Space Activities and the Space Race in Terms of Space Security: a Soviet and American Perspective

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The article examines the issue of the space race in terms of the views of Soviet scientists and American scientists. The article cites normative legal acts, internal orders, and decrees of the Soviet era in the aspect of space activity for the period 1960 – 1964, which highlight the real state and attitude of the Soviet government toward the development of space activity. Certain contradictions regarding the demilitarisation of space in national and global aspects are analyzed. The irrelevance of the interaction between the development of space weapons and deterrence under the conditions of an increase in the number of space actors is highlighted. A transition from competition to cooperation in the aspect of long-term space stability is proposed.

Keywords: space security, weaponization, space race, militarization and deterrence, space activities, space race, Soviet government.

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Introduction

When the first manned spacecraft begins to reach other celestial bodies, conflicts will inevitably arise (Haley,1963).

The following search terms are currently in high demand: "space activity," "nuclear weapons," "war," and "refugees." On the one hand, seeing people become interested in global issues is encouraging; on the other hand, one does not need to be a professional in the field

of psychology to understand and recognize today's trend of "power-fear" symbiosis among people. Every day, we strive to gain this "power," but failing to do so will have unforeseeable consequences for humanity. Space exploration and the development of space technology represent a new and extremely specific sphere of human activity. On the one hand, this provides enormous opportunities for progress for the nation. On the other hand, it has the potential to cause the world innumerable problems. For instance, the capabilities of a space rocket are quite diverse. It is possible to lift into space and launch into orbit a container with scientific equipment or a cabin with astronauts, as well as a container with any type of weapon of mass destruction. Space technology makes it possible to create orbital military bases, which are particularly dangerous due to their mobile nature. States that have not created their own anti-missile systems may find themselves defenseless against an enemy that uses new types of weapons. Nuclear weapons delivered by space rockets are too dangerous in terms of their potential impact and the suddenness with which they can be delivered. Its neutralisation is associated with large difficulties. So, it is all about how these achievements will be used.

Today, when millions of refugees are forced to flee their homes and families, suffering the pain and anguish of loss, millions more are terrified of becoming victims as a result of the use of nuclear weapons, humanity is suffering massive losses in all aspects as a result of horrible invasions and wars, we must prevent potential conflicts from occurring in the scope of space activity. Global conflicts as a result of the "space race" and space weaponization must be avoided. In many respects, it seems that the high level of space activity is an indicator of the country's success and level of development, and it is an indicator that most countries aim for today. Nevertheless, we must clearly understand that outer space is a harsh environment that does not tolerate mistakes.

The power of space activity is a very valuable resource. Currently, the issues of occupation and settlement, as well as the demonstration of state power through the establishment of political control, are highly contentious. In addition, there are competing legal issues regarding the extraction and utilization of space resources and the mining of space. The issues of the responsibility for space debris and traffic in space are not clarified either. Unresolved major issues in the field of space activities endanger both the public and the environment. So, the first and probably the most important for us today, is the issue of safety: the safety of humanity, the safety of the Earth, and the safety of outer space. Because of its global nature, space activity affects the interests of literally all countries and peoples on the planet. Outer space is distinct from land, sea, and air space in that it is not divided into zones in the course of its use by states. While in flight, spacecraft pass through all of the layers of outer space as they move away from the Earth, and their orbits cross many territories and states. For all of these reasons, states must not conduct their activities in outer space independently of one another. Unfortunately, the ideal universe, which is engaged in high space activity within the framework of space science, is a utopia. And we absolutely clearly understand that. In 1960 Ritland wrote: "We aspire to space not because it attracts us, like everything unknown, but because this is a space where we can exercise military operations of a strategic scale with great efficiency. A Nation Taking Advantage of the New Theatre hostilities ... will inevitably become the leading nation" (Kolosov, 2014). Definitely, it is not possible to interrupt certain processes for a short period of time, for example, the development of space weapons and competition for first place in the space industry, but it is not impossible at all. The space race and the militarization of space were a solid start for the development of space activities, but the direction of further development could be changed. This article examines

what legal regulations exist in terms of space security and how we can achieve global safety and sustainability.

Formation and development of space activity

Whereas the space age began as a military and scientific competition between the US and the Soviet Union, both states quickly realised that their own interests and abilities to continue exploring and using space required cooperation and some commonly agreed-upon rules (Kopal, 1966). However, the majority of Soviet scientists and scientists believe that the era of space exploration began precisely on October 4, 1957, when the Soviet Union launched the first artificial Earth satellite in human history, and hundreds of artificial satellites were launched into Earth orbit over the next decade. Emphasizing its primacy in space activities, the Soviet Union emphasised that the United States of America and France launched their space objects into orbit later, in 1958 and 1965, respectively. Over time, satellites from other countries were launched into orbit with the help of foreign rocket carriers. Soviet scientists also consistently emphasised their superiority over the first man in space, Yuri Gagarin, who made the flight on April 12, 1961. After the flight of Yuri Gagarin, entire crews went up into space, and a man defiantly stepped out of the spaceship directly into outer space (Kolosov, 2014). Cultural and economic factors were considered important in the Soviet launch of the first satellite, "Sputnik 1." Despite the brutality of the Soviet regime, the Soviet Union (USSR) was one of the fastest-growing economies of the 20th century (Davies, 1998). Even before the official start of the Soviet space programme, there existed a movement known as "cosmism" that generated a lot of early interest in space travel. A utopian view of what space exploration could ultimately entail for humanity led to the development of cosmicism, a synthesis of the occult, religious philosophy, and serious science (Howell et al., 2019).

However, the space race after the launch of the first satellite was preceded by a race in development and ideas. Konstantin Tsiolkovskyi, one of the most important cosmological thinkers, made an important contribution to Soviet science regarding space developments. His words are known: "The Earth is the cradle of humanity, but it is impossible to live in the cradle forever." Despite his low level of formal education, Tsiolkovsky was responsible for much of the initial theoretical work in space travel that later laid the foundations for the Soviet space programme (Howell et al., 2019). At that time, there was a race for ideas between Soviet and German scientists. Thus, in its editorial to Madestov, the presidium of the All-Russian Association of Naturalists had the goal of awarding Konstantin Tsiolkovsky scientific excellence in the development of a jet device (rocket) for extra-atmospheric and interplanetary space. The letter also stated that in 1896, Konstantin Tsiolkovsky, as a result of serious mathematical calculations, invented a jet device (rocket) for extra-atmospheric and interplanetary space. After two published papers in a Russian scientific journal, Tsiolkovsky's development did not gain much importance, but Tsiolkovsky's idea itself was stolen, as the letter stated, and used for war purposes by Colonel Unge in Sweden. In 1911-1912, Konstantin Tsiolkovskyi published his work in the "Bulletin of Aeronautics," after which, in 1912, he received scientific support from engineer B. Vorobyev, and in 1914, engineer Ryumin provided scientific feedback. Scientists wrote that Tsiolkovsky's work is not fiction, but supported by specific mathematical calculations. (News, 1923). The existence of such documents confirms that the first foundations of rocketry were founded on scientific advancement, the desire to research and develop new technologies without any military purposes. It is the achievements

of outstanding scientists from various countries (Germany, the USSR, the USA, France, etc.) that are the resource that allows humanity to move forward. However, today there is a widespread opinion among scientists that the emergence of space activity is directly related to the militarization of space. For many scientists, this opinion is a certain explanation why the idea of disarmament in space has no right to exist. That is, if space activity began with the aim of militarising space, space disarmament is impossible. This explanation is mostly supported by opponents of the idea of space disarmament, who play a key role in restraining this process and see the further development of space activities only in arms control regimes.

The beginning of the weaponization and militarisation of space

It is well known that space militarization and armament essentially run counter to productive business and research endeavours. The internal trust and collaboration required to support systems deployed in space for peaceful reasons can be destroyed by war in space. Despite this, efforts to militarise and weaponize space are escalating with the aim of establishing one country's military dominance over others throughout the universe. There are two main reasons for wanting to establish military dominance in space: first, the lack of confidence in the capability of the current missile defence system to thwart an intercontinental ballistic missile carrying a nuclear warhead, and second, the need to defend one's own satellites from other anti-satellite (ASAT) weapons. In addition to these two factors, putting weapons in space would offer the nation a military edge over opponents on land, at sea, and in the air (Tripathi, 2013). The concept of space weapons originated in the early 1980s as the United States' Strategic Defence Initiative (SDI) program. The guiding idea behind such a concept was to supply a large quantity of satellites into orbit that would detect the launch of enemy missiles, and then shoot them down. This space missile defence was not intended as a substitute for land-based defences, but as part of a multi-layered defence concept that also included sea-based interceptors on board ships and the High-Altitude Area Defence ground terminal (HAAD), a system designed to defeat short- and medium-range missiles. Essentially, the idea was to form a protective shield against possible missile attacks with nuclear warheads. Like any other air defence system, the Space-Based System requires the presence of sensors to detect and track an enemy missile from its launch and a lethal weapon that would destroy it, along with the associated command and control elements. Space-based sensors have been developed on the boards of satellites to observe, detect, and track enemy missiles, as well as space-based laser weapons and interceptors to destroy them. The multi-tiered approach involved defeating enemy missiles with land- and sea-based weapons as a last resort in the event that space-based weapons failed to hit the target (Tripathi, 2013).

Unfortunately, there is no fundamental difference between rockets used for peaceful space activities and rockets used for military purposes. Space rockets can serve as carriers of nuclear weapons, and spacecraft can be used for reconnaissance purposes, for testing nuclear weapons in outer space, to create military communication systems, for the creation of active obstacles to ground means of communication for the purpose of conducting enemy propaganda, etc. That is, it is the purpose of use that matters. If the military concept gained wide publicity in the 1980s, despite the fact that development and implementation of such a concept began much earlier and the USA had an open, clear position regarding the importance and necessity of further implementation of the development of a military orientation in

the field of space activities throughout the entire time, then the Soviet authorities' position regarding the militarization of space is contradictory.

In the Soviet Union, such scientists as Evgeny Korovin, who until the end of his life headed the Commission of the Academy of Sciences of the USSR on legal issues of interplanetary space, created in 1959, can be considered the founder of the Soviet science of international space law. He has numerous articles that raise a whole range of issues related to the research and use of outer space. In his works, the scientist wrote that modern international law is the law of peace and that the prohibition of war should be both logically and legally extended not only to terrestrial territories, water areas, and airspace but also to outer space. Based on this, space law can be defined as a branch of international law that represents a set of legal norms and principles that regulate legal relations between states in the process of their cooperation and competition in the development and use of outer space exclusively for peaceful purposes.

According to Soviet scientists' positions, the United States and its partners in the military do not want to abandon the use of space technology for military purposes. The military space program of the United States envisages the creation of early systems prevention and interception of satellites and ballistic missiles, construction of military reconnaissance and radio navigation satellites, a series of communication satellites, development of a manned hypersonic spacecraft, orbital space stations, studying the possibilities of creating orbital belts of artificial meteorites (space "minefields") and "asteroid bombs." As a result, as noted by Soviet scientists, the Soviet Union in March 1957 was the first to offer to negotiate a ban on the military use of intercontinental ballistic missiles while simultaneously banning nuclear weapons and liquidating their stockpiles (Kolosov, 2014). However, American scientists have a different vision regarding the USSR's proposal for peaceful space. For instance, Andrew Krepinewich and Barry Wats wrote that, despite these early fears of a space war, the two major powers avoided an arms race in orbit. Instead, the competition between them turned into a competition for prestige, and manned and scientific achievements in space served as successors to national power. After the US success in landing on the Moon, the intensity of this competition died down, although for a short time it seemed that it might be replaced by an arms race. During President Reagan's administration, the US embarked on an aggressive missile defence program that included a space component, in direct violation of the Anti-Ballistic Missile Defence Treaty. This space component promised to ignite a new arms race in space as the Soviet Union sought to match or counter the new capabilities of the United States. However, before the space arms race became more like a contest of ideas, the cost of long-term military competition, the emergence of economic inefficiency and the loss of faith in the Soviet forces forced the Soviet authorities to seek a peaceful solution (Krepinewich & Wats, 2015).

According to certain documents, the USSR began to propose peace treaties as early as March 1957, however, according to American scientists, this position of Soviet scientists arose as a result of economic instability and a loss of faith in the Soviet space. Is this really true? For instance, in the period from 1960 to 1964, we can see active processes regarding new scientific developments in the field of space activity in the Soviet Union. According to the data of the scientific collection "Establishment of the country's missile power: "From the history of the creation of missile and nuclear weapons and strategic missile forces (1960–1964),"" more than 400 resolutions were implemented during the period 1960–1964. The most interesting among them are: Resolution of the technical meeting on January 4, 1960

on the design task on the BSS for 8K64 products; proposals by D.F. Ustinov, E.P. Slavsky, and M.I. Nedelin, dated January 6, 1960, to clarify the composition of the State Commission for Testing the R-7A Rocket; an order of the Chairman of the State Committee of the Soviet of Ministers of the USSR on Defense Technology No. 11, of January 6, 1960 on the implementation of the Resolution of the Central Committee of the CPSU and the Council of Ministers of the USSR of December 10, 1959, No 1388-618 "On the Development of Space Research;" A detailed note by I. S. Konev and M. I. Nedelin to the Soviet of Ministers of the USSR on January 7, 1960 about the modernization of measuring complexes; A detailed note by A. G. Mrykyn, January 2, 1960, about launching R-12 rockets from the mine; Order of the Minister of Defense of the USSR on the location of administrative bodies Commander-in-Chief of the Rocket Forces; A detailed note by G. F. Odyntsov and M. I. Nedelin, January 12, 1960 on the need to increase the service area of the Military Artillery engineering academy. F. E. Dzerzhinsky; Order of the Commander-in-Chief of the Rocket Forces No 001 dated January 14, 1960 on the admission of long-range aviation military units to the Rocket Forces; Order of the Commander-in-Chief of the Rocket Forces No. 002, dated January 14, 1960 on the admission of military educational institutions of the Ground Forces and the Air Force to the Rocket Forces; Memorandum of M. I. Nedelin and D. F. Ustinov, dated January 14, 1960 on the acceleration of work on the development of TTT for the R-9A missile; Memorandum of F. R. Kozlov, L. I. Brezhnev and others, dated of January 16, 1960 on the adoption of the R-7 missile; Memorandum of D. F. Ustinov on reconnaissance work to select a site for the construction of a ground control center for space rockets for flight to other planets; Decision of the Commission of the Presidium of the Council of Ministers of the USSR on military-industrial issues No 14 dated of January 25, 1960 "On the appointment of a commission to conduct tests at the test site "A""; Act of inspection of parts of the R-7A rocket No. I1-3 at the crash site on January 26, 1960; Memorandum of V. A. Bolytko, D. F. Ustinov, dated January 27, 1960 on providing military units with rocket fuel components; Note by S. P. Korolov and M. I. Nedelin, January 26, 1960 on the increase in the staff of NIIP-5 test units; Memorandum of M. I. Nedelin and V. D. Ivanov, dated February 10, 1960 on the increase in the staffing of the military representations of the GURVO; Memorandum of I. D. Serbin, dated February 10, 1960 on the approval of the composition of state commissions for testing R-14 and R-16 missiles; Reference-report N. V. Nochevkin, dated February 10, 1960 on measures to improve the accuracy of firing of R-12 missiles; Note by M. I. Nedelin and S. S. Biryuzov, dated March 3, 1960 on the need connection to work on the missile defence system NII-2 PVO; Note by V. A. Sudets, dated March 15, 1960 on readiness for the next test launch of the Burya cruise missile; Note by V. A. Sudets, S. M. Leschenko, M. V. Keldysh, S. A. Lavochkin, dated March 16, 1960 on the progress of tests of the Burya cruise missile; Cipher telegram L. A. Grishin , A. I. Semenov, S. N. Shishkin, A. I. Nesterenko, dated March 18, 1960 on the progress of testing the R-7A missile; Conclusion of the Main Directorate of Missile Weapons on the results climatic tests of the product 8K63 in conditions of negative temperatures from March 25, 1960; Note by K. I. Galanshin to the Central Committee of the CPSU of April 16, 1960 on the creation of a rocket manufacturing production base in the Perm region; Note by R. Ya. Malinovsky and D. F. Ustinov, April 19, 1960 on the draft resolution "On measures to further ensure the advanced position of the USSR in the exploration of outer space"; Memorandum of Major General V. P. Morozov to the head of the Main directorate of missile weapons, dated May 20 on the allocation of ballistic missiles for combat training of troops in 1960; Directive of the Minister of Defense of the USSR No. Org / 9 / 59003, May 25, 1960

on measures for the further deployment of the Rocket Forces; Proposal of the Ministry of Defense of the USSR and the Main Political Directorate of the SA and Navy dated May 27 on the establishment of the Military Council of the Rocket Forces; Note by D. F. Ustinov, K. N. Rudnev, V. D. Kalmikov and others in the Central Committee of the CPSU, May 31 on a long-term plan of work for the exploration of outer space; Letter from the Secretary of the Perm Regional Committee of the CPSU K. I. Galanshin and Chairman of the Perm Council of the National Economy A. G. Soldatov, dated June 2, 1960 on the creation of a production base for the manufacture of 8K63 missiles; On the approval of the note-report of the Minister of Defense of the USSR on the use of the Rocket Forces (Ivkin & Sukhina, 2019). A review of the outline documents refutes both the position of American scientists regarding the economic instability of the USSR, as a result of which the signing of peace agreements was proposed, and the position of Soviet scientists regarding only the peaceful use of space. A review of these documents once again confirms the presence of rivalry and the fear of losing in the space race. It was the fear of another state gaining a military monopoly on space as a new "altitude" and the desire to maintain safe access to space for civilian purposes that led the two Cold War superpowers to agree on the importance of the international rule of law. The development of militarization and, at the same time, containment of military activity in outer space were the solutions to the issue at that time. At the multilateral forum of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), guidelines for the peaceful use of outer space were adopted. Hence, the comprehensive role of the rule of international law is emphasised in Article III of the Outer Space Treaty, according to which all space activities must be conducted "in accordance with international law, including the UN Charter" (Jakhu et al., 2016).

Contemporary views and confrontations regarding the demilitarization of outer space

As in previous years, as well as today, the important question is not whether international law regulates military activities in space, but rather what specific regulatory and legal norms can be applied. The debate over whether the provision in Article IV of the OST should exclude military activity has long reached a consensus. However, there are many non-aggressive military applications in space for which specific regulatory rules need to be clarified, especially given the pace of development of new space technologies and applications. There are competing theoretical approaches to how the regulation of space activities and strategic military use should be approached. In the simplest terms, there is an opposition between those who consider space a "sanctuary" and those who see it as the highest point that needs to be controlled to protect national interests. Cassandra Steer distinguishes two schools of thought on this matter. The first school, which includes adherents of "space as a sanctuary," considers it necessary to ensure absolute freedom from weapons in space. According to scientists of this school, "any kind of space war can endanger all satellites." Given our civilian, commercial, and military dependence on space assets, the consequences could be catastrophic. Cassandra Steer refers to another school those who support "space control" or "space defence." According to scientists at this school, the increase in the number of space countries, including the European Union (EU), China, India, Iran, Japan, South Korea, and North Korea, can increase the vulnerability of space assets. Proponents of this school insist on the need to increase military activity in space (Jakhu et al., 2016).

Due to its numerous strategic applications, space has become an important hub for all types of actors, particularly states. As a result of more launches, satellites, and actors in space, as well as a heavy reliance on space-based systems, the environment has become increasingly polluted and crowded. On average, 990 satellites will be launched annually until 2028. With 5,800 functional satellites already in orbit and 2,600 defunct satellites, this means our orbital highways are overloaded, and without a stable space environment, services we rely on in our daily lives, such as GPS, disaster response data, emissions data, and marine navigation systems, are at risk (Haigh, 2022). Over the years, the Committee on the Peaceful Uses of Outer Space has considered various aspects of the long-term sustainability of outer space activities. In June 2016, the Committee agreed to a first set of guidelines for the long-term sustainability of outer space activities (Report, 2016). In 2018, consensus was reached on a preamble and nine additional guidelines (Report, 2018a; Report, 2018b), although the Working Group could not agree on its final report. In June 2019, the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space were adopted (Report, 2019). Looking at the existing rules and laws in the field of space stability, there are still many gaps and things that need to be clarified.

For example, the question of using kinetic ASAT is controversial today. Thus, in the event of the kinetic destruction of a space object, anti-satellite (ASAT) tests conducted by China, Russia, and the USA have clearly demonstrated that the resulting space debris generation will cause large-scale, long-term, and serious damage to the space environment and endanger all future space activities. In accordance with Article 55 of Additional Protocol I to the Geneva Conventions, methods and means of warfare that may be expected to cause "widespread, long-term, and severe damage" to the environment are prohibited. Thus, as Cassandra Steer points out, there may likely be other, less destructive forms of ASAT that can escape this ban. Today, taking into account the unstoppable development of technical progress and the growth of the number of space actors, it is important to reach a compromise and establish global and general rules with minimal risks for space, humanity, and the planet. We have to understand that the deterrence system is not able to work and be successful when we have more than two complicit actors. On the one hand, the implementation of the programme of demilitarisation of space is currently ineffective due to the categorical acceptance of certain countries, and on the other hand, the development of militarization and simultaneous deterrence are gradually losing their significance, first of all, due to the increase in the number of space actors. Probably, in the future, the states will have to agree on the neutralization outer space, when the flight would also be prohibited military missiles through outer space (Zhukov, 1966).

In order for space and security to become a successful combination, member states should strengthen partnerships and gradually move from competition to cooperation. For example, the experience of the partnership between ESA and EDA in establishing a common vision for the future of space in Europe by strengthening synergies between civil and security activities in the fields of navigation, communication, and surveillance, as well as ensuring European autonomy in accessing and using space in a safe and protected environment, including against cyber threats, ESA and EDA have already successfully established partnerships, including with the European Commission in its areas of interest and expertise, in areas such as critical space technologies for European independence, RPAS command and control, cyber security, CBRN, and of course government satellite communications (GOVSATCOM). By providing Member States and forces on the ground with specific space operational capabilities, there is a de facto unification around the Member States of all the necessary actors: ESA, the

Commission, and EDA to support the Member States themselves. The main objective of ESA and EDA is to offer solutions to member states and the Commission so that European programmes can meet security needs. As Jorge Domecq points out, success in this multi-participant satellite communications collaboration will give a positive boost to two other critical space capabilities that are indispensable to any security-related operation today: space-based Earth observation and positioning, navigation, and determination of time. Working together will ultimately have a positive impact on governance and a shared vision for the future of space activity. (Domecq, 2017).

Conclusions

The article examined issues related to the space race from the point of view of Soviet and American scientists and analysed the normative legal acts, internal orders, and resolutions of the Soviet era in the aspect of space activities for the period 1960–1964, which shed light on the real state and attitude of the Soviet authorities toward the development of space activity. The interesting fact of the existence of contradictions regarding the proposal of the Soviet authorities to form an agreement on peaceful outer space while at the same time actively developing military policy is established. Certain contradictions regarding the demilitarisation of space in national and global aspects as of today are analyzed. As a result of the study, it was established that today, in the conditions of an increase in the number of space actors and an increase in space launches, the interaction of weapons and deterrence is not relevant in the aspect of space security. A transition from competition to cooperation in the aspect of long-term space stability and the search for a compromise in the aspect of demilitarising space are proposed.

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