

THE LEGAL REGIME GOVERNING THE PASSAGE OF SPACE OBJECTS OVER THE AIRSPACE OF FOREIGN COUNTRIES

EL RÉGIMEN LEGAL QUE RIGE EL PASO DE OBJETOS ESPACIALES EN EL ESPACIO AÉREO DE PAÍSES EXTRANJEROS

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Abstract: According to the Chicago Convention (Civil Aviation Convention, 1984), every government has complete and unquestioned governance over the airspace of its land. On the other hand according to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, every state is allowed to use and explore the outer space. Nowadays, space activities are increasingly expanding and several space objects are launched into the outer space every year. Resultantly it is constantly probable for space objects to violate foreign countries' airspace while ascending towards the space or descending from it. The purpose of the present paper is to investigate the passage of space objects over the airspace of foreign countries. To this end, firstly the issue of the boundary between the outer space and the airspace of countries is elaborated on and afterwards, it is investigated if there is an international convention in this context in spite of lack of existence of an international treaty regarding the legal criteria governing the passage of space objects over countries' airspace.

Keywords: Space objects, outer space, airspace, international convention

Abstracto: De acuerdo con el Convenio de Chicago (Convención de Aviación Civil, 1984), cada gobierno tiene un gobierno completo e incuestionable sobre el espacio aéreo de su territorio. Por otro lado, de conformidad con el Tratado sobre los principios que rigen las actividades de los Estados en la exploración y utilización del espacio ultraterrestre, incluida la Luna y otros cuerpos celestes, todos los estados pueden utilizar y explorar el espacio ultraterrestre. Hoy en día, las actividades espaciales se están expandiendo cada vez más y cada año se lanzan varios objetos espaciales al espacio exterior. En consecuencia, es constantemente probable que los objetos espaciales violen el espacio aéreo de países extranjeros mientras ascienden hacia el espacio o descienden de él. El objetivo del presente trabajo es investigar el paso de objetos espaciales por el espacio aéreo de países extranjeros. Con este fin, en primer lugar se elabora el tema de la frontera entre el espacio ultraterrestre y el espacio aéreo de los países, y luego se investiga si existe una convención internacional en este contexto a pesar de la falta de existencia de un tratado internacional sobre el derecho criterios que rigen el paso de objetos espaciales por el espacio aéreo de los países.

Palabras clave: objetos espaciales, espacio exterior, espacio aéreo, convención internacional

Introduction

Nowadays, space exploration is of a very high importance for every state and in fact, most countries are currently undertaking extensive researches in this regard while other countries possess the required technologies for launching space objects into the outer space and launch various space objects into the outer space. Iran is one of these countries. The geographical condition of some countries (Benko, Graff, 1985: 135) forces them to use other countries' airspace in case of intending to launch a space object into the outer space. The question that is brought up considering the aforementioned content is that considering the increasing trend of launching satellites into the outer space and the fact that these space objects are constantly prone to violating the airspace of foreign countries while they ascend towards the space or descend from it; what are the legal criteria governing the passage of space objects from the airspace of foreign countries? The present paper tries to find an answer to the former question. However undertaking research in this regard first of all requires the researcher to determine the height of airspace of countries. Therefore, in the present study it is firstly tried to determine the boundaries between the airspace of countries and the outer space with respect to existing treaties regarding the outer space. Afterwards, it is investigated whether there is an international convention on passage of space objects over the space of countries or not. Furthermore, it is investigated whether it can be claimed that an international convention has been formed on the aforementioned subject or not.

Chapter One

The boundary between the land's airspace and the outer space

Undoubtedly, the issue of the boundary between the airspace and the outer space is one of the oldest and most debated subjects in the context of space laws (Copal, 1980: 154). The issue of determination of the starting point of the outer space as a legal issue was for the first time raised by the Legal Subcommittee of committee on the Peaceful Uses of Outer Space (COPUOS) in 1959. In 1966, in the draft of the treaty of principles governing the activities of states in the exploration and use of outer space (including the moon and other celestial bodies), the United Nations (UN) asked the COPUOS to undertake a study regarding the issues related to defining the outer space. The issue of defining and determining the limits of airspace has remained in the program of future studies of the COPUOS since that time, however this committee has not yet specifically elaborated on this issue. In 1979, 1983 and 1987, the Soviet Union made several propositions to the COPUOS about the determination of the starting point of the outer space. However since the decisions of the COPUOS are made in a collective manner, the referred propositions were never approved by the committee (Trachea, 1997: 1).

The importance of determination of the boundary between the outer space and countries' airspace lies in the point that on the one hand, according to the Chicago Convention, every state has complete and unquestioned governance over its' land's airspace, and on the other hand according to the treaty on the Outer Space, every state is allowed to peacefully explore and use the outer space (Rosen field, 1979: 138).

In the convention of states' international liability for damages caused by space objects (1972), there are different sentences regarding civil responsibility in outer space and earth's airspace. This in turn shows the necessity of determination of the boundary between the outer space and countries' airspace (Larsen. L, 2009: 171).

In space-related treaties that have been approved until today, there is no criterion for determining the boundary between the outer space and earth's airspace. Therefore, the researchers of the space laws have proposed different definitions of outer space in addition to different criteria for determining the boundary between the outer space and earth's airspace. In general, the theories proposed in this context can be categorized in three categories.

First Category

Lack of need for determining the boundary between outer-space and earth's airspace

These researchers believe that there is no need for determination of the boundary between the outer space and earth's airspace (Jessup, Tab Enfield, 1959: 207). They have cited the following reasons to justify their idea:

1. Currently it is neither technically nor practically possible to determine the boundary between the outer space and earth's airspace
2. Determining the boundary between these domains must be completed by technical space experts and it is not the duty of the science of law to elaborate on this issue
3. Lack of existence of any international treaties in this context is a sign of the fact that there is still no need for determining the boundary between these domains
4. Most developed countries tend to extend their governance as much as possible and if governments negotiate the determination of boundary between outer space and earth's airspace, they will try to extend the height of their airspace disregard of scientific considerations (Lee, T, 1970: 46).

As an objection to this theory it should be said that the purpose of determining the boundary between these domains is not to determine the precise scientific border between them, rather the purpose is to determine an agreed border that may not even be consistent with scientific facts at all. In addition, countries including France, Belgium, Italy, Russia, Netherland and Egypt have shown their tendency for determining the boundary between these domains (Odenton, 2003: 67). Nevertheless, existence of treaties that determine different responsibilities for states in space and on land is a sign of the need for determining the boundary between these domains.

Second Category

The criterion of space activities

Some of the lawyers in the domain of space laws believe that while determining the boundary between the outer space and earth's aerial space, one should not merely rely on scientific and technical criteria, rather the outer space should be considered as a space in which atmospheric activities are conducted while the earth's airspace should be considered as an area in which non-space activities are conducted (Odenton, 2003: 69). In other words, the boundary between these domains is determined by the activities that are conducted in them. According to this criterion, for example the heights at which airplanes fly is considered as the earth's airspace while the location of space satellites is considered as the outer space. Not unlike the previously discussed theory, this theory maintains that there is no need for determination of the boundary between the outer space and earth's airspace. As an objection to this theory, it should be said that in consistence with the daily developments of science and technology, aerial activities reach higher heights and therefore, the criterion of space and air activities is an ambiguous criterion (Rosen Field, 1979: 140). In addition, since it is crucial to determine the area of governance of every state this criterion cannot be considered as a suitable one.

Third Category

Technical Criteria

As a result of objections made to the previously discussed theories, the majority of the researchers in the domain of space laws have consistently tried to determine the boundary between the outer space and earth's airspace through technical and scientific criteria. Various ideas have been proposed in this context, however due to shortage of space, we have only referred to the top three most important criterions.

First Subject

The criterion proposed by the International Civilian Aviation Organization (ICAO)

In its statement No.7, the International Civilian Aviation Organization (ICAO) introduces the earth's airspace extent as the last point in which an airplane is controllable. According to this criterion, the ending point of the airspace of earth is about 80 kilometers above sea level.

Second Subject

The Criterion of the ending point of Aerodynamic capacity

According to this criterion, the boundary between the outer space and airspace is the point in which the air loses its aerodynamic capacity. This point is approximately 82 kilometers above the sea level (Odenton, 2003: 72).

Third Subject

The closest point on the earth's orbit to the earth

According to this criterion, the outer space starts from the lowest point of earth's orbit. The earth's orbit has an oval shape which does not have a fixed thickness. In this regard, the earth's orbit starts from approximately 100 kilometers from the earth and continues for hundreds of kilometers and even thousands of kilometers in some areas (Larsen, L: 171). According to this criterion, the boundary between the space and earth's airspace is the closest point on the earth's orbit to the earth.

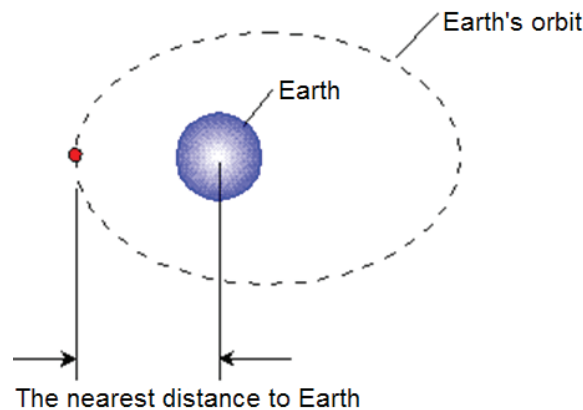


Figure 1: The nearest distance to Earth

The major defect of the entire abovementioned technical criteria is that none of them illustrates a precise boundary between the outer space and airspace and, all of them are prone to changes as science develops. (Odenton, 2003: 67).

However, the most important thing that should be considered for in determination of the boundary between the outer space and airspace is that in order to be able to approve an international treaty, the proposed criterion must be accepted by all countries (Copal, 1980: 171). It seems that according to the following reasons the criterion of the closest point on earth's orbit to the earth is the most agreed upon criterion:

First of all, the Soviet Union's proposition about the boundary between the outer space and airspace was based on this criterion and other countries including France, Belgium, Italy, Netherland and Egypt agreed with this criterion too (Odenton, 2003: 65).

Nevertheless, since aerial security is of a very high importance for every state, and considering the fact that the last criterion provides every country with a more extensive airspace compared to the other two criteria, it seems that this criterion would be better embraced and accepted by countries around the world (Copal, 1980: 171).

Nonetheless, in 1968, the organization of international laws has considered this criterion as the index for determination of the boundary between the outer space and airspace. Most lawyers and researchers of the domain of space laws consider this criterion as the best criterion for separation of the outer space from the earth's air space (Larsen. L, 2009: 171).

Chapter Two

Violation of foreign countries' airspace through passage of space objects

While there is no international convention regarding the boundary between the outer

space and the earth's airspace, there is also no international convention regarding the passage of space objects from the airspace of foreign countries. However, one researcher has stated that considering the special geographical conditions of some countries that force states to use other countries' airspace for launching space objects into the outer space, and considering the fact that every country is allowed to use and explore the outer space according to the article 1 of the treaty on outer space, it can be considered that the above mentioned treaty implies that every country is allowed to harmlessly cross and or use other countries airspace for accessing the outer space (Latch, 1972: 60). However this has never been accepted by the experts of this domain since the freedom in using the outer space has no need for violation of the airspace of other countries.

While elaborating on the legal criteria governing the passage of space objects from the airspace of foreign countries, two different subjects must be separated from this title:

1. When a satellite is positioned on the earth's orbit, it will eventually fall to the earth. The higher the satellite is located on the earth's orbit and the faster it moves, the longer it will remain on the earth's orbit, however it still will eventually fall to the earth (Dale, 1978: 107). When satellites descend to the earth's atmosphere, they either burn thoroughly or shatter with their particles falling to the ground. Anyways, such fallings cannot be considered as passage of space objects from the airspace of foreign countries. This is because there is no control on the falling of satellites and this movement cannot be titled as passage.
2. The article 5 of the treaty on Saving Astronauts (1968) states that if a manned spacecraft landed in a foreign country due to a fault, crash, an emergency or such affairs, the host country is obliged to return the astronauts safely to the launching country. This is different from harmless passage from the airspace of a country; because by harmless passage it is referred to a passage for which the route of flight or location of landing have been previously determined and the launching country knows exactly where the space object will pass (Trachea, 1979: 13).
3. There is no international convention on the passage of space objects from the airspace of foreign countries and therefore some researchers have tried to create an international convention in order to prove the right of passage of space objects from the airspace of foreign countries. The next section is dedicated to the investigation of international conventions in this regard.

International convention on passage of space objects from the airspace of foreign countries

An international convention is a behavioral regulation developed through an international process and identified as an obliging regulation by the members of international laws. In other words, as regulating methods, international conventions rely on the constant practice of states (Article 1: 2-3).

Some researchers have claimed that despite the lack of an international convention on the free and harmless passage of space objects above the airspace of foreign countries, there has been an international convention formed in this regard which allows every country to use other countries' airspace for launching into or landing from the outer space without any need to taking permissions (Verchtin, Danilenko, 1985: 24).

These researchers justify their idea in the following way: when a space object is launched into the space or lands from the space, in most cases the former and latter launching and landing are conducted within the airspace of the corresponding country, however in some cases these actions are performed using foreign countries' airspace. Countries who use foreign countries for the sake of the aforementioned actions never take permissions for the target foreign country and this shows that there is an international convention on the permission for harmless passage of space objects from the airspace of other countries (Latch, 1972: 60).

In 1995, COPUS developed a questionnaire in relation to space laws and distributed the questionnaires among the representatives of member countries of the committee. The question number 7 of the inventory asked the respondents whether there exists an international convention

on the harmless passage of space objects from the airspace of foreign countries or not.

In answering the above mentioned question, the countries of Germany, Russia, Syria, Iraq, Pakistan, and south-Korea stated that they believe that there was no such convention while the countries of Greece, Chile, Mexico and Czech Republic believed that there exists an international convention. On the other hand, the majority of researchers believe that no international convention has been formed in this regard yet (Vazenberg, 2007: 36; Freda, 1992: 37; Chang, 1980: 357).

As it has been mentioned, for a rule to become an international convention it should be continuously adopted by the members of the international laws council and it seems that since the 1957 in which the first space-craft was launched into the space, not a significant amount of time has passed and therefore it cannot be stated that an international convention has been formed regarding the passage of space objects from the airspace of foreign countries (Trachea, 1997: 15). In addition since certain countries believe that there is no international convention in this regard, it can be concluded there is no convention, and otherwise these countries would have had been aware of it.

Finally it should be said that with respect to daily development of space activities, it is crucial to form an international convention regarding the determination of the boundary between the outer space and the airspace, in addition to passage of space objects from the airspace of foreign countries.

Conclusion

Studying the international criteria governing the passage of space objects from the airspace of foreign countries requires us to initially determine the boundary between the airspace and the outer space. With respect to lack of an international treaty in this regard, various researchers have proposed different theories. However, among these theories, the theory of “the closest point on the earth’s orbit to the earth” seems more appropriate than the other proposed theories since it provides states with a wider airspace in addition to the fact that more countries have agreed with this theory. Regarding the passage of space objects above the airspace of foreign countries, some researchers believe that there exists an international convention in this context based on which countries use other countries’ airspace for the purposes of launching space objects into the space and landing the launched space objects don’t need to take any permission from the foreign country. However, for a rule to become an international convention, that regulation or rule should be continuously adopted by the members of the international laws council and it seems that since the 1957 in which the first space-craft was launched into the space, not a significant amount of time has passed and therefore it cannot be stated that an international convention has been formed regarding the passage of space objects from the airspace of foreign countries. Nevertheless, certain countries have specifically stated that there are no international conventions in this regard. Based on these reasons it should be stated that neither any international treaties nor any international conventions have been formed regarding the passage of space objects from the airspace of foreign countries.

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