechanisms to practise these three principles. First, the sovereignty claim of every country over celestial bodies in outer space and its resources, including the moon, was frozen, while putting on hold the disputes over the ownership of outer space. Second, China has established international agencies similar to the International Sea-Bed Authority, or international trustee agencies such as the United Nations Trusteeship Council, to be responsible for the overall management of the exploration, exploitation, application, and benefit distribution of outer space and its resources. Third, China has adopted the contracting system to develop outer space resources, requiring that investors and managers of outer space resources share benefits in line with the agreement. These three mechanisms specifically include the following aspects.

First, the sovereignty of states over celestial bodies in outer space and its resources is frozen, as stipulated in Article IV of the Antarctic Treaty. In terms of international law, no country is permitted to claim sovereignty over outer space. In terms of domestic law, both NASA[36] and Chinese courts[37] hold that no individual or country shall claim ownership of celestial bodies, including the moon. The legislation or agreements of the United States, Luxembourg, the United Kingdom and other countries only define the issue of national protection against private

exploitation, utilization and benefits of natural resources in outer space, and secure the interests of private investment, rather than referring to the ownership of celestial bodies in outer space and its resources.[38] In consequence, the most pressing issue now is the right to exploitation and benefits, not the issue of ownership of celestial bodies in outer space and its resources.

Second, the proposal to organize an international agency with unified management is nothing new. As suggested by some foreign scholars, an independent agency organized under the auspices of the United Nations should have the legislative power to formulate laws and regulations that can maintain investment security in outer space travel and the enforcement power to execute these regulations, as well as the judicial power to resolve disputes. One of the primary functions of the independent agency is to establish a property right system under which investment and exploration in space are advocated, while retaining the ownership of celestial bodies.[39] Some scholars referred to the previous example of the International Telecommunication Union (ITU), stating that it does not actually own relevant frequencies, but coordinates the use of frequencies.[40]

The author suggests that the international agency so established refer to the structure and functions of the International Sea-Bed Authority, without any right to claim ownership of outer space and its resources. Any attempt to build an international agency should be based on the support of countries in the world. China can take the lead in building it to actively explore and create international rules for exploitation activities in outer space, drawing on the experience of initiating and founding the Asian Infrastructure Investment Bank.

Third, the priority among priorities in the exploitation of outer space resources is to secure the benefits of investment and exploitation, and to encourage people to continue to explore. The primary reason for the United States to vote down the Moon Treaty was that it firmly held that the Moon Treaty would restrict the development of a free economy.[41] The utilitarian position of the United States is clear. But it is undeniable that outer space exploration is dangerous and costly. Without the support of necessary incentive mechanisms, even a great cause can hardly be sustained.

Two conditions must be met at least for a mechanism to exploit outer space and its resources. Firstly, the legal principle of "common heritage of mankind" is complied with, which is in line with the provisions of Article 2 of the Outer Space Treaty and Article 11 of the Moon Treaty. Secondly, both enthusiasm and initiative of all parties involved in outer space exploration should be fully mobilized, while securing that the human activities in outer space exploration can proceed with. The contracting system adopted by China in initial stages for reform and opening-up was an extremely sensational mechanism that fully meets these two conditions. The contracting system had three typical characteristics. First, the ownership and management rights were clearly separated. Second, the distribution of responsibilities, rights and interests had been clearly explicit. Third, it functioned as a transitional system.[42] Furthermore, the contracting system with flexible and diverse forms, which had been widely used in all walks of life, can be combined with such economic forms as shareholding system and cooperative operation.

The contracting system for the exploitation of outer space resources consists of four aspects, as follows. First, countries, corporations, individuals, etc. act as the main contractors, or work in various forms such as cooperation and holding among these main subjects. Second, the contracting system can be widely used in the field of resource exploitation of outer space, such as outer space travel, exploration and development of astronomical resources in outer space, disposal of orbital debris and garbage, and other commercial activities. Third, the terms such as contracting term, profit sharing, rights and obligations of contractor and employer can be flexibly set out in the contract pursuant to different outer space activities. Fourth, the contracting system can be used as a transition mechanism; more efficient mechanisms could be employed as space technology and legal norms continue to mature. Supporting mechanisms such as detailed regulations, evaluation standards and financial systems will definitely be developed during the specific implementation process.

At present, the applicability of the contracting system to the exploitation of outer space resources can only be compared with the regional development system adopted by the International Sea-Bed Authority. The development system of the International Sea-Bed Authority always comes with complicated payment systems[43] and decision-making systems. For this reason, the United States has so far been reluctant to join the *United Nations Convention on the Law of the Sea*.[44] In comparison, the exploration and development of outer space are inseparable from plenty of inputs, more complex techniques and longer return period, with higher risk. Therefore, the necessary incentive mechanisms in this respect should be established to attract more countries to be part of the development and exploration of outer space resources.

4. Conclusion

It cannot be denied that not every country is able to participate in the exploration and development of outer space

because this field requires the solid foundation laid by super strong technological and economic strength. The vast number of developing countries desire to benefit from the achievements of the exploitation of outer space, but they do not have the ability to take risks. Furthermore, they pin their hopes on the legal principle of "common heritage of mankind" to restrict space powers from exclusively dominating and monopolizing outer space. Nothing more important than determining ownership of outer space, however, is the exploitation and use of outer space. Relying on abundant funds and technological advantages, as well as scientific and technological strength, aerospace powers such as the United States and Western Europe vainly attempt to dominate and monopolize the utilization and benefits of outer space resources. In view of this, efforts must be made to give full play to the role of international law in guiding countries and regulating their acts in outer space. China, a space power and a developing country that has come after, must hold fast to its own philosophy and role. At the same time, China should further the perfection of outer space law with the responsibility of a great nation.

Notes

[1] The "Five Treaties on Space Law" refer to *the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1967)* (hereinafter referred to as "Outer Space Treaty"), *the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968)* (hereinafter referred to as "Rescue Treaty"), *the Convention on International Liability for Damage Caused by Space Objects (1982)* (hereinafter referred to as "Convention on International Liability"), *the Convention on Registration of Objects Launched into Outer Space (1976)* (hereinafter referred to as "Convention on Registration"), and *the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979)* (hereinafter referred to as "Moon Treaty").

[2] The Outer Space Treaty (1967), Article 2; the Moon Treaty (1979), Paragraph 1, Article 11.

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[16] As set out in paragraph b, Clause 1, Article 38 of *the Statute of the Court*: international custom, as evidence of a general practice accepted as law. In paragraph c, Clause 1, Article 38 of *the Statute of the Court*: the general principles of law recognized by civilized nations. As set out in paragraph c, Clause 1, Article 38 of *the Statute of the Court*: the general principles of law recognized by civilized nations.

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