

Space Law at 21st Century: The Security Issues

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The article analyzes the problem of the formation of the imperative of explication of human activity in outer space. It is believed that the existing international treaties and legal framework for the regulation of human activities in outer space requires close attention of researchers and thorough study. The main challenges posed by space exploration carry not only potential benefits, but also global threats and risks to the existence of human civilization. The content of the strategy for the development of the comic space is demonstrated taking into account the non-classical paradigm of philosophy and epistemology, which significantly delegitimize the content of modern ethical and axiological principles. The search for strategies of legal support of the policy and strategy of civilization development in the context of space exploration is carried out within the eight formulated trends (space delimitation, prevention of militarization, environmental problems of space exploration, resource potential of space, etc).

Keywords: space law; security issues; space exploration; space tourism; international legal treaty; imperative to overcome the border; aero-space environmental technologies

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Introduction

The modern history of mankind is marked by a motivational transgressive strategy. Postmodern intentions of culture, philosophy, art qualitatively describe in a new way the need and phenomenology of the transition beyond, overcoming ontological boundaries and demarcation lines. Not least influenced by this way of perception and understanding

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of the world the fact of man's exit beyond its planetary lacuna. Such a breakthrough in crossing the border by general logic involves focusing the perception and understanding of humanity as a whole, a unitary phenomenon, not separated by ethnic, political, socio-cultural differentiation. In addition, access to the cosmic space is an opportunity to find and establish the meaning and strategy of joint human activity, the possibility of leveling internal conflicts and confrontations. However, the question of the general imperative of human behaviour in space strategies is problematic in nature. This is evidenced by a number of international treaties and legal acts, which over the past few decades have been adopted by international organizations and governments of the advanced countries of the world.

Another level of problems of philosophical understanding of space exploration by mankind is not only in the ethical and legal plane, but also in the phenomenological perspective. It is clear that they have become the imperatives of behavior and to legitimize the historical and cultural experience, formed over a long period of time and subject to engagement a whole range of objective and subjective factors: natural, social, geographical, usually appliances and more. It is extremely difficult to predict what factors will influence the formation of the imperative of human behavior in outer space. Thus, there is no information base on the impact on human consciousness and behavior of changes in space-time relationships, the lack of influence of the magnetic field, the lack of day and night as a factor of biological rhythms, and so on. Therefore, to predict what will be the behavior of a person in these unusual conditions is also difficult.

The next controversial moment of space exploration is the formation of a new order of understanding of chaos. And there is a certain contradiction in this aspect. After all, on the one hand, with the ancient philosophical tradition originates understanding of the cosmos as the embodiment of order and harmony. On the other hand, with a more detailed approach to space exploration, it is an unpredictable and chaotic process. Therefore, the position of postmodern philosophy on understanding the world as chaos, dynamics of organizational-structural and entropy processes is justified. It is clear that this understanding of the world significantly affects the mental structures of perception and analysis of reality. There is a natural question: how much is humanity as a global planetary community ready to overcome the boundaries of the inhabited space? It is clear that it is necessary to implement the strategy of 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 regulation of human activity, legitimized by the world community. This experience of collision with a fundamentally unfamiliar, unpredictable outer space is dangerous to build on the basis of mythology about the pioneers or pioneers, heroically overcome the horizon line of human existence. The logic of this myth is the idea of the possibility of conquering nature. However, the best practices of the impact analysis of the scientific and technical process warn against such reckless motivation. Accordingly, the overall strategy for the exploration of outer space should be based on a clear invariant knowledge of the universal laws of the Universe and, accordingly, stable, historically established patterns of imperatives of human behavior.

The Contradictions of Space Exploration and Space Law Potential for Ones' Overcoming

Given the above, it is advisable to divide the General context of philosophical analysis of the problem of space exploration into two separate problem fields. The first of these will be considered in the abstract-scientific. Its purpose is to study space as a new level of scientific and technological knowledge, design and testing of fundamentally new strategies for the

implementation of human activity, sources of expanding the boundaries of knowledge and experience. Another aspect of the problem should be considered praxeological. Its content is the use of the resources of the Universe, the possibility of communication, navigation and planetary control. This resource significantly increases the possible risks and technologies of influence in the context of global geopolitics. An obvious example of this claim is the separate territorial claims for ownership of the moon's surface.

If the abstract-scientific level of the problem of space exploration is rather speculative in nature, the praxeological context, on the one hand, requires critical thinking and urgent solutions, and on the other, contains the necessary empirical basis for research, at least in the form of numerous legal acts regulating this type of activity. So, let us analyze the praxeological arguments of the need for space exploration.

First, the need for space exploration is due to the large-scale growth of the planet's population. Therefore, the implementation of this strategy has every reason to be considered a condition, if not survival, then at least the stability of the existence and development of the human race.

Secondly, the position on the beginning of space expansion is quite unambiguous, but it is extremely difficult to build an adequate speculative model about the possible and necessary limits of this activity. Accordingly, the formation of imperatives that would regulate and Orient the freedom of explication of human activity is considered urgent and urgent.

Third, human adaptation to a qualitatively new and unknown outer space involves a whole range of uncertain biological, social, political and moral issues. Given this, there is a problem of verification and conceptualization of the determinants that make up the content of the algorithm of human activity in space.

Fourth, it is extremely difficult to predict the possibility and content of communication strategies of mankind in interstellar space, which, quite logically, produces the prospect of meeting with extraterrestrial civilizations. The main problem of communication in this context is the most probable discrepancy between the means of mediation and the systems of semantics and values. It is logical that the hope for a spontaneous super-rational order of formation of the relevant imperatives of behavior in the situation of communication with extraterrestrial civilizations is illusory. Therefore, the problem of formation of imperatives of realization of this type of human activity requires careful study and justification.

To substantiate a holistic and consistent worldview complex, which should be worked out the content of the strategy for the development of the comic space, taking into account the non-classical paradigm of philosophy and epistemology, which significantly delegitimizes the content of ethical and axiological principles, is another argument in favor of the study of the problem. Accordingly, following the general logic of modern research, the basic principle of analysis of any problem is an empirical, pragmatic or praxeological context.

Given the above arguments, we note such important aspects. The history of space exploration by mankind is insignificant in the context of earth civilization. However, the potential resources and risks associated with the success of this campaign are of great interest to countries around the world, and not only to space-faring Nations. Therefore, it is logical that the main regulatory framework for the regulation of space activities is implemented by the system of the UN General Assembly resolution, namely: the Declaration of legal principles governing the activities of States in the exploration and use of outer space (1963); Treaty on principles governing the activities of States in the exploration and use of outer space, including the moon and other celestial bodies (1967); Agreement on the rescue of astronauts, the return of astronauts and the return of objects launched into outer space (1968); Convention on

international liability for damage caused by space objects (1972); Convention on registration of objects launched into outer space (1975); The agreement governing the activities of States on the moon and other celestial bodies (1979); Principles of direct television broadcasting (1982); Principles of remote sensing (1986); Principles for the use of nuclear power sources in outer space (1992), etc. [Shemshuchenko, 2007: 120]. It is significant that the Committee from outer space, which is headquartered and operates in Vienna, has two subcommittees: scientific, technical and legal. The most important issues discussed by the legal Subcommittee in recent years have been: the status and implementation of the UN international treaties on outer space; the collection and analysis of activities of governmental and international organizations in the field of space law; the problem of delimitation of outer space, technology and the legal status of the use of geostationary orbit and international telecommunications; the specifics of the harmonization of international treaties with individual national systems of legislation; the problem of the use of nuclear energy on a space scale; issues of ownership of movable property in outer space; issues of environmental protection, regulation of spheres of influence and responsibility. Consequently, the scientific and technical problems of space exploration are closely related to the political and legal aspects of human activities.

In modern security studies, the problems of space exploration and the possibility of space law in their settlement are mainly considered through the prism of a number of trends [Szocika et al., 2017]. We will carry out their explication in the framework of our research:

1. *The problem of the delimitation of outer space and airspace.* On the one hand, outer space is the property of all mankind, and on the other hand, it is marked by the borders of national States as airspace, the unauthorized crossing of which can lead to tragic consequences. Michael Nayak notes: “The Air Force, in particular AFSPC, faces a challenge in the near future unlike any it has faced before: a contested, degraded space environment that, any year now, can degenerate into a full-on battle. The U.S. military and intelligence space enterprise needs to be ready to not just respond, but dominate” [Nayak, 2018: 169]. Another author, Schandra Chandrashekar, cites the following reasoning: “A number of developments, especially over the last decade, raise concerns about whether this posture is adequate to cope with the challenges for India as an emerging space power. The role of space and space assets are emerging as key components of a global security architecture that includes both civil and military uses of space” [Chandrashekar, 2016: 135].

Therefore, the issue of the delimitation of outer space is relevant to the whole world, both the advanced space powers and the governments of those countries that have recently demonstrated ambitions in the exploration of outer space: “In addition to these political and military drivers, the advent of small satellites (smallsats), along with a global trend of commercialization of space, is blurring the distinctions between civil and military uses of space. These developments reduce entry barriers and make access to and use of space easier for all countries and actors. All this poses additional challenges and complications to the global space community for the effective and safe use of space by all states” [Chandrashekar, 2016: 137]. Therefore, a balanced policy and a consistent strategy for the implementation of this task are extremely important for the preservation of a fragile peace on our planet, and for the development of a fair order of space exploration by all countries.

2. *The problem of preventing the militarization of outer space.* The relevant international law tools attempt to prohibit the possible use of nuclear weapons and weapons of mass destruction. However, the spectrum of deadly means invented by mankind is extremely wide. Therefore, there is a need to coordinate at the international geopolitical level the complete and unconditional rejection of the means of aggression. George Sariaak formulates

the problem of the militarization of space as follows: “Space has always been militarized, and suggests that those who it’s Champions as a sanctuary within international relations have unrealistic expectations. There needs to be greater cooperation and accessibility to space for non-spacefaring states in order to eliminate aspects of a security dilemma that are emerging with regard to passive and active military space technology. The dual-use nature of space technology makes it difficult to stipulate whether there is an outright stabilizing or destabilizing effect from this technology. Certain uses of peaceful/passive military space technologies, and even commercial or civil space assets, which stabilize international relations can encroach on a militarization of space, inadvertently leading to a destabilization of international relations” [Sariak, 2017: 61]. Therefore, the issues of modern astropolitics are of great interest both from the side of direct stakeholders and from the side of theorists and researchers of this problem. So, Patrick K. Gleeson notes: “In the last fifteen to twenty years, technologically advanced states and their military forces have increasingly relied on spacebased systems to support their strategic objectives across the spectrum of state activity... Militaries are utilizing both commercial and military satellite systems for weather forecasting, remote sensing, navigation, targeting, and the transmission of the vast amounts of communications data required on the modern battlefield” [Gleeson, 2007: 116]. But tried and tested regulatory framework is in need of detail and concretization of the general conceptual provisions, namely: “The following factors, highlighted below, have been considered in arriving at this conclusion: international law, including the UN Charter is a part of international space law; the UN Charter, while prohibiting the use of force generally, does authorize its use in limited circumstances; self-defense and when authorized for the purposes of maintaining international peace and security; while states might well be able to surrender their inherent right to use force in self defense, the clear and unequivocal language evidencing such an intent would be required; the Outer Space Treaty does not include a clear, unequivocal statement prohibiting the use of force in space; the lawful use of force in outer space does not undermine the underlying principles of the Outer Space Treaty, as contained in the Preamble, and Articles I and II of the Treaty; in particular, the principles of ‘freedom of use and access’, ‘non-appropriation’, and ‘benefit and interests of all’; and state practice suggests that states, particularly the two historical space powers, have publicly reserved the right to use force in self defense in the outer space environment” [Gleeson, 2007: 155]. Therefore, the use of force in outer space is a global threat to human civilization. And it is this indisputable fact should be the basis for a planetary imperative in space exploration, not political, national, imperial or colonialistic ambitions.

3. *Environmental aspects of space activities (environmentally friendly aero-space technologies)*. The authors note that there are now about eight thousand artifacts of human activity in outer space. Such a large number of objects forms the problem of establishing their safe interaction and further disposal. Thus, Tobias Ide is working on the concept of the ecological universe: according to the author, the discursive-analytical spatial theory forms such an idea of the environment in which all phenomena and processes are closely related [Ide, 2017]. Indeed, that is why the determinants of the connection of the General universe do not just localize space, and justify the categorical nature of human responsibility. At the same time, according to Sergey Krichevsky, there is a significant potential for greening due to the transition to environmentally friendly (clean, ‘green’) technologies, but it is used very ineffectively due to outdated rules of the game and insufficient incentives [Krichevsky, 2018a: 80].

Indeed, the environmental problems of space for the inhabitants of the Earth are included in the list of futurological, having on the agenda such problems as global warming and the

like. At the same time, experience shows that the environment begins to remind itself often when it is too late to implement preventive measures. Sergey Krichevsky in his latest research emphasizes that the environmental problems associated with the safety measurement of space exploration, for its successful solution, should be at the center of philosophical research. He underlines, that “to resolve the topical problems of contemporary astronautics and the space future of humankind successfully, all scientific and technical activities ought to correlate with philosophical reflection and interdisciplinary examination of new projects and space exploration technologies aimed at their study and modification including the earth’s realities” [Krichevsky, 2018b: 94].

4. *The problem of ownership of the Moon, Mars and other natural space objects.* The surface of the Earth becomes close to humanity, so the territorial resources of the natural satellite of our planet and other space objects are of interest to businessmen and politicians of the world. A number of authors seek to predict and model the implementation of these projects in the future, but in the end, their forecast is disappointing: “At present, it is hard to project whether this will be a peaceful colonization or a military conflict between the countries engaged in the race... A peaceful colonisation of Mars, based on joint ventures, i.e. the construction of new orbital stations, cooperation between astronauts and space exploration, certainly seems the most desirable scenario. The worst version, on the other hand, is the military conflict triggered by the need to search for natural resources or resulting from a new cold war that may break out between the United States, the Russian Federation, the People’s Republic of China, and possibly other new powers, e.g. Brazil and India. One may not rule out the possibility that the defeat and humiliation of one of the parties in the space conflict, the hostility may eventually translate into military action in Earth” [Szocika et al., 2017: 35]. And the previous history of human civilization as well as its current state indicates that space is the unexplored sphere that can multiply the global problems of mankind. It is logical to seek to prevent such threatening trends. The development of space exploration strategies on archaic principles of power as a physical (technological) influence is not productive.

Another axiological level in the formation of the imperative to overcome the earth’s limit is more rational and teleological, namely the principles of the common good and social justice. In other words: “But that aspirant states or users need to be enabled to bridge the widening gap of technology and knowledge is generic, but the consequences of non-inclusion for the goal of space sustainability require a unique approach. To think about this is to think about the foundations of Global Public Goods (GPGs) and the role of market forces in the goal of global governance. GPGs are understood as not only the common resources of outer space, but also the preferred social condition of benefit sharing and the common institutions, policies, and system of rules by which the common good is achieved” [Timeibi, 2016: 15]. Therefore, according to a long-known idea, those who do not learn the lessons of history have every reason to repeat them in their current practice.

5. *Space tourism.* This industry is very promising and attractive for investment. Wealthy citizens of the world require new experiences, and are willing to spend significant resources to get them. Tourism as a business sector provides guarantees of high level of customer activity without peaking. How it is possible to provide it in a little-explored space is difficult to imagine. Therefore, researchers model different options or scenarios for space exploration and in the context of space tourism in particular. A thorough analysis of this problem is carried out by Karl Leib, and the first thing that interests the author in this aspect is security issues: “Space trends to produce future-oriented thinking and often suffers from a tendency to envision grand developments just over the horizon. However, economic development of

space in the form of mining and tourism appears to be increasingly likely in the near future. The exact role of governments in these developments will vary by industry; the emerging space tourism industry may require little more than a safety regime analogous to that of commercial airliners. However, space-based mining will require establishment of clear property rights and, therefore, a reconfiguration of the present international legal regime for space. Both state practice and international law will need to evolve in order to accommodate these new realities within the existing domain of state sovereignty” [Leib, 2015: 2].

The author analyzes several possible scenarios of such activity. The first of the proposed options have every reason to call spontaneous, or unbalanced: “One scenario is that no formal change to international law will be made and the international system will ‘muddle through’ and develop an ad hoc series of arrangements. States and companies could decide not to wait for formally secured rights and begin economic activity... The allocation of celestial resources would therefore be on a first-come, first-served basis. Corporate actors could simply engage in space mining without any legal regime in place, trusting to traditional forms of lobbying and political relationships to ensure that the resources extracted from space will be retained by them as product to be sold” [Leib, 2015: 15]. The second scenario is more balanced and moderate, but dangerous with a number of possible risks of global geopolitics: “A second scenario imagines a formal or informal partition of the Moon through bilateral negotiations or agreement by the ‘space powers’. Those states would likely include, at a minimum, the existing and emergent spacefaring powers: the United States, Russia, China, the European Space Agency countries, Japan, India, Canada, Brazil, Indonesia, and South Korea. Assuming consensus is reached on major issues, which is not (of course) a given, this coalition of interested states could negotiate exclusive zones of operations among themselves, with the understanding that mining rights would fall to whichever state holds title to the zone of operations” [Leib, 2015: 16]. The third option is the most stable and balanced, but the skeptics and opponents see a threat to the hegemony of the super-states, particularly the United States — a third scenario would attempt to bring to fruition the lunar development regime envisioned by the Moon Agreement [Leib, 2015: 18]. Thus, the implementation of territorial claims concerning the surface of natural space objects requires close attention and balanced political decisions.

6. *Telecommunication technologies.* Integration and globalization of the modern world into the universal civilization is impossible without the actual development of telecommunication technologies. Space satellites, remote sensing of the earth, space meteorology — all these resources are, without exaggeration, powerfully influential. And it is this power of influence that needs to be balanced in the context of shaky international politics. Nicolas Peter remarks: “A direct consequence of the aforementioned internationalization and globalization of space actors in the past decade is the multiplication of overall agreements in the past six years. The main areas of cooperation among civilian space agencies are in the domain of space applications (excluding space-based telecommunications) and in space sciences” [Nicolas, 2016: 147]. Thus, the author sees such main lines of international cooperation in space exploration due to the significant role of telecommunication technologies: the number of countries that might be involved in these cooperative endeavors has dramatically increased since the early 1990s, illustrating the increasing institutionalization but also the internationalization of space activities; the Cold War era has finished and space cooperation got more politically flexible nature; while space science is an established area of cooperation among spacefaring countries, space applications and especially Earth observation are witnessing the emergence of new actors especially in Asia and so on [Nicolas, 2016: 153].

Accordingly, the complex system of world geopolitics is of particular importance in the little-studied outer space.

7. *Medical and biological research.* It is known that the presence of man in outer space greatly expands our understanding of the boundaries of the human. Adaptation mechanisms in outer space are implemented unpredictably, in comparison with more or less certain trajectories of terrestrial adaptation. Therefore, Justin Saint P. Walsh analyzes this problem through the prism of the concept of universal heritage. Accordingly, “many of the objects sent into space (and left there, or abandoned to destruction on re-entry) can be seen simply as tools of a kind that either becomes obsolete as technology advances, or that are no longer used because they break” [Walsh, 2012: 235] According to Justin Walsh, the main trends in the regulation of this activity are as follows: definition of the kinds of objects and sites, including innovative scientific instruments that are elite for protection (Cultural Property Convention and World Heritage Convention); support for international cooperation to protect heritage for all humanity (all of the treaties); inclusion of otherwise disenfranchised groups in discussions of protection; emphasis on in situ preservation rather than removal of heritage (Underwater Heritage Convention); responsible observation and documentation of heritage in order to increase public awareness and appreciation (Underwater Heritage Convention); creation of an international body to designate and monitor protected status (World Heritage Convention and Antarctic Treaty); development of multiple levels of protected status (Antarctic Treaty); enabling of a transparent protection scheme by opening the planning of site and object management to international scrutiny (World Heritage Convention and Antarctic Treaty) [Walsh, 2012: 237]. Therefore, we can make an intermediate conclusion that scientific research in the field of natural, biological Sciences and medicine in outer space acquire the appropriate specifics and values. All these factors affect not only the environment, but also the very nature of man. It is logical that the implementation of predictive functions on the most likely options for the development of adaptation mechanisms and the harmonization of the overall strategy of their regulation is an issue of great importance.

8. *Resource capacity of space.* The exploration of space as a potential source of resources necessary for human civilization, especially against the background of the catastrophic approach of their final exhaustion, is also an important component of the strategy of its development and regulation of the freedom of human will. After all, as the earthly history of mankind shows, in the struggle for resources, moral imperatives do not show the dominant signs of their own categoricity. Accordingly, Gurbachan Singh Sachdeva considers the question of the resource capacity of outer space as one of the main ones: “Many legal experts are likely to differ with this proposal for varied reasons. Their arguments can be surmised, but this proposal can be vouchsafed by advocating the need for constant evolution of new space applications in the future, innovation of the priority of space activities, the international exigencies, and the need to update comments to the existing law. Further, the outer space arena is prone to military complex overtures, constitutes a free field for fierce economic competition, and is bestowed with bounteous natural resources-offering vast commercial opportunities” [Sachdeva, 216: 106]. Given the ‘success’ of mankind in the irrational exploitation of human resources, the problem of the resource capacity of space has the potential to come to the forefront of the problems of sustainable development of mankind in space.

Conclusions

Therefore, the problem of space exploration attracts close attention, without exaggeration, of all mankind. Therefore, the problem of developing a clear and conscious imperative to regulate human activity occupies such an important place in international cooperation and the activities of international organizations. Consequently, the above problems in the development of outer space by mankind in the legal aspect provide for two levels of solutions: improvement of the existing legal framework of international instruments and the design of regulation of human activity in the subsequent challenges of the development of the interstellar world.

The need for legal regulation of all major manifestations of activity in outer space testifies to the embryonic state of the relevant imperatives, which are closely linked to the challenges to the security of mankind and its civilization progress. However, actual problems encountered in the implementation of the activities that require immediate solutions. The demarcation of nationalized airspace and universal space, the problem of the militarization of the space expansion of mankind, the development of telecommunication technologies and the use of geostationary orbit, technological, medical and biological research — all these activities significantly change the course of our daily activities and the overall security of the status of the development of earth civilization.

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