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**A LEGAL VIEW ON OUTER SPACE AND
CYBERSPACE: SIMILARITIES AND
DIFFERENCES**

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A Legal View on Outer Space and Cyberspace: similarities and differences

Katrin Nyman Metcalf¹

Introduction

It is not unusual in academic or practical debate to compare outer space and cyberspace – already the names invite to a comparison.² The idea goes a bit deeper than just the name however: we are in both cases dealing with areas that appear borderless, which means that traditional legal principles and rules based on state jurisdiction within specific borders, cannot apply or at least will be difficult to apply. Consequently, lawyers and others dealing with these areas will have to think creatively and be willing to apply a functional way of reasoning rather than a strictly rule-bound one.

I will make a personal note here, at the start of this article: as someone working with legal issues of both outer space and cyberspace, I have been struck by a specific similarity between these two spaces. During my work, nearly 20 years ago on a PhD thesis on the law of outer space,³ one of the (many) fascinating experiences was to read old books – which in space law terms means from the end of the 1950s-early 1960s – and feel transported to a very different era. Very little was known about outer space when the development of space activities first started (with the launch of Sputnik in October 1957) so even serious academic authors discussed how to react when meeting aliens or what we could expect

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 - 2 Martha Meija-Kaiser 2013 “Space Law and Unauthorised Cyber Activities” in Katharina Ziolkowski (ed) *Peacetime Regime for State Activities in Cyberspace*. International Law, International Relations and Diplomacy (CCDCOE – NATO Cooperative Cyber Defence Centre of Excellence, Tallinn) pp. 349-372; Benedikt Pirker 2013 “Territorial Sovereignty and Integrity and the Challenges of Cyberspace” in Ziolkowski pp. 189-216; Katharina Ziolkowski 2013 “General Principles of International Law as Applicable in Cyberspace” in Ziolkowski pp. 135-188.
 - 3 Katrin Nyman Metcalf 1999 *Activities in Space, Appropriation or use?* (Iustus, Uppsala)

when travelling to different planets. The similarity with cyberspace is to be found in the tone of the underlying message: mankind was entering an era of something entirely new, leaving the shackles of earth behind and embracing a new future, in which national borders and terrestrial disputes played no role. Many of those working on cyberspace will probably nod in recognition, as this language resembles that used in early cyberspace discussions. Also for this new area, it was felt that something entirely novel was beginning, without borders, open to all. Unfortunately, in both areas we can see how in practice it is not easy to abandon the traditional, state-based, way of thinking and let go of existing rules and organisational structures. Outer space law turned out to be created by states in the traditional manner of public international law and in cyberspace, the debate has turned to how it can be possible to apply the existing legal framework also in this environment.

Although romantic notions of a totally new beginning may not withstand the pressures of reality, the two areas of law still show evidence of similarities as well as differences that can be useful to observe and mutually learn from. It might appear as if outer space law as the “older sibling” has less to learn, but in fact this area of law is currently in an important process of change, due to developments that have occurred in space in recent decades. The most significant of these changes is the privatisation of space activities. As cyberspace has been predominantly private from the beginning, there can be useful lessons from cyberspace law. Above all, there are common issues of the two spaces related to the process of making law as well as to ensuring its implementation, in areas that challenge traditional notions of jurisdiction, authority of specific organisations and relationships between the public and private, the civilian and the military, the foreign and the domestic. The perceived “borderlessness” is not just geographic but also limits between issues that should be regulated by a formal system of states and those that fit better for self-regulation or international cooperation are challenged by the physical nature of the spaces.

The military use of outer space has been a significant feature of space use and space regulation since its inception. From the legal viewpoint, this can be seen as a complicating factor, as in the military sector there is for understandable reasons less willingness to be transparent especially vis-à-vis other states, including on matters like registering satellites. At the same time, the space environment has got used to dealing and coping with this. Cyberspace equally can be of relevance for defence as well as for everyday civilian uses, often without any difference between the tools and means used for these various purposes. This article does not deal specifically with military matters but much of the general discussion is

relevant for any type of space or cyberspace use.

Law for “new spaces”

The basic principles of space law include that outer space is the province of mankind, it cannot be appropriated and it may be used by all countries.⁴ These principles were set out in the 1963 Space Declaration⁵ and repeated in the 1967 Outer Space Treaty⁶. It may be discussed to what extent such principles have become customary law,⁷ but generally it is accepted that a basic legal framework for outer space does exist and is binding for all states. Customary law is important as a source of public international law due to the absence of a legislator at the global level: there is no organ with the power to adopt binding rules for international areas, unless states agree to adopt a treaty or something similar. To avoid situations of a legal void, rules of custom may become a source of law. Normally, customary law presupposes that states behave in a certain manner but also that they do so because they feel that this is what the law requires, *usus* and *opinio juris*. The exact content of these requirements has been discussed extensively by courts as well as academic writers.⁸ Often the substance of rules that become customary law is set out in a document, like a treaty or convention,⁹ but the development into customary law means that the rules take on an existence also outside of that treaty and can bind non-parties or cover other situations that those exactly described in the treaty.

4 There is a different notion of “common heritage of mankind” that is set out in the Moon Agreement - *Agreement covering the Activities of States on the Moon and Other Celestial Bodies* (5 December 1979, in force 11 July 1984, 1363 UNTS 3) (and in the Convention of the Law of the Sea, for the deep seabed) but this further-reaching principle, which includes creation of a system to manage resources in common areas, has not had widespread acceptance, especially not for outer space. The Moon Agreement has only 18 parties and no significant space nations among them. Thus, such concept has not entered the realm of customary law, although the more general principle of common province of mankind may have.

5 *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*, GA Res. 1662/XVIII, 13 December 1963

6 *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, (27 June 1967, in force 10 October 1967, 610 UNTS 205).

7 Francis Lyall and Paul B. Larsen 2009 *Space Law. A Treatise* (Ashgate, UK) pp. 77-80.

8 Iain Brownlie 2003 *Public International Law* (6th ed., Oxford University Press, Oxford) especially p. 7 onwards.

9 Different words – like agreement, treaty, convention etc. - are used interchangeably for international agreements and there is no basic difference in the legal meaning, unless some specific international organisation or regime provides for special names. In space law, different terms are used without any difference in meaning.

Customary law does not mean that the importance of having treaties disappears and customary law cannot replace the possibility to make specific and clear international rules through a process leading up to a written document, but customary law complements treaties as far as the legal situation for non-parties or matters that may not be so clear in treaties are concerned. The International Court of Justice (ICJ) stated in the *North Sea Continental Shelf* case¹⁰ that even if the number of ratifications of a convention is not so high,¹¹ non-ratification may be due to other reasons than active disapproval of the content and principles in such a convention may eventually become binding also for non-parties. Matters can even become customary law quickly, as stated in Judge Sorensen's dissenting opinion in the same case,¹² where he mentioned the extremely dynamic process of evolution in modern times. The case is from 1969 and since then, the speed of technological development has increased exponentially. Outer space has from the beginning of the space age been an area that develops quickly. Indeed, the notion of instant customary law emanates from outer space law.¹³ This is when something may not have happened often enough for there to be any practice to speak of, but there is nevertheless a great degree of consensus among states on what the legal framework should look like.

In theory, cyberspace law could develop in the same way as outer space law – with a combination of treaties, conventions or other documents and customary law. However, the cyber development has been different from the start with mainly private actors rather than states. Customary international law is created by states: they create the rules that they are also bound by.¹⁴ The actual practice may be by other organs than the states as such, but it should still be attributable to the state, as private bodies do not have the possibility to make their own law but have to follow that made by relevant organs. Furthermore, the activities in cyberspace were not new in the same way as space activities were even when the use of this area first emerged, but cyberspace activities were mainly new ways of doing things that had previously been done differently within their own, well-established legal frameworks. This includes such matters as telephony, broadcasting, public service provision, commerce and so on. Thus, since

10 *North Sea Continental Shelf Case* [1969] ICJ Reports, 43

11 And as for the Outer Space Treaty, the number of ratifications include a quite impressive 107 countries (January 2018)

12 *North Sea Continental Shelf Case, Diss. Op. Judge Sorensen* [1969] ICJ Reports, 242

13 Bin Cheng 1965 “United Nations Resolutions on Outer Space: “Instant” International Customary Law?” – *Indian Journal on International Law* Vol. 5, 1965, pp. 23-48.

14 For a discussion on customary law for cyberspace, see Przemyslaw Paul Polanski (2007) *Customary law of the Internet: in the search for a supranational cyberspace law* (Asser, The Hague).

realising that the totally new world dreamt about – as mentioned above – was not actually coming about, the legal development for cyberspace has been more about how to make existing rules apply in a new environment, in a reasonable manner.¹⁵

Outer space law started by establishing a framework for new activities, in an area that prior to the first satellite launch was not covered by any legal regime. Currently, outer space law is faced with fitting concrete activities into a legal regime that is expressed in quite general and principal terms. One example of this is that space law does not define where the border runs between prohibited appropriation and permitted use. When use was mainly scientific and quite limited, carried out by states, this was not a major problem. With the increased use that we see today and not least a growing number of private actors (in addition to a growing number of states) there can be real questions of whether use of a space resource is in fact so extensive that it excludes any other user and thus is akin to appropriation.¹⁶ The debate on appropriation versus use has been exacerbated recently with adoption of legislation specifically on space resources. This appears to indicate that states see a real possibility of use of such resources, which will further highlight the need to understand the difference between the concepts of use and appropriation. Legislation includes the US Commercial Space Launch Competitiveness Act¹⁷ from the end of 2015 and the Luxemburg planned legislation on exploration and use of space resources¹⁸.

It is not new for space law to deal with situations in which activities take place without a clear legal framework, but at a time when space use was mainly carried out by states, it was possible to deal with issues that were not covered by treaties (or were not clear) *ad hoc* through diplomatic means. Simply put, this meant that it was not so important that every issue was covered by explicit legal provisions, as issues arising could be solved in the existing inter-state cooperation framework. Despite space exploration taking place during the cold war period with the USSR and USA being the main actors, there was a surprising amount of cooperation and common understanding. It may have been because of the novelty of the

15 Kriangsak Kittichaisree 2017 *Public International Law of Cyberspace* (Spinger, Heidelberg) pp. 53-55. Also Council of Europe *Safeguarding Human Rights on the Net* (<https://rm.coe.int/16806fe670>)

16 Nyman Metcalf 1999 pp. 212-217. The discussions on this issue have actually not moved on much since the writing of the thesis, although in the past couple of years new space resource legislation has started pushing for a renewed debate.

17 *U.S. Commercial Space Launch Competitiveness Act* H.R.2262 (available at: <https://www.congress.gov/bill/114th-congress/house-bill/2262/text>)

18 *Loi sur l'exploration et l'utilisation des ressources de l'espace* <http://legilux.public.lu/eli/etat/leg/loi/2017/07/20/a674/jo>

area, as neither knew what the other had up their sleeve or due to the largely scientific nature of activities. As mentioned, the military use of space was treated differently with a greater degree of secrecy, but even given this, it was possible to develop a legal regime even if not very detailed and specific. However, private actors need a greater degree of legal certainty to be able to invest and develop their activities.

Responsibility for actions in outer space and cyberspace

One of the main reasons for lawyers working in the field of international law to take an interest in outer space - even those who are not fascinated by space as such - is the nature of outer space as an area outside of national borders to which all states should have equal rights. To make sense of these ideals in practice is a challenge. As outer space is an area that is truly international and does not belong to any state, rules must be made internationally if there are to be any rules at all. There has recently been an increase in the number of states that pass national space legislation, but such legislation serves to implement international principles and only national space law cannot be enough to govern an international area. Consequently, international rulemaking is tested: can states agree on functioning rules in a global setting? And will they ensure that the rules are implemented?

As mentioned, in the early space age, it was positively surprising that despite the deep cold war period, the main players the USSR and the USA did manage to agree on many issues. Currently we are in a very insecure global situation, in an era of unpredictability and tension. Added to this is the changed situation in outer space where private firms develop new activities, the number of space nations with civilian as well as military capabilities is growing rapidly, space debris has turned into a real practical problem and there has not been any successful international space legislation passed for some decades. After a surprisingly active and rapid beginning to space law development starting immediately after the launch of the first satellite Sputnik in October 1957, there has been if not a stagnation then at least a fragmentation of efforts. Several treaties were adopted in the 1960s and 1970s, these still form the basis for space law together with several important United Nations General Assembly resolutions. Such resolutions are non-binding but can nevertheless be important if they set out important principles. In more recent times, there has been a trend of agreement between parties involved in certain activity (like the International

Space Station¹⁹⁾ rather than general agreements, in the development of which all states can participate.²⁰

With the increasing importance of private actors, the question of implementation of law is underlined. Making rules is one thing, but if these are not enforced they will soon lose any importance. It is true for any situation – in space, on earth or in cyberspace – that most issues never go to a court or any other process for interpretation and evaluation, but actors just behave in accordance with rules. Only in exceptional circumstances where there are problems will there be a need to “test” the validity and applicability of a rule. At the same time, even if academics discuss what exactly makes people behave in accordance with rules, it is generally assumed that the knowledge that there could be a sanction for non-fulfilment is important. With countries, there is a legal system that may intervene, but on the international arena this is much less clear – hence the need to create rules which are supported by a system for implementing them, by way of sanctions if needed.

In space law, the question of implementation of law is in theory solved so that states are responsible for their space objects. This is possible through registration of space objects, which should be made according to the Registration Convention.²¹ Liability claims under the existing legal regime are based on the premise that the object is identified.²² The treaties contain different rules on how it is to be determined which state is responsible when several may be involved in the creation and launch of a space object and in some instances, liability may be shared.²³ This is a traditional way to deal with liability in international law and there is nothing wrong with such a system in theory, but in practice – when there are many private actors that may be multinational, when the location of the organisation may be irrelevant in relation to the location of its activities – the system may become inefficient. There are different levels on which this is

19 *Agreement among the Government of Canada, the Governments of the Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America concerning cooperation on the Civil International Space Station*. ESA/C/IGA-CC(98)9, as updated.

20 Edith Walter 2011 “The privatisation and commercialisation of outer space” (Chapter 4.1) in Christian Brünner and Alexander Soucek (eds.) *Outer Space in Society, Politics and Law* (Springer, Heidelberg) pp. 493-518 at p. 502.

21 *Convention on Registration of Objects Launched into Outer Space* (14 January 1975, in force 11 March 1978, 1023 UNTS 15).

22 Under the *Convention on the International Liability for Damage caused by Space Objects* (29 March 1972, in force 1 September 1972, 961 UNTS 187).

23 Article V of the Liability Convention.

seen: it may be very hard to determine who an object belongs to (an important consideration linked to space debris); it may be too easy to avoid responsibility by “flags of convenience” of less responsible states; technology may develop so fast that it is hard to enforce rules as they quickly become obsolete; and so on. Cyberspace highlights all these issues: it would appear futile to make a cyberspace liability convention, similar to that for space liability, as we already know that its application would be very difficult. For outer space, the extent of the difficulties became known only later, when the rules had been formulated, as the use of space developed in a different manner than what many may have expected at the time of adopting the rules.

A new way to make rules

Space law has had to face the challenge of trying to keep up with the pace of technology. Normally and traditionally law comes after the facts, but in a fast-moving situation this may not always be possible and several authors use space as an example of an area where law cannot wait for facts. This can entail problems of legal predictability.²⁴ The constant and increasingly rapid development of technology underlines these challenges and the larger number of states involved – although positive from the viewpoint of a more inclusive space society – means that the law-making process has become more cumbersome whereas it should be as fast and flexible as possible. Law-making for space is no longer a diplomatic activity in the UN, largely led by only a couple of states, but has become much more diverse. There are more states involved in space so more actors with an interest in the legal framework. The fact that more states pass national space legislation is a positive development from the viewpoint of legal certainty but which can lead to different problems if the national laws include mutually contradictory provisions or such matters that are not (or not clearly) in accordance with the treaties.²⁵

Among the many developments going on in outer space, the most important one from a legal viewpoint is the increasing privatisation of space activities. Private actors need legal certainty – meaning clear rules for what is permitted or not and under what conditions. The absence of a legal framework can lead to

24 Valérie Kayser 2010 *Launching Space Objects: Issues of Liability and Future Prospects* (Space Regulations Library, Kluwer, Dordrecht/Boston/London) p. 258.

25 One example is that the Danish space law from 2016 contains a definition of outer space (albeit only for the application of that law), something which international space law has still not agreed on. The draft Luxembourg law mentioned above appears to claim that appropriation is allowed to some extent.

innumerable legal conflicts with questions on what can be done and what not, who is liable if something goes wrong and so on. Even before activities start, private actors will normally look for legal certainty through a clear regulatory framework before they invest. In cyberspace, to some extent, a legal framework existed from the start of the activities, which included mainly private actors from early on.²⁶ This framework consisted of telecommunications rules that especially since the liberalisation of telecommunications in Europe and many parts of the world from the early 1990s onward, have developed in a similar manner in many countries, as well as content rules in media related legislation (primarily for broadcasting). The main instruments are licensing by regulatory agencies that also deal with the necessary international coordination of matters such as frequencies and numbers, to some extent under the auspices of the International Telecommunications Union (ITU). The big cyberspace challenge from the legal viewpoint was not the absence of rules or regulatory bodies but the insistence from many actors that due to the borderless nature of cyberspace, traditional rules could only be applied to a limited extent. To make sense of what can apply and what not, to ensure some responsibility so as not to provoke states into having to take restrictive action, various multi-stakeholder fora and self-regulatory systems developed.²⁷

Having a system in which the relevant actors themselves actively participate in the rule-making and enforcement can be helpful. This explains the popularity of such phenomena as self-regulation²⁸ and multi-stakeholderism – which moves us into the area of what cyberspace can teach outer space. Not least as the diverse nature of the key actors is a characteristic of cyberspace and something towards which outer space is moving. However, even if the idea is nice, it is not guaranteed success in practice. For this rule-making system to be effective and relevant, the rules thus developed must be implemented. Otherwise it loses its credibility just like a non-implemented formal legal system does, sooner or later. For the self-regulatory system, such loss of authority and respect is likely to come quicker however, as it cannot benefit from the credibility of the basic legal system of the country. There are complex mechanisms involved in why self-regulation can work, why subjects submit voluntarily to rules even in the

26 We need not discuss here exactly when cyberspace was born and how – it is not relevant for the main argument. What is clear is that when activities started being more widespread and affect the general public, private firms also started being involved.

27 <https://www.freedomonlinecoalition.com/>; <http://www.intgovforum.org/multilingual/>; <https://www.internetsociety.org/> to mention just a few initiatives.

28 Bronwen Morgan and Karen Yeung 2009 *An Introduction to Law and Regulation. Texts and Materials*. (Cambridge University Press, Cambridge 2007, reprint 2009) p. 95.

absence of a formal sanctioning system. The reasons are likely to contain a fair degree of give and take – of accepting rules because others will so everyone will be in the same situation plus showing the formal rule-maker (the state) that sector participants are willing to take responsibility and the state can safely step back, trusting that rules will nevertheless be observed. Such a system is fragile in the sense that if the mentioned balance, the give and take, does not work there is no foundation to keep the system afloat.

What is said should not be interpreted as major scepticism toward the idea of self-regulation or multi-stakeholderism. On the contrary, this author believes the future for “new” spaces lies in new ways of thinking. However, until now the influence of the new mechanism for making rules – like multi-stakeholder conferences and working groups – has been limited, as states are not willing to cede too much power to such informal mechanisms and if some states are, then these tend to be a minority and often those where informal systems already work quite well so the rules are actually less needed than in many other countries, much less open to new regulatory ideas. There is no shortage of fora for discussion but little that goes beyond talk. The solution is not so hard to identify but extremely hard to implement: it takes political will from states to say that it is acceptable that rules for e.g. cyberspace or for certain activities in outer space can be decided by the relevant parties in a setting of multi-stakeholder participation, including public and private bodies, academia and civil society, on equal terms and with equal rights. The resulting system shall then also be accepted as the regulatory framework for the relevant activities. We can still only speculate how effective such rules can be as they either do not even exist or otherwise at least are very new. As for the military side of the spaces, it is unlikely states would cede control of any regulatory matters – it is another (and open) question to what extent this hinders development of efficient self-regulation for the rest of activities.

Some concluding remarks

The 50th anniversary of the Outer Space Treaty in 2017 (from its adoption) and the anniversary in 2018 of the UN Committee on Peaceful Uses of Outer Space, celebrated with various activities in 2017-2018 provides an inspiration for considering the legal regime of space. Some countries have used this as a basis for promoting new or amended space treaties. However, it looks unlikely that there would be any major new UN sponsored treaties or treaty amendments in the near future. The general global environment is not conducive to this and

initiatives related to space debris²⁹ have not indicated any great expectations of success. On a more philosophical note, the discussion on how it can be ensured that the entire community of mankind can benefit from outer space, which has been going on since early space use, remains and is highlighted by private actors becoming all the more important.

For cyberspace, the idea of a totally free environment where everyone with access to basic technology could communicate freely with the world, has given way to attempts to create some form of acceptable regulation before too many states decide to strike down on the freedoms and rein in what has become a powerful beast.

Tools for dealing with the developments in outer space and cyberspace may come to resemble each other more, with initiatives of self-regulation or multi-stakeholder fora for a more creative and inclusive rule-making. If well used, such tools can lead to a system in which interests of the private sector as well as those of the states can be taken into account already during the drafting process, which should increase the chances that rules will be obeyed, even if the nature of the spaces is such that traditional law-enforcement tools are not effective. Despite that the grand notions of new realities that were attributed to both of the spaces in their infancies may not withstand more mundane pressures of everyday use, we may find that the rulemaking systems can learn a lot from one-another. For different reasons, at different pace and in different eras, outer space and cyberspace have both demonstrated that areas that challenge the traditional structure of the earth as a composite of states with their defined jurisdiction can be of great importance for everyday activities of citizens of the earth. Even if we may not be able to totally leave the shackles of the earth behind, we may turn the necessity of a new thinking, caused by the special nature of these areas, into a positive inspiration factor for a more inclusive rule making, that can benefit also other areas.

29 https://eeas.europa.eu/topics/disarmament-non-proliferation-and-arms-export-control/14715_en. Nina-Louisa Remuss 2011 “Space and Security” (Chapter 4.2) in Christian Brünner and Alexander Soucek (eds.) *Outer Space in Society, Politics and Law* (Springer, Wien/New York) pp. 519-568 at p. 540-545.