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Abstract of the doctoral dissertation

"Evolution of the international space law in the perspective of modern technological progres"

On 4th of October, 1957, for the first time in history, the boundary of space was crossed by launching the satellite "Sputnik 1", while on 12th of April, 1961, the first human flight to outer space was conducted. These are extraordinary achievements in the history of mankind, especially considering the fact that not even 60 years have passed since the first human flight by airplane, which took place on 17 th of December, 1903 and which lasted less than a minute. This is a proof of the ever-faster technological development, which is most visible through the invention of the new ways the outer space is being used today.

The new area that mankind gained access to also brought with it the need to regulate activities and introduce rules of conduct. Similar processes took place in the case of establishing provisions concerning Antarctica, the high seas and the seabed, i.e. zones outside the jurisdiction of states. Therefore, in the initial stages of the use of outer space and the intense period of exploration against the backdrop of the Cold War rivalry between superpowers, a number of treaties were created that established a system of international space law. These treaties include:

- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, opened for signature on 27 January 1967;
- Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, opened for signature on 22 April 1968;
- Convention on International Liability for Damage Caused by Space Objects, opened for signature on 29 March 1972;

- Convention on Registration of Objects Launched into Outer Space, opened for signature on 14 January 1975.

However, technological development continues, making space more accessible, not only for states, but also for private entities. Along with new investments, especially undertaken by entrepreneurs, new ways of using space are emerging, especially regarding the exploitation of resources in space and space tourism, as well as dealing with the threats posed by the phenomenon of space debris.

In the dissertation, a thesis was put forward that due to the unclear structure of the provisions of the agreements that make up the international space law and the lack of more detailed regulation of issues related to the use of outer space, space law undergoes a specific evolution in order to manage the legal gaps visible against the background of modern ways of using outer space. This evolution is influenced by several factors, especially:

- state practice;
- entering into new agreements aimed at influencing the interpretation of applicable regulations;
- developing guidelines on the use of outer space on the international forum, which take the form of soft law.

This work will show how the over half-century interpretation of international law is changing, and what impact it has on the contemporary possibilities of using outer space.

The thesis will be argued mainly on the basis of three issues that are the focal points of activities undertaken in space by various actors, from states to private companies. These issues are:

- extraction of resources in space;
- space tourism - transportation of non-astronauts in space;
- responsibility for contamination of the Earth's orbit with space debris.

An auxiliary question that was posed while proving the thesis is whether, despite the ongoing process of evolution *vide* reinterpretation of the applicable provisions, the space law is able to cover all new types of space activities with its regulations?

The main purpose of the work is to examine whether it is possible to further develop activities in outer space under the currently functioning international space law, despite the growing tendency of states to conclude separate agreements and to some extent ignore - when it serves their interest - guidelines emerging in the form of soft law. This comes down to establishing a hypothesis that the current shape of international space law treaties does not allow for the regulatory framework to cover all aspects of space activities that result from the modern use of space. Therefore, it is required to adopt new regulations for this purpose, which would complete the current composition of the space law.

The dissertation consists of four chapters, divided into subchapters, the last of which are conclusions regarding the discussed issue. Each of the issues discussed has

been analyzed against the background of real activities taking place in space, in which various entities are involved, and plans for future activities.

The first chapter serves to present the most important sources of law, which are currently in force in international space law. Its genesis has been exposed and the rules governing it have been described. What's more, the problems that arise from them in comparison with modern ways of using space have been signaled.

The second chapter focuses on the plans for the extraction of minerals from space and the exploitation of its resources by various entities in several ways. It was indicated what is potentially the greatest obstacle to the implementation of these plans on the basis of international space law regulations. In this context, the issue of the doctrine of the common heritage of mankind and its application in universally recognized treaties was subjected to particular analysis. In addition, this chapter also distinguishes private entities from state entities and considers whether the former are subject to the applicable provisions of agreements that make up international space law.

The third chapter discusses the latest commercial venture in which the most important actors of the private sector have engaged, i.e. the service of launching people who are not astronauts into space, called "space tourism". This chapter describes the types of such activities and analyzes the occurrence of conflicts of legal regimes from other branches of international law, especially between aviation law and space law. In addition, the issue of the person of the space tourist and his status in the light of international space law was discussed.

The fourth chapter analyzes the phenomenon of space debris and the threat it poses to the future of conducting activities in space. This chapter focuses in particular on the meaning of the terms "space object" and "space debris", their interdependence and the resulting obligations of states involved in the conduct of space activities. In addition, considerations have been taken on the responsibility of states for the protection of the Earth surrounding environment, which results from the Outer Space Treaty of 1967, as well as mechanisms in broader international law that could allow states to meet their obligations on these issues.

At the end of the dissertation, there is an ending constituting a summary of the work, it includes conclusions from the analysis of individual issues and verification of the research hypothesis. The dissertation ends with a bibliographic appendix, including a list of scientific articles, acts of international law, judgments of the International Court of Justice and internet sources from which actual information was obtained.

This dissertation is of a synthetic nature, its creation was based on several research methods. The most important method was the comparative method, mainly in order to search for definitions of terms appearing both in agreements that make up international space law (e.g. "*res communis*", "spacecraft crew", "space object", "space debris") and scientific literature arising in connection with the latest ways of using outer space (e.g. "astromining", "space tourist"), as well as various views and positions on shaping new international agreements (e.g. Artemis Accords). It was also used to comprehensively study the similarities and dissimilarities of the same concepts that appear in a number of different treaties regulating other areas of international law (e.g.

the principle of non-appropriation found both in the Outer Space Treaty of 1967 and the United Nations Convention on the Law of the Sea of 1982). The method of exegesis was also used to a large extent, and the historical method was also used to a limited extent, mainly in order to demonstrate the intentions of the authors of international space law agreements when developing individual regulations contained therein.

Keywords: international space law, use of the outer space, astromining, space tourism, space object, space debris, protection of the near-terrestrial environment.