The Impact of New Developments on International Space Law
(new actors, commercialization, privatization,
increase in number of "space-faring nations", etc.)

by

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Introduction

Since more than two decades, there are important new developments that may change also the legal order for outer space activities. At least, we can observe a considerable difference to the beginning of the space age when there were only two space powers, the United States of America and the then Soviet Union. The tendency towards commercialization as an orientation towards profit-making and even to privatization and a considerably growing number of users of outer space may ask for new answers and may ask for new legal regulation. In the following, the attempt will be made to briefly sketch out the changing parameters of the use of outer space and then to come up with a description of the present and perhaps the challenges of the future legal order.

I. The development of using outer space

Not only the beginning of the space age through the launch of the first artificial satellite Sputnik 1 in 1957, the sending of the first man into outer space with Jury Gagarin and the race of sending the first man to the Moon which happened on 20 July 1969 showed that the two super powers dominated this first phase of space activities. The activities were governmental activities undertaken solely by the then Soviet Union and the United States of America. They also had a genuine interest in using outer space because the civilian use was a by-product of the important military underpinning of their space activities. And also the first concrete application of space use, namely the use of outer space for telecommunication satellite was characterized by the public purpose. The establishment of the International Telecommunication Satellite Organization INTELSAT was composed of an assembly of governmental telecommunication services around the world. It was a public enterprise and provided services not only for the technology possessing, but also for the developing countries.

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Beginning in the 1980ies, one could observe a slowly changing number of space users. Not only more governments started to become interested and then active in space activities, but also one can observe a tendency towards commercialization and even privatization. This shall be briefly illustrated by a brief survey of major fields of space applications that is the use of satellites for various purposes, space transportation, the establishment of the International Space Station and finally space touristic activities.

If one first has a look into the space transportation sector, it was certainly true that in 1969, the time of the first lunar landing, both the United States of America and the Soviet Union possessed public systems. This was clear with the Soviet Union with their then preference for the public sector, but it was also the case for NASA's Apollo program which limited private participation to the role of contractors manufacturing the necessary hardware. Firms like Boeing, Chrysler, IBM and McDonnell Douglas thus contributed, but were not the main actors in the governmental transportation system. This did not really change in the Space Shuttle era; the first commercial input to the launching of commercial satellites ended after the Challenger disaster in 1986 and the Shuttle which will retire in 2011 was used only for governmental missions, inter alia for transporting systems for the establishment of the International Space Station in low Earth orbit. It is only recently that President Obama has indicated a considerable interest and even given a policy directive that more commercialization and even privatization of the space transportation sector in the United States would be aimed at. The private launching enterprise Space X is just one of the proponents of this new era.

In Europe, in 1980 the semi-private firm Arianespace was established which became heavily involved in commercial launches. Europe is probably the region of the world that is very advanced in commercialization and privatization of the launching market. Other countries which today possess launching capability, such as Russia, Kazakhstan, Ukraine, China and India provide public launch services, but are in an increasing way engaged in commercial uses. Europe basically uses Arianespace and thus the semi-private enterprise. Thus, the launching sector is still predominantly public but in a growing way commercialized and partially even semi-privatized.

The largest and most attractive commercial use of outer space is the use through satellites. There are three major forms of such satellite use, namely using outer space by telecommunication satellites, by satellites for Earth observation – so-called remote sensing – and by navigation satellites.

With regard to telecommunication which is the most lucrative space application one can observe a considerable move towards privatization. The international telecommunication public enterprise INTELSAT had been privatized and is now Intelsat Inc. Moreover, we find private satellite uses like for example SES Astra in Luxembourg and the US enterprise IRIDIUM. So, in this area one can clearly find a tendency towards privatization.

With regard to remote sensing of the Earth by satellites, we can find, on the one hand, semi-public entities running the remote sensing for commercial ends like ENVISAT (ESA), ERS (ESA), LANDSAT (NASA), SPOT (CNES, France), IRS (ISRO, India), Earth Observation System (EOS, NASA), Terrasar X and Tandem X by Germany (DLR). On the other hand, there are commercial providers such as ECONOS (US), Quick Bird (US), Orbit View (US) and Rapid Eye (Germany).

With regard to navigation satellites, we have two existing public infrastructures with GPS and GLONASS and a planned public infrastructure GALILEO and the Chinese Beidou (Compass). But the concrete services for the end users a taken by private firms like Tom Tom, Globalsat and a variety of providers of so-called smart phones.

The use of the International Space Station is governed by public entities. It is based on the Intergovernmental Agreement of the United States, Russia, Japan, Canada and 10 ESA Member States. The rationale of the ISS is rather unclear. Besides its high political value as a symbol of inter-State cooperation, there are, of course, primarily scientific purposes which the ISS shall serve. But more recently, the visit of Dennis Tito and Mrs. Ansari on a Russian ticket for 20 mio. Dollars as space tourists made it clear that the participants of this great endeavor will call for commercial uses of the International Space Station.

Finally, there is a rather new development with another form of space touristic activities. One can of course already designate the visit to the International Space Station as such a space touristic activity, but what shall be offered by firms like Virgin Galactic is suborbital flights to enjoy micro or zero gravity. Here the entire undertaking is completely private as will be the basic touristic infrastructure in the form of different space ports.

Can one thus observe a clear tendency towards commercialization and even privatization of space activities? Certainly, one should also be aware that the number of governmental users of outer space has considerably increased since the first lunar landing in 1969. Today, 32 States and 2 international organizations (ESA and Eumetsat) have registered space objects with the United Nations. More than 30 States have their own space programs and more than

50 States have procured satellites in orbit. This makes evident the significant increase of the use of outer space.

II. The development of international space law so far

International space law, after the inception of the space age following the successful launch of Sputnik 1 in October 1957, has been remarkably quickly developed in its first phase. After the fundamental decision of the main space powers, the United States of America and the Soviet Union, to deal with the international legal order for space activities not at a bilateral level, but under the auspices of the United Nations, it was clear that this phase was based on public international law. So it did not come as a surprise that the five international agreements, the Outer Space Treaty of 1967, the Rescue Agreement of 1968, the Liability Convention of 1972, the Registration Convention of 1975, and the Moon Agreement of 1979 all were negotiated in the United Nations Committee on the Peaceful Uses of Outer Space and later adopted as Resolutions by the UN General Assembly. The difference in the number of ratifications just expresses the different level of acceptance of these international agreements. Interestingly enough, even the consensus principle did not change the lack of support, in case of the Registration Convention with only 53 ratifications until today and particularly for the Moon Agreement with only 14 ratifications. But this phase can, without doubt, be characterized as the successful phase of international space law-making bringing about five multilateral treaties of rather profound character.

But his first phase ended at the end of the 1970ies. Later, one can observe a significant softening of international space law in the sense of less binding legal commitments. After the end of the first phase of space law-making from 1967 to 1979, not a single multilateral international agreement on the basic framework or on specific uses of outer space resources has been agreed upon. There was a General Assembly Resolution on the Use of Direct Broadcasting Satellites, a second one on the Use of Remote Sensing and a third one on the Use of Nuclear Power Sources. Moreover, in 1996, a fourth Resolution on Space Benefits has been adopted which was more or less a reinterpretation of Article I paragraph 1 of the Outer Space Treaty. This 1996 Resolution was the overture to other international resolutions, one of 2004 on the Launching State and one of 2007 on the Practice of States in the Registration of Space Objects. One sees a clear development from hard international law to non-binding UN resolutions for specific uses of outer space towards a reinterpretation of hard international law through international UNGA resolutions.

This was followed by a most recent development in the form of the adoption of the United Nations Space Debris Mitigation Guidelines on the basis of an agreement of the Interagency Space Debris Coordination Committee. It is an interesting development that now a severe problem like the one of the environmental protection of outer space and possible consequences of accidents caused by space debris is dealt with on an interagency basis with the explicit requirement that these Guidelines should not be legally binding on States. Other examples of unofficial negotiation fora may be designed to bypass the United Nations and its Committee on the Peaceful Uses of Outer Space are the Committee on Earth Observation Satellites (CEOS) which encompasses the World's Governmental Agency responsible for civil Earth observation satellite programs along with agencies that receive and process data acquired remotely from space. Moreover, there is the International Committee on Global Navigation Satellite Systems (ICG) established in 2005 through the United Nations Office for Outer Space Affairs with the purpose of promoting the use and application of GNSS on a global basis is another example. The ICG will encourage coordination among providers of GNSS core systems and augmentations in order to ensure greater compatibility and interoperability. Its membership is confined to the key GNSS system providers and the space-based regional or augmentation system providers. It shall make recommendation that do not create legal obligations and will not set standards. Finally, the Global Exploration Strategy (GES) promulgated by 14 leading space agencies in May 2007 can also be arguably understood as an attempt to avoid binding international rules.

One can thus observe that the old consensus of the main super powers to agree upon law-making within the United Nations for the sake of having a wide-spread support for an international order for space activities seems to be put into question. Today, non-binding agreements are sought to give the main space powers a maximum leeway in space to manoeuvre their activities.

There are, however, also countervailing tendencies. One may, first of all, not forget that Russia, China, Canada and the European States made an effort in the Conference of Disarmament to come up with a legally binding agreement on disarmament.

Moreover, one should not forget that the International Telecommunication Union, a specialized agency of the United Nations is for a long time working quite successfully on the basis of legally binding international agreements. The Constitution of the ITU as well as the World Administration Radio Conferences (WARCs) serve the purpose of allocating frequencies and services as well as orbital positions.

Finally, the negotiations on the so-called Space-Assets Protocol to the Cape Town Convention on International Interest in Mobile Equipment seem to have come to a successful end. This is a great achievement because it lays a more solid basis for any asset-based financing of space infrastructure. And without any doubt, one can find again legally binding commitments here.

Therefore, one interesting observation can be made: If vital security interests of countries are concerned or if their commercial interests are concerned, there seems to be higher likelihood of them agreeing to have some form of internationally binding legal agreements.

III. Current legal developments

1. The current growing awareness for the possible economic potential of outer space and the celestial bodies may increase chances to arrive at an international legal order for the commercial use of outer space. It is well known that the Outer Space Treaty does not fulfill this task by its rudimentary provisions of the freedoms of outer space limited through the fact that outer space is the province of all mankind. Further limitations are the non-appropriation principle, the partial prohibition of military uses and the rather reluctant provision of Article IX with some kind of environmental protection. Moreover, through Article III OST limitations from general international law are also framing the freedom of action in outer space.

It is also well known that the Moon Agreement does not give further guidance as to the exact feature of such an international legal order for economic space activities. Rather, the provision of Article 11 by calling the Moon and the celestial bodies the common heritage of mankind raises more questions than it answers them. It is completely open how the concept of common heritage of mankind may be implemented in practice. Only paragraph 7 of Article 11 of the Moon Agreement gives some hint by providing that all investing countries may benefit from the Moon resources as well as developing countries should do so. It does, however, by no means indicate any concrete criteria for the measuring of the benefits of either side. It is thus completely open whether the international community will or will not eventually decide to engage itself at all in any economic activity on the Moon or other celestial bodies or whether it will do so under very strict restrictions and very severe liability provisions.

2. Still of a great relevance are military uses of outer space. Outer space, in one form or another, is still at the forefront of military interest for most of the space-faring States. It is no secret that the United States of America, Russia, China and perhaps some other space-

faring countries including Europe regard outer space as a possible place for warfare at least for self defense against presumed attacks against their own territory. The development of new weapons could also give rise to new developments in international space law with regard to military activities.

3. Furthermore, the growing commercial and private space activities require to a greater extent than ever new national space legislation. It is well known that the four options of becoming a launching State significantly increase the possibility for States to be involved and to be held liable in case of an accident of a private satellite launched into outer space. In such a case, the launching State bears the risk that a possible recourse against the private enterprise may not be satisfactory because the enterprise is not insured. In such a case, the only loser of such activity would be the launching State.

It is thus in the self-interest of all States potentially involved in the launch of a space object to enact national space legislation which may then require from such private enterprise to adequately insure itself. Hitherto, there are a couple of approximately 20 States that possess such national space legislation. But there is still a considerable number of States that could potentially be launching States and that could potentially procure the launch of private enterprise but do not have national space legislation. We can observe a certain trend towards the adoption of such national space legislation. Inter alia, in the past five years France, The Netherlands, Belgium, Japan and some other States have enacted national space legislations. And one can expect in a short and mid-perspective that even more national space legislation will come.

4. Finally, one may hope that the international community must and will come to some solutions with regard to the problem of space debris. It is well known that so far, there are only the legally non-binding Interagency Space Debris Mitigation Coordination Committee Guidelines based upon which UNCOPUOS Guidelines were developed and subsequently endorsed by the United Nations General Assembly. They are not the solution although they define the problems and delineate them in a rather clear way. It is a positive development that at least some consciousness about the dimension of the problem and the necessity to mitigate the risk and even to remediate the space environment has been raised. We can only have the sincere hope that States Parties may recognize the need to do something about this problem as this problem affects all. Comparable to the world climate, also the use of the orbits is a common good which more or less determines in the future also the commercial potential of outer space.

Conclusion

There is one very clear tendency to observe. Compared to a few years ago, there are many more actors active in outer space. More governments as well as more private users try to benefit from outer space. Evidently, such considerable increase in the number of users demands more regulation. Ignoring for a moment the military aspects, one may have the hope that the observable tendency towards commercialization and privatization may eventually pave the way for an international legal order for commercial space activities. In principle, The Moon Agreement is well equipped to serve this purpose. It is open enough and comes up with a variety of possible orders. It can be a liberal commercial order, there can be a rather restrictive order of full international administration and there can be complete prohibition of any commercial uses like the Antarctic example shows very clearly. All could fit under the criterion of common heritage of mankind which, as becomes more and more clear, does not prohibit any commercial use. Rather, any commercial use should be based and limited by balanced regulations. Such regulations, on the one hand, must be made by governments undertaking space activities. Such governments should take the obligation of Article VI of the Outer Space Treaty very seriously and start with drafting and enacting national space legislation.

And finally, more regulation is required concerning the environmental protection of outer space. it becomes clear that the use of outer space by so many (more) actors must be regulated: Therefore, it is, like in airspace, absolutely necessary that some regime of space traffic management be installed. And the users of outer space should also see that it is in their own commercial interest to provide for rules that bring solutions to the mitigation and even remediation of space debris. The problem of space debris thus symbolizes the crossroads. Either there will be a more stable international development and a stable international legal order with a possible economic outlook or outer space will lose any commercial potential and lose its potential as a place for future human activities. It is the States that have the choice which way to go – nobody else! And they should be guided by the normative appeal of Article I paragraph 1 of the Outer Space Treaty, namely that the use of outer space is the province of all mankind!