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Space Law in the Light of Bobbio's Theory of Legal Ordering

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"The Bobbio's word has the gift to clarify, explain and illuminate."
Celso Lafer, Professor of Law Faculty of the Sao Paulo's University, Member of the Brazilian Academy of Letters and the Brazilian Academy of Sciences.[1]

This paper seeks to examine the central documents of the corpus juris spatialis in light of the main indications of the Norberto Bobbio's Theory of Legal Ordering. In perspective, it is an attempt to establish benchmarks to assess whether and to what extent the foundations of the international space law in fact work as a legal ordering where prevail unity, cohesion, coherence, completeness, and effectiveness, according to the Bobbio's conception. The creation of such a system may be essential in the development and strengthening of a real rule of law in outer space activities, which is increasingly indispensable to this province of all mankind.

I Introduction

Norberto Bobbio (1909–2004) was an eminent Italian philosopher of law – who developed in depth the theory of Hans Kelsen (1881–1973) on legal ordering[2] – and a thinker of political sciences, as well as a historian of political thought.
It is worth remembering that Bobbio visited Brazil in 1983, invited to participate in "Encounters at the University of Brasilia," where he discussed his ideas with what he affectionately called Brazilians "bobbiologists", including Miguel

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1 Lafer, Celso, in Preface of the Brazilian edition of the Bobbio's Theory of Legal Ordering (Bobbio, Norberto, Teoria do Ordenamento Jurídico, Brasil, São Paulo: EDIPRO, 2011, p. 9); Lafer was Brazilian Minister of Foreign Affairs twice, in 1992 and in 2001-2002.

2 Kelsen, Hans, General Theory of Law and State; originally published – USA, Cambridge: Harvard University Press, 1945; The Lawbook Exchange Edition, New Jersey, 2007, 2009.

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Reale, Celso Lafer and Tertius Sampaio Ferraz Junior, great personalities of legal sciences and of the cultural universe in Brazil.[3]

Hardly one comes to Italy to participate in an important meeting on legal issues without paying due reverence to this remarkable jurist, a brilliant reference for all the world. The author of the present paper pursues this goal.

This work aims at examining the existing international space law – mainly its central treaties – in the light of the Bobbio's Theory of Legal Ordering (Teoria dell'ordinamento giuridico), first published in 1960. Strangely, I didn't find an English translation of this book. I had to resort to the Brazilian editions published in Portuguese.[4]

All translations from Portuguese into English that appear in this paper are of my sole responsibility.

To Bobbio "a satisfactory definition of the law is only possible if we assume the standpoint of the legal ordering." He asserts: "The [legal] orderings are composed of a myriad of norms that, like stars in the sky, no one was ever able to count." And concludes: "If a legal ordering is composed of various norms, this means that the main problems linked to the existence of a legal ordering are problems born of the relationship between various norms among themselves."

According to Bobbio, these main problems are:

1. The unity among the various norms of a legal ordering – "We cannot talk about legal ordering, if we do not consider it as an unitary ordering;"
2. The performance of a legal ordering as a system, which must solve the question of juridical antinomies – "When we ask if a legal ordering is a system, we wonder whether the norms that compound the ordering are compatible between them, and under what conditions is this relationship possible.";
3. The completeness of a legal ordering, which faces in the first place the question of lacunae – "… a legal ordering has a norm to regulate each case;" and
4. The relationship among various legal orderings, particularly, how one can influence the others as well as receive support from each one of the others.

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3 Bobbio no Brasil: um retrato intelectual (Bobbio in Brazil: an intellectual portrait), Organizador: Carlos Henrique Cardim; Brasil: Editora Universidade de Brasília (UnB); Brasil, São Paulo: Imprensa Oficial do Estado, 2001 (Edition in Portuguese).

4 Edition launched by Polio and University of Brasília (UnB) Publishing Houses (Brasília, 1989), with translation by Claudio de Cicco and Maria Celeste C. J. dos Santos; presentation by Tércio Sampaio Ferraz Junior; and technical review by Joao Ferreira; 6th Edition by University of Brasilia (UnB) Publishing House (Brasilia, 1995), with translation by Maria Celeste Cordeiro Leite dos Santos (Associated Professor of the Law Faculty of Sao Paulo University), technical review by Claudio de Cicco (also Associated Professor of this same Law Faculty); General Theory of Law, Edition by Martins Fontes Publishing House (São Paulo, 2007), with translation by Denise Agostinetti, reviewed by Silvana Cobucci Leite; Edition launched by EDIPRO Publishing House (São Paulo, 2011), with translation by Ari Marcelo Solon (Professor of General Theory of Law, Faculty of Law, University of Sao Paulo), foreword by Celso Lafer, and presentation of Tércio Sampaio Ferraz Junior (entitled "The legal thinking of Norberto Bobbio").

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Bobbio argues that "a legal ordering, taken as a whole, is only valid if it is effective." And in the chapter entitled "Law and force", he affirms: "The law, as it is, is an expression of the strongest, not of the most righteous. It would be better if the strongest were also the most righteous".

However, Bobbio was always concerned with updating their views and keeping up with the changing world. In one of his latest books, "From structure to function: new studies of theory of law" (Dalla struttura alla funzione – Nuovi Studi di theory del diritto)[5], released in Brazil in 2007, he supports the need to adapt the general theory of law to the transformations of contemporary society and to the growth of the welfare state in order to describe accurately the passage of the "guaranteeing State" [or "ensuring State"] in "driving State", and, therefore, of the law as mere instruments of "social control" in instrument of "social direction."

Thanks to the advent of the welfare State, new techniques of social control emerged, deeply different from those utilized by the classic liberal State. Techniques of encouragement are employed increasingly, in addition to or in substitution of techniques of discouraging. The first are used aiming at changes, while the last ones aim at social conservation, Bobbio clarifies.

All this evolution is logical and natural, because, as Mario G. Losano notes, "while there is a society with legal ordering, persists also the need to reflect on justice, on the structure and function of legal norms, on behaviors that should be encouraged or suppressed, and finally on the type and level of order that should govern that society."[6]

In this sense, legal theory, according to Bobbio, must be complemented by a functional analysis of law, highlighting its promotional function, i.e., the action developed by law through the application of positive sanctions to encourage the carrying out of socially desirable acts.

The Bobbio's conclusion could not be clearer: "The function of a legal ordering is not to only control the behaviors of individuals – which can be obtained by the technique of negative sanctions –, but also to drive the behaviors for certain predetermined objectives. It can be obtained preferably by the technique of positive sanctions and incentives. (…) I believe, therefore, that today it is more accurate to define the law, from the functional point of view, as a form of control and social direction."[7] The recognition of the law's promotional function came to update, expand and enrich the Bobbio's theory of legal ordering.

5 Bobbio, Norberto. Da estrutura à função: novos estudos de teoria do direito (Dalla strutura alla funzione: nuovi studi di teoria del dirito; From structure to function: new studies of the theory of law), with foreword to the Brazilian edition by Mario Losano, presentation by Celso Lafer, translation by Daniela Beccaccia Versiani and technical advice from Orlando Seixas Bechara ad Renata Nagamine; Brasil, São Paulo: Manole, 2007 (Edition in Portuguese).

6 Losano, Mario G., Prologue to the Brazilian edition of the book "A filosofia contemporânea do direito" (La filosofia del diritto contemporanea) by Carla Faralli; Brasil, São Paulo: WMF Martins Fontes, 2006, p. XII-XIII.

7 Bobbio, Norberto, Da estrutura à função: novos estudos de teoria do direito (From structure to function: new studies of the theory of law), p. 79.

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I am convinced that applying these considerations to the international space law may be appropriate, opportune and beneficial for the advancement of such specific legal ordering. This experience gives the opportunity to assess – to a certain extent – the level of legal ordering which this branch of law has reached until now, and how it can improve the degree of its coherence and effectiveness. Moreover, it can also be highly important for stimulating the scientific research on the theory of the international space law, mainly its configuration as a system of norms.

As Celso Lafer rightly observes, "the work of Bobbio is always a lucid basis not only for dealing with the present of the legal life, but at the same time also to think about its future."[8]

The effectiveness of international space law, by the way, is closely linked with the crucial question of the rule of law in outer space, whose importance was stressed by Judge Manfred Lachs with these right words: "If all the activities connected with outer space are to be conducted for the benefit of all and to the detriment of none, international co-operation is essential, and if all the possibilities opened up are to be used in a responsible manner, the conduct of States in regard to outer space must be submitted to the rule of law."[9]

II The Effectiveness of a Legal Ordering

To Bobbio, the effectiveness is a constitutive character of law only when by law one understands not a particular norm, but a legal ordering, i.e., a set of norms. Also according to Bobbio, only in a legal ordering the effectiveness of a norm is the very foundation of its validity.Even a customary norm becomes a legal norm only if it is part of a legal ordering. There are no legal orderings because there are legal norms different from non-legal, but there are legal norms because there are legal orderings different from non-legal orderings.

"The term 'law,' within the more common meaning of objective law, indicates a type of normative system, not a type of norm." To Bobbio, since the beginning, the term "law" has, among its various meanings, that of "legal ordering", expressed, for instance, in the branches named "Roman law", "Canon law", "Italian law" etc. (And why not "International Space Law?") In his view, "one can only talk about law when there is a set of norms forming an ordering," as "the law is not the norm, but an ordered set of norms," and "a norm is never alone but is linked to other norms, with which it forms a normative

8 Lafer, Celso, Id Ibid, p. 20.

9 Lachs, Manfred, The Law of Outer Space – An Experience in Contemporary Law-Making, The Netherlands, Leiden: Martinus Nijhoff Publishers, 2010, p. 5. Book re-issued on the occasion of the 50th anniversary of the International Institute of Space Law (IISL), edited by Tanja Masson-Zwaan and Stephan Hobe.

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system."[10] In sum, legal ordering is "a complex of structured norms." Thus, we can say that "no norm is an island, entire of itself; each is a piece of the continent, a part of the main," borrowing the words of the famous English poet John Donne (1572–1631).

This also means that the law, however complex as it may be, does not necessarily have to be a maze, although there has always been a great amount of legal mazes all over the world.

To Bobbio, for having a legal ordering, the existence of unity among its norms is important, but not enough. It is also necessary that the whole of the ordering constitutes a system, a systematic unity, ie, that its parts be coherent among themselves. According to Bobbio, "coherence is not a condition of validity, but is always a condition for the justice of an ordering."

Based on these ideas, we can deduce that, in general, the effectiveness of an international space law's norm depends on the status, the coherence and the firmness of all system, of all legal ordering. Hence, the main troubles associated with the existence, as well as the effectiveness of any legal ordering emerge from the relationship of the different norms among themselves, as Bobbio points out.

Let's examine the relationship among the international outer space legal norms to verify whether they form an effective legal ordering. For this, we need to answer some essential questions, relating to pertinent conditions proposed by Bobbio.

1. Is there a unit and a hierarchy of norms in the outer space legal ordering?
2. Does the outer space legal ordering constitute, in addition to a unit, a coherent system? Are there the antinomies of law?
3. How complete is the outer space legal ordering? How serious is the question of lacunae of law in this legal ordering?
4. How does the outer space legal ordering relate to others legal orderings?

The answers to these questions, of course, will be naturally interrelated.

III The Unit of International Outer Space Legal Ordering

"The scope of public international law has now moved beyond the Earth – hence, we now also have well established rules of international law regulating the exploration and use of outer space. These rules are set out in the United Nations treaties on outer space and form an increasingly important part of the broader corpus of 'hard' (public interna-tional) law. As with most legal system, it was seen as important to prescribe exactly where these international legal rules derived from, as a necessary prerequisite to establishing what they

10 Bobbio makes a point of saying that the separation between the problems of the legal ordering, on the one hand, and the problems of legal norms, on the other, as well as the autonomous treatment of the legal ordering as part of a general theory of law, were mainly work of Hans Kelsen (1881–1973). See Kelsen, Hans, General Theory of Law and State, reference 2.

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were and thus how they would be applicable (or not) to a particular situation," Steven Freeland points out.[11]

In fact, the international space law is a specialized spinoff of the public international law and its cornerstone, the Charter of the United Nations. The outer space legal ordering must be absolutely compatible with the international public legal ordering. There is a clear hierarchy between them. The international public legal ordering is a superior one in relation to the international outer space legal ordering. The latter cannot contradict the first.

The basis of international outer space legal ordering is composed of the five treaties created in just 13 years, between 1967 and 1979, to regulate a new kind of activities, the space activities, and to establish the status of a new kind of space, the outer space. The first of them is "The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies," universally acknowledged as the international code of space activities. This is on top of the hierarchy in relation to others. The others strictly adopt the principles expressed by this one.

The five founding instruments[12] are known by the following short names: "Outer Space Treaty" (1967), "Rescue Agreement" (1968), "Liability Convention" (1972), "Registration Convention" (1976), and "Moon Agreement" (1979). They were prepared and approved by the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS), then approved by the United Nations General Assembly, and afterwards opened for signature of the States and International Intergovernmental Organizations. Under the supremacy of the Outer Space Treaty, these instruments certainly form the international outer space legal ordering. They have a common origin (the United Nations), they keep a complementary relationship among them, and guard a reasonably coherent unit.

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11 Freeland, Steven, The role of 'soft law' in Public International Law and its relevance to the international legal regulation of outer space, in Soft Law in Outer Space – The Function of Non-binding norms in internatio-nal space law, Irmgard Mrbone (Ed.), Böhlau Verlag, Wien-Köln-Graz, 2012, pp. 9–30.

12 The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (the "Outer Space Treaty"), opened for signature on 27 January 1967, entered into force on 10 October 1967; The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the "Rescue Agreement"), opened for signature on 22 April 1968, entered into force on 3 December 1968; The Convention on International Liability for Damage Caused by Space Objects (the "Liability Convention"), opened for signature on 29 March 1972, entered into force on 1 September 1972; The Convention on registration of objects laun-ched into outer space (the "Registration Con-vention"), opened for signature on 14 January 1975, entered into force on 15 September 1976; The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the "Moon Agreement"), opened for signature on 18 December 1979, entered into force on 11 July 1984.

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It is evident that the central principle of the outer space legal ordering is expressed just in the Article I of the Outer Space Treaty: "The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind."
It is not by chance that this principle is called "common benefit clause." It permeates all the principles and norms of the five space treaties. The spirit and the sense of the "common benefit clause" are emphasized in the introduction and in the principal articles of the Outer Space Treaty.
Therefore, that clause can be and deserves to be considered the highest principle of the hierarchy of norms of the international space law, if we take into account the Bobbio's theory on the legal ordering, as well as his view on the promotional function of law, which he formulated later.

IV The Ultimate Purpose of the International Outer Space Legal Ordering

In the introduction of Outer Space Treaty, there are, at least, three symptomatic and strong references to the "common benefit clause":

1. "Recognizing the common interest
2. "Desiring to contribute to broad international co-operation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes";
3. "Believing that such co-operation will contribute to the development of mutual understanding and to the strengthening of friendly relations between States and peoples".

Also are attuned to the basic clause the paragraphs 2 and 3 of Article I:

- "Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies";
- "There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international co-operation in such investigation."

The same can be said on the Articles II, III and IV, as well as the first sentence of the Article IX:

- "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";
- "States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the Moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding";

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- "In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty";
- "States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner."

The Rescue Agreement, by its turn, already in the Preface, notes "the great importance" of the Outer Space Treaty, pointing out that it "calls for the rendering of all possible assistance to astronauts in the event of accident, distress or emergency landing, the prompt and safe return of astronauts, and the return of objects launched into outer space." The agreement also stresses the desire of the States Parties "to develop and give further concrete expression to these duties," as well as "to promote international co-operation in the peaceful exploration and use of outer space," always "prompted by sentiments of humanity."

The Liability Convention equally begins "recognizing the common interest of all mankind in furthering the exploration and use of outer space for peaceful purposes," and recalling the Outer Space Treaty. It takes into special consideration that, "notwithstanding the precautionary measures to be taken by States and international intergovernmental organizations involved in the launching of space objects, damage may on occasion be caused by such objects," and recognizes "the need to elaborate effective international rules and procedures concerning liability for damage caused by space objects and to ensure, in particular, the prompt payment under the terms of this Convention of a full and equitable measure of compensation to victims of such damage," believing that "the establishment of such rules and procedures will contribute to the strengthening of international co-operation in the field of the exploration and use of outer space for peaceful purposes." It should be noted that the Liability Convention is clearly victim-oriented (designed to benefit potential claimants), fixing absolute responsibility/strict liability for damages caused by space objects on the surface of the Earth or to aircraft in flight.[13]

The Registration Convention also recognizes "the common interest of all mankind in furthering the exploration and use of outer space for peaceful purposes," and recalls the Outer Space Treaty, the Rescue Agreement, and the Liability Convention. It refers especially to the international responsibility of States for their national space activities, and to the State of Registry, on whose name an object launched into outer space is registered.

Fulfilling the Outer Space Treaty, the Registration Convention establishes a central register of objects launched into outer space to be maintained, "on a

13 Christol, Carl Q, Space Law – Past, Present and Future, Netherlands: Kluwer Law, 1991, p. 232. Bittencourt Neto, Olavo de Oliveira, Direito espacial contemporâneo: responsabilidade internacional, Brasil, Curitiba: Juruá, 2011, p. 155 (Edition in Portuguese).

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mandatory basis, by the Secretary-General of the United Nations." It determines as well the creation of the national registration by launching States of space objects launched into outer space. Its objective is "to provide for States Parties additional means and procedures to assist in the identification of space objects." The States Parties to this Convention believe that "a mandatory system of registering objects launched into outer space would, in particular, assist in their identification and would contribute to the application and de-velopment of international law governing the exploration and use of outer space [for peaceful purposes, I would add in full harmony with the sense of this legal ordering]."
The Moon Agreement also starts "noting the achievements of States in the exploration and use of the Moon and other celestial bodies," and recalls all space treaties already mentioned, "taking into account the need to define and develop the provisions of these international instruments in relation to the Moon and other celestial bodies, having regard to further progress in the exploration and use of outer space." The Moon Agreement, particularly, recognizes that "the Moon, as a natural satellite of the Earth, has an important role to play in the exploration of outer space," and proclaims its purposes "to promote on the basis of equality the further development of co-operation among States in the exploration and use of the Moon and other celestial bodies," taking into account "the benefits which may be derived from the exploitation of the natural resources of the Moon and other celestial bodies." The Moon Agreement seeks as well "to prevent the Moon from becoming an area of international conflict," as it is committed with the Article IV of Outer Space Treaty, which affirms: "The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military maneuvers on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited."

V The Customs in the International Outer Space Legal Ordering

To Bobbio, in each legal ordering, beside the direct sources, there are indirect sources, which can be divided into two classes: recognized and delegated sources. In his view, a typical example of recognized source is the custom. The international space law has no delegated sources, but it has customs as recognized sources. For example, the principle of free remote sensing from outer space of all countries without any previous permission is in general recognized as a custom. This principle is derived from the Principles Relating to Remote Sensing of the Earth from Space, resolution (41/65) approved by the United Nations General Assembly in 1986.[14] In 2002, in COPUOS's Legal Subcommittee meeting, some developed countries did not agree with the proposal to

14 <www.oosa.unvienna.org/oosa/en/SpaceLaw/gares/html/gares_41_0065.html>.

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discuss the possibility of transforming the remote sensing principles into an updated convention. They argue that a new debate on this resolution may cast doubt on the principle of remote sensing liberty. For them, it would be unacceptable. But, in fact, there is no visible sign of the countries interested in casting doubt on this principle.

Anyway, the Remote Sensing Principles should be updated, as the technologies and the activities of remote sensing have undergone a deep development in the last 26 years. Indeed, the remote sensing activities became practically unregulated in many very important aspects. For instance what it means, in Principle IV, that "such activities shall be conducted in a manner detrimental to the legitimate rights and interests of the sensed State"? And how to interpret legally the term "legitimate rights and interests of the sensed State," as well as the expression "taking into particular account the needs and interests of the developing countries," that appears many times in this and in other resolutions approved by United Nations General Assembly? The truth is that the lack of a real, wide and updated international regulation of the remote sensing activities from outer space became surely one of the most flagrant lacunae of international space law.

Bobbio refers to the "consuetudo praeter legem" – the custom emerged in practical life for ordering matters not yet regulated legally. This kind of custom could be negative for the International Space Law, as much as it results from the predominance of a national law or practice of the most powerful countries and/or enterprises.

For example, Michael J. Listner, an American lawyer licensed to practice before the state and federal courts of New Hampshire, in an article entitled "It's time to rethink international space law", proposed: "To shape domestic space policy and regulations to provide a platform to begin to reshape international space law. Domestic space policy could evolve into multilateral agreements with other countries regarding the use of space. The idea is that, over time, multilateral agreements born of domestic space policies would eventually reshape the thinking of international space law and either make the Outer Space Treaty redundant or encourage the international community to either rethink or redefine the res communis doctrine."[15] "To rethink or redefine the res communis [humanitatis, should be added] doctrine" probably means to discard the Article I of the Outer Space Treaty with the fundamental principle expressed in it, according to which "the exploration and use of outer space (…) shall be carried out for the benefit and in the interests of all countries (…), and shall be the province of all mankind." That would be a brutal setback in the development of international space law.

Regarding the custom in International Space Law, it is worth mentioning – as good examples on how to overcome certain structural and political difficulties – the resolutions 59,115 and 62,101, drafted and approved by COPUOS and also approved by the UN General Assembly in the last decade: "Application of the concept of the 'launching State'," of 10 December 2004, and

15 The Space Review, May 31, 2005.

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"Recommendations on enhancing the practice of States and International Intergovernmental organizations in registering space objects," of 17 December 2007. These resolutions have not changed any of the five UN treaties on outer space, nor interpreted the Liability Convention or the Registration Convention in some way. At COPUOS, usually, it has been very difficult to reach the needed consensus for changing and interpreting the old treaties or creating new ones. The two resolutions just clarified some of the most important provisions of the conventions, in view of facilitating their effective application. It was a very timely and positive initiative. But they are not enough to really strengthen consistently the legal ordering.
Are there here some customs in process of lege ferenda (formation law) or in route of becoming lege lata (existing law), and, therefore, integrated norms of the outer space legal ordering? Yes, I believe so. Such sense of initiative and creativity seems increasingly necessary at COPUOS, in particular, of course, at its Legal Subcommittee, in order to enlarge the way for the upgrading, the renewal and the preventive role of international space law.

VI The Completeness of the International Space Legal Ordering

Bobbio defines "completeness" as "the property by which a legal ordering has a norm to regulate each case. Given that the absence of a norm is often called 'lacuna' (in one sense of the term 'lacuna'),'completeness' means that there are not 'lacunae'. In other words, still according to Bobbio, the incompleteness consists in the fact that the ordering does not include norms prohibiting and allowing, at the same time, a certain behavior. Incomplete, therefore, is a system in which there is neither the norm that prohibits certain behavior nor the norm that allows it.
In reality, the completeness of a legal ordering looks like a dream, a necessary dream, a dream that must be pursued permanently and tirelessly, in the name of its effectiveness, in the pursuit of justice and fairness. Evidently, the international outer space legal ordering is light years away from being even an almost complete system. Nevertheless, it could be (and must be) much more comprehensive than it is today. This is one of its fragilities, reducing considerably its effectiveness and its real weight in the regulation of the space activities.
Let's list some of the most recognized lacunae of the international outer space legal ordering:

1. There is not a more comprehensive definition of "space object" and "space debris", as well as "space activities" and, in particular, "space launching".
2. The danger generated by space debris requires that we start as soon as possible, gradually creating international legislation on this issue that just keeps growing. The document existing today (the "Space Debris Mitigation Guidelines"[16], created by the COPUOS's Scientific and Technical

16 Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, United Nations publications, V.09-88517, January 2010.

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Subcommittee, and adopted by the UN General Assembly in 2007) is an important achievement, but it is not up to the seriousness of the threats faced by space activities. In that sense, the working paper submitted by the Czech Republic to the Legal Subcommittee was a positive step, at the fiftieth session, in 2012, proposing the inclusion on its agenda of a new item entitled "Review of the legal aspects of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, with a view to transforming the Guidelines into a set of principles to be adopted by the General Assembly". At the occasion, many delegations supported the proposal, arguing that it "was timely, in view of the importance of the issue of space debris to all States and the absence of relevant binding legal mechanisms to address that issue."[17] However, some delegations rejected the proposal, clamming that it would be premature to begin transforming the Guidelines into a set of principles to be adopted by the General Assembly. Thus there was not the needed consensus to permit the discussion of the issue by the Legal Subcommittee. Nevertheless, according to the mere common sense, it is undeniable that the challenge of space debris deserves a legal treatment much more appropriate and effective.

3. It lacks to complete the article IV of the Outer Space Treaty to ban the installation in orbit around the Earth of any type of weapons, and not only weapons of mass destruction. At the same time it is crucial to prevent the use of force in outer space, as it can generate highly unpredictable, uncontrollable and disastrous consequences for space activities. Such highly responsible measures will surely prevent the transformation of outer space on the battlefield, ensuring a long-term sustainability of space activities and, therefore, the security in outer space in maximum possible scale. It means demilitarizing outer space as we have already done in the Antarctic and on the Moon. A new, renewed, and comprehensive article IV would be entirely compatible and coherent with "the common interest of all mankind in the progress of the exploration and use of outer space for the peaceful purposes" (Preamble of Outer Space Treaty). In this relation, it is worth to note the article "From star wars to space wars – the next strategic frontier: paradigms to anchor space security," by Jackson N. Maogoto, Professor of the University of Manchester, and the already quoted Steven Freeland, Professor of the University of Western Sydney. "In light of the existing lacunae in the international space law regime," they seek "to explore avenues/paradigms through which the militarization of space may be regulated and its weaponization addressed." Their comments deserve special attention: "Military blueprints by major space-faring powers now encapsulate concepts of 'space support' and 'force enhancement' which point to a central role of space assets in facilitating military operations, while notions of 'space control' and 'force application' suggest the weaponization of space, and the putative view that space may in the near future be a theatre

17 Report of the Legal Subcommittee on its fifty-first session, held in Vienna from 19 to 30 March 2012 – A/AC.105/C.2/L.283.

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of military operations. As defence goals increasingly focus on space as the final frontier evident in development of national missile defence systems, anti-satellite weapons and other space-based systems, international peace and security face a new challenge. Creators of the current legal regime for space failed to foresee the rapid rate at which technological and engineering breakthroughs would take place. Now the shortcomings in the current regime beg the question of how the law can keep up and address space technology. It is imperative that the international community act now rather than later."[18]

4. Lack of definition and delimitation of the outer space, logically indispensable for the total clarity and the best performance of the Outer Space Treaty and other space agreements.[19]
5. It is time to internationally regulate the process of commercialization of space activities. There are important open problems, as the sale of orbiting satellites, along with the question of liability for damage caused by such satellites. The Resolution 59 115 of the UN General Assembly, already aforementioned, although it is a positive initiative, it does not solve the question with the needed consistency.
6. Lack of the environmental damage in the article I of the Liability Convention.
7. It lacks to negotiate an agreement on this matter – based, of course, on the extraordinary experience that resulted in the Moon Agreement of 1979. It is not lawful to admit that such exploitation will be carried out in a sequence of unilateral fait accompli based on the law of the strongest and richest both financially and technologically, as on a past time that is presumed to be overcome.
8. Lack of an updated international regulation of the remote sensing activities from outer space.
9. Lack of an updated international regulation of the use of nuclear power sources in space activities. The Principles Relevant to the Use of Nuclear Power Sources in Outer Space, adopted by the UN General Assembly in its resolution 47/68 of 14 December 1992 need to be updated as soon as possible in view of the increasing danger involved. The COPUOS's Legal Subcommittee noted that the adoption of the Safety Framework for Nuclear Power Source Applications in Outer Space (A/AC.105/934) by the Scientific and Technical Subcommittee in 2009, endorsed by the COPUOS's Plenary in the same year, "constituted an important step with regard to the progressive development of international space law and considerably advanced

18 Maogoto, Jackson N., and Freeland, Steven, From star wars to space wars – the next strategic frontier: paradigms to anchor space security, Journal of Air & Space Law 33.1 (2008): 10–37. Available at: <http://works.bepress.com/jackson_maogoto/47>.

19 Bittencourt Neto, Olavo de Oliveira, Limite Vertical à Soberania dos Estados: Fronteira entre Espaço Aéreo e Ultraterrestre (Vertical Limit of State Sovereignty: Border between Airspace and Outer Space), PhD Thesis approved by the Faculty of Law, University of Sao Paulo (USP), Brazil, Sao Paulo, May 2012.

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international cooperation in ensuring the safe use of nuclear power sources in outer space"[20] Anyway, the necessity to review the Principles Related to the Use of Nuclear Power Sources in Outer Space is evident, as well as the mentioned Safety Framework, with a view to developing binding international norms, committed with the principles of preservation of life and maintenance of peace, which are pillars of the international legal ordering in force, based on the Charter of the United Nations.

10. At the time of space tourism, it is no longer enough to just give special considerations to astronauts, cosmonauts or taikonauts, defining them as "envoys of mankind in outer space", as it is expressed in article V of Outer Space Treaty. It is necessary to internationally regulate the new presences in outer space: the tourists of today and tomorrow, and the travelers of the not so distant future. In a future new legal regulation on humans in outer space, we have to take into due account, of course, "the personnel of a spacecraft", as the Rescue Agreement stipulates.

Some States tend to argue that if the space activities are developing well – which is not entirely true – there is no need to fill most of these lacunae of space treaties or update them in general. They often stress that such renewal may impair the advancement of space activities. They seem to say "do not move a team that is winning." This expression may be valid in the field of sports, but absolutely not in the fields of law. This is a completely anti-juridical action. It denies and disregards the need for a genuine rule of law in outer space. Such approach makes impossible the normal and effective functioning of any legal ordering.

VII The Production of the Legal Ordering

What interests Bobbio in the general theory of legal ordering, according to himself, "is not how many and what are the sources of law in a modern legal ordering. He is interested in "the fact that, while one recognizes the existence of acts and facts on which depend the production of legal norms (the sources of law), it is exactly recognized that the legal ordering, in addition to regulating people's behavior, also regulates the manner in which the norms must be produced. It's often said that the legal ordering regulates its own production of norms." Bobbio emphasizes the existence of norms of structure, along with norms of behavior: "Just as there is no legal ordering without positive norms, there is no legal ordering without norms of structure." To him, the norms of structure can be regarded as norms for the legal production, ie, the norms regulating the procedures for the legal regulation. In other words, these norms do not regulate behavior, but how to regulate behavior. Or, still more precisely, "the behavior that they regulate is that of producing norms."

Bobbio draws "attention to the category of "norms for the production of other norms", as "the presence and frequency of these norms constitute the

20 Report of the Legal Subcommittee on its fifty-first session – A/AC.105/1003.

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complexity of the legal ordering, and only the study of legal ordering makes us understand the nature and importance of these norms." Bobbio descrbes such norms as "commands to command" and define them as "imperative norms of second instance" (the "imperative norms of first instance" would be the norms of behavior).

How to assess the performance achieved by the norms of structure of the international legal outer space ordering? These norms, based on the principle of consensus of all States Members of the COPUOS, were a great historical achievement during the Cold War period. This principle and all working mechanisms created from it enabled the birth and development of the international space law in cosmic velocity, as it was said even then in the 60s.

Strangely, from the 80s, when the Cold War was nearing its end, the norms of structure of the international legal ordering of outer space were losing their principal productive force. From 1979, after the approval of the Moon Agreement by the UN General Assembly, until now, the COPUOS appears unable to produce a binding treaty.

Why? Because of decision or lack of political will of the majority of States? No, because some major powers, changing their original policy and corresponding conduct, and using the rule of consensus, began to prefer the mere production of resolutions of the General Assembly of the United Nations, which are not mandatory and, therefore, do not require deep commitments.

Thus, the structure's norms of the international legal ordering of outer space, rather than to foster and promote the development of norms of conduct of this ordering, as before, they erected barriers to a dynamic progress of the international space law, as the growing diversification and intensification of space activities would require.

The following reflection of Bobbio is appropriate here: "We can imagine two extreme situations – that in which one assign value to inertia, ie, to the fact that things remain as they are, and that in which one assign a positive value to the transformations."

VIII Three Conclusions and a Gratitude

1. The Bobbio's theory of legal ordering can be a convenient and efficient tool to study important aspects of the international space law as a particular legal ordering.
2. The international regulation of space activities has yet to evolve much more to become a legal ordering worthy to be considered effective, comprehensive and with a tolerable number of lacunae.
3. In the first decades of the space age, we had more international legal ordering for a small amount of space activities. Today, after more than 50 years, we have much more space activities and much less international legal ordering.
4. Thank you very much, Prof. Bobbio. Your ideas are also beneficial beyond the Earth.