Space Activity Regulatory Matters of Space Law

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This article studies the issues of international space law and analyses the reasons for its occurrence. At the moment, space law actively develops, and space exploration has become increasingly popular and demanded. Nevertheless, this field's legal regulations were drawn up in the mid-20th century and are now partly obsolete. Moreover, the set of space-related legal relations in regard to the exploration and use of outer space and celestial bodies undergoes significant changes. Therefore, it is of sufficient importance to seek new possible areas and improve existing means of resolving current legal issues to ensure the progress of international and national space law.

Every year problems related to unregulated actions of private companies in the sector increasingly occur. This topic requires analysis to provide ways to address those gaps in international space law.

Keywords: legal and regulatory framework, space law, international space law, national space law, commercialization, spaceX.

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Introduction

Space law is a young sector of law and sufficiently progressive. It is essential for activities in outer space to be governed by high-quality international and national law and for any problem to be solved as soon as possible. International activities function according to five international treaties supervised by the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), namely (Space, 2020):

1. "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies" of 19 December 1966.
2. "Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space" of 19 December 1967.
3. "Agreement Governing the Activities of States on the Moon and Other Celestial Bodies" of 5 December 1979.
4. "Convention on International Liability for Damage Caused by Space Objects" of 29 November 1971.
5. "Convention on Registration of Objects Launched into Outer Space" of 12 November 1974.

In many countries of the world, domestic legislation has used the legal basis of the above-mentioned instruments in their national space law, thus accommodating the legal framework in accordance with the contemporary requirements and needs of the sector.

Current issues facing international and national space law

"Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies" is a legal basis of international space law. The instrument entered into force in October 1967 (Space Law, 2020).

Its principles are (RES 2222, 1966):

a) states shall be responsible for national space activities whether carried out by governmental or non-governmental entities;
a) the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind;
b) the Moon and other celestial bodies shall be used exclusively for peaceful purposes;
c) states shall not place nuclear weapons or other weapons of mass destruction in orbit or on celestial bodies or station them in outer space in any other manner.

Over time, however, some significant problems, which are not regulated in any way by international space law, have occurred, such as commercial flights, space waste, and controls on the export of space resources. Researchers such as Joel A. Dennerley, Islam Mohammad Saiful, Olga Stelmach, and many others have addressed these issues. In addition, the need to improve the United Nations treaty framework on space law has been repeatedly raised in the writings of scientists such as G. Zhukov, E. Korovin, Y. Kolosov, V. Kopal, A. Yakovenko, and others. Nevertheless, disputes are whether to develop existing rules or develop and adopt a new universal instrument.

According to Olga Stelmach: "The international legal issue with regard to the safety of space activities is a complex one. Its integral components are minimization of space debris,

ensuring the safety of nuclear power source applications in space and human activities in outer space" (Stelmakh, 2015), with which we agree and would like to consider in more detail the scope of the topic.

These issues need to be addressed in the coming years since future frequent commercial human space flights could lead to deeper legal issues related to liability, insurance, informed consent of passengers, licensing, and safety regulations (Critical, 2014).

Moreover, the security of outer space in the orbit of our planet has been raised. The treaties, conventions, and agreements that still regulate space activities were written at a time when only a few countries were sending satellites into orbit. To date, private companies with sufficient resources to decide to launch their own missile or satellite have occurred (Islam, 2019).

SpaceX is one of the most popular companies that launch 12,000 new satellites into space and design a large constellation of small commercial satellites. In the United States, the United States Federal Communications Commission (FCC) gave permission for the launch. Still, the regulatory issue and similar consent to the use of satellites in the territory of other States of the company remain open. In the USA, the United States Federal Communications Commission (FCC) permitted the company to launch, but the regulatory issue and similar consent to the use of satellites in other States of the company remain open. The company has encountered legal issues around the world, as many States still have no regulation on the security of outer space (Sheetz & Petrova, 2020).

Moreover, Elon Musk has not fully presented a solution to the problem at the international level regarding waste disposal from orbital and non-operational satellites (currently more than 5,000 objects are in Earth orbit. About 2,000 of them are working. The situation may change with 12,000 new vehicles). All this makes many countries of the world consider their own security that could be threatened since 12,000 satellites will be in space, able to control communications and the Internet around the world, and no one at this point will be able to control SpaceX from a legal point of view, including (Elon, 2020).

Furthermore, currently, a problem of unresolved interactions between States regarding international missions, such as between the State of registration and a foreign or international element (which State's law should apply if the legal event to be regulated by private international law has taken place on a manned object or outside its outer space of another country?) is amply discussed, as well as the question of the protection of "ownership" (inventions and discoveries in the course of outer space activities outside Earth subject to intellectual property rights), that is, under the law of which country ownership is to be determined since the expeditions can involve more than one country with different national legislation (Beglyi, 2012).

Next, the issue regarding the launch, management, and return of commercial space objects has not yet been adequately addressed at the international level. However, these issues scratch only the surface of tasks to be considered by States that design and finalize national space law (Dennerley, 2018). On the one hand, projects aimed at generating commercial benefits require promotion and encouragement, and, on the other hand, the fundamental principles and standards of international space law, particularly those concerning the exploration and use of outer space for the benefit and in the interests of all mankind for peaceful purposes on the basis of non-discrimination and international cooperation shall have strictly complied.

National space legislation could be an effective tool to address the commercial aspects of the problem, while public law should be a priority at the supranational level.

Addressing issues of concern in space law

The regulatory framework for space activities, including private companies, should focus on controlling flight permissions, spacecraft and satellite launches, and space research. This requires the improvement of international space legislation as the basis for the reform of national space legislation, as follows:

a) clear procedures for monitoring private space organizations and their activities should be established, as well as rules on liability for failure, improper performance, or inaction with regard to international space law;
b) the regulatory framework for commercial space flights should be under focus, and the liability of carriers and operators should be established;
c) in the future, space commerce would be introduced in the development of space tourism, and a section should also govern this issue in the regulations;
d) information, insurance, liability, licensing, and safety rules should be established at the international legal level in commercial transportation;
e) the world is already facing the challenge of a large amount of space debris in Earth orbit, which is growing every year (defunct satellites, their fragments, technical oil, etc.), and is quite dangerous because it is this debris that can damage parts of the suits, operational satellites, etc.

Nowadays, such wastes are not being disposed of because no rules are established for countries to be obliged to dispose of waste and not to leave it in Earth orbit. In the future, it could cause many problems for science, make it more difficult to transport and deliver goods to international space stations, limit access to satellite services, and make spaceflight more difficult. The procedure for the disposal and control of space wastes should be developed and provided for, as well as liability for non-compliance with international law on this matter should be established.

According to Dinar Valeev, it is necessary "to pay attention to the projects that do not pollute outer space, as well as to combine legal, operational and design solutions, contributing to the objective of the eventual limitation of orbital debris in the course of any space activity. It should also be noted that, while the overall pollution of outer space will increase, a set of technical and legal mechanisms against space debris should be established, using the joint efforts of the entire international community" (Valeev, 2019).

Furthermore, international and uniform terminology in space law should be under focus because currently, some inconsistencies exist. For example, in English versions of international treaties, the word "astronaut" is frequently used, while in the post-Soviet countries, the word "cosmonaut" is used. In China, the word "taikonaut" is used to define the envoys of humanity. A. Solodovnikova has studied this issue, and she concludes, "Extraordinary allegoristic recognition, in Art. 5 of 1967 Outer Space Treaty, astronauts as envoys of humanity in outer space may lead to the delusion that astronauts have a supranational status. Conversely, according to Art. 8 of the Treaty, a State on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. However, the understanding of astronauts as envoys of mankind in outer space can be interpreted from the perspective of special provisions regarding the obligation to render astronauts all possible assistance in the event of an accident, distress, or emergency landing on the foreign territory, high seas and return to their homes" (Solodovnikova, 2019).

The recent successful delivery of Cygnus cargo to the International Space Station, the launch of the Falcon 9 rocket, all of which are a reminder of the successes in space and potential future unregulated legal issues. In 1967, with the signing of the main Treaty, they could not have imagined the problem created by private companies, technological progress, but it still needs to be addressed in the coming years because serious international conflict is possible.

Conclusions

In conclusion, the key international legal instruments on outer space were designed in the mid-20th century and could not at that time foresee all the modern technological breakthroughs, and that is why they need to be changed. If international and national legislation were updated, conflict situations could be minimized in the future.

The sectors require to be updated as follows:

1. Security: it is very important that research conducted in space by individual States or private companies in no way have States on Earth been concerned about their security and the privacy protection of the population.
2. Economic security: this issue should be under special focus since the financial security and independence of each State are an important component of the world economy. It is very important that no country should be pressured by private companies or other States in the exploration and use of outer space.
3. Ecology: the more satellites are sent to Earth orbit each year, the more the amount of debris and waste. This fact is a time bomb and could seriously affect space science. Recycling of waste, non-operational satellites, and other debris must be developed and ratified, and it is the obligation of each actor in space.
4. International medicine: as more scientists and tourists are sent to outer space each year, it is necessary to develop a procedure for rendering medical assistance, insurance, a procedure for licensing such trips, and of course, instructing the safety of each space expedition student.

This list of sectors that need to be addressed is not exhaustive since space law is a dynamic field of law, and therefore the topical space legal issues that need to be given due attention will always arise. Because of this fact, in the future, an extensive regulatory system for a particular field of space law will occur. As a result, its adoption, ratification, and implementation by the States involved in space development would be complicated. Therefore we propose to unify the rules of space law into an international space code.

It should unify and regulate all regulations that are legally binding for now in space law, as well as it requires ratification by States parties to space exploration. The instrument should also address the issues mentioned above.

In the near future, the procedure for the development of new rules of space law and for the ratification and unification of the new international code of space law. These changes will give public and private companies the chance to develop space science, space technology and find common ground, leading to further progress in the sector.

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