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SPACE LAW, STATE AND SOCIETY: AN EXPLORATORY APPROACH

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Abstract

This research focus on advances in space law, its origin, historical context and environmentalism. It analyzes the economic relations that emanate from the discovery of the new field of space, and what the product of the commercial exploration of its matter represents. The terrestrial environment, devastated by centuries of human action, is now being surpassed by the prospect of survival on other planets, either through new resources or colonization of environments capable of supporting human life. The methodology is exploratory, given the originality of the subject. Collection of data and bibliographical analysis are carried, mainly from the Ukrainian journal *Advanced Space Law*. Space law is an innovative branch of international law, encompassing new interests to be protected. We conclude attributing to space exploration companies an expectation of significant results for an improvement in people's lives, given that life on Earth will not be viable for future generations.

Keywords: Advanced Space Law; Nationalism; Outer Space Treaty; Space Law; State.

Resumo

Esta pesquisa trata dos avanços no direito espacial, origem, contexto histórico e ambientalismo. Analisa as relações econômicas que emanam da descoberta do novo campo do espaço e o que representa o produto da exploração comercial de sua matéria. O ambiente terrestre, devastado por séculos de ação humana, está sendo superado pela perspectiva de sobrevivência em outros planetas, seja por meio de novos recursos ou da colonização de ambientes capazes de sustentar a vida humana. A metodologia é exploratória, dada a originalidade do assunto. A coleta de dados e análise bibliográfica são realizadas, principalmente, a partir da revista ucraniana *Advanced Space Law*. O direito espacial é um ramo inovador do direito internacional, abrangendo novos interesses a serem protegidos. Conclui-se por atribuir às empresas de exploração espacial uma expectativa de resultados significativos de melhora na vida humana, uma vez que a vida na Terra não será viável para as gerações futuras.

Palavras chave: Direito Espacial; Direitos Espaciais Avançados; Estado; Nacionalismo; Tratado do Espaço Sideral.

INTRODUCTION

The development of human civilization is an important factor in expanding the frontiers of international law. The sea law came about with the conquest of the ocean by humans. The law regulating airspace relations resulted from the use of aircraft and the conquest of the skies. In the same way, the next branch of international law was also created: the outer space law.

Humanity is actively developing. In the space dimension, the most promising direction of technology is into limitless outer space, which extends from the atmosphere from a height of 100

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kilometers. Planet Earth is not eternal, and through this premise the place of origin of humanity will sooner or later have to be abandoned for more propitious alternatives.

As the planet's natural resources become extinct, which has been happening in a frantic way and with greater emphasis in recent decades, human survival will be a consequence of business success, of its new technologies and innovations to dominate the space sphere. This article means to address this technological evolution in space and how an international law in adaptation comprises commercial advances.

The first section exposes the ills that the planet has been suffering, in several irretrievable ways, by collective human action. The second section refers to space law, origin, purposes and historical context, as well as the imposition of international organizations and the interests of State sovereignty. The method used is the exploratory, due to the originality that the theme represents. It was used bibliographic research, data collection and analysis, mainly through the pioneering Ukrainian periodical *Advanced Space Law*.

The main objective of the research is to address the clash between free market and economic intervention by States in the field of space law, also briefly passing through legislation and the obstacles that technology can bring, such as an even greater environmental neglect of the Earth because it is believed that there are other planets in space to inhabit.

TECHNOLOGY AND THE STATE IN A DEGRADED PLANET

"During the time he has been on Earth – somewhere between half a million and a million years – man has been more and more, a profound geological force. He has changed the face of the planet he lives in, sometimes for the better, but too often for the worse." (HUXLEY, 2016, p. 20). Man has lived too much on the planet in the fashion of a parasite sustained through the welfare of the one he infests. Many parasites are wise enough not to destroy their host because they would destroy themselves. This is not the case of man. On the contrary, he often lived in his host doing everything to totally ruin it (HUXLEY, 2016).

Man has deliberately destroyed forests since the hunting period. With the purpose of increasing visibility, the hunting tribes tended to burn the undergrowth, allowing the deer to be hunted much more easily than it would be in a dense forest. And since agriculture began around 8000 BC, men have been cutting down and burning forests in order to create new places to grow food. "The whole process was hurried after the beginning of the Iron Age, when it became possible to break, with iron plows, soils that were too hard for the wooden plows used in the past" (HUXLEY, 2016, p. 25).

Given the real context of threats to various forms of life, combined with scientific uncertainty, considering the well-being of future generations may be related to the very survival of the species, current and of later generations (SOUZA; MACIEL, 2018). The set of technological and industrial information that has been developed expands collective and individual well-being through numerous advances provided, but there is also a planet damage in concomitance (LEVES; CENCI, 2018).

It no longer can be denied human activity has substantially altered the shape of all-natural aspects of the Earth, creating a situation of extreme risk not only for other species, but also for the human being. All these geological and climatic changes, as well as those of fauna and flora, were motivated, to a greater or lesser extent, by human desire, and these are only selective elements of the complexity that is the degradation of the environment (CAMPELLO; AMARAL, 2020).

"Man, throughout history, had his main inventions and contributions taken from contemplation of nature. However, at the same time man attributed value to nature, he subdued her to his own will." (DARIUS; BARNABÉ, p. 51). From the 19th century on, through scientific revolutions, men stopped contemplating nature and started dominating and using it for his own welfare.

"Today, because of this harmful behavior, humanity experiences a reality of environmental crisis by which forests are increasingly deforested, and polluting gases are released into the atmosphere daily" (DARIUS; BARNABÉ, p. 51). The climate is warming and humans are the cause, with the temperature expected by 2100 to rise by around 2.6 degrees, enough to raise sea levels significantly. The warmer it gets, the more space the water takes up as more water melts from the glaciers, which contributes to the precariousness of life on the planet (GARVEY, 2010).

The sun warms the Earth and part of this heat is absorbed by gases from the atmosphere, from there the planet sends them back to space, however, the burning of fossil fuels release some of these gases into the atmosphere and their excess increases the surface temperature. Thus, excess carbon gas is released into the atmosphere, which captures heat and modifies the temperature, raising sea levels and making regions uninhabitable. Gases act as a blanket under the planet, hence the commonly used term *greenhouse effect* (GARVEY, 2010).

This blanket thickens with carbon and methane as more gases are released into the atmosphere, which warms the planet with greater and greater intensity. Some of the consequences derived from *the greenhouse effect* are the increase in heavy rains, storms and floods, hurricanes, avalanches and landslides; drinking water becomes scarce and forest fires more frequent, while farmland is damaged, as hurricanes increase in intensity and quantity. In certain parts of the globe, environments become extremely humid, while in others, extremely dry (GARVEY, 2010).

Sea level rises and with it more areas become uninhabitable; on the other hand, the expectation is that the number of people will only increase with time, making the situation even worse. Thus, it is necessary to reflect on whether the growing number of individuals will go in a world territory that only decreases with the corollaries of human action, climate and environmental degradation. Massive numbers of homeless people can be expected to fight for their lives while access to water is delimited to habitable areas.

The general tendency is to believe in the ability of technology to satisfy human needs for survival. However, for Theodore J. Kaczynski (2010), the American terrorist and radical anarcho-ecologist, the answer to the evils that afflict men is not in technology. The author is the US's most academic terrorist. "He graduated from Harvard in 1962, completed a PhD at the University of Michigan in 1967, and then became an assistant professor of mathematics at Berkeley" (FLEMING, 2021, p. 1).

"After resigning from his professorship in 1969, Kaczynski set out to live in the wilderness and eventually built himself a one-room cabin in rural Montana" (FLEMING, 2021, p. 1). From there he launched a bombing campaign that killed three people, injured 23, and ended with his arrest in 1996, not before having his work published. In an April 1995 letter to The New York Times, written in the name of a terrorist group, Kaczynski promised he would end his bombing campaign if his work were to be published in a widely read periodical.

"This was more a threat than a promise: publish this or more people will perish. The Washington Post accepted his article (with no revisions) and published it in a 'special section' on 19 September 1995" (FLEMING, 2021, p. 2-3). The idea of a context is important to understand how far anti-technology claims may go. Some authors, as the one quoted above, foments a radical chain of thought that aggressively imposes change in society.

Kaczynski (2010) proposes that when the motor vehicle was created, no one thought that this would take away man's freedom, but on the contrary, such a technological invention would significantly increase it, after all, immense territories would be covered with comfort and speed. Thus, a man who walked could, from then on, start to drive his vehicle, while a man who had no interest in going on like this could continue walking.

According to the author, the advancement of technology means the unification of different nations, cultures and peoples in a univocal pattern, that is, technological evolution is an impulse that conditions all men, however divergent they may be, to live a style of common life and nourished by technology. Technological advance, therefore, becomes the central structure on which everything revolves and on which everything depends (KACZYNSKI, 2010).

Within the bias of spatial law, the logic of Kaczynski (2010) represents pessimism towards a technology capable of taking men beyond the inconsistencies and conflicts of the terrestrial environment. The world modulated around the technological invention of the automobile rests on stretches of fallen forests and extinct natural habitats, in order to form new roads. A man who previously could walk at his own pace, more recently has had to submit to passing vehicles, traffic regulations and the sound effects of new technologies.

"When a new item of technology is introduced as an option an individual can accept or not as he chooses" (KACZYNSKI, 2010, p. 76), it does not necessarily remain optional. In many cases, the new technology changes society in such a way as people eventually are forced to use it. The author foments an idea of opposition towards technology as to not merely suggest, mas demand that life should be lived in the forest and far away from any technological means.

Thus, technology can in fact have a conditioning impact on society, inciting people to surrender to the well-being provided and, therefore, neglecting other elements. Like vehicles that needed roads under forests that have already ceased to exist, life on other planets presupposes technologies that do not have their impact defined or delimited. On the other hand, technology has made life easier and more pleasureful than in past times.

It is true that contemporary problems become more and more complex upon widespread neglect. Global warming, pollution, overpopulation, asteroid collisions, scarcity of natural resources, nuclear wars, epidemiological and pandemic diseases, fires and the certainty that at some point the solar system will cease are just some of the most impactful addictions that are imposed. The search for alternative paths to human survival, though, centers on technology, mining and colonization of other planets.

The growing possibility of humanity's extinction motivates the much-needed adaptation. The danger lies in adapting negligently with defeatism to an environment that still harbors possibilities. The State is a variable capable of compelling adaptation through the use of monopolized force (WEBER, 2018). In this way, rules are created, imposed and obeyed. Rebellion is punished with fixed sanctions. On the matter of spreading environmental conscience, though, such an institution is of little value when long term results are intended.

> The State implements its concepts and pursues the ends that society points to it through the monopoly of legitimate violence. Generally, however, this monopoly becomes brutal and inhumane. The State's spearhead in addressing its objectives is composed of creatures that learn and adapt to the social requirements of their surroundings (FONTANA FILHO, 2021a, p. 18).

Not only the people behind State force change along the day-to-day routine of their respective professions, but the people that interact with it. When the ideal aim is to expose current facts and data on

global events in search for solutions, State legislations and impositions are in fact not a viable option. They stand as obstacles to the growth and technological development. Demonizing richness is one example to it. “The attitude of demonizing the entrepreneur and the wealth produced is an important part of state rationality with the aim of maintaining power and social control.” (FONTANA FILHO, 2021b, p. 36).

It is also easier to subtract property as long as the victims are not considered real victims, but people deserving of punishment. The subtraction of assets from its respectful owners cannot be a heinous attitude insofar as they seem to be greedy bastards destructive of a collectively idealized dream, as the eradication of poverty. The second section of the article goes deeper into the treaties on outer space law and their demands of collectivizing profits.

As the control over territory and air, the space entails enormous possibilities towards power and social dominance. Anything too complex tends to be dealt with by a militarized institution for security purposes. After the 1950’s, the most powerful States in their corresponding times have tried regulating space life through treaties and impositions, as well as reaching for space resources excluding the rest. The weak States, on the other hand, have tried seeking aid in international institutions and regulations that offered them a part of the profits even without any risks or initiative from them.

> The existence of a State makes it colorful and addressable every flaw in society life. The function of such an institution is to fulfill our dreams of completeness and improvement. When an individual or collective problem becomes apparent, it is great to know that something is being done about by someone, better yet a powerful structure. The lives of individuals would be harsher and filled with pain if they felt responsible for all the harm that exists. A State makes this problem disappear by claiming responsibility for resolving conflicts, however complex they are. There is, then, nothing to be done by the individual, to a major or lesser extent, while a higher institution in charge already exists. We can then live our lives and take care of our little chores while someone else acts on our behalf. The State thus takes the form of a complex organization that solves problems whose ends are considered too demanding for individual action alone to interact (FONTANA FILHO, 2020, p. 15).

Therefore, the State is an institution with intrinsic will towards regulating important issues, and with this sense of purpose affecting people’s lives in a way as to generate legitimacy in its actions.

Among State interventions and impositions on technology development, many laws have been created in an attempt to legislate over space. The following section of the article delineates the progress of these laws, their intentions, meaning and the context in which they were built, with emphasis on its character, firstly collectivist and later on more nationalist.

ADVANCES IN SPACE LAW: COLLECTIVISM AND NATIONALISM

The space age was inaugurated with the launch of Sputnik I in October 1957. It has already known two systems of world hegemony: the bipolar, in which the leaders of the United States (US) and the Union of Soviet Socialist Republics (USSR) confronted each other; and the unipolar, in force today, under the uncompromising supremacy of the US. The two systems are characterized by very different impacts on the process of creating space laws. Almost the entire legal body is created under the first system, which largely dissolved with the collapse of the USSR in 1991 (MONSERRAT FILHO; SALIN, 2003).

In the 1960s and 1970s, an intense work of drafting agreements emerges and advances. All of it takes place in a single legislative plenary, the United Nations Committee for the Peaceful Use of Outer Space (COPUOS), with its two subcommittees, the Legal and the Scientific-Technical (MONSERRAT FILHO; SALIN, 2003). “Victorious in World War II, the two superpowers, separated by intense political and strategic rivalry, have been fighting each other since the 1940s in a 'cold war', capable of 'warming up' at any time with the use of weapons of mass destruction” (MONSERRAT FILHO; SALIN, 2003, p. 261).

These weapons were initially transported by planes, but it was soon concluded that the best thing would be to launch them by means of intercontinental ballistic missiles. The US and the USSR then launched the race for the creation of the first intercontinental ballistic missile. The objective of both was to become the first space power in the world (MONSERRAT FILHO; SALIN, 2003). “This is the climate in which the Space Age begins and the bases of Space Law, that is, the regulation of space activities, begin to be laid” (MONSERRAT FILHO; SALIN, 2003, p. 263).

Thus, the construction of space law began among Cold War conflicts. The first major space decision was an agreement between the US and the USSR on the brand-new space issue to be debated and regulated at the United Nations (UN), where, for this purpose, in 1959, COPUOS was created, then composed by 24 countries, while in 2003 it was increased to 65. This allowed for a more open and transparent treatment of the subject (MONSERRAT FILHO; SALIN, 2003).

The importance of reaching outer space and developing technologies capable of extracting minerals from asteroids for human survival against a planet in decline is evident. As a result, several unresolved issues arise, namely, the problems of legislative consolidation of ownership of mining deposits and space matters, distant planets and stars, as well as about national and international sovereignty, although that is still a scientifically unexplored subject (KOBZAR; DANYLENKO, 2019; BEZZUBOV, 2020).

More than 100 years of history lay upon the category of space law, which was first mentioned in scientific works by French scientists in 1910. The space law of that time was an idea without form or content. The first monograph on space law was published in 1932. Brief scientific publications dedicated to space law appeared in the 1930s and 1940s (HALUNK0, 2019).

The first doctoral thesis on the subject was defended in 1953. In October 1957, the first artificial satellite entered Earth's orbit. Therefore, the period before 1957 is a mythological, science-fiction, and theoretical elucidation of probable social relations that could potentially arise and be governed by law upon human activity in outer space. Spatial legislation emerged from these premises of theoretical discussion, but most importantly, from concrete events that inspired research and reflection (HALUNK0, 2019).

The United Nations (2008) define Space Law as the body of laws that govern space-related activities. It is, therefore, a form of general international law, which comprises a variety of international agreements, treaties, conventions and resolutions of the General Assembly of the United Nations, as well as rules and regulations of other international organizations. Thus, space law is characterized as one of the youngest branches of jurisprudence.

> Space law is a set of international legal principles and norms governing relations between States and with international organizations in connection with the exploration and use of outer space, which determine international legal status of space, including celestial bodies. It is one of the newest branches of international law (DROZD, 2019, p. 18).

There are five main treaties led by the UN regarding the non-appropriation of outer space by a nation, military power or international entity, which is an important initial element in the matter of space regulation. These are: I) the Outer Space Treaty, created in 1967, which prohibits the use of weapons of mass destruction in space, on the Moon's reserves and on space bodies; II) the Rescue Agreement, created in 1968, which regulates the obligations of any State towards any spacecraft that may present signs of a dangerous situation (KRAUSE, 2017; ERLANK, 2015).

III) The Liability Convention, created in 1972, which establishes responsibility for the rules relating to space activities. When a Soviet Union's nuclear satellite crashed in 1978, the nation was punished under this treaty; IV) the Registration Convention, created in 1976, establishes a system that identifies and registers space objects; V) the Moon Agreement, created in 1979, but which started generating juridical effects only in 1984, proposes that outer space and its riches are to be used for peaceful purposes only (KRAUSE, 2017; ERLANK, 2015).

The Moon Treaty was prepared by the UN Committee, but only 11 nations ratified. It asserted that any resources taken from space should be shared with all nations. Most nations did not sign or ratify

this treaty, given the intrinsically collectivist implications imposed on more developed countries, that is, they would have to pay for the ill-development of most countries (CHAMBERS, 1984).

In common agreement, the treaties cover outer space as an environment shared by States and, therefore, exploration should also have a sharing character. Based on this premise of sharing the environment, the promulgated treaties gained support in claims to collectivize the results, an element present, to a greater or lesser extent, in all of them. The meaning of the term exploration took various forms, including economic and scientific research.

The Outer Space Treaty basically points to a set of rules a nation needs to observe when in space. Its main objective at the time of its enactment was to prevent the nuclear arms race between the US and the USSR from reaching the space sphere. This treaty establishes the principles that govern the activities of States in the exploration and use of outer space to this day (CHANG, 2017; KOSTENKO, 2020).

It claims, for example, that the Moon and other celestial bodies must be exploited by all States for the sole purpose of peace. In another section, the treaty asserts no nation can declare itself sovereign over any part of the solar system, again seeking protection from immeasurable powers and outer space conquest by rich and heavy militarized countries (CHANG, 2017).

Thus, outer space can be freely explored and used by all States, without any discrimination, based on equality and in accordance with international law, having free access to all regions of celestial bodies and planets. The treaty further establishes that outer space, including the Moon and other celestial bodies, must be open to scientific research, and States must facilitate and encourage international cooperation to achieve this goal (BECERRA; RODRÍGUEZ, 2016; FERREIRA-SNYMAN; FERREIRA, 2019).

The understanding that the Moon could be a private property of the nation that conquers it has long persuaded developed countries, leading them towards technological innovation (PÉPIN, 1960). In 1976, a number of equatorial states attempted to assert their exclusive rights to the geostationary orbit as its projection passed through its territory, and the objects deduced were immobile and just above the corresponding points on the Earth's surface. Such claims were not supported and were rejected, mainly due to the low military power of these countries to impose their might, but also due to the impact of the space treaties in effect (ОГОРОДОВ, 2008).

The rules regarding the freedom of access to all regions on celestial bodies and planets for scientific research, with States facilitating and encouraging international cooperation, does not contemplate attempts to install private property or even private industry with regard to mineral wealth. Research is encouraged, but individual mineral exploration is not permitted, as profit sharing lay as an absolute (BECERRA; RODRÍGUEZ, 2016).

Article II of the Outer Space Treaty states that "Outer Space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." (UNITED NATIONS, 2008, p. 4). Thus, difficulties to privatization and determination of sovereignty borders represent concrete elements in the midst of the normative abstract space legislation tries to fill.

Furthermore, the weakening of the sovereign State that has been taking shape makes it even more difficult to materialize sovereignty in space. If, on Earth, sovereign States have been suffering to impose themselves upon the breach of their sovereignty by international organizations (LUHMANN, 2016), how can one expect a country to stipulate which celestial materials belong to it?

In general terms, the main predominant features surrounding the Outer Space Treaty are the following: I) outer space is free for all nations to explore and no claims to sovereignty can be made. Space activities should benefit all nations and peoples, but no property belongs to anyone in particular; II) nuclear weapons and weapons of mass destruction are not allowed in the Earth's orbit, on celestial bodies or elsewhere in outer space, given space peace rules; III) States are responsible for any possible damage arising from their space objects, as well as for any activities carried by their citizens. States must protect outer space from any harmful contamination (HOWELL, 2017).

A private company acting on its own initiative would therefore have no legal right to a place in space or on a celestial body, even if it has already parked permanent equipment there. Thus, after the risks and innovation of space entrepreneurship, the reward is collectivized. The innovator assumes the risks, while the profit is shared among people that may not know the space is even real.

While some individuals aimed at the stars, others lurched over law books. A year after the USSR sent the Sputnik space program in 1957, the United Nations General Assembly created COPUOS. In 1960, the International Institute for Space Law was created as a non-governmental agency with the aim of developing legal charters and imposing cooperation on nations in space matters. Its main functions were to exchange information about outer space, keep records on what governmental and non-governmental organizations did in space and enforce space legislation (CORREIA *et al.*, 2017; HOWELL, 2017).

Between the 1950's and 1970's the world witnessed one of the most important moments of space exploration, when the US and the now extinct USSR developed to reach outside the Earth's atmosphere. The launch of new space missions represents the advancement of science and engineering, which offer cutting-edge results not only for space exploration, but also for the problems that permeate life on Earth. Products such as Teflon, GPS, barcode and Velcro emerged from space research (BRASKEM, 2017).

The launch of artificial satellites boosted the telecommunications sector and even agriculture. The medical field has also benefited greatly from the development of space solutions. Automatic blood pressure measurement systems and high-speed cardiac monitoring equipment are examples of the benefits of space research and technological development. Commercial flights to the Moon and colonization of Mars are among the main objectives of the latest phases of space exploration (BRASKEM, 2017), as well as the commercialization of lunar resources, which requires advanced mining technologies (KRICHEVSKY; BAGROV, 2019).

Asteroids are known to be rich in valuable resources such as iridium, platinum and palladium, which are rare on Earth (KOSTENKO, 2020). The Moon is composed of billions of liters of water, which make it susceptible to exploitation. The search for water mining opens margin for spatial colonization, as finding water in an environment makes it cheaper and easier to live from this source than transporting it to Earth (BASULTO, 2015).

The possibilities for exploring asteroids are numerous, including inexhaustible quantities of precious metals and the logistical support of human colonies on the Moon or Mars, as long as they already contain fuel, water and other materials as natural sources. The rocky bodies that orbit the Earth and accumulate in the asteroid belt between Mars and Jupiter are an almost inexhaustible source of wealth, with water as the main attraction for life beyond Earth's surface (MEJÍA, 2016).

A single 500 cubic meter asteroid may contain material comparable to all the platinum ever made on Earth throughout history. Water is a kind of oil for future space life, as the hydrolysis process allows obtaining hydrogen and oxygen that drive rockets, maintaining satellites and sustaining life of space explorers (MEJÍA, 2016).

Due to the high value of these materials, mining expeditions must be a frequent phenomenon. The critical question then is who will own these mined resources. Based on a series of treaties that are decades old, no one could institute private property over them, but national impositions directly confront these interests, mainly by the US (KOSTENKO, 2020; SVETLICHNYJ *et al.*, 2019).

A large part of the space treaties already discussed have in common agreement the product of space exploration should benefit all countries on an equal basis (MURAVIOV *et al.*, 2019), but is it all countries on an equal footing that research, develop technology and take risks to tame the forces of space through intelligence and determination? Should not outer space and its goods benefit those individuals capable of conquering them as they are the ones who risk own resources and time in this endeavor? This chain of thought is ignored by most treaties still in effect.

The space is unknown and untouched by ordinary people. More than that, it has intrinsic value. It is a potential value as long as humanity does not have the technology required to use it, and it will be a

real material value as soon as such technologies emerge. The legal treatment of spatial relations is carried on two levels: international and national. At the first level, the UN regulates the introduction of a uniform legal regime, common to all. On the second, each State, represented by its authorized public administration bodies, specifies and expands the spatial provisions relating to the use of outer space and space objects with mineral deposits (KOBZAR; DANYLENKO, 2019).

This unknown has been scrutinized by billionaire Elon Musk, founder of Space X, who proclaimed that in less than a decade his company would send people to Mars. Jeffrey P. Bezos, founder of the Amazon company, similarly uses part of his fortune to power his rocket company, Blue Origin, and says that in the near future thousands of people will live and work in space (CHANG, 2017; CHANG, 2015). Boeing, Firefly and Aerospace are other space companies with prospects for success (HALUNKO, 2019).

"Currently, space activity in the countries throughout the world is growing like an avalanche; by the end of the second decade of the 21st century, all countries are participating in it in this or that way." (UDARTSEV, 2019, p. 94). This corroborates the interests of legislating on the spatial sphere, after all, it comprises high possibilities of impact on people's lives, in addition to profit for companies capable of providing the necessary services.

Although nations have legal jurisdictions over the distances, sizes and proportions of their respective territories, both air and seas included, the same does not occur with outer space, as the distances are differently measured. In space it is possible to find an immeasurable variety of celestial bodies such as asteroids, planets, comets, stars, and distances are often measured in light years. This reveals the complexity of the matter in terms of regulation, whether national or international.

The current legal regulatory basis for space relations has two main conceptual approaches, distinct and antagonistic: first, the priority of international institutions under the concept of world security, in terms of outer space exploration by various methods; the second, the concept of self-sufficiency of national States, as a form of autonomous resolution of issues related to the implementation of space activities by an individual State, its citizens or companies (KOBZAR; DANYLENKO, 2019).

The US under the administration of Barack Obama (MEJÍA, 2016) and later with Donald J. Trump organized themselves by creating new departments to address the need for growing space technologies. President Trump unveiled what he called the National Space Strategy, which takes the form of a launching pad for the next generation of American space exploration. The strategy claims national interests come first, in order to strengthen the country. It occurs through a dynamic of

cooperation and interaction between different US sectors, including space, national security, commercial and civil (SVETLICHNYJ; LEVCHENKO, 2019; FERREIRA-SNYMAN; FERREIRA, 2019).

> The United States will partner with the commercial sector to ensure that American companies remain world leaders in space technology. The National Space Strategy establishes forthrightly that securing the scientific, commercial, and national security benefits of space is a top priority for this Administration. The National Space Strategy protects vital interest in space — to ensure unfettered access to, and freedom to operate in space, in order to advance America's security, economic prosperity, and scientific knowledge. President Trump has already taken significant steps to reorient American space policy and set it on the right path for the future. On June 30, 2017, the President revived the National Space Council for the first time in 24 years. On December 11, 2017, President Trump once again set America's sights toward the stars by signing Space Policy Directive — 1, which instructed the National Aeronautics and Space Administration (NASA) to return American astronauts to the moon for long-term exploration and utilization, followed by human missions to Mars and other destinations (SVETLICHNYJ; LEVCHENKO, 2019, p. 87).

Before that, in late November 2016, former US President Barack Obama had already signed the so-called Space Law, which promoted the private exploration of space, which has been carried by companies Space X and ATK Orbital. The law included the appropriation of asteroids and other resources in space by individuals and companies, as they can provide the technology to move and explore these celestial bodies believed to be rich in minerals such as platinum, gold, iron and water (MEJÍA, 2016).

The last article of this law requires the government not to interfere in the mineral space exploration and also makes it clear whoever manages to recover an asteroid's resources has the right to own, transport, use and sell it (MEJÍA, 2016). Peter Singer (2004) criticizes exacerbated forms of nationalism, saying that:

> Our problems are today [2002] too intertwined to be resolved in a system made up of national states whose citizens are primarily and almost exclusively loyal to their own national state rather than the wider global community – and that system has not generated a sufficiently large will. to meet the pressing needs of those living in extreme poverty. Imagining ourselves as part of a national community feels good when we conceive it as something that extends our concerns beyond limited tribal loyalty, but it's less attractive when we conceive it as something that raises a wall and separates us from the rest of the world. (SINGER, 2004, p. 219-220).

According to the practice of space law, the first concept, that of collectivism, tends to be the dominant one, since it is generally believed that the security of humanity is the fundamental rule for the coexistence of peoples, nations and States. However, the US shows itself as an exception to the rule (MEJÍA, 2016). The resolution of domestic problems is more easily addressed by sovereign States, while international problems are secondary, given the difficulties, complexities and multifaceted character they present. It is simpler to address the problems contained in delimited borders (KOBZAR; DANYLENKO, 2019).

Perspectives for solving problems that are based on the national aspect have a concrete character insofar as they deal with determined borders and finite, precise and detectable evils. Space activities possess the general objective of socioeconomic and scientific progress, aiming at the survival of a declining Earth, but the erosion of the terrestrial environment occurs worldwide, transcending borders and, therefore, making national measures difficult (DROZD, 2019; SOROKA *et al.*, 2019).

Finally, the regulatory legal basis mechanism for outer space is a set of I) declared international guarantees of space exploration, based on its recognition as a value that cannot be nationalized, assigned or damaged; II) national legal treatment of space relations that arise during space activities by a particular country or its representatives; III) provisions of the private space law, which is in formation phase (KOBZAR; DANYLENKO, 2019).

Regulating space means limiting human relations, imposing rules on territory and on each other's sovereignty and freedom. Legalism in space represents the human empire transcending territorial, maritime and aerial aspects, entering a sphere that goes beyond the vague conceptions of sovereignty ever created. If the ownership of man over man was already a constant in society life, more recently the theme covers the ownership of distant constellations, invisible to the naked eye, some even without any prospect of ever being reached (LAFFERRANDERIE, 1997; FEDER, 1981).

FINAL REMARKS

Global warming, thinning of the ozone layer, plant and animal disappearance, destruction of the forests that surround Earth, among other events have caused a growing society concern. Human society has been increasingly struggling with an ecological crisis. The rapid consumption of natural resources and its exhaustion due to the waste of contemporary society have created an ongoing condition whose finish line is nearby.

Today's space law is a young branch of international law, a new and dynamic sphere of application of international legal norms. This branch needs time to mature and adapt to the economic forces they undertake and the rapid dynamics of space science, revolutionary technologies and the widespread use of communication that are growing fast.

We live in a planet whose focus is no longer on restoring the environment, but on ascending into the distant. If during the Middle-Western period the objective was the heavens, today the same pattern is followed, no longer in Christ, but in the unknown of outer space. It is entirely predictable that as the number of people in space increases as a result of the expansion of activities, the law that governs human activity in this environment will adapt and impose itself.

It should be noted the importance and global relevance of entrepreneurship and innovation carried by unique individuals of genius and ambition. It is known that legislative interests will try to contain their tempers through obstacles in the form of legal letters. To some extent, the US is the exception to this rule. Attempts to relativize the merit of innovation have already been employed, as is the case with the aforementioned international treaties, which excel in the collectivization of celestial matters, as if the risks and resources were collectivized as well in matters of invention.

Judicial adaptation must take the form of the absence of any egalitarian regulation on the subject, at the risk of hampering technological advances, entrepreneurial interests and human survival. When the outer space takes the center of the debate, it is worked with assumptions, theories, imaginations, daydreams and scientific abstractions.

The classic idea of legislation tends to be based on concrete elements. In the absence of these, there is no need to speak of positive law in space matters. The extraction of fundamental materials for a world that dies in their absence raises a favorable field for *laissez-faire* to act. May economic action be left free to innovate, create, develop and save humanity from itself.

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