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New Space Dynamics and the Development of Space Law: Exposing Weaknesses and Suggesting Alternatives

INTRODUCTION

In 2019 humanity celebrated the 50th anniversary of the first moon landing, an achievement that inspired millions and evoked visions of humanity's future in space. Looking back at this milestone, one is struck by how much has changed since the early days of spaceflight. Although the launch of space objects is not as frequent as that of aeroplanes, we are witnessing a notable increase in the amount of space traffic, operated both by States and private entities. At the same time, new uses for outer space are constantly being developed, be they commercial, military, or scientific in nature. These developments are widely recognised. On the one hand, they are recognised by States, as demonstrated by the rising adoption of national space strategies and by the increasing international support for the *Artemis Accords,* a document dedicated to establishing a "common vision [...] to enhance the governance of the civil exploration and use of outer space".[1] On the other hand, they are also recognised by scholars, who have been inspired by developments in the space sector to reflect on and restate the current state of international space law in the McGill Manual on the International Law Applicable to Military Uses of Outer Space (MILAMOS).[2] The new uses *for*

[1] NASA 2020: Section 1.
[2] Jakhu–Freeland 2022.

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space, the new users *of* space and the new engagement *with* these dynamics are often – as in this book – captured in the term "New Space", and many observers are already proclaiming a New Space Age.[3]

While the Space Age is new, the international law governing it is relatively old. At least, it is old in the sense that it does not directly or extensively address the dynamics and phenomena that characterise the New Space Age. Conventional space law research therefore tends to focus on the question of how far existing law governs and impacts New Space endeavours.[4] Considering the speed and scale at which New Space dynamics are unfolding, this Chapter will take a different perspective and in fact reverse the questions asked in conventional space law literature. Instead of asking how international outer space law impacts commercial, military and scientific uses of outer space, including by private actors, this Chapter will investigate the extent to which the New Space dynamics can impact the development of international outer space law.

The aim of this Chapter is to show that New Space dynamics can and in fact should have an impact on the development of international outer space law in several ways. It will demonstrate which of these New Space dynamics can and should have an impact on the development of space law. When the Chapter refers to the *development* of outer space law, it does not necessarily mean the creation of new law. Although the creation of new space law will also be considered in this Chapter, its focus will mostly lie on the development of the *understanding* and handling of *existing* space law in space law research. The existing law will, after all, not simply vanish with the creation of new law.

[3] For example Del Canto Viterale 2023: 232–233; The Washington Post 2023; Ciocca et al. 2021: 4–6.

[4] Regarding resource exploitation in space, which also serves as the example in this Chapter, see Bonin–Tronchetti 2010: 6–21; De Man 2016.

By analysing the example of the concept "national appropriation" in Article II[5] of the Outer Space Treaty[6] (OST), it will be argued that the New Space dynamics identified earlier require space lawyers to engage more critically and more comprehensively with the established arguments and beliefs of space law in order to allow a doctrinally sound and practical application of existing space law to modern space endeavours.[7]

Translated into methodological terms, the Chapter combines different approaches. On the one hand, Article II OST will be interpreted with a focus on applying the provision to modern phenomena. While it may have practical applications, the approach does *not* focus on desired outcomes. Instead, it demonstrates, where ordinary tools of treaty interpretation have been underexplored and how they can be better exploited to facilitate practical interpretations of international outer space law even with conservative approaches to treaty interpretation. On the other hand, the Chapter will offer reflections not only on how existing law can govern and address the emerging practice in the exploration and exploitation of outer space, but also on how this newly emerging practice may shape the interpretation of the Outer Space Treaty as subsequent practice under Article 31(3)(b)[8] of the Vienna Convention on the Law of Treaties[9] (VCLT).

[5] Most of the Chapter will revolve around Article II OST, but in so far as the proper understanding of "national activities" in the OST is concerned, recourse will also be made to Article VI OST as well.

[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 January 1967, 610 UNTS 205.

[7] Conducting the required critical research requires a lot of fundamental research and is thus far beyond the scope of this Chapter. A lot of it will, however, be contributed by the author's upcoming PhD thesis.

[8] Technically speaking, references to Article 31 VCLT in the context of space law in this text should be understood as references to the customary international law codified in Article 31 VCLT (see Dörr 2018: 561) given that Article 4 VCLT stipulates that the VCLT itself can only be applied to treaties which were concluded before the VCLT entered into force in 1980.

[9] Vienna Convention on the Law of Treaties, 23 May 1969, 1155 UNTS 331.

Accordingly, the structure of the Chapter is as follows. First, the two trends of New Space with the greatest impact on the development of outer space law will be introduced, namely the shift in space utilisation from a theoretical to a practical issue and the shift in users of space from being mostly States to being mostly non-State actors. In the next section, it will be demonstrated how these developments push the results of prior legal engagement with Article II OST to their breaking point and at the same time offer insights into which type of engagement would be necessary to find doctrinally sound and practical ways to understand the provision. Finally, the Chapter will draw conclusions from the analysis, reflect in the abstract on the impact of New Space dynamics on international law-making in general and summarise the implications of the findings for the development of outer space law.

NEW DYNAMICS – PRACTICE AND PRIVATES

This Chapter will focus on two specific dynamics characterising the New Space Age, namely the increasing "practicalisation" and privatisation of space projects. These dynamics constitute a shift from previously existing standards in spacefaring and are likely to have an impact on the development of international outer space law.

Realising space utilisation – A shift from theory to practice

This Chapter operates on the hypothesis that, as more technology becomes available, the possibilities of utilising the benefits of space for commercial, military and scientific purposes will steadily increase. Since 2016, there has been a sharp rise in space objects being launched, especially from the United States.[10] While the number of launches does not directly correspond to that of new space objects since 2016, as many of these objects belong to mega constellations

[10] United Nations Office for Outer Space Affairs 2023.

like *StarLink,* there is also a significant increase in launches. The boom in launches and space objects goes hand in hand with a growing space industry, focused among other things on the development of space mining techniques,[11] space travel[12] and the deployment of ever smaller satellites.[13] Although this dynamic is at this point not yet a ubiquitous phenomenon and even varies among developed countries with advanced spacefaring experience, at present the global space industry is already worth hundreds of billions of dollars and economic experts expect it to double or even triple in size by the year 2040.[14] As a growing sector of industry sets its sights on outer space, the extraction and utilisation of resources in space may also be on the horizon. The possibilities for such utilisation have already been studied and developed in principle: in 2021 for example, a team of student researchers from *Technische Universität Berlin* developed the Lunar Rover *LUIEE* (Lunar Ice Extraction & Electrolysis), a device capable of extracting lunar ice and separating the oxygen and hydrogen bound therein through electrolysis.[15] This process makes hydrogen available for fuel production in outer space which in turn has the potential to significantly reduce the costs of spacefaring, since it may allow expensive space objects operated by propulsion systems to be refuelled. Minerals mined in space could potentially be used as filament for 3D printers, which have been proven[16] to operate normally under Zero G conditions.

Against the background of the predicted major economic growth in the space sector combined with realistic prospects for the use of space resources, it is at the very least plausible that many new forms of space exploration and exploitation will be tested. Not only that, but if they are tested successfully, it is reasonable to assume that such technologies would also be developed further and increasingly put to use in outer space.

[11] Vernile 2018: 42–50.
[12] Vernile 2018: 51–60.
[13] Vernile 2018: 61–70.
[14] New Space Economy s. a.
[15] Technische Universität Berlin 2021.
[16] Prater et al. 2018: 412–415.

This will change the way in which we need to engage with space law. It is one thing to discuss the implications of space law for certain utilisation practices, when they do not yet occur on a large scale. It is an entirely different issue, when real world practices lead to real world legal disputes which are then debated and decided in court. Determining the legality of space utilisation on a case-by-case basis requires space lawyers to *apply* the vague principles constituting today's space law to real world facts with real world consequences. To eventually produce the legal certainty[17] that can legitimately be expected from the courts, space lawyers will have to find a reliable path through the many theories that have been devised about the correct way of understanding space law principles, which frequently contradict one another in their results. We will have to find doctrinally sound definitions for the black letter law terms found in the provisions of the Outer Space Treaty or the Liability Convention,[18] because these are what the courts can eventually apply – not the theories about them. This requires space lawyers to engage with space law in a way that pays much greater attention to the technical and doctrinal handling of the law compared to the largely academic and theoretical discussions which have dominated the discourse so far. Section *Article II OST – Established inadequacy* of this Chapter will exemplify what this means for the proper treatment of Article II OST when it comes to resource acquisition. One implication can be mentioned here already: in order to generate insights into a practical way of handling and applying space law to real world cases, it will be necessary for space lawyers to leave their comfort zones and (critically) assess terms and concepts of space law in relation to definitions and concepts from the rest of international law that are already well-established in practice.

[17] For the importance of legal certainty in space see JOHNSON 2011: 1517.

[18] Convention on the international liability for damage caused by space objects, 29 March 1972, 961 UNTS 187.

The "privatisation" of spacefaring – A shift from states to companies

A second and less hypothetical dynamic of modern spacefaring which can be observed and which will determine how we should engage with space law is the increasingly private nature of space activities.[19] A first wave of companies have developed their own launch systems and capabilities, and more and more small private actors are collaborating with such companies and space agencies to put their own space objects in orbit.

This dynamic does not mean that States and their practice do not continue to shape the law of outer space, but it does imply that outer space will slowly but surely transform into an environment that is strongly characterised by the presence of private economic actors.[20] The presence of States in space through their space agencies and their own missions will not necessarily diminish as a consequence, but States will operate in an environment that is increasingly crowded by actors which are *prima facie* not directly bound by outer space law.[21] At the same time, the practices established by these actors, as well as the standards and best practices that will necessarily arise out of their interaction, could become a challenge to standards and practices that are simultaneously developed among States.

This development is interesting because it raises questions regarding the genesis of the rules of international law, which are generally created by States. Of course, the mere presence of non-State actors and their practice does not immediately impact existing rules of international law or create new ones. It does, however, shift the spotlight away from direct State practice and raises two questions in doing so:

[19] Vernile 2018: XXV–XXVII.

[20] Vernile 2018: XXV.

[21] States do of course owe one another to ensure compliance of their national activities conducted by non-governmental entities under Article VI OST, but the exact requirements and consequences of this obligation – so this Chapter will argue below – are far less clear than they are presented in the established space law discourse.

First, is attribution of private conduct in space to the appropriate States truly as straightforward and low in requirements as is often suggested?[22] If it is, then private conduct in space is eventually State conduct in space and may directly shape the understanding of space law as subsequent practice pursuant to Article 31(3)(b) VCLT.[23] If, however, attribution of "national activities" (Article VI OST) does not function in a generalised fashion, but only if certain conditions are met, then space lawyers will have to carefully differentiate between which practices are relevant and less relevant for the purposes of identifying subsequent practice through private actors. At the very least, a critical revisit of the law of attribution and its application in an outer space context will be appropriate. The results of this critical revisit may very well have an impact on the future development of space law. The second sub-section of section *Article II OST – Established inadequacy* of this Chapter will offer further thoughts on this matter.

Second, if certain conduct by private actors in space should not be attributable to States, what sort of impact can the conduct of such actors have on the development of space law? Technically, this question contains two issues. The first one is whether the large influx of private actors in the space sector warrants a rethink of the doctrine of international law sources. After all, the practice of private seafarers and merchants has shaped international regimes already.[24] The second issue raised in the question is whether the conduct of

[22] See for example Baca 1993: 1065–1066.

[23] Gardiner 2015: 266; International Law Commission 2018b: 37, Commentary 2 to Conclusion 5. While the ILC first and foremost considers attributable practice of non-State actors relevant when they exercise governmental authority, it did not directly reject the possibility of considering conduct that is attributable to a State based on effective control under Article 8 ARSIWA. Considering that attribution under Article VI OST would only extend to "national" activities in the first place, it can very well be argued that attributable non-State practices under Article VI OST can and should be considered practice in the application of the OST, cf. International Law Commission 1966: 222, Commentary 15 to Article 27.

[24] Consider for example the *lex mercatoria* or the references in the United Nations Convention for the Law of the Sea to the already established "generally accepted international rules and standards" as well as "regulations, procedures and practices" of seafaring.

private actors can impact the development of space law not through their attribution, but through how States *react* to and *regulate* it, which could also be considered a form of subsequent practice.

ARTICLE II OST – ESTABLISHED INADEQUACY

To demonstrate the implications that the two shifts in spacefaring practice identified above will have on the development of space law, this Section will highlight how the "practicalisation" and privatisation of space exploration and exploitation can and should affect the established interpretations of Article II OST. It is virtually – and rightfully – undisputed in international space law that Article II OST governs extractive practices regarding resources in outer space.[25] That is, at least in so far as the extraction of resources is aimed at economic benefits, which are likely to require extractive actors to obtain some forms of rights over the extracted resources.[26] The acquisition of rights over space resources is, in turn, governed by the non-appropriation principle of Article II OST. This also explains why *NASA* chose to include in the *Artemis Accords* a reference stating that the mere extraction of resources in outer space is not automatically an appropriation in the sense of Article II OST.[27] Article 11 of the Agreement governing the Activities of States on the Moon and Other Celestial Bodies[28] (Moon Agreement) contains a more explicit regulation regarding the acquisition of property rights over resources in outer space, but the low adoption rate of that treaty makes Article 11 of the Moon Agreement a provision of negligible relevance compared to Article II OST.[29]

[25] See for example Baca 1993: 1065–1067; De Man 2016; Jakhu–Freeland 2009: 53–54, 58–59; Hobe et al. 2009; Paliouras 2014: 46–49; Tennen 2016: 283–285; Tronchetti 2009: 29–33.

[26] Hertzfeld – von der Dunk 2005.

[27] NASA 2020: Section 10(2).

[28] Agreement governing the Activities of States on the Moon and Other Celestial Bodies, 5 December 1979, 1363 UNTS 3.

[29] Johnson 2011: 1497; Rostoff 2017: 380; Sprankling 2014: 180.

Against this backdrop, it is not surprising that a great deal of academic thought has been articulated regarding *how exactly* Article II OST governs the extraction of resources and the acquisition of various rights over various things in space. One aspect of this broad body of literature concerns the question of whether and how the conduct of private actors can and should be subsumed under Article II OST. First of all, in order to understand the implications of New Space dynamics on the development of the international law of outer space, it is necessary to understand the positions advanced on such questions in the existing discourse, which will be presented below. This Chapter argues that the existing positions on the important questions of space law in the orbit of Article II OST – while very well established and accepted in international space law discourse – are proving inadequate in light of the emerging New Space dynamics and the shift in thinking that they require.

"Appropriation" – The need for new perspectives

This sub-section of the Chapter will argue in favour of the need to begin engaging with the concept of appropriation in Article II OST in a doctrinal and comprehensive way. The shift in thinking that is required in light of the New Space dynamics when engaging with Article II OST and with the very concept that it rules out will become apparent when contrasting the norm typology of Article II OST with the practical scenarios to be governed by the provision (a). An immediate consequence of this shift in thinking, this sub-section argues, is that shortcomings in the existing interpretations of Article II OST and its applications to resource acquisition scenarios will become apparent (b). To overcome these shortcomings, the sub-section will finally suggest some avenues for further research that promise to eventually render Article II OST both more applicable to practical cases with a certain degree of legal certainty and to make it more doctrinally sound by taking the wording and requirements of Article II OST seriously (c).

Reflecting on norm typology – Principles and practice

Article II OST is commonly referred to as a *principle,*[30] which is not surprising considering that the Outer Space Treaty itself is properly called the "Treaty on *principles* governing the activities of States in the exploration and use of outer space, including the moon and other celestial bodies",[31] and which is based on a UN General Assembly resolution declaring the "Legal *Principles* Governing the Activities of States in the Exploration and Use of Outer Space".[32] Neither the Outer Space Treaty nor the Declaration of Principles contains any reference to the implications of non-appropriation being a principle rather than a rule. It is clear, however, from general legal theory that principles and rules – while equally binding –differ in how they govern the conduct of legal subjects. This difference was eloquently discussed by Robert Alexy in his *Theory of Constitutional Rights.*[33] Although he was writing in the context of German constitutional law, Alexy approached the distinction between principles and rules at a fairly abstract and general level. In his words:

> "The decisive point in distinguishing rules from principles is that principles are norms which require that something is realized to the greatest extent possible given the legal and factual possibilities. Principles are optimization requirements, characterized by the fact that they can be satisfied to varying degrees, and that the appropriate degree of satisfaction depends not only on what is factually possible but also on what is legally possible. The scope of the legally possible is determined by opposing principles and rules.
>
> By contrast, rules are norms which are always either fulfilled or not. If a rule validly applies, then the requirement is to do exactly what it says, neither more nor less. In this way rules

[30] See De Man 2016; Freeland 2013; Paliouras 2014; Pershing 2019.
[31] Emphasis added.
[32] UNGA Res. 1962(XVIII), emphasis added.
[33] Alexy 2010.

> contain fixed points in the field of the factually and legally possible. This means that the distinction between rules and principles is a qualitative one and not one of degree. Every norm is either a norm or a principle."[34]

While the definition of a rule provided by Alexy is abstract enough to function outside of a constitutional law context, his characterisation of principles does not directly match the normative content of Article II OST. That is because Article II OST establishes a legal status for outer space as an area rather than, for example, guaranteeing a liberty. As a matter of logic, the determination of the legal status of an area is something that is realised to the greatest extent possible from the moment at which the norm determining that status becomes binding. From this point onwards, the conduct of actors can only be evaluated against the norm in terms of their compliance with it and not in terms of realisation. This remains true at least until a point is reached at which an overwhelmingly conflicting practice either changes the interpretation of a status-determining provision in the sense of Article 31(3)(b) VCLT or when it eventually overrides the provision determining the status entirely as a new specialised norm of customary international law. Not every status-determining norm is necessarily excluded from being a principle in Alexy's sense. Consider, for example, the constitutional provisions that determine the status of a State's form of government: the fact that Germany is a democracy according to Article 20(1) of the German Basic Law does not automatically realise democracy in Germany. Instead, public procedures, elections and other possible manifestations of democracy must still be organised and conducted in a manner which is as democratic as possible, in a conscious effort towards democratisation on a day-by-day basis. What follows from this is that status-determining norms can be principles, if they relate to an entity with the capacity to shape and reflect its own actions. For Article II OST as a norm that determines the legal status of an inanimate area, this is not the case.

[34] Alexy 2010: 47–48.

There are, however, other possible criteria for distinguishing principles from rules. Alexy himself notes that the level of generality[35] of a norm could potentially be considered a criterion, as well as a norm's significance[36] for the legal order.[37] Principles could perhaps be characterised as an aspirational type of legal norm. From the perspectives of generality or abstractness and of its significance[38] for the system of outer space law, Article II OST may very well qualify as a principle. At this point it should be noted that the references to Article II OST as a principle in the scholarly literature and in the Outer Space Treaty were probably not intended to establish a categorical distinction between different categories of norms. Terminological inconsistency[39] may very well be a plausible alternative explanation. After all, the prohibition (= rule) on the use of force in Article 2(4) of the United Nations Charter is contained in an article governing the fundamental "Principles" of the organisation. Nevertheless, as this Chapter will demonstrate below, the way in which Article II OST is actually discussed in the context of the legality of property acquisition over space resources indicates that space lawyers regard it as a principle rather than as a rule.

This is problematic, because the difficulty with principles is that – unlike rules – they are not designed to answer in clear terms how a legal subject that is bound by the norm should behave in a concrete real-world scenario. In the context of resource extraction and other emerging practices, however, concrete real-world scenarios are exactly what New Space dynamics are likely to produce. To state with a practicable level of legal certainty whether an endeavour involving space resources is lawful or not, it is necessary to apply

[35] Raz 1972: 838. In his text, Raz develops the level of a norm's generality regarding the description of conduct, so it may not fit very well for a status determining a provision like Article II OST either. Nevertheless, Article II OST is very abstract in describing the conduct that it regulates by listing different modalities of appropriation including the maximally general appropriation "by any other means". In this sense, non-appropriation could indeed be considered a principle.

[36] Peczenik 1971: 30–32.

[37] Alexy 2010: 45–46.

[38] Paliouras 2014: 37–38.

[39] Consider the principle of *falsa demonstratio non nocet*. Lardy 1914: 7.

a rule rather than a principle. Can Article II OST be treated like a rule? This Chapter argues that it can and should be. The argument for this is as follows: in essence, the determination of outer space as non-appropriable logically means that any appropriation of outer space is – framed negatively – *prohibited* by Article II OST. Framed as a duty, States are under an obligation not to appropriate outer space. Both understandings, which are closely related, imply that Article II OST is a norm that can be complied with, one that requires actors to do exactly what it says[40] or to abstain from exactly what it rules out, namely appropriation.

That being said, how well a legal norm can function as a rule necessarily depends on the clarity of its elements. Just as the prohibition of theft requires a clear understanding what "theft" is, how it can be conducted and how it is distinguished from comparable acts that are not prohibited, the functioning of Article II OST as a rule hinges on a clear definition of appropriation as its central concept. In light of the modalities of appropriation that Article II OST lists explicitly, such a definition must encompass how and why an appropriation can be conducted through claims of sovereignty, occupation and use. Based on a comparative analysis of the three explicitly mentioned modalities of appropriation, the most abstract modality of appropriation "by any other means" could potentially also be filled with meaning. Having established a meaning for appropriation, conduct could be assessed against that yardstick and legal certainty would be achievable for various questions of space resource exploitation.

The regulation style of Article II OST makes it possible to treat the provision as a rule, which should ultimately be more decisive than the common references to non-appropriation as a principle, considering how little the implications of such references have been explained and reflected on. Such a shift in thinking about Article II OST would be necessary to keep the norm relevant in light of the New Space dynamic of "practicalisation". Legal research in outer space law

[40] Alexy 2010: 48.

should therefore begin to entertain the idea of conceptualising Article II OST as a rule. At the very least, it should focus on finding definitions for the elements of Article II OST, particularly for the central concept of appropriation.

Inadequacies in appropriation arguments

Against the backdrop of the preceding considerations about Article II OST, the most prominent existing arguments about space resource acquisition and Article II OST prove inadequate in several regards, which will be highlighted in this part of the Chapter.

Since a great deal has been written about Article II OST and the legality of "space mining", the following overview of some of the prominent arguments in this discussion is, of course, not to be understood as a comprehensive and perfectly inclusive representation of every argument made in outer space law literature regarding Article II OST. The goal of the overview is rather to flesh out some of the most prominent lines of argument, which often function as the basis for more differentiated arguments. The scholarly works chosen to represent the general positions are selected as mere examples and many others could have been chosen in their place. Discussing certain authors' works specifically is thus not intended to elevate their work over that of others or *vice versa*. Before discussing some of the prominent arguments and their shortcomings, it is important to emphasise that the intention is not to dismiss these arguments as necessarily wrong. After all, they are largely based on valid methods of (international) legal reasoning and follow an inner logic. This is why they need to be taken into consideration to gain a comprehensive understanding of all the legal implications of Article II OST for resource extraction in space. Nevertheless, they are based on legal research that merely scratches the surface of what would be possible and necessary in order to render Article II OST future proof and its application both doctrinally sound and legally certain with a view to the increasing "practicalisation" of spacefaring.

The arguments

The first line of argument about the appropriation of space resources seeks to prohibit the acquisition of certain rights over resources and focuses on the nature of the rights that cannot be acquired under Article II OST. In essence, proponents of this line of argument are of the opinion that the acquisition of property or sovereignty over space and its resources is prohibited by Article II OST. The argument has been articulated in a variety of ways, which range from a "broad reading"[41] of Article II OST regarding sovereignty and property to the outright prohibition of exclusive[42] rights.[43] It draws its authority from the inclusive status of outer space as a global commons that the Outer Space Treaty arguably[44] seeks to establish to prevent the repetition of the race for the acquisition of sovereignty[45] that took place between states in previous centuries. Further support is derived from a statement made during the negotiations preceding the conclusion of the Outer Space Treaty in the United Nations Committee on Peaceful Uses of Outer Space (UN COPUOS) in which the

41 See for example Gangale 2009: 33–34; Lachs 1972: 44; Pershing 2019: 154–157.

42 See for example De Man 2016: 320, who holds that exclusion is problematic under Article II OST when it is not based on use; Husby 1994: 364.

43 Further arguments include for example the OST's object and purpose to prevent any kind of power struggle over outer space and its resources, see Gawronski 2018: 179; Jakhu–Freeland 2009: 49; Hobe et al. 2009. Another argument that is often raised in support of this position is that the prohibition on the exercise of state sovereignty over space precludes the creation of property rights, which many authors allege flow from national sovereignty. See for example Cheng 1997: 233, 400. The assumption underlying this final argument, namely that property flows only from national law and cannot exist independently of national legal orders, may have been true for a long time. However, as the ideological divide between socialism and capitalism was overcome in practice, the economy became globalised and human rights – including a right to property – succeeded at the international level, these assumptions can and in fact should be challenged today. For an in-depth analysis of this argument, readers are directed to the author's upcoming PhD thesis as well as to Sprankling 2014.

44 Although a 2020 Executive Order from the United States of America takes a different stand, see President of the United States of America 2020: Section 1. See also Bertamini 2020.

45 See Jakhu–Freeland 2009: 49; Hobe et al. 2009.

Belgian representative pointed out that it was apparently without contradiction that the non-appropriation clause was supposed to extend to both sovereignty and property rights.[46]

A different and equally well-established line of argument allows property acquisition over space resources pursuant to Article II OST. It is based on the fact that the wording of Article II OST does not explicitly prohibit the acquisition of property rights over resources.[47] Authors advancing this position agree that the appropriation of outer space itself, especially in relation to territory, remains prohibited, but contend that the extraction of and acquisition of property rights over such extracted resources is allowed. In essence this position relies on a peculiarity of international law, articulated most prominently in the *Lotus* judgment delivered by the *Permanent Court of International Justice* (PCIJ).[48] In that case the Court proclaimed:

> "[T]he rules of law binding upon States therefore emanate from their own free will as expressed in conventions or by usages generally accepted as expressing principles of law and established in order to regulate the relations between these co-existing independent communities or with a view to the achievement of common aims. Restrictions upon the independence of States cannot therefore be presumed."[49]

In other words: limitations of State sovereignty, such as the prohibition of certain conduct, cannot be presumed. Instead, the sovereignty-based nature of international legal relations requires that restrictions of sovereignty are based in law that States willingly subject themselves to. If Article II OST was supposed to prohibit States from acquiring rights over resources in outer space, i.e. if Article II OST is to be interpreted in a way that assumes that

[46] Statement by Mr Bal in United Nations Committee on the Peaceful Uses of Outer Space 1966: 7.

[47] See for example Hobe 2019: 160; Johnson 2011: 1507; Pop 2008: 135–142, 150–151; Sprankling 2014: 187–189.

[48] PCIJ *(Lotus)* 1927.

[49] PCIJ *(Lotus)* 1927: 18.

States subjected themselves to a prohibition of acquiring rights over resources in space, the provision should have mentioned that in a clearer fashion, much as the Moon Agreement does.

These two lines of argument regarding the legality of rights acquisition over space resources under Article II OST are the most prominent and established ones, judging by their frequent reappearance in space law discourses. Next to them, other lines and facets of argument are also briefly worth mentioning here. There is, for example, the occasional discussion[50] of an analogy between outer space and the High Seas, according to which space resources should be acquirable despite Article II OST, just like fish can be caught and owned despite Article 89 of the United Nations Convention on the Law of the Sea[51] (UNCLOS), which rules out the subjection of the High Seas under State sovereignty. Another prominent and established facet of the resource appropriation discourse is the distinction between land and movable resources, according to which the former are covered by Article II OST in light of the Outer Space Treaty's purpose, while the latter are not.[52]

The problem(s) with the arguments

Although the arguments presented are valid legal arguments, they suffer from a number of interrelated flaws that render the arguments inadequate in two regards. First, the arguments presented above are unable to provide legal certainty in the application of Article II OST to real-world cases. Secondly, they mostly ignore the modalities spelled out in the text of Article II OST.

In terms of legal certainty, the very fact that most[53] of the arguments are based on valid methods of international legal argumentation makes the

[50] See for example Blanchette-Séguin 2017: 966–969; Brooks 1966: 322; Pop 2008: 139; Williams 1987: 147.

[51] United Nations Convention on the Law of the Sea, 10 December 1982, 1833 UNTS 3.

[52] Alshdaifat 2018: 32–33; Bonin–Tronchetti 2010: 6–14; Cheng 1997: 400–401.

[53] Because analogies take a State's commitment to a provision of law limiting the State's sovereignty in one context and transfer it to justify a similar restriction in a different context – one to which the State has not committed – analogies in international law are

contradictions between them problematic. The first two lines of argument alone come to diametrically opposing results regarding the legality of resource acquisition in space. That is, of course, unless one considers the distinction between land and resources to be relevant and applies the first line of argument only to land and the second one only to resources. Such a distinction does not, however, flow from the reasoning behind either line of argument. Furthermore, the Outer Space Treaty nowhere makes such a distinction itself. Indeed, in light of the treaty's objective of preventing power struggles between States over outer space, the distinction between land and resources becomes less and less relevant today, as valuable resources rather than land are the chief focus of space actors. Power struggles may just as well arise over resources as over land, especially considering that many resources on Earth are destined to expire at some point in time. As of now there is no decisive legal consideration that helps decide between the first two lines of argument. This leaves actors which plan to realise the immense potential of exploiting the resources of outer space for the benefit of humanity in a legal limbo of not knowing whether their plans are lawful. Even worse: the contradiction between the major lines of argument in the absence of a decisive element renders Article II OST powerless to regulate a very important and potentially seminal use of outer space. In circumstances like this, it is likely that political will and the practice of opportunistic actors which may not be overly concerned about the legality of their actions will eventually shape the law of outer space and not the other way round. The first examples of such unilateral steps being taken are reflected in the national space legislation of various States, which attempt to create facts by allowing their nationals to acquire property rights over space resources. Although contemporary space law authors still tend to only refer to the laws of Luxembourg (2017) and the United States (2015) in this context, in fact many other States are following suit and their laws should also be considered. For example, Japan and the United Arab

a problematic concept in light of the PCIJ's finding in *Lotus*. The analogy between the law of the High Seas and outer space law is thus doctrinally doubtful.

Emirates have enacted similar legislation[54] and India adopted a Space Policy in 2023 under which non-governmental entities or NGEs are encouraged to

> "engage in the commercial recovery of an asteroid resource or a space resource. Any NGE engaged in such process shall be entitled to possess, own, transport, use, and sell any such asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of India."[55]

Legal researchers in outer space law should be aware[56] of this trend and ask themselves whether our hands are effectively tied or whether there are relevant methods of legal thinking which are underrepresented in the discourse.

At the doctrinal level, there is a second problem with the arguments presented above; a problem that they all have in common and one that is connected to the first problem in terms of underrepresented methods of legal thinking. Although all the lines of argument presented above say something about the results of applying Article II OST, none of them reach their respective conclusions by actually applying the law, i.e. by attaching a certain meaning to the individual elements of the norm, such as appropriation or a claim of sovereignty, and subsuming a set of facts to these elements. It is striking that only a select few scholars[57] engage in the systematic and technical interpretation

[54] A tentative English translation of the Japanese Act on the Promotion of Business Activities for the Exploration and Development of Space Resources (Act 83 of 2021) is available at https://www8.cao.go.jp/space/english/resource/documents/act83_2021.pdf. The UAE Federal Law No. 12 of 2019 on the Regulation of the Space Sector does not explicitly allow for the acquisition of property rights over space resources, but its Article 18(1) allows the possibility that space resources are acquired and used for commercial purposes. Said law is available at https://www.moj.gov.ae/assets/2020/Federal%20Law%20No%2012%20of%202019%20on%20THE%20REGULATION%20OF%20THE%20SPACE%20SECTOR.pdf.aspx.

[55] Indian Space Policy – 2023, available at https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf.

[56] Blount 2018: 122–123.

[57] Such as Blount 2018: 101–104; Jakhu–Freeland 2009: 48–55; Hobe et al. 2009; Schwab 2008: 56–70.

of the actual terms of Article II OST through the lens of Article 31 VCLT, and even these discussions are confined to only a small number of pages. That understanding a norm properly requires a definition of its terms should go without saying for any lawyer.[58]

If one thinks of Article II OST as a principle and is not overly concerned with treating the provision as a legal rule with meaningful requirements, then a technical legal interpretation of the black letter law may not appear as relevant. It may also very well be true that many do not deem it necessary to interpret what is meant by a "claim of sovereignty", a "use" of something or an "appropriation", as most will have some immediate association in mind. However, the "practicalisation" of spacefaring makes understanding the elements of the norm relevant and associations an often treacherous undertaking, especially in a discipline as focussed on the meaning of a text as law. Even if one followed the broadest interpretation that Article II OST is concerned with the prevention of exclusive rights over outer space in the form of sovereignty and property, the question still remains as to how exactly these rights are acquired in international law. It is this process of acquisition which must be understood from a legal perspective, because this is what the conduct of actors in outer space can be measured against under Article II OST. This in turn requires difficult, but not impossible, fundamental research into sovereignty and property as well as their acquisition under international law. In light of the increasing "practicalisation" of spacefaring, space lawyers must be able to categorically state what an appropriation is and how it is brought about, rather than philosophising over what its results are. How else can we tell the limits of what an actor may *do* in outer space? After all, both the exploration and use of outer space are necessarily manifested as *actions*. This should not come as a surprise, considering the full title of the Outer Space Treaty and its various provisions which focus on *activities* in outer space.

[58] For the interpretation of international treaties see in particular Dörr 2018: 578–579; Fitzmaurice 1957: 220–223; Gardiner 2015: 66; International Court of Justice 1952: 105, 122.

A constructive suggestion – Promising avenues for new research

To overcome the shortcomings of existing appropriation arguments and to place future interpretations of Article II OST on robust doctrinal legs, new research is necessary.[59] This Chapter suggests treating Article II OST as a rule rather than as a principle for this purpose. Such a treatment is accompanied by a very concrete implication for the concept of appropriation. If the Outer Space Treaty's non-appropriation clause is understood as a rule, i.e. as a norm where the requirement is to do exactly what it says,[60] then appropriation must be understood as a requirement relating to an activity and not as a mere description of the results of an activity. In other words: appropriation must be entertained as a concept that concerns the process of acquiring something, rather than one that is concerned with the results of rights acquisition.[61]

Departing from this point, the next step towards filling appropriation as a concept of international law with meaning is to attribute a meaning to the modalities of appropriation listed in Article II OST. While it is true that the modality "by any other means" makes the list open ended, the explicitly listed modalities are the best indicator of what can constitute an appropriation in the first place. The fact that the list of examples for a concept is open ended does not, after all, mean that the concept itself has no definable meaning. Once all listed modes of appropriation have been studied and translated into tests for assessing behaviour, they can be compared in the search for common denominators among the modes of appropriation. Such common denominators have the potential to give meaning to the abstract modality of appropriation "by any other means" spelled out at the end of Article II OST. This last step especially will be very important for New Space practices, which might develop

[59] Conducting this research itself is unfortunately far beyond the scope of this Chapter. It is, however, conducted in comprehensive fashion in the author's upcoming PhD thesis.

[60] Alexy 2010: 48.

[61] For appropriation as an act rather than as the result of an act see also Blount 2018: 102. While Blount only refers to a dictionary in his interpretation of appropriation as active conduct, his assessment is ultimately correct. After all it resonates with the ordinary meaning of the term in line with Article 31(1) VCLT.

means to utilise space in the future which have not yet been envisaged. Such practices could be potentially problematic in light of Article II OST without being identical to one of the explicitly mentioned modalities of appropriation.

Giving meaning to the modalities of appropriation in Article II OST may seem a straightforward undertaking at first, but it is in fact quite the opposite. Stating with confidence what a claim of sovereignty is requires a firm understanding of what sovereignty is, how it can be acquired and by whom. What steps need to be undertaken in order to acquire sovereignty? How much control and independence are required? What role is played by recognition by other States? What is the role of law in the acquisition of sovereignty? As sovereignty is an essentially contested[62] concept, answering these questions alone is very demanding. The same is true of the acquisition of property in international law. Does international law even recognise property as a concept[63] or is it true that property is a concept of national law only, as has been written[64] in the past? If international law knows property independent of national laws, how is it acquired? To what extent can modes of property acquisition from national law be considered general principles of law [Article 38(1)(c) of the Statute of the International Court of Justice] for the purposes of international law? What steps does an actor need to undertake to acquire property?

[62] Besson 2011: para. 4.

[63] Consider for example the work of Sprankling 2014.

[64] Harriman 1926: 104, 107. In fact, the collapse of the Iron Curtain in favour of capitalism, the establishment of a globalised world economy with a need to have investments protected reliably, the success of human rights, including the right to property at least in regional human rights treaties, as well as the regulation of global commons show that there is room today for property in international law. See Sprankling 2014: 14–20. Nevertheless, developments in the conditions relevant for property in international law have so far been ignored in space law debates about the acquisition of property over resources. Symptomatic of this is a statement by the International Institute for Space Law's (IISL) Board of Directors from 2009, which held that: "Since there is no territorial jurisdiction in outer space or on celestial bodies, there can be no private ownership of parts thereof, as this would presuppose the existence of a territorial sovereign competent to confer such titles of ownership." This may have been true in the past, but developments in property law and the circumstances shaping property law give plenty of reasons to be considerably more critical.

Answering these questions requires thorough foundational research in international law, not only in the area of space law. However, it is possible to answer them, and without at least attempting to do so, there is no way of interpreting the concept of appropriation comprehensively and of doing justice to the modalities which the text of Article II OST clearly spells out.

"Responsibility" for "national" activities – Basics of attribution revisited

The two New Space dynamics predicted in this Chapter do not only have an impact on the material aspects of the Outer Space Treaty's non-appropriation clause. The advent of a more active and a more privately-controlled world of spacefaring also puts a spotlight on the question of whether and to what extent States bear responsibility for private actors. Article II OST does not rule out just any appropriation of outer space, but only "national" appropriation. "National" is a concept which the Outer Space Treaty picks up again in its Article VI, which deals with the responsibility of States for national activities carried out by private entities *inter alia*.

Under which circumstances space-related private conduct can be attributed to States has important implications for the development of outer space law through subsequent practice,[65] as well as for questions of liability. Space lawyers have recognised this and discussed the attribution of private activity in space alongside the concept of "national" activities. Many seem to agree that all private conduct in space is in one way or another attributable to States, mostly via Article VI OST.[66] Nevertheless, as other observers have pointed out,[67] there is still considerable doubt as to the precise functioning of attribution in outer space law and the degree of responsibility created thereby for States. This is where another implication of New Space dynamics for the development of outer space law comes into play: in order to resolve problematic space law issues,

[65] See Article 31(3)(b) VCLT.

[66] See for example Baca 1993: 1065–1066; Gangale 2009: 37.

[67] Among others see Cheng 1997: 633; von der Dunk 2011: 9.

such as the responsibility for private actors, space law research must widen its horizons and engage with the generally accepted doctrines of international law – in this case the doctrine of attribution.

When the Outer Space Treaty was concluded, the Draft Articles on the Responsibility of States for Internationally Wrongful Acts (ARSIWA) compiled by the International Law Commission (ILC) had yet to be formulated, so the debates about attribution in outer space law were mostly not articulated in the vocabulary of attribution that international law uses today. Aside from the vocabulary, however, the normative contents of attributing private conduct to States do not flow from the ARSIWA themselves, but from customary international law, resting on long-standing practices that predate the ARSIWA. This sub-section will make the case that debates about attribution and State responsibility in outer space should return to these established basics of attribution in international law. The reasoning behind this is twofold: for one thing, thinking about attribution and responsibility in terms of general international law will bring space law in line with the international legal system or at least highlight where explanation and justification is required in cases where space law departs from the general law on attribution. Even if one accepted that Article VI OST was *lex specialis* regarding the attribution norms under Articles 4–11 ARSIWA in the sense of Article 55 ARSIWA, awareness of the extent of such speciality would be welcome in terms of legal certainty. For another, approaching the attribution of private conduct in space from a properly understood ARSIWA angle will hopefully prevent some of the graver misunderstandings about attribution that shape the current discourse.

Before engaging with this issue any further, some clarifications on concepts are appropriate. These clarifications concern a) the concept of responsibility; b) the threshold for the attribution of private conduct under international law; and c) the role of jurisdiction for attribution. After clarifying these concepts, the sub-section will point out d) how these general concepts have been misunderstood in the space law discourse about attribution and make the case that it is worthwhile for space lawyers to revisit them.

Responsibility

Article VI OST refers to the "international responsibility" that States bear for "national activities". The concept of responsibility has many meanings in international law. As Volker Röben demonstrated in impressive fashion in 2012, many different meanings of "responsibility" coexist in international law at the same time.[68] These refer *inter alia* to the existence of primary obligations, due diligence and secondary consequences attaching to the violation of primary obligations.[69] Only the latter of these is responsibility in the sense of State responsibility under the ARSIWA and only here does attribution under the law of State responsibility matter. In light of this, the formulation in Article VI OST raises questions as to whether the responsibility mentioned on Article VI OST is really (only) about attribution and State responsibility in the sense of the ARSIWA. That is because the provision refers to responsibility "for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty". Such responsibility is logically directed at ensuring that private actors do not engage in conduct that would conflict with the primary obligations under space law if such conduct were carried out by a State. It is therefore not aimed at treating breaches of primary obligations that have *already occurred* as breaches by States. It is a responsibility aimed at *preventing* breaches of law rather than one *incurred by* breaches of the law. In consequence, if a private entity for which a State bears responsibility under Article VI OST engages in conduct contrary to what the Outer Space Treaty requires, the legal consequence is that the responsible State breaches Article VI OST. Unless the requirements for attribution are met, the consequence is generally *not* that the State in question has itself, through the attributable conduct of a private entity, acted contrary to a substantive provision of the Outer Space Treaty. This is the consequence of the fundamentally accepted distinction between responsibility in the sense of a primary legal obligation and responsibility in the sense of secondary obligations incurred from breaching primary obligations. While

[68] Röben 2012: 102–104.

[69] Röben 2012: 102–104.

there are also elements of Article VI OST which resonate better with State responsibility in the sense of the secondary level of responsibility (attribution and the ARSIWA in general), the mix of responsibilities in Article VI OST complicates matters and simultaneously demonstrates how important it is to know what concept we are talking about as lawyers. On a sidenote: the vagueness and legal uncertainty deriving from this (perhaps overlooked or simply unintended) mix of responsibilities in Article VI OST raise doubts as to whether such a norm can be considered the more specialised norm in the sense of *lex specialis*.

The threshold for the attribution of private conduct in international law

As a classically State-centred order, attributing the conduct of non-State actors to States is somewhat of an exception[70] and therefore comes with a high threshold. This is especially true of private conduct that is not conducted in the exercise of State authority or in the context of fulfilling State functions, but which is simply "controlled" by a State in the sense of Article 8 ARSIWA. It is in this spirit that the *International Court of Justice's* (ICJ) finding in its *Nicaragua*[71] judgment must be understood. In this judgment the Court established that the control-based attribution of private conduct to a State in the sense of Article 8 ARSIWA generally requires that a State effectively controls, instructs or directs the concrete conduct of a non-State entity. This was also upheld in the ICJ's *Genocide* judgment.[72] All in all, this threshold is relatively high and difficult to establish in practice.[73] This is a conclusion that is ultimately also shared by the *ILC* in its commentaries on Article 8 ARSIWA.[74]

70 International Law Commission 2001: 47, Commentary 1 to Article 8 ARSIWA.

71 See the holding paragraphs for what was necessary to attribute private conduct in International Court of Justice 1986: 146.

72 International Court of Justice 2007: 208.

73 Talmon 2009: 503.

74 International Law Commission 2001: 47, Commentaries 1 and 3 to Article 8 ARSIWA.

In contrast, the so-called "overall control" test, originally established by the *International Criminal Tribunal for the Former Yugoslavia* in the context of individual criminal responsibility[75] was rejected. This test has been misinterpreted as applying to attribution in the context of State responsibility and holds that conduct is attributable to a State when the State controls the overall circumstances under which private conduct occurs, but not the individual conduct itself. The *ICJ* explicitly rejected this test as a basis for attribution in international law because it

> "has the major drawback of broadening the scope of State responsibility well beyond the fundamental principle governing the law of international responsibility: a State is responsible only for its own conduct, that is to say the conduct of persons acting, on whatever basis, on its behalf.
>
> [...]
>
> In this regard the "overall control" test is unsuitable, for it stretches too far, almost to breaking point, the connection which must exist between the conduct of a State's organs and its international responsibility."[76]

The role of jurisdiction for attribution

As will be shown in what follows, jurisdiction plays no role in the attribution of conduct to a State under international law. Jurisdiction and attribution are, in fact, unrelated concepts. The tendency of space lawyers to seek to establish a connection between these two concepts is thus problematic.

Similarly to the concept of responsibility, the notion of jurisdiction has several distinct meanings in international law.[77] It can, first, relate to a court's competence to hear and decide a case. Second, it can relate to a State's competence to make and enforce rules for its territory and nationals. Third, it can relate

[75] International Criminal Tribunal for the Former Yugoslavia 1999: 58–59.

[76] International Court of Justice 2007: 210.

[77] Extremely instructive on this matter – even far beyond a human rights context – is Milanović 2008.

to the effective control over individuals as a basis for the existence of primary human rights obligations.[78] In a nutshell, none of these three meanings have anything to do with the attribution of private conduct to a State. The second meaning of jurisdiction concerns the authority States have to govern private entities. The third meaning concerns which primary obligations States have towards individuals under human rights law.

Therefore, when it comes to jurisdiction, the focus is not on attribution, nor is it on private entities acting on behalf of the State. The only similarity between jurisdiction and attribution under Article 8 ARSIWA is this: effective control over an individual's capacity to enjoy human rights is required to establish a State's jurisdiction-based obligations in a human rights context [cf. Article 2(1) of the International Covenant on Civil and Political Rights] and effective control is also required for attribution under Article 8 ARSIWA. This does not, however, mean that the jurisdiction in the form of effective control referred to in the context of human rights law is a factor in terms of attribution, as the contexts in which effective control is exercised are different.[79]

Similarly, a State's jurisdiction over its territory and nationals is not to be confused with the considerations of attribution. If at all, this sort of jurisdiction comes with responsibility in the sense of obligations *towards* those under it. Similarly, private ships flying the flag of a State are also not attributed to that State, even though it has jurisdiction over the ship according to Article 92(1) UNCLOS.[80]

Another concept that is linked to this meaning of jurisdiction is that of the obligations of due diligence: a State must ensure that violations of international law do not emanate from its sphere of jurisdiction. If a State fails to exercise this due diligence, it is a *direct* violation of the State's international (due diligence) obligations. It does not, however, make the unlawful conduct emanating from

[78] See Article 2(1) of the International Covenant on Civil and Political Rights.

[79] Milanović 2008: 436–448.

[80] Although it should also be mentioned that the Flag State system is not transferrable to space objects, see Sprankling 2014: 194.

its sphere of jurisdiction, such as from its territory, *attributable* to the State in terms of State responsibility under the ARSIWA.[81]

The necessity of stronger awareness regarding attribution basics in space law

Having reviewed the basics of attribution in international law – of which outer space law is part and parcel – many arguments about the attribution of private actors in space to States should cause a certain degree of discomfort in lawyers. It becomes evident that many of these arguments clash with fundamental considerations of State responsibility. It is worth emphasising again that the reason for this is not to criticise the work of individual authors, but to demonstrate that the discipline of space law as such is prone to misunderstanding some of the concepts of general international law, and this is a situation which needs to be changed.

Contrary to the high threshold for the attribution of private conduct to States in international law, space lawyers have repeatedly suggested that the attribution of private conduct under space law is not the exception, but the norm.[82] Some scholars erroneously argue, without providing suitable grounds or references, that the duty in Article VI OST to continuously supervise private actors makes their conduct attributable under Article 11 ARSIWA, which concerns adopting private conduct as a State's own.[83] Neither the ILC's commentary on Article 11 ARSIWA nor the international jurisprudence in which attribution via Article 11 ARSIWA was discussed support such an argument in the slightest. One reason for this is that mere supervision does not *adopt* the supervised conduct as a State's own. Another reason is that Article 11 ARSIWA is about subsequent or retroactive attribution,[84] while the authorisation of private conduct which Article VI OST refers to

81 Sprankling 2014: 442; International Court of Justice 2007: 220–226.
82 For example Baca 1993: 1065–1066; E. Pellander in SichTRaum 2021: 32:51–33:03.
83 Blount–Robinson 2016: 167.
84 International Law Commission 2001: 52, Commentary 1 to Article 11 ARSIWA.

should logically happen *before* anything is launched to or done in outer space by a private entity. A useful analysis of attribution and space law was written by Frans von der Dunk in 2011. His article deserves praise because it recognises that attribution arguments for space law contradict the way that attribution normally works in international law[85] and because in some parts it employs a critical analytical perspective[86] on the arguments presented. Unfortunately, however, this article uncritically discusses jurisdiction as a basis for attribution under international law.[87]

It is also unfortunate how the authors of MILAMOS, all of whom are well-renowned international space lawyers, have restated what "national" activities are. In rule 102 of MILAMOS, the authors created a list of activities that are to be considered "national" under space law *de lege lata*.[88] In doing so, they combined the activities of a State with those of entities under the jurisdiction of a state with those attributable to a State.[89] While it was sensible of them to keep the categories of jurisdiction and attribution separate in their restatement of national activities, they squandered an opportunity to differentiate between the implications of and responsibility incurred under each of these activities.[90] After all, Article VI OST establishes States' "responsibility" for national activities without differentiating between the possible responsibilities that could be incurred by each category of national activity. However, differentiating between due diligence, State responsibility under the ARSIWA and responsibility towards entities under a State's jurisdiction is necessary under international law: both from the perspective of applying the law correctly and from that of ensuring legal certainty.

Taking the different concepts of international law which are mixed up in Article VI OST seriously and distinguishing between them is necessary to come

[85] Von der Dunk 2011: 9.
[86] Von der Dunk 2011: 9–14.
[87] Von der Dunk 2011: 14–17.
[88] Jakhu–Freeland 2022: 4, 9.
[89] Jakhu–Freeland 2022: 9.
[90] Bertamini 2022.

to a doctrinally sound answer to the question of which type of national activities the "national appropriation" in Article II OST is concerned with. It is also directly relevant to the question of which behaviour in outer space is relevant in terms of *State* practice, especially in light of the increasing privatisation of spacefaring. The attribution of non-State actors in space will have to be critically reassessed in the future. Considering the high threshold of effective control for attribution and the fact that the remoteness of outer space makes particularly difficult to properly supervise any conduct in space with the technological means that are currently available, new bases for attribution may need to be considered, if the attribution of private actors in space is indeed intended to be a regular affair.

In essence, the takeaway from this Section is that space lawyers need to remember the basics of international law in so far as they relate to space law. From this point on, existing arguments should be critically engaged with. Doing so is essential in order to create new and well-founded interpretations of provisions that still cause confusion almost 60 years after their creation such as Articles II and VI OST. Equally importantly, it is also necessary to formulate convincing arguments to the effect that space law *consciously* does things differently from general international law. Otherwise, such arguments are difficult to distinguish from simply misunderstanding international law.

CONCLUSIONS AND REFLECTIONS – TAKING THE DEVELOPMENT OF SPACE LAW SERIOUSLY

In light of the emerging New Space dynamics, the international law of outer space is at a crossroads. The "practicalisation" and privatisation of spacefaring have two major implications for the development of international outer space law. The first of these emphasises the interplay of international law(-making) and non-State actors.

Traditionally, non-State actors do not play a role in the development of international law. Their practice does not contribute to the emergence of customary

law, for example.[91] However, in the wake of a surging private space economy where private actors are likely to create the most traffic in space, their practice is likely to shape the reality of spacefaring. This is something that international (space) law cannot ignore, and represents an opportunity to ponder the genesis of international law norms.

Despite its general focus on States, international law is not blind towards the practices and impacts of private entities. Consider, for example, the field of business and human rights.[92] Even though multinational corporations are not directly bound by human rights law, they have a great influence on the enjoyment of human rights in practice, which States should address in their domestic regulation in order to fulfil their international obligations. This realisation has led to the *UN Guiding Principles on Business and Human Rights*. International law is also known to incorporate reference standards for conduct that were not developed by States. For example, the so-called *lex mercatoria* as a body of norms governing transnational business can be incorporated[93] into international dispute resolution via provisions such as Article 10 of the Inter-American Convention on the Law Applicable to International Contracts.[94] It is also likely that the long history of maritime navigation, which significantly predates the existence of States, has shaped some of the rules of international maritime law of today, for example in the generally accepted international rules or standards that UNCLOS refers to in various articles.

Even if we feel that private entities in space should not contribute to establishing practical standards which might crystallise into law, their conduct may still influence the development of space law in two ways. In so far as private conduct is attributable to States, this conduct can potentially be considered

[91] International Law Commission 2018a: 130, Commentary 1 to Conclusion 4 and 132, Commentary 8 to Conclusion 4.

[92] Office of the High Commissioner for Human Rights 2011.

[93] Schill 2011: 20–23.

[94] Not registered with the UN Secretariat.

State practice,[95] which is relevant both for the interpretation of existing space law and for the development of new customary law. However, it is not only attributable conduct which may be relevant. Since States are under an obligation to authorise and supervise national space activities, even when conducted by private entities, pursuant to Article VI OST, they are in a position to react to the plans and practices of private space actors. How States will govern the space actors under their jurisdiction through national space laws but also through concrete authorisations or rejections of missions is immediately relevant practice for the development of space law.[96] Space lawyers should thus pay close attention to the passing of national space legislation and regulative practice as well as to the emerging practices of all actors in outer space.

The second major implication of the "practicalisation" and privatisation of spacefaring is that it is likely to push many established doctrines of space law to a breaking point. As space lawyers, we have two options for dealing with this situation. We can either stick to the arguments that we know, overlook their inadequacies, and blame the law itself in a cry for new international regulation,[97] regardless of how unrealistic such a new regime may be. Or we can embrace the idea that there is room to improve the understanding and practicality of the space law that we have by engaging with it diligently through the lens of general international law. Accepting that space law is a part of international law means that a good space lawyer must first be a good general international lawyer.

This Chapter argues in favour of the second option. It does so not only because the appearance of new space law does not simply get rid of the existing space law, which we will still have to deal with in some way. Also, and perhaps most importantly, this argument rests on the author's strong conviction that the Outer Space Treaty, in particular, is a beautifully idealistic, relevant and

[95] This is at least what the terminology "endorsement" in International Law Commission 2018a: 132, Commentary 8 to Conclusion 4 suggests. After all, endorsement of private conduct is also the anchor for attribution in Article 11 ARSIWA.

[96] International Law Commission 2018: 132, Commentary 8 to Conclusion 4.

[97] See for example Pershing 2019: 170–178; Tronchetti 2009.

optimistic piece of international law, which deserves to be taken seriously. To take space law seriously means to engage critically with the arguments that the discourse has produced so far.[98] Making apologetic references instead to a "space law specific understanding" of concepts would be the easy way out, but it would be the wrong way. While space law certainly modifies certain concepts of international law by restricting what would otherwise be part of States' sovereignty, this Chapter has shown that the line between a space law-specific understanding of these concepts and misunderstanding them altogether is slim. After all, some of the critiques of established arguments and their reproduction point out that not only do they clash with the basics of international law, but to an extent they are incompatible with techniques of legal argumentation in general.[99]

The Chapter has demonstrated what needs to be improved in the space law discourse and suggested avenues for research which might make a difference. While its focus lay on Articles II and VI OST, its general position is abstract from these two articles and can also be transferred to other provisions of space law. A critical generalist international law perspective will benefit any space law discourse and help to steer the development of space law in a direction which can take it out of the academic niche in which it has existed for too long.

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98 Bertamini 2023; Bertamini 2022.

99 Particularly the application of Article II OST without actually subsuming facts to its requirements.

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