The Innovative Paradigm of Space Relations Development

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Danylenko, Anna (2021) The Innovative Paradigm of Space Relations Development. *Advanced Space Law*, Volume 7, 12-18. https://doi.org/10.29202/asl/7/2

The relevance of this article is based on the need of investigation and research an effective legal mechanisms to regulate the development of new space technologies, which have already provoked problems such as insufficient regulation of space commercialization, space debris disposal, cybersecurity of satellites, other space objects and the general legal liability of space offenses. The study was conducted based on scientific doctrine analysis, international documents and national legislation, certain norms of the United States and Ukraine governing space relations, as well as statistics on the space industry financing in the United States and Ukraine. The methodological study basis consists of leading methods of scientific research – analysis and synthesis, deduction and induction, formalization, formal-legal, comparative-legal, as well as the method of legal modeling. It is revealed that today space relations unite two parallel paradigms of their development – international and national. Each of them pursues its own goals, although formally, they are united by a common slogan. The hypothesis of the need to create a global administrator as a union, which will launch the latest model of settlement of space relations, which will be based on special rules that will determine a unified legal regime for outer space usage and development.

Keywords: outer space, space relations, space legal relations, development, global administrator, global administration

Received: 6 March 2021 / Accepted: 7 April 2021 / Published: 29 June 2021

Introduction

The genesis of social development and statehood testifies to the existence in the world of various models of social relations legal regulation. Under the influence of objective or subjective factors, each country has chosen the type and method of its regulation that best illustrates the proper implementation approach of the social contract. As a rule, public relations are governed by law, precedent and legal customs. To a greater extent, it is the laws that regulate mankind's daily life. They have authority and, in the case of strict regulation, a measure of coercion. This is due to the need of mechanisms development to ensure the harmony of social development.

It should be understood that any legal relations are a form of social relations. They are always endowed with the ability to develop as they arise on the basis of relevant legal norms. Such norms are established and provided by the state and are in constant dynamics.

The axiom is that people live together in an interdependent environment, and their problems require proper settlement (Hart, 1954: 489). The state and society must support each other to cope with poverty and achieve prosperity (Djoharwinarlin, 2012: 345). In this process, the state supports society by providing opportunities and access to preserve traditions and adapt them to a dynamic era (Djoharwinarlin, 2012: 345). Society obeys the law and receives the right to demand from the state to guarantee, protect and ensure the public interest.

The emergence of the first rule of space law – the "instant principle" prompted humanity to rethink the system of public values. There was a need for the formation of joint, supranational mechanisms for regulating such a phenomenon as space relations. In this regard, the first space powers began to sign international space treaties, which became the basis for international space law formation. These norms served as the principles on which space activities should be carried out. However, proper mechanisms for strict regulation of space relations were not provided.

In particular, although the exploration and use of outer space, including the Moon and other celestial bodies, is carried out for the benefit of all countries, regardless of their level of economic or scientific development, and is the property of all mankind (Article 1 of the Treaty on the Principles of State exploration and use of outer space, including the Moon and other celestial bodies, adopted by General Assembly resolution 2222 (XXI) of 19 December 1966 (Res 2222 (XXI), 1966)), there are already evidence of illegal space activities, in particular remote sensing of the Earth from space, in field of satellite broadcasting or usage of nuclear energy sources in outer space. A clear example of this is the crash of the Soviet artificial satellite Earth "Space-954," which led to radioactive contamination of northern Canada in 1978 (Cohen, 1984).

The relevance of this article is based on the need of investigation and research an effective legal mechanisms to regulate the development of new space technologies, which have already provoked problems such as insufficient regulation of space commercialization, space debris disposal, cybersecurity of satellites, other space objects and the general legal liability for space offenses.

Approaches to defining the space relations essence

It should be noted that any legal relationship is a purely social link, which is the social effect of objective law (Jeuland, 2020: 2). That is, space law and space relations are not identical categories. It should also be borne in mind that space relations are a kind of legal and have a number of common features.

The positions of legal theorists Emmanuel Jeuland classified according to the concept of legal relations into four categories:

a) Category 1 (e.g., Duguit, Kelsen): those who criticize or ignore the concept of the legal relation as legal relations between people;
b) Category 2 (e.g., Valley, Savigny): those who use the concept of the legal relationship without making it the basis of law;
c) Category 3 (e.g., Somek, Pavlakos): those who recognize legal relations as a theory within the dogmatic approach to law;
d) Category 4 (e.g., Nedelsky, Foucault): some philosophers of the law insist on human relations (Jeuland, 2020: 4-7).

On the one hand, it is a means of legal influence on public relations and its outcome. On the other, the social relationship between individuals is characterized by the presence of their legal rights and responsibilities (Baklanova, 2017: 1018).

From the knowledge of cosmic norms origin, it is clear that first there were cosmic relations, which prompted the international community to form an international legal regime for outer space usage and development, which led to their rebirth into legal relations.

This indicates a significant number of their varieties, each of which has its own legal regime. First of all, it is international, which is based on the need to regulate supranational relations between states and private companies operating under their auspices and are active actors in the study and development of outer space. This is implemented by joint agreements and acts of supranational institutions and organizations.

At the same time, international space relations at the beginning of its existence were based on the principles of publicity. At the time, this meant that only the state was responsible for space activities. However, the scientific development of the private sector has significantly outstripped the space innovations of state institutions, so the change in space legal relation nature from public to mixed (public-private) was inevitable and depended only on time (Soroka, 2017: 331).

However, it is more appropriate to assume that space relations are always public, although they may have a private commercial nature. It is implied that the world development of the scope determining the public interest forms a new paradigm of perception of legal relations publicity signs. Today it is quite difficult to form a clear parallel that distinguishes between public and private relations based on public interest, especially in the development and use of outer space, the resources of which are mankind property.

That is why modern international space law expands the traditional notions of spatial boundaries and regulates the effect of general international law on relations between its subjects (Kapustin et al., 2021: 21). Among the most complex and controversial problems of international space law is the problem of determining the range of subjects of this branch of law and the constituent elements of international space law. Unfortunately, these structural elements of the studied system have not yet received a sufficiently complete development and unanimous solution in theory international law. Nevertheless, there is currently a serious legal framework governing legal relations in the field of space activities (Baklanova, 2017: 1017, 1019).

The second is national, which is directly related to the admission, preparation and implementation of space activities by a single country. These issues are regulated by national space law and provide rules of conduct that space actors must follow before and during space activities. As an example, in the USA, such rules exist concerning 1) commercial space regulation, 2) satellite remote sensing of the Earth, 3) satellites of communication, 4) national

aeronautics and NASA activity, and 5) space production. Most of these issues are addressed through space policy, which is implemented through appropriate programs that provide specific administrative rules for its implementation (Smith, 2018: 43). In particular, the crisis of 2000 led to a rethinking and reform of space programs and policy and the development of a new U.S. space doctrine, which is now based on: reducing manned projects and giving preference to automatic flights; redistribution of responsibilities between NASA and private commercial sector (the federal sector is responsible for developing strategic public policies and supporting basic space research, and the private sector is responsible for manned flights and scientific and practical use of Earth's orbit). In addition, the U.S. federal government is currently encouraging policies that require a nationwide focus on job creation related to space activities rather than the pursuit of leadership in accordance with old standards; reducing budget expenditures and increasing public-private partnerships in space projects (Soroka, 2019: 336).

The current state of space relations development

Today, space relations unite two parallel paradigms of their development – international and national. According to the international space relations paradigm, space exploration is a new level of science and technological knowledge, design and testing of fundamentally new strategies for human activity, sources of expanding the boundaries of knowledge and experience (Danilyan & Dzeban, 2019: 7). At the same time, the national paradigm of space legal relations concerns obtaining the maximum selfish result from space resource usage, their transformation into economic values, which will primarily satisfy the national public interest, although formally related to universal values. This is due to the fact that space exploration is expensive.

However, for the United States, as an example, this is a relatively small budget. NASA's spending peaked at nearly 4.5 percent of the federal budget in 1966, fell to 1 percent by 1975, and gradually fell to about half a percent in recent years. By comparison, defense spending in recent years has accounted for about 20 percent of the budget. Congress has allocated about $ 23 billion to NASA in 2021, about 3 percent more than the previous year (Markovich et al., 2021). In other countries, where the financing of space activities is not a priority in terms of socio-economic problems, it is quite a significant financial resource. In particular, for example, the analysis of statistical data and reports of the Ukraine State Space Agency on the financing of scientific and technical activities in the space industry revealed a fairly constant trend of changes in the total costs of this industry. On average, for the last 20 years, approximately 1.5 billion UAH (in 2015 prices) has been spent annually from all (budgetary and extra-budgetary) sources of funding for scientific and technical activities in the space industry.

Moreover, the maximum value of total costs was reached in 2004 (over 2 billion UAH in 2015 prices) and the minimum – in 2018 (over 798 million UAH in 2015 prices) (Bulkin, 2020). It is clear that any financial investment must be justified by the results obtained. And in today's realities, economic benefits are of greater value to less developed countries.

This indicates, firstly, the objective access inequality of countries to the possibility of space exploration, secondly, the change of orientations on the goals of space exploration, thirdly, the different level of space relations development and, consequently, the lack of a unified approach to its use – some countries are active, and most are not.

It is clear that with the emergence of the phenomenon of outer space commercialization, more and more states are interested in the idea of bringing people into space (Til, 2013: 3).

However, there is still no legal regime for the implementation of this. In addition, there are a number of space legal relations, the international or national regime of which is not appropriate to apply.

Of course, space commercialization has many advantages, but in addition to the aspects of practicality and safety, it requires proper regulation of the impact of constant rocket launches on the environment. Some environmentally conscious researchers are concerned about this, as today they are kerosene and liquid oxygen rockets and rockets with a hybrid engine that uses synthetic hydrocarbons and nitrous oxide. Both rockets create an undesirable amount of pollution, but a hybrid rocket specifically emits more carbon than a gas and oxygen machine (Til, 2013: 10).

Accordingly, today it is extremely important to form a new model of settlement of space relations, which will be based on special rules that will determine a unified legal regime for outer space use and development.

Global administration as a way to streamline space relations

The need to rethink views on the role and purpose of law in the context of cosmization of human life implies a deepening of knowledge about its relationship with the globalization changes that occur against the background of increasing the role of sustainable human development. Today, the study of the Earth by individual sciences, which are in no way related to each other, is a thing of the past. This approach is being replaced by the study of the planet from a global perspective, which allows us to understand the Earth as a whole, as a part of space, which is interconnected and interdependent with a single whole of outer space. Part of the new cosmic worldview is the expansion of the subject of many old classical sciences, and they are going beyond the study of purely terrestrial phenomena and processes, the emergence of the cosmic aspect in their research (Grushevitskaya & Sadokhin, 1998).

That is, it is long overdue to create a global administrator as a union, which will determine a single legal regime of space, the peculiarities of its development and use on the basis of the same standards and conditions for all states, as well as tariffs and quotas in this area. It should be endowed with the status of the main body in the field of regulation of space relations and legal relations with the presence of strict regulatory mechanisms and the competence to apply measures to influence the offense.

The main goal of global administrator is to form the imperative of human activity in outer space explication in outer space, expanding the boundaries of human presence in space, taking into account the acquired fundamental knowledge about the structure of the world with a balanced policy of human activity (Danilyan & Dzeban, 2019: 6, 7).

Based on the development of Oleg Danilyan and Alexander Dzeban for the implementation of this, he should base his activities on the following tasks: 1) to form a regulatory framework for the delimitation of outer space and air; 2) to develop a balanced policy and a consistent strategy for the implementation of the development and use of outer space; 3) install fuses for the militarization of outer space; 4) to form ecological criteria, rules and norms of space activity; 5) to develop a legal regime of ownership of space resources and space objects, which according to current international rules is the property of mankind; 6) to form a regulatory framework and evidence-based basis for the implementation of space tourism; 7) monitor the development of telecommunications technologies and introduce innovations in their use in the world; 8)

systematically carry out medical and biological research; 9) constantly monitor the outer space resource capacity.

The raised question needs a separate scientific study and substantiation. However, with the global administration of space relations, it can be argued about the emergence and development of the latest paradigm of space relations, which will significantly expand the boundaries of human understanding of space and its capabilities, as well as protect it from the existing negative consequences of space activities.

Conclusions

The first thing to understand is that space law, space law, and space relations are not identical categories. Space legal relations are a kind of legal one. Therefore, they have a number of common features, are constantly in dynamics and need proper regulation in view of their constant transformations.

Today there are a large number of their varieties, each of which has its own legal regime:

1. International, which is based on need to regulate supranational relations between states and private companies operating under their auspices and are active subjects of space exploration and development. This is realized by joint agreements and acts of supranational institutions and organizations.
2. National, which directly relates to the admission, preparation and implementation of space activities by a single country. These issues are regulated by national space law and provide rules of conduct that space actors must follow before and during space activities.

This leads to the conclusion that today space relations unite two parallel paradigms of their development – international and national. Each of them pursues its own goals, although formally, they are united by a common slogan. This has already led to the existence of space legal relations number, the international or national regime of which is not appropriate to apply, but their parallel existence: has not ensured objective equality of access to space for the development of outer space; caused a change in the guidelines for the development of outer space and different levels of space relations development; a unified approach to its use is not provided.

The hypothesis of the need to create a global administrator as a union, which will determine a single legal regime of space, the peculiarities of its development and usage basing on the same standards and conditions for all states, and will determine tariffs and quotas in this area.

With the global administration of space relations, it will be possible to argue about the emergence and development of the latest paradigm of space relations, which will significantly expand the boundaries of human space understanding and its capabilities, as well as protect it from the already negative consequences of space activities.

🕮 References

Baklanova, Anna (2017) Legal Relations in Space Right. *Current Problems of Aviation and Space*, 3, 1017-1019.

Bulkin, I. (2020) Priorities of Financing of Scientific and Technical Activity in Ukraine by the Business Sector. Parts I, II: *Science and Science of Science*, 2 (108), 34-63.

Cohen, Alexander F. (1984) Cosmos 954 and the International Law of Satellite Accidents. *Yale Journal of International Law*, 10. Available online: https://digitalcommons.law.

yale.edu/cgi/viewcontent.cgi?referer= https://scholar.google.com.ua/&httpsredir=1&article=1316&context=yjil

Danilyan, Oleg and Alexander Dzeban (2019) Space Law at 21st Century: The Security Issues. *Philosophy and Cosmology*, 22, 6-15. https://doi.org/10.29202/phil-cosm/22/1

Djoharwinarlin, Sri. (2012) The Relationship Between State And Society: Managing Poverty Through Local Wisdom. *Journal of Government and Politics*, 3(2), 325-334. https://doi.org/10.18196/jgp.2012.0018

Grushevitskaya, Tatyana and Alexander Sadokhin (1998) *Concepts of Modern Natural Science*. High school, 383. Available online: https://www.gumer.info/bibliotek_Buks/Science/grushev/23.php

Hart, Henry M. Jr. (1954) The Relations between State and Federal Law. *Columbia Law Review*, 54(4), 489-542. https://doi.org/10.2307/1119546

Jeuland, Emmanuel (2020) Theories of Legal Relations. *Archive ouverte HAL.* Available online: https://hal.archives-ouvertes.fr/hal-02539607/document

Kapustin, Anatoly, Vladislav Avkhadeev, and Anna Golovina (2021) *Formation of a Modern International Legal Concept for the Exploration and Use of Outer Space.* Moscow: Institute of Legislation and Comparative Law under the Government of the Russian Federation: INFRA-M. https://doi.org/10.12737/1241334

Markovich, Steven J., Andrew Chatzky and Anshu Siripurapu (2021) *Space Exploration and U.S. Competitiveness*. Available online: https://www.cfr.org/backgrounder/space-exploration-and-us-competitiveness

Res 2222 (XXI) (1966) *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies* (Dec. 19, 1966). Available online: https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html

Smith ("*Skip*"), Milton (2018) A Space Law Primer for Colorado Lawyers Part 2: *U.S. FEATURE Space Law*, 43-49. Available online: https://www.cobar.org/Portals/COBAR/Repository/TCL/May%202018/CL_May_Feature_ SpaceLaw.pdf

Soroka, Larysa (2017) International Legal Regulation of Space Activities. *Subcarpathian Law Herald*, 1 (16), 330-333.

Soroka, Larysa (2019) Forming A New Policy of U.S. Leadership in Space Activities. *Subcarpathian Law Herald*, 4 –2, 81-83.

Til, Nic Van (2013) The Commercialization of Outer Space. *Honors Projects,* 191. Available online: http://scholarworks.gvsu.edu/honorsprojects/191