The Limits of Space and the Limits of Law

— Air Space, Aerospace and Outer Space —

Pedro Ferreira
Assistant professor
Law Faculty, University of Macau

I - INTRODUCTION

Without going into highly philosophical speculation, space can be defined as the area or volume between given limits, established according to different criteria such as different nature, mere geometrical measurements or even by excluding factors; thus, for instance, outer space can be defined as the space beyond the planet Earth including the surrounding air space. From this perspective the limits of national territories, Exclusive Economic Zones, the continental shelf, Antarctica and air space are determined, more or less accurately.

However, as such spatial portions are not under the same jurisdiction - national or non-national - nor have the same legal nature, the problem shifts from a simple scientific question to a genuine legal problem that require, first of all, knowing which criteria should be used to differentiate them - the limits of space - and second, which rules should apply inside such space - the limits of law.

II - THE LIMITS OF SPACE

Concerning the first problem - the limits of space - and taking as a basis for the criterion the type of sovereignity, one may classify spaces as "national" and "non-national", according to Professor Bin Cheng's[1] teachings.

It must be noted that here, air space does not appear only as national air space but also as air space as a dimension inherent in any territory, whether national or international, meaning that one shouldn't forget that air space can not be dissociated from the title on which the rights to land surface are based and thus is subject to

---

[1] Bin Cheng, *Legal and commercial aspects of data gathering by remote sensing*, in "The Highways of air and outer space over Asia", Dordrecht: Martinus Nijhoff, 1992, p. 49-76; Henri A. Wassemberg, *Principles of outer space law in Hindsight*. Dordrecht: Martinus Nijhoff Publishers, 1991, p. 39.

different sovereignty. The rule, in this case, is that the sovereignty over the air space shall be the one applied to the land or water surface.

From among the national spaces we shall consider only one dimension thereof: the air space.

As for non-national spaces, we shall talk about the air space over the Exclusive Economic Zone, international spaces and the outer space.

1. The national air space

National space or national territory is that spatial portion subject to or in respect of which State sovereignty is exercised. Sovereignty, regarded as a power - basically complete and absolute, nevertheless allows for different degrees of exercise[2] or even a dissociation of title and exercise. To express this last situation - exercise of sovereignty - we use also the terms jurisdiction or administration, as in the case of Macau[3].

Considering that a territory is a dimension and as such recognized both by the domestic law of most States and by international conventions, there is no national territory without a national air space.

In terms of international law, this is what Article 1 of the Chicago Convention on International Civil Aviation lectures in establishing that the contracting Parties recognize that each State has complete and exclusive sovereignty over the space above its territory (see Art. 8 and 12). The notion of territory includes the territorial waters as provided in Article 2: "*For the purpose of this Convention the territory of a state shall be deemed to be the land areas and territorial waters adjacent thereto under the sovereignty, suzerainty, protection or mandate of such state*"[4]. Likewise, Article 2., 2) of the UN Convention on the Law of The Sea provides that the sovereignty of a coastal State extends to the air space over the territorial waters.

However, the feverish and century old legal discussion both in Air Law and Outer Space Law on the vertical limit of air space did not achieve a satisfactory conclusion[5]. It is only accepted that the limits of sovereignty are defined in two

---

2 Léopold Peyrefitte, Droit de l'espace. Paris: Dalloz, 1993, p. 55, says that "*la compétence des Etats diminue d'intensite au fur et a mesure ou on s'éloigne du territoire qui constitue le support de la souverainete étatique. Elle est compléte et exclusive sur le territoire national. Elle s'atténue déja dans les eaux territoriales ou l'Etat riverain est tenu d'accorder un droit de passage innocent aux navires battant pavillon étranger. Elle deminue de maniére plus sensible dans d'espace aérien surlombant le territoire ou le droit de souveraineté de l'Etat sous-jacent est fortement contrarie par les cinq libertés de l'air permettant la navigation aérienne. Elle deminue encore plus en haut mer ou l'Etat n'exerce de compétence que sur les navires battant son pavillon. Enfin, dans l'espace extra-atmosphérique et sur es corps célestes, elle est réduite a certains actes de souveraineté fragmentaire exercés sur les objects spatiaux el le personnel se trouvant a bord*".

3 The division between title and exercise is recognized in the preamble to the Macau Basic Law and by n. 2 of the Joint-Declaration that reads that in 1999 "*China will resume the exercise of sovereignty over Macau*".

4 Article I of the Paris Convention states that "*The contracting parties recognize that each power has complete and exclusive sovereignty over the air above its territory*".

5 In spite of that, we believe that air space and atmosphere are diferent concepts. The first is a legal concept and the second an empiric-scientific one.

distinct levels: one - positive, is the sovereignty over national air space which still allows for restrictions arising from international law[6]; the other - negative, concerning the outer space, but allowing for a *mezzospazio* to be established between those two levels.

In our domestic law, the sovereignty over air space is constitutionally established as a integral part of the territory and, as such, public dominium (Art. 5 and 84, 1.c) of the Portuguese Constitution - CRP).

However, the CRP only refers to a historically defined territory (Art. 5) or national territory (Art. 124) when providing concrete (geometric criteria) definition of the limits of the territory, and referring to the Law, including the International Treaties, for definition of the extension and limits of the territorial waters, the exclusive economic zone and the right over the adjacent sea-bed. The latter elements are provided for in Article 84, 1.a) on the public dominium, but no reference is made to the upper limit of air space. Only the minimum limit is set forth in subparagraph b), for the purpose of defining public air space.

Thus Article 5 of the CRP must be understood as acknowledging that the *"national territory has not two but rather three dimensions; it is not a surface but a volume and extends above and below the surface of the Earth"*[7]. Yet one must conclude, by juxtaposing Article 5 and Article 84 of CRP, that the legislator did not want to state explicitly that a territory comprises also the air space, but rather that at least a part of that space comprising the upper layers of space above the limits recognized as the owner's, is public.

Notwithstanding the absence of a direct rule, the same applies to the Macao Law. If there is no such thing as a one-dimensional territory - including the territorial waters -, the territory will always be connected with an element above the ground - air space. Macau has a national air space i.e., it is under State sovereignty.

Admitting this notion is not enough. No doubt, Macao's territory, including its surrounding waters and the overlying air space, belongs to the PRC (Joint Declaration and Art. 292/1 CRP). What can be discussed are the limits of the exercise of sovereignty, administration rights or jurisdiction over that space by the Portuguese State. Can one accept that the title that confers on Portugal the right to exercise sovereignty over the Territory is not enough to legitimize the administration or jurisdiction over the territorial waters and territorial air space? Both in legal texts and doctrines, the question is a taboo.

The 1987 Joint Declaration of the Government of the Portuguese Republic and the Government of the People's Republic of China on Macau provides that the *"Macao region (including the Macao peninsula, Taipa Island and Coloane Island, hereinafter referred to as Macau) is a part of the Chinese territory"* and that the Government of the People's Republic of China will resume the exercise of the sovereignty over Macau from December 20, 1999 onwards. The Macau Basic Law, which

---

6 This resctrictions are proven namely from estabilished sayings such as "freedoms of air", maxime the freedom for flying of civilian aircraft, constituted in the Chicago Convention.

7 Reinhold Zippelius, Teoria Geral do Estado, p. 42. Cfr. Maurice N. Andem, International legal problems in the peaceful exploration and use of outer space. Rovaniemi: University of Lapland, 1992, p. 72.

will enter into force only after 1999, in turn recognizes that *"Macao, including the Macao peninsula and the islands of Taipa and Coloane, has long been a part of the Chinese territory"* (1st paragraph of the preamble). The Macao Statute briefly states that, "The territory of Macao includes the city of the name of God of Macao and the islands of Taipa and Coloane" (Article 1).

The omission in those texts of references to the waters and air space can only, in my opinion, be regarded as the emergence of an unsolved question which, in result of the historical circumstances of the transition period, was set aside. But, so the ancient Portuguese saying: *the cat is hiding but its tail sticks out*, in other words, the fact that the issue is not discussed does not mean that it does not exist. This paper won't dwell on the analysis of the Chinese and Portuguese stances over the years on what is considered *"the most serious issue of the Portuguese foreign policy in the Far East"*[8] up to the beginning of this century. One can only acknowledge the existence of different historical stances. In one hand, Portugal maintains that Macao includes the peninsula, the islands and the waters of the Inner Harbour. China, in turn, maintains that *"Macao is deprived of territorial waters, as the Chinese concessions were confined to territory of the peninsula, ruling out the application of any principle of International Law regarding the matter"*[9]. The contrasting arguments led to the absence of agreement; the solution was to maintain the former *status quo*. As time passed, it seems this *status quo* turned into a *"gentlemen's agreement"* where the Macao Administration exercises *de facto* a minimalist jurisdiction - issuing laws through consultation in the Sino-Portuguese Joint Liaison Group, and enforcing them - in respect of waters and air space.

The exercise of powers and the assumption of international obligations of the Portuguese State, transferred to Macao (Decree-law no. 23/94, of January 27) from an organizational point of view and materialized in the draft of a civil aviation regulations subsystem (inter allia, Decree-Law 36/95/M, of August 7) and in the signing of air service agreements between the Government of Macao and other Governments[10], express this jurisdiction or administration.

Accordingly, the Macao Government is in charge of regulating the local civil aviation activities, by issuing licenses and certificates for air transport operators and aviation equipment and personnel which, in order to be internationally recognized, presupposes the existence of a State with international responsibility - Portugal.

Such regulatory activity may only be understood where exercised *"within*

---

8 António Vasconcelos de Saldanha, *As conferências intergovernamentais de 1909 para a delimitação de Macau e o seu significado nas relações luso-chinesas*. Macau: SAFP, 1995, p. 6.

9 António Vasconcelos de Saldanha, op. cit., p. 6.

10 We take as an example the agreement between the Macau Government and the Government of the German Republic, published in "Boletim Oficial" no41, of 7.10.96. We should stress out that the preamble states that the Macau Government was "duly authorised by the competent institution of the sovereign Republic of Portugal and agreed by the People's Republic of China *"devidamente autorizado pelo competente órgão de soberania da República Portuguesa e com o assentimento da República Popular da China"* (author's underlining). One does not understand here what sort of agreement is referred to and what is it's legal base. The Joint Declaration, Anexo II only demands the right to consultation in regard to these questions. For reasons cited in the text we cannot consider the presupposition that the adminstration of the Macau air space is the responsibility of the PRC.

the scope of the air space of the Territory and the international air space under the jurisdiction of Macau" (Art. 1, Decree-Law 23/94 of January 27). Accordingly, Article 8/1 of the Ordinance 227/95/M of August 7 (Air Navigation Regulation of Macau) stipulates that the *"chairman of AACM is entitled to having the charter defining the air space under the delegated responsibility of Macau published [...]"*. Unlike the Decree-Law, the latter provision refers to a *"delegated air space"* and not the *"air space of the Territory"* using a terminology that relates to situations where, by force of international agreements, a given State assumes the control of a given air space, under normal circumstances international. The Note to Part IX of the Air Navigation Regulation of Macau uses still another term: *"area for which Macau is responsible"*, closer to the one used in the definition of the ATZ: *"area of responsibility"*.

The regulation of the air space under Portuguese administration is still expressed in the establishment of aeronautical servitudes as provided in Article 6/2, (Decree-Law 52/94/M of November 7), stipulating that the air space included in the servitude must obligatorily be indicated in the corresponding Ordinance. So, despite avoiding any reference to air space, Ordinance no. 233/95/M of August 14 constituting an aeronautical servitude in the area surrounding the airport, allows for an *a contrario* interpretation to the effect that Macau has an *"aerial part"*.

The regulatory competence exercised by Macau is further expressed in the provision of air traffic services which, in general, are confined to the air space under the jurisdiction of each State. Accordingly, Macau manages the Macau Air Traffic Zone[11] stretching vertically 900 meters from the ground or sea and in an misshapen 5 km. circle starting at the center of the airport.

What characterizes this ATZ is the fact that it was established following consultations in the Sino-Portuguese Joint Liaison Group, on the basis not only of the application of the general principle that all matters in the transition period were to be submitted to that body but also as, in an anticipation of 1999, the ATZ stretches beyond what would be considered air space under Portuguese jurisdiction, indeed including the air space over some islands under Chinese sovereignty. This ATZ is a unique case in the world: firstly, because it is considered as regulated air space; secondly, because it is crossed by the line dividing the Guangzhou and the Hong Kong FIRs; and thirdly, because it stretches over air space under the sovereignty of other States. Such a complicated situation led to the signing of a Memorandum of Understanding following trilateral meetings between Macau, China and Hong Kong.

The jurisdiction over the local air space is further confirmed by international agreements concluded between Macau and other Governments. Noteworthy in such agreements[12]

---

[11] ATZ is defined in Macau AIP as a *"defined air space, which is notified, around as aerodrome for the protection of aerodrome traffic"*. And this is the only zone, national ou international that Macau is responsabile for, in terms of controled of air space.

[12] Nevertheless, there exists some differences relating to these agreements. For example the agreement of air traffic between Yugoslavia and the USA in 1973, expressly says *"territory in relation to the United States of America shall mean the land areas under the sovereignty [...] and territorial waters adjacent thereto. Territory in relation to the Socialist Federal Republic of Yugoslavia shall mean the land areas and territorial waters adjacent thereto under its sovereignty*" (author's underlining).

is the fact that, in respect of Macau, the term "territory" is replaced by "Area", meaning "*the Macau peninsula and the islands of Taipa and Coloane*". The other Party "*has the meaning conferred to "Territory" in article 2 of the Chicago Convention*". Accordingly, for the purpose of the regulation of air transport, in particular in respect of overflight authorizations and stops for commercial or non-commercial purposes, the Macau Administration assumes the jurisdiction, like any other Administration, over its own air space.

Therefore, nothing prevents Macau from exercising its jurisdiction over the air space under Chinese sovereignty except that, historically, this sovereignty is conferred on Portugal as in respect of the portion of territory comprising the Macau Peninsula and the Islands of Taipa and Coloane[13]. In fact, the situation does not depart much from the provision in Article 2 of the Chicago Convention, that reads: "*the territory of a State shall be deemed to be the land areas and territorial waters adjacent thereto under the sovereignty, suzerainty, protection or mandate of such State*".

2. Non-national spaces: air space and outer space

Non-national spaces are those not under the sovereignty of any State, and may be subdivide into: *terra nulla and territorium extra comercium.*

A space can be considered *terra nulla* where it cannot be acquired by occupation under International Law and, as such, be placed under the sovereignty of *primi occupantis*, i.e., the one who first took possession thereof. Presently, this category has a less than residual value.

extra comercium territorium are such spaces in respect of which no State may ever constitute rights of sovereignty. Thus one may include herein also the territories or spaces rated as Common Heritage of Mankind inasmuch as, being territories not liable to be appropriated by any State, they are possessed by Mankind as a whole, with or without a representing international organization.

Thus, the legal nature of the spaces is measured by the legitimacy of the rights exercised over them; sovereignty excludes any other right. The *terra nulla* or *territorium extra-comercium* require the absence of any sovereignty or exclude it in terms of territorial acquisition.

2.1. The air space over the Exclusive Economic Zone and the continental shelf

The regime applicable to the air space overlying the Exclusive Economic Zone and the continental shelf, excepting activities such as the exploit of natural resources, derives almost entirely from International Law, that excludes the possibility of exercise of full and sovereign powers. Hence, such spaces cannot be considered dimensions of a national territory.

In fact, States can exercise certain sovereign powers over the Exclusive

---

[13] It therefore happens that the airport is situated over the water and the aircraft very rarely passes effectively over the islands or over the Macau peninsula. In this way the question of the delimitation of the space under Portuguese jurisdiction is passed over to the question of the delimitation of the waters under that same jurisdiction.

Economic Zone such as the exploit and use of sea resources; likewise, they may exercise jurisdiction, for instance by building artificial islands, conducting scientific research and engaging in the protection and preservation of the maritime environment (Art. 56 of the UN Convention on the Law of The Sea), but not in connection with sovereign rights over that space. Consequently it is understandable that the sovereign rights or rights of jurisdiction do not clash with the rights of other States when exercising the right to overfly (87,1.b)) and other rights connected with the operation of aircraft, providing that such rights are exercised in compliance with the rules issued by the coastal State in respect of the exercise of such rights (Article 58, 1) and 3) of the UN Convention on the Law of The Sea).

As for the continental shelf, Article 77, 1) of the UN Convention on the Law of The Sea recognizes the right of the coastal States to *"exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its naturals resources"*, thus excluding sovereign rights as mentioned in Article 78,1), as the exercise of those rights *"do not affect the legal status of the superjacent waters or of the airspace above those waters"*.

2.2. The air space over the High Seas and other *territorium extra-comercium* or *terra nulla*

Both in respect of the High Seas as in respect of other non-national "land" territories, the regime applicable to air space shall be, as a rule, the same as applies to the underlying land surface. Therefore, the principle of the freedom of the High Seas which includes the freedom of overflight applies fully (Art 87, 1. b) of the UN Convention on the Law of The Sea).

The Chicago Convention does not pronounce on this matter; it only extends its provisions to air navigation over the High Seas, more precisely the rules relating to the provision of air navigation services, but not to the regulation of the exercise of such freedom. Article 12 of the Chicago Convention provides, in fine: *"Over the high seas, the rules in force shall be those established under this Convention"*. Consequently, when aircraft fly over the high seas they shall be protected from any foreign intervention, and the State of registration has exclusive jurisdiction over that aircraft (Article 2, 4. of the UN Convention on the Law of The Sea and Article 12 of the Chicago Convention).

It is here, in non-national zones, that air space and outer space rules and regulations converge, but do not fully coincide, to the extent that one may envision a single statute for the air space over international waters and outer space. This acquires a major importance in the case of launching pads in the High Seas.

2.3. Outer space

Just like what happened in Air Law in respect of the determination of the vertical limit, since the launching of the first Sputnik the issue involving the delimitation of outer space is the focus of concern of international organizations such as the UN and the International Telecommunication Union (ITU) and scholars[14].

---

[14] Bin Cheng, For delimiting outer space, p. 230

However, up to the Bogota Declaration, it had not been deemed relevant or at least first priority unlike, for instance, the peaceful use of outer space or the exploit of the natural resources of celestial bodies. Even after the Bogota Declaration, the question of the urgency of the matter, albeit being a recurring topic in the UNCOPUOS Agenda, is still left to decide[15].

The truth is that during almost 40 years of peaceful exploration of outer space never a practical problem arose from the absence of a boundary between air space and outer space[16] leading to a problem relating to the applicability legal rules: *"No country or even the writers in the space law field have identified any problem that would be resolved solely through the establishment of a boundary between air space and outer space"*[17]. One might say that nothing was amiss with the lack of an international treaty establishing a fixed limit nor that anything could be gained by such an agreement[18]. Until the 70's the activities carried out by space powers had not been questioned; consequently, they were supposed to be absolutely compatible with the sovereignty of the underlying States[19].

However, the drafters of the Space Treaty - concerned above all with drawing up a set of rules applicable to contemporary or future space activities, took for granted that there was already a defined Air Law system. Yet, as such activities were distinct and took place in two distinct - yet not completely - physical areas, the problem of a neat separation should have been ascribed a greater relevance. In view of the development of new activities not fitting into the previous regime, the only possible way was to set up a new one - the space law - dissociated from Air Law, to the extent as the activities were different.

The problems started here as neither was the scientific community capable of proposing a feasible and uniform criteria nor did the States agree on an arbitrary frontier; consequently no international legal instrument, declaration or resolution contains any direct or indirect provision in respect of the delimitation of the lower outer space[20].

---

15 Nevertheless, some studies were prepared by the UN General-Secretariat: *The question of the Definition and/or Delimitation of Outer Space* (Doc. UN A/AC.105/C.2/7, of 7 May 1970, and add. from 21 January 1977); *Reports Pertaining to the Use of Satellites of Positions in the geostationary Orbit*, de 1975 (Doc. UN A/AC.105/149, 14 Mars 1975); *Physical nature and technical attributes of the geostationay orbit*, de 1977 (Doc. UN A/AC.105/20, 29 August 1977) and by the Comittee on Space research - COSPAR, Doc. UN A/AC.105/164, 6 January 1976.

16 Nandasiri Jasentuliyana, *The United Nations: its role in the progressive development of space law.* Proceeding of the Third ECSL Summer Course on Space Law and Policy, September 5-15, 1994, p.14.

17 S. Neil Hosenball, *Delimitation of air space and outer space: is such a boundery needed now?*, in "Earth-oriented space activities and their legal implications: Proceedings of the symposium held on October 15/16, 1981.[Canada]: Centre for Research of Air and Space Law, 1983, pp. 347-348.

18 Carl Q. Christhol, *The modern International law of outer space*, New York, Pergamon Press, 1982, p. 436.

19 One notes that "*d'un point de vue juridique, il n'y avait pas de différence entre le survol non autorise du territoire d'un Etat par un aéronef et le passage d'un satellite au-dessus de ce même territoire*" (Lépold Peyrefitte, Droit de l'espace. Paris: Dalloz, 1993, p. 41). Besides other relevant legal rules, the necessity for authorization results from article 8 of the Chicago Convention.

20 Outer space is defined in the ITU Radio Regulations 169. The Space Affairs Act, 1993, of South-Africa have also one definition, using the perigee rule. Outer Space is defined as "*the space above the surface of the earth from a height of which it is, in pratice possible to operate an object in an orbit around the earth*".

This omission may prove dangerous, as each State may consider itself bound by different laws and all depends on their interpretation and stance on the delimitation/definition issue. This hazard was exposed by the Bogota Declaration, signed in 1976 by some Equatorial countries, in maintaining basically that some segments of the geostationary orbit, as well their orbital slots were a part of the territory of the underlying Equatorial countries; so, any object placed thereon required their previous consent.

The remaining States, particularly the developed countries, immediately dismissed the Declaration claiming that it contradicted the prevailing International law all along the line. Yet, in spite of having achieved few practical effects, the Declaration was not all waste, not only because it can be regarded as the aftermath of the claims of the developing countries with regard to outer space, but also because it rekindled the discussion over the delimitation/definition.

However, even if taken to its ultimate consequences, the Bogota Declaration does not thwart the outer space delimitation/definition issue, as the status of the segments of the geostationary orbit located outside the arch above the Equatorial countries, as well the orbital bearings over the high seas, was left to clarify[21].

Thus the issue involving the definition of outer space remains of current interest; the controversy - in my opinion resulting from the misunderstanding of the basic questions by spatialist and functionalist theories, continues indefinitely. Outer Space Law is still pubescent. On the one hand, it is questioned whether delimitation/definition is a real issue and whether discussing it has a positive or negative effect. Assuming it is worth discussing, there's no unanimity as to how such delimitation/definition should be put into practice: by means of an international treaty or customary law? What kind of criteria should be applied?

III - THE LIMITS OF LAW

Having mentioned the different issues relating to the delimitation of the spaces, it now matters to see whether one can establish other criteria for applying the rules, in particular those of International Law, beyond the mere territorial connection. One may add that this problem would not exist if all spaces could be geometrically delimited and the definition of the applicable legal regulation were based exclusively on the territorial connection.

One should take into account, firstly, the fact that the boundaries between spaces cannot always be ascertained by resorting to physical or scientific criteria, but rather to legal and political criteria; secondly, the legal regulations are not primarily intended at the definition of things but rather at setting up rules of conduct aimed at human actions.

---

[21] The Bogota Declaration declares that this part of the arch should be considered as common heritage of Mankind, and therefore the proclamation of sovereignty was circumbscribed of its orbital positions or the orbital arch over the equatorial state or in other words, the proclamation of sovereignty would extend to the space below the geostationary orbit.

And this brings us to the second tier of problems highlighted in the beginning. The limits of space, even when their boundaries are perfectly defined, do not necessarily coincide with the limits of the law, for there are rules the application of which extends to all instances wherever the prerequisites for their application are available.

This means that it is the de facto situation or the circumstances of the concrete factuality - a legally relevant activity or conduct, for instance the use, exploit or appropriation (object) - that, as it takes place under the scope of application of a certain rule, of domestic or international law, leads to its application.

And so it is, whatever the previous title to the exercise of rights over the space. In other words, wherever the space where such activity is carried out or such human conduct takes place or a certain thing is located. Here one seems to be concerned with two different things: one is the qualification of spaces; the other is the determination of the rule applicable to human conduct and activities. Yet, the latter is essentially obtained by linking it with the territory where it took place, for instance: the space determines the rule in respect of the exercise or not of sovereignty, the right of free or controlled passage, the system of registration and liability and the court of jurisdiction; thus the two problems merge into one, but should not be mistaken for one another.

As the application of the rule can be dissociated from the space, it could happen that national laws would be applied in non-national spaces and vice-versa. There are rules of International Law applicable to activities that take place in sovereign spaces - to a certain extent it is the case with civil aviation regulations -, and rules of International Law applicable in foreign spaces such as the outer space, but even then they can live side-by-side with national laws.

Nevertheless, scholars are still split. Some maintain that by determining the territory one can determine the law; others maintain that the determination of the rule is dissociated from the territory. The former are spatialists, while the latter are functionalists.

The spacialist approach maintains basically that outer space can be physically or legally demarcated, like the national territory; accordingly, the world would be divided in two spheres with distinct competencies *ratione loci*: State and international. Therefore, air space and outer space would be two different realities of a distinct nature resulting in the national territory / *territorium extra-comercium*[22] antithesis.

The main arguments of this proposition rest on the fact that by drawing a safe and permanent limit, to be achieved specially by means of an international agreement, the equality between States and the oversight would be better safeguarded.

The main concerns and difficulties of this theory lie in achieving a criteria that can be universally applied and accepted, bearing in mind the marked differences between

---

[22] It finally follows the criteria applicable to earth boundaries especially the division of territorial waters and international waters. The formal question of delimitation or *ratione loci* of spaces, or its actual correlation, continues in the meantime to be resolved.

its advocates: one group, split into those who favour a delimitation based on a physical, natural or scientific criterion and those who propose an arbitrary criterion[23], merely geographic; and a second group split into those who call for a criterion based on an international convention and those who, while abstaining therefrom, choose to set up or confirm a customary rule. Therefore the criteria are manifold, and there are probably as many authors pondering on this matter[24].

The spatialist approach is liable to criticism.

First, it does not satisfactorily explain why there are activities which, in the spacialists' opinion, take place in outer space but are not subject to Outer Space Law and vice versa, i.e., how come there are activities that, while taking place geographically outside outer space are still subject to Outer Space.

Second, in seeking to achieve a formal delimitation criterion based on geophysics, it ends up by concluding there is no satisfactory criterion. Being so, and in order to provide a frame for the right of passage and the liability rules, there should be a sub-criterion based on functionalist considerations.

Another part of doctrine, called functionalist, officially supported by some countries such as the United States and the UK has, in general, questioned the need to set up limits and create a *ratione loci* definition of outer space. The application of the Outer Space rules will depend rather on the kind of object or the nature of space activities or the subjects involved in it (*ratione materiae*), i. e., *"space activities are to be regulated by law, each on its own merit, regardless of where they take place"*, bearing in mind that there *"exists one medium, the coelum, which encircles the globe and loses itself in the universe [...] this medium should be considered a unity"* [25].

The absence of a definition would mean, in fact, that the criterion as yet employed is the functional criterion. The absence of a delimitation of a measurable, customary nature or of conventional international law, is tantamount to accepting a functional approach.

The great advantage here is the homogeneity of rules. Each activity or object would be governed by a single law, even where occurring or sited in sovereign territory. Hence: activities of an aeronautical nature - air space domain; astronautic activities - where the goal of the spacecraft is the space - outer space domain. Consequently, certain activities would, regardless of not taking place in outer space, be subject to the corresponding regime[26], while others, even when reaching outer space, would be

---

23 S. Neil Hosenball, *Delimitation of air space and outer space: is such a boundary needed now?*, p. 342-343, projects the arbitrators in a category different from space specialists, and defined in the following manner: *"Those [...] who decided that the question of the definition and/or delimitation of outer space can be resolved by establishing a capricious, unreasonable and unsupported arbitrary boundary between air space and outer space"*.

24 Bin Cheng, *For delimiting outer space*, p. 232

25 N.M. Matte, *Aerospace law*. London: Sweet and Mawell, 1969, pp. 62-63.

26 In the United States Commercial Space Launch Act of 1984, "launching" *"means to place, or attempt to place, a launch vehicle and payload, if any, in a suborbital trajectory, in Earth orbit in outer space, or otherwise in outer space"*, and "Launch vehicle"means any *"vehicle constructed for the purpose of operationg in or placing a payload in, outer space and any suborbital rocket"*. The Space Affairs Act, 1993, of South-Africa defines lauching as the *"placing or attempted to placing of any spacecraft into a sub-orbital trajectory or into outer space, or the testing of a launch vehicle or spacecraft in which it is foreseen that the launch veihcle will lift from the Earth's surface"*.

excluded therefrom. Thus, the two systems are somehow compatible or inclusive, as they would not even be concurrent. Each one has its own object: activities, persons or things.

As for activities - as they are the ones determining the applicable law - those taking place in the air space or in the outer space shall be governed by the law applicable to the respective purpose. A functionally aerospatial activity would therefore be the one intended for use and exploration of outer space carried out according to Article I of the Space Treaty - in the interest and for the benefit of all States. In the end there would be as many definitions of outer space as there are purposes of the use of space.

In the case of objects, the distinction is also based on a functional differentiation of the aerospace object (aircraft[27] or spacecraft[28]): the type of engine used, means of propulsion, track, use, etc. We call attention upon Article IV of the Convention on Registration that, following the UN Resolution 1721 (XVI) of December 20, 1961 requires that States that launch objects in the space notify the UN General Secretary for the purpose of registration. So, such objects can previously be classified as space crafts and be subject, *ab initio*, to outer space law.

In respect of the application of International Law to persons only, such persons would be considered or not astronauts to the extent as they perform or not space activities.

The functional perspective is not clear of criticism specially as, in seeking to solve the question of delimitation by means of the function or the goal of the activities, it postpones the solution of the issue by prompting a second round of questions such as finding out whether one is concerned with space objects or activities. Given the present development of technology, this is indeed an impossible task.

As for objects, one would have to accept that every object that leaves earth destined for the outer space is subject to Outer Space Law, even though it might not enter the outer space (from a physical point of view).

Likewise, it cannot be explained why in a zone nowadays under national sovereignty certain activities - lawful under Space Law but unlawful under national law - would be permitted. If there is no distinction between air space and outer space, the former would stripped of its current meaning, the meaning assigned to it by various international treaties, i.e., an object crossing the airspace of another State would be not under the control of the said State as long as it claims to be a space object.

---

27 The Air Law, reiterating its inseparable connection that should occur between an aircraft and atmosphere, defines an aircraft in flight like *"any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earths surface"* (Annex 1 and Annex 7 of Chicago Convention, 1944). The official ruling no 73/95 determined the publishing of the government gazette of Macau of Decree-Laws no 40200, 40201, both of 24th of June of 1955, 44920 of 18th of March of 1953 and 221/71, of 26th of May, that approves the protocols relating to the amendments of the Convention of the International Civil Aviation signed in Chicago, on the 7th of December of 1944 and approved by Decree-Law no36 158, de 17th of February of 1947, and the annex 1 to 18 of the referred Convention.

28 Spacecraft is defined by the ITU Radio Regulations (RR170) as the *"man made vehicle which is intended to go beyond the major portion of the Earth's atmosphere"*. *"It is agreed that a space station can be defined as a station located on an object destined to go or has gone beyond the major portion of the Earth's atmosphere"* (RR 61). One should note that a spacecraft and space station are names applicable not only when they are in outer space but also initially when they pass through the air space.

This theory would not solve the problem of the status of the outer space zones as only such activities as are permitted to be carried out therein or regulated depend on their spatial location. One activity may be permitted in the geostationary orbit but considered unlawful if it takes place in the celestial bodies. Due to the convergence of rules relating to the same activity, the determination of a zone is a problem that logically precedes the choice of the applicable rule.

If one considers the reasons as well as the criticism voiced against both approaches, one is tempted to pursue a third course which, as a whole, may be more satisfactory.

In fact, one is faced with two dimensions of the same problem. One is the delimitation of spaces and their legal situation and the other is the determination of the rule applicable to a certain act, to the classification of a thing or the status of a person.

One must therefore acknowledge that some activities are regulated regardless of where they take place, but the site where they should take place is important in order to know which law is applicable. The point - even under the spatialist perspective - is that every legal system has its own scope of spatial/territorial application, but that does not rule out the application of another law in this same space. So, neither thesis solves, by itself, the problem. There is necessarily an overlapping - yet no conflict - of laws applicable to the same spaces and in the same spaces.

To emphasize this forking of laws we propose that an aerospace be created, not as a physical concept as it is often understood, but as a legal entity that attempts to call attention upon a special connection between a particular set of legal rules and a particular type of legal facts, wherever they take place. Only then can one obtain satisfactory answers to the problems arising from the technological confluence typical of our times. For instance:

a) A case of remote sensing: an airplane overflying a national territory for the purpose of sensing or just overfying can be considered an unlawful act (Art 9) while a satellite some kilometers away performing the same activity probably in a more efficient way is considered an lawful activity. Is this only a matter of delimitation? It does not appear to be so. The only solution is to set up a unified system relating to the activity rather than to the space.

b) Vehicles capable of performing typically spatial activities such as transporting satellites, as well as aeronautical activities, in particular the commercial carriage of persons and goods (known as hybrid vehicles 45). Is this an instance of application of two sets of rules and a succession of systems in space and time? A geographical limit or any other distinction, based for instance on the goal (exploration and use of the space) and on the means (suspension but not by reaction of air[29]) would not solve the problem. Again, a unified system would be the solution. According

---

[29] The position defended by functionalists is to make one consider that the space activity is the journey of a vehicle between earth and space, and aerial activity, the journey of a vehicle between two points on earth even though it has used outer space. The difficulty to solve this issue can be easily understood. In the last instance, the violation of the principles of equality would force the State to be responsibile to declare the purpose of each mission, that is to decide which law it was interested in applying.

to Prof. Wassenberg in such cases *"Traffic control and safety procedures [...] should be amended to apply to spacecraft as well."* [30]

c) In case of an accident involving a spacecraft and an aircraft belonging to a third State, in the air space of a State other than the former two. Which liability system applies? Perchance that of Air Law? The Liability Convention? Currently and according to Carl. Q. Christol (*"Legal aspects of aerospace planes"*), in this case *"the territorial position of the two vehicles becomes a matter of importance"*, also because the Liability Convention distinguishes between accidents in air space and in the outer space. Even then, there is still a contradiction between air law and space law and only by unifying the rules can the problem be solved.

d) In case of launching pads for rockets[31] located in non-national territories such as the high seas and non-national air space. Which law should apply to the launching operation? The law of a certain State or the International Law? In this case, the unification of rules is about to be achieved, meaning it is easier to combine the freedom of the high seas and the freedom of flight and the freedom to explore and use the outer space.

IV - CONCLUSION

We attempted to demonstrate, in this brief presentation, that the only possible way to solve the problem of the definition/delimitation of air space and outer space, in other words the problem of determining the law applicable to aerospace activities is to set up a unified legal system - the aerospace - characterized by the *"subordination of individual, national sovereignty to the combined sovereignty of the community of states"*[32].

This goal can only be achieved by bringing air law and space law closer to one another a process which, as in all branches of International Law, may prove slow, difficult and complex but not impossible.

Until then, the issue involving the delimitation/definition, along with the questions relating to the right of innocent passage and freedom of passage, aerial surveillance and hybrid vehicles is likely to go on being discussed in political circles rather than on a merely legal level[33]. Above all, because the equitable access to natural resources, the qualification of activities in the interest of mankind as a whole and the spaces as common heritage of Mankind are at stake. But even then one should aim at a unification of systems within the scope of specialized international organizations such as COPUOS and UIT for space activities, and the ICAO for aviation activities.

---

30 Henri A. Wassemberg, *Principles of outer space law in Hindsight*. Dordrecht: Martinus Nijhoff Publishers, 1991, p. 37.

31 One of the recent examples is a launching pad actually being constructed in Norway, since the beggining of 1988 is destined to launch Zenit rockets.

32 Frans G. von der Dunk, *Jus cogens sive lex ferenda: jus cogendum*?. In "Air and space law: de lege ferenda". Dordrecht: Martinus Nijhoff Publishers, 1992, p. 229.

33 Christhol, Carl Q., *The modern international law of outer space*. New York, Pergamon Press, 1982, p. 502.

Let's be optimistic. Actually, if one watches the pattern of evolution of Air Law and Outer Space Law one notices that there is a common path tending more and more to concur in virtue of the technological development and that, fortunately, does not wait for an *opinio juris*.

Considering Air Law, with the first airplanes crossing the skies came almost naturally a call for freedom of navigation or at least freedom of passage, later upheld only by the international Conventions, i.e., regulated internationally and nowadays heading towards deregulation. Like Space Law, *"international air transport has become an activity of interest to all mankind"*[34].

Space activities, originally subject to freedom of use and exploit gradually allow for the acquisition of exclusive rights but subject to tighter than ever regulations. Like Air Law related activities, space activities - originally performed exclusively under the responsibility of governmental agencies, are slowly being privatized and commercialized and will soon be performed entirely by private entities.

---

[34] Neelie Smit-kroes, *The impact of european liberalization on operations between Asia and Europe*. In The Highways of Air and Outer Space Over Asia", p. 3.