International Responsibility for Activities in Outer Space in the Modern Space Age

Article VI of the Outer Space Treaty in the context of international space law and public international law

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This thesis analyses the legal regime for international responsibility for activities in outer space, and with that, its central provision under international space law: Article VI of the Outer Space Treaty. The topic is assessed from the angle of public international law, and interprets Article VI of the Outer Space Treaty as an integral part of the international legal system. The analysis takes recourse to international responsibility law and the law of treaties. The result is a legal assessment of Article VI of the Outer Space Treaty that extends to States' obligations in respect of space activities carried out by their non-governmental entities – a perspective of particular relevance at a time of considerable changes in the space industry, referred to here as the modern space age.

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MADE IN SWEDEN

To the space lawyers out there

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Abstract

This dissertation is set in the context of the modern space age, which is characterised by an overall increase in space activities on a global scale and a relative increase in private and commercial space activities. Space has become a business case.

This study analyses the principle of international responsibility for activities in outer space as mainly codified in Article VI of the Outer Space Treaty. The research differentiates four central aspects that, combined, provide a thorough and extensive assessment of the research topic. The study concludes that:

(5) International space law is a special field of public international law and can best be analysed by taking into account relevant norms of public international law;

(6) The legal regime of international responsibility for activities in outer space draws on norms of international space law, norms of international responsibility law, and norms of the law of treaties. Its conception closely resembles the conception of international responsibility under international responsibility law, however, with the crucial difference that it applies a deviating regime of rules of attribution: States can incur international responsibility for all 'national activities' carried out by non-governmental entities under their jurisdiction;

(7) International responsibility for activities in outer space must be considered in relation to other central concepts of international space law such as the regime on liability or the framework on registration of space objects. In this study, the assessment is limited to the elements of 'launching State' and 'State of registry'. The analysis uses a differentiation between static and dynamic norms and assesses their interrelation with Article VI of the Treaty;

(8) The activities of non-State actors are regulated by Article VI Sentence 2 of the Treaty, which constitutes a primary norm of international law. It requires these activities to receive 'authorisation' and 'continuing supervision' by the 'appropriate State party'. Interpretation of these elements clarifies the international legal obligations that State parties to the Outer Space Treaty are under by virtue of Article VI Sentence 2.

This study provides methodologies for interpreting international responsibility for activities in outer space in a contemporary context. The analysis shows that the legal regime for international responsibility for activities in outer space remains applicable and relevant, and stands ready to serve as a legal framework for the years to come. Given the characteristic of international responsibility as enforcement mechanism under international (space) law, this finding is of considerable importance.

Abbreviations

Art.	Article
Arts.	Articles
CLEP	Chinese Lunar Exploration Programme (Chang'e Project)
CNSA	China National Space Administration
COPUOS	Committee on the Peaceful Uses of Outer Space
cp.	Compare
CUP	Cambridge University Press
Doc.	Document
ECHR	European Convention on Human Rights
ECtHR	European Court of Human Rights
ESA	European Space Agency
ESPI	European Space Policy Institute
i.a.	inter alia
ibid.	ibidem
ICJ	International Court of Justice
ICJ Statute	Statute of the International Court of Justice
ICTY	International Criminal Tribunal for the former Yugoslavia
IGA	International Intergovernmental Agreement (ISS)
ILA	International Law Association
ILC	International Law Commission
ILEX	Indian Lunar Exploration Programme
ISRO	Indian Space Research Organisation
ISS	International Space Station
ITU	International Telecommunication Union
JAXA	Japan Aerospace Exploration Agency
e.g.	exempli gratia

Legal Principles Declaration	Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space
Liability Convention	Convention on International Liability for Damage Caused by Space Objects
GA	General Assembly
km	Kilometres
Moon Agreement	Agreement Governing the Activities of States on the Moon and Other Celestial Bodies
MSL	Mean Sea Level
NASA	National Aeronautics and Space Administration
OUP	Oxford University Press
Outer Space Treaty	Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies
p.	page(s)
para.	paragraph
PCA	Permanent Court of Arbitration
PCIJ	Permanent Court of International Justice
PSU	Public Sector Untertaking
Registration Convention	Convention on Registration of Objects Launched into Outer Space
Rescue and Return Agreement	Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space
TSR	The Space Report
UN	United Nations
UN Charter	Charter of the United Nations
UK	United Kingdom of Great Britain and Ireland
United Kingdom	United Kingdom of Great Britain and Ireland
United States	United States of America
US	United States of America

USD	United States Dollar
Vienna Convention	Vienna Convention on the Law of Treaties
v.	versus
WTO	World Trade Organization

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Scarlet O’Donnell

27 October 2023

Chapter 1 – Foundations of the research

1.1. Introduction and overview

The space industry is currently changing, with privatisation, commercialisation, and an overall increase in activities and operations. Changes affect major sectors of the space industry, such as space exploration, space science, satellite manufacturing, support ground equipment manufacturing, satellite operations, and the launch industry. Global expenditure and predictions on a future worth of the industry are increasing.[1] Drawing from those developments in the space industry, the aim of this study is to suggest a legal interpretation that would be capable, on one hand, to tackle current challenges involving State and non-State actors in outer space activities and, on the other, to preserve the principles of international space law as codified in relevant legal instruments. This study presupposes that international space law forms part of international law. Its aim is to determine the interpretation that best fits with the idea of space law as an integral part of the international legal system. At its core, it therefore aims at a coherence of the international legal system, which, for ease of reference, is referred to in the following text as a 'coherent' interpretation of international responsibility for activities in outer space.[2] This purpose is highly valuable in a context in which the debate between domestic space lawyers and international space lawyers operating in the field can lead to radically different positions on how space activities are normatively restrained and 'who bears responsibility for what' when carrying out activities in outer space.

International space law as a field of international law is attracting increasing attention among international lawyers. In part, this is due to the surge of national space programmes by a number of States around the globe, the rising activities of non-State actors performing commercial activities in outer space, and the substantial

[1] The Space Report 2022 reported the value of the space economy at $447 billion in 2021 and the pace of growth was expected to accelerate in 2022; see: 'TSR Home' (*The Space Report*) <https://www.thespacereport.org/> accessed 27 October 2023.

[2] While not aiming at a 'correct' interpretation in the sense of a value judgement of the outcome, I wish to apply the methodologies offered by international law like a 'craft' – therewith, this research offers a 'justified' and 'coherent' interpretation of international responsibility for activities in outer space, which takes as its point of origin the perspective of international law.

technological advancements of space technology. There are various denominations referring to this evolving landscape of space activities, particularly the shift toward increased commercialisation, innovation, and new business models; such as 'NewSpace' or 'Space 2.0'.[3] In broad strokes, those developments consist of an increase in actors involved in space activities and the amount of space activities in total, an increase in the share of non-governmental actors among all space actors (for instance, privatisation), and an increase in the commercialisation of space activities.

These changes pose new questions regarding the application of the existing body of international space law, which was mainly laid down in the 1960s and 1970s. They arguably produce a lasting influence on the interpretation of international space law, as the legal issues that arise contemporarily are in direct relation to technological advancements. Drawing on this, the present study focuses on Article VI of the *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* (Outer Space Treaty) as a pivotal provision governing international responsibility for outer space activities.[4] For the moment, it suffices to recall the text of Article VI of the Outer Space Treaty, in order to preliminarily illustrate the existing ambiguities surrounding its legal interpretation and the potential effectiveness of Article VI in relation to the modern space age:

> States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.

Indeed, due to the wording in Article VI of the Outer Space Treaty, and its direct relevance for non-governmental activities in outer space, an analysis of international responsibility for activities in outer space cannot be undertaken without prior

[3] See in more detail Chapter 2 *State and non-State sector developments in the modern space age*.

[4] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (18 UST 2410; TIAS 6347; 610 UNTS 205); adoption by the General Assembly: 19 December 1966 (Resolution 2222 (XXI)); opened for signature: 27 January 1967 in London, Moscow, and Washington, D.C.; entry into force: 10 October 1967; depositaries: Russian Federation, United Kingdom of Great Britain and Northern Ireland, and United States of America.

consideration of the changes in the current scenery of space activities and space actors. These changes are presented in Chapter 2 of the present study.

When addressing the legal implications of the provision, several relevant aspects of Article VI of the Outer Space Treaty come to the fore. The first of these is that Article VI of the Outer Space Treaty as a provision of international space law raises the question of how international space law relates to public international law. The second concern is how to coherently interpret the notion of international responsibility for activities in outer space from the perspective of international law. The third aspect considers Article VI of the Outer Space Treaty within the framework of international space law: it concerns the relationship of international responsibility for activities in outer space with other central concepts of international space law. Fourthly and lastly, Article VI of the Outer Space Treaty sets forth legal obligations for States that have non-governmental entities carry out space activities under their jurisdictions. As non-governmental entities are not traditional subjects of international law, States often impose obligations on them by way of domestic legislation. Clarifying the content of States' obligations enables us to gain a comprehensive picture of Article VI of the Outer Space Treaty. Below, these four aspects are considered in more detail and connected to the structure of this study.

The research undertaken in the present study can be subsumed under an overarching research question, namely how Article VI of the Outer Space Treaty can be interpreted in a way that best fits with the idea of space law as an integral part of the international legal system in the modern space age. As mentioned above, the research question summarises this aim as 'coherent' interpretation. This overarching research question is broken up into four individual questions, which flow from the aspects of the provision as highlighted here. Each of these questions constitutes the foundation for one chapter in the present study. Their analyses build on each other and enable an assessment of the overarching research question in the final Chapter 7.

In considering the *first* of the above-mentioned aspects, it is necessary to assess the interrelationship between international space law and public international law. The determination of the applicable law of international responsibility for activities in outer space depends on international space law and public international law, as international space law is a field of international law. This follows from Article III of the Outer Space Treaty, which declares that international law is applicable to the legal framework of the Treaty.[5]

The primary sources of international law are (1) codified rules such as in treaties and conventions, (2) international customary law, and (3) general principles of law.[6] As part of the analysis here, it is therefore necessary to determine the sources of

[5] Art. III Outer Space Treaty.

[6] Art. 38 of the *Statute of the International Court of Justice* (ICJ Statute) 1946.

international space law and to set the latter in relation to international law. It is beneficial in this context to assess the nature of the principle of international responsibility under public international law (i.e., international responsibility law) and to assert its role within the international legal order, as in the view of the present study, international responsibility constitutes a defining feature of international law.

The relationship between international space law and public international law is also influenced by the applicability of general principles of law. General principles of law are currently under consideration by the International Law Commission (ILC) and are understood to apply to other norms of international law in a general way. Their consideration in the present context attends to an assessment in how far international space law relies on its own rules and in how far public international law is relevant for its assessment. Moreover, reference to the principle of *lex specialis* also enables us to consider the relationship between international space law and public international law in the context of fragmentation of international law.[7] This discourse has been going on for some time, and specifically gained momentum in 2006 with the conclusion of the work of the ILC on *Fragmentation of international law: Difficulties Arising from the Diversification and Expansion of International Law* (Working Group on Fragmentation of International Law).[8]

Lex specialis in the international legal context is used in different meanings. Sometimes, it refers to a way to resolve a conflict of legal norms. In another understanding, it can describe the relationship between legal norms free of the existence of a conflict of norms. This latter view was adopted by the ILC in its work on fragmentation of international law, and is also the sense in which the *lex specialis* principle is understood in the present study. The underlying assumption is that the various fields of international law are interconnected, and that while international space law is the 'special' law to apply to activities in outer space, other rules or norms of international law are needed to holistically ('coherently') determine the applicable legal regime. Ultimately, the theoretical framework on fragmentation of international law provides a tool to assess whether international space law can be considered a special field of law – or what is known as 'special regime' or 'self-contained regime' in the context of fragmentation. By assessing international responsibility for activities in outer space in light of the nature and role of international responsibility in international law, general principles of law, and fragmentation, this study contributes to the discourse on the relationship between *lex specialis* and *lex generalis* in respect of international space law.

[7] The debate on fragmentation of international law was sparked in the 1990s and also discussed at the ILC. The then-perceptible trend of fields of international law developing into special areas caused concern about international law as a system.

[8] The ILC Working Group on Fragmentation of International Law concluded its work in 2006 with the adoption of its consolidated report: UN Doc. A/CN.4/L.681 and Add.1, ILC, 'Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law, Report of the Study Group of the International Law Commission' 13 April 2006.

In addition, positioning the research within the above-mentioned context enables us to address questions that concern the relationship between fields of international law, which are relevant not only for space lawyers, but for international lawyers more generally. Such questions include: how can the *lex specialis* principle be applied in the assessment of a relationship between different fields of international law? What role does the *lex specialis* principle play with regard to the interpretation of treaties? Can a field of international law ever be truly independent of other fields of international law? Can the application of the *lex specialis* principle under a special regime be informed by its application in other special regimes (analogy)? Does the development towards an increasingly more specialised and diversified international law pose a threat to the unity of the international legal system? As the present study is limited to and specifically addresses international responsibility for activities in outer space, it is beyond its scope to formulate general answers to these questions or unresolved issues: they concern a wider assessment and would require the analysis of the interrelationship between additional fields of international law. The results of this study, however, could bear relevance for other norms or special regimes of public international law by way of analogy.[9] This first aspect of the research is broached in research question 1 and analysed in Chapter 3 of the present study. The findings concerning the interrelationship between international space law and public international law offer a foundation for the following legal analysis of aspects of Article VI of the Outer Space Treaty in the ensuing chapters.

The *second* relevant aspect is that Article VI of the Outer Space Treaty as the central provision under international space law to address international responsibility for activities in outer space, raises the question of how the legal regime of international responsibility for activities in outer space is to be interpreted coherently. Which other relevant norms under international space law address international responsibility for activities in outer space? How is international responsibility for activities in outer space interpreted coherently, taking into account other relevant fields of international law? Of central importance here are international responsibility law and international treaty law as fields of public international law.

International space law is a comparatively young field of international law, and is confronted with and driven by the immense changes taking place in space science and technology. Those changes regularly raise new questions as to how certain rules of international space law should be understood and applied, as – in contrast to the modernisation of technology – most of the legal regulation of outer space dates from the beginning of the space age. The codification efforts of international space law were initiated in the late 1950s, sparked by the launch of Sputnik-1 – humankind's first artificial satellite launched into Earth orbit – by the Union of Soviet Socialist

[9] These questions are revisited in the final Chapter 7 of this study regarding their assessment under international space law.

Republics (Soviet Union) in 1957.[10] Early codification negotiations concentrated on the formulation of general legal principles that could serve as a guide to conducting activities in outer space[11] and culminated in the first treaty on international space law – the Outer Space Treaty – in 1967. Six decades later, these principles still constitute the basis for activities in outer space, and the Outer Space Treaty often is referred to as a 'principles treaty'[12] or the *Magna Carta* of international space law.[13]

In addition to political motivation, the formulation of the foundational principles of international space law at the dawn of the space age was influenced by the considerable disparity between the outer space environment and terrestrial terrain. The ultra-hazardous risk of venturing into outer space was, and still is, balanced against the benefits that humanity may gain from space activities (i.e., space exploration and utilisation of outer space). The appreciation of the ultra-hazardousness of the space environment is reflected in the international legal regime applicable to activities in outer space, which showcases in several instances a more direct or stricter approach than legal regulation of comparable areas on Earth.

The most specific expression of increased standards can be found in the international accountability regime applicable to activities carried out in outer space, which goes beyond the usual standards of accountability in other – terrestrial – fields of international law. 'Accountability' in this study is used as an umbrella term for the legal concepts of international responsibility and international liability, as both

[10] Sputnik-1 (Russian: Спу́тник-1), Earth's first artificial satellite, was launched on 4 October 1957 under the Soviet space programme and heralded the space age; see: 'Sputnik 1' (*Encyclopedia Astronautica*) <http://www.astronautix.com/s/sputnik1.html> accessed 27 October 2023. This event created global interest in a legal agreement on basic parameters to guide activities in outer space, whereas before, (international) space law had been pursued by select individuals only. See: Chapter 4 in this study, Section *4.2.1. The* corpus juris spatialis*: drafting history and general features*; Stephen E Doyle, *A Concise History of Space Law: 1910-2009, Nandasiri Jasentuliyana Keynote Lecture during the 53rd IISL Colloquium on the Law of Outer Space 2010* (International Institute of Space Law 2011) in: Mark Sundahl and V Gopalakrishnan, *New Perspectives on Space Law: Proceedings of the 53rd IISL Colloquium on the Law of Outer Space, Young Scholars Session* (International Institute of Space Law 2011) p. 1-5.

[11] See, principally: General Assembly Resolution A/RES/18/1962, 1962 (XVIII), Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, 13 December 1963 (Legal Principles Declaration).

[12] The Outer Space Treaty codifies general principles, some of which were elaborated later on in separate conventions and agreements. See also already the title of the Outer Space Treaty referring to principles applicable to activities in outer space: *Treaty on* Principles *Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* (emphasis added).

[13] The idea of separating principles applicable to activities in outer space and more specific legal regulation of obligations relating to space faring States was already formulated by the Soviet Union in 1962; see: Bin Cheng, 'The 1967 Space Treaty' in: Bin Cheng, *Studies in International Space Law* (Clarendon Press 1997) p. 218; Bin Cheng, 'The United Nations and Outer Space' (1961) 14 Current Legal Problems p. 247-249; Stephan Hobe, 'Historical Background' in: Stephan Hobe, Bernhard Schmidt-Tedd, Kai-Uwe Schrogl and Gérardine Goh Escolar (asst. ed), *Cologne Commentary on Space Law Volume I; CoCoSL* (Heymanns 2009) p. 14.

notions aim to formulate rules addressing the 'righting' of a transpired 'wrong' – in the sense of an internationally wrongful act for establishing international responsibility – or 'damage' – in the sense of international liability. However, it is important to note that while the two legal concepts, international responsibility and international liability, share certain traits and can be grouped together under the umbrella term accountability, they also display differences in their conceptualisation. International liability under current public international law is understood as resulting from damage while carrying out an activity not prohibited under international law. The resulting injury or damage creates a legal obligation of compensation, but the legality of the activity itself which initially led to the damage is not contested.

International responsibility under public international law (i.e., international responsibility law) results from an internationally wrongful act under international law – which requires the breach of an applicable international legal obligation as well as its attribution to an international legal person: classically, either a State or an international organisation. Attribution of conduct to an international actor – one or more States or international organisations – is guided by the rules on attribution. While damage is a prerequisite for international liability, the existence of damage is not required under international responsibility law for the finding of international responsibility.[14] It may, however, play a role with regard to the restitution of the transpired wrong.[15] International responsibility law is primarily reflected in the ILC's *Articles on Responsibility of States for Internationally Wrongful Acts* (Articles on State Responsibility, or sometimes abbreviated as ARSIWA)[16] and its *Articles on the Responsibility of International Organizations* (Articles on Responsibility of International Organisations, or sometimes, ARIO or DARIO).[17]

The conception of international responsibility and international liability under international space law is slightly different from their public international law 'general' counterparts, as both concepts allow for a stricter form when applied to

[14] 'International responsibility law' in this study is used interchangeably with 'law of international responsibility', and also 'general international law of responsibility'. All refer to the legal framework for international responsibility, including (international) responsibility of States (State responsibility law/(international) law of State responsibility), of international organisations, and potentially, of private actors. Since 'general international law' is sometimes used as a reference to customary international law, and most of the codification of international responsibility law is viewed as having reached the status of customary international law, 'general' international law of State responsibility corresponds to both its customary international law nature and also, its general relevance for other fields of public international law.

[15] The understanding of both international responsibility and international liability in the present study builds on the work of the ILC.

[16] General Assembly Resolution A/RES/56/83, Responsibility of States for internationally wrongful acts, 12 December 2001.

[17] General Assembly Resolution A/RES/66/100 and annex; Responsibility for International Organizations, 9 December 2011.

activities in outer space. In a nutshell, the international responsibility regime for activities in outer space attributes conduct to States which comprises a wider scope of activities than under international responsibility law. While the conduct of States' organs remains attributable to them under both fields of law, a stricter application becomes apparent with regard to the conduct of non-State actors, whose conduct under general international law may or may not be attributable to the State. As can be seen in Article VI of the Outer Space Treaty, international space law declares activities of *non-governmental entities*[18] attributable to the State *in toto*, whereas international responsibility law requires a sufficiently strong link between the non-State actor (non-governmental entity) and the State or international organisation under whose auspices the non-State activities take place.[19] Similarly to international responsibility for space activities, international liability for damage resulting from objects launched into outer space goes beyond the normal standards of care found in many other areas of international law on Earth, as it establishes a strict liability regime for confined areas.[20] With those augmented standards for both international responsibility and international liability under international space law, the properties of the outer space environment already found a direct translation into the applicable legal regime with the onset of the space age.

Some of the other foundational principles of international space law were elaborated on in subsequent conventions, such as Articles V and VIII of the Outer Space Treaty in the *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space* (Rescue and Return Agreement) of 1968;[21] Article VII of the Outer Space Treaty on international liability in the

[18] Non-governmental entity as terminology used in the Outer Space Treaty here is used to refer to any actor carrying out space activities that is not a State or international (intergovernmental) organisation, and is considered synonymous with non-State actor. For the terminology of non-State actors, non-governmental entities, and private space actors, see: Chapter 2 *State and non-State sector developments in the modern space age.*

[19] Arts. 5-11 Articles on State Responsibility.

[20] Strict liability is awarded for damage caused by a space object on the surface of the Earth or to aircraft in flight; Art. II Liability Convention. See for more details below, e.g., on its conception and the relationship between international responsibility and international liability for space activities Chapter 5 (Section 5.2 *Liability for Space Activities* and Section 5.4 *The concepts of the launching State and the State of registry in relation to international responsibility for activities in outer space*).

[21] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (19 UST 7570; TIAS 6599; 672 UNTS 119); adoption by the General Assembly: 19 December 1967 (Resolution 2345 (XXII); opened for signature: 22 April 1968 in London, Moscow, and Washington, D.C.; entry into force: 3 December 1968; depositaries: Russian Federation, United Kingdom of Great Britain and Northern Ireland, and United States of America. The return of astronauts is based on Art. V Outer Space Treaty, while the return of space objects is based on Arts. V and VIII Outer Space Treaty; see: UNOOSA, 'Rescue and Return Agreement' <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introrescueagreement.html> accessed 27 October 2023. See for a reference to the negotiation history, e.g.: Irmgard Marboe, Julia Neumann, and Kai-Uwe Schrogl, *Rescue and Return Agreement 'Historical Background*

Convention on International Liability for Damage Caused by Space Objects (Liability Convention) of 1972;[22] and Article VIII of the Outer Space Treaty on registration of objects launched into outer space in the *Convention on Registration of Objects Launched into Outer Space* (Registration Convention) of 1975.[23] This is *not* the case for Article VI of the Outer Space Treaty. Some commentators have regretted this;[24] however, this study takes the view that a clarification of Article VI of the Outer Space Treaty through recourse to public international law – to the law of treaties for interpretation, and to international responsibility law for a comprehensive assessment of international responsibility for activities in outer space – leads to a persuasive and conclusive result which can clarify Article VI and serve the finding of international responsibility for activities in outer space appropriately for the foreseeable future. This aspect is the foundation of research question 2 and is analysed in Chapter 4.

With this, we turn to the consequences of the legal assessment of international responsibility for activities in outer space in relation to international space law. *Thirdly*, the legal assessment of international responsibility for activities in outer space, once identified, must be set in context with other central norms of international space law. As, especially, international liability for activities in outer space and the registration of objects launched into outer space are often referred to in relation to Article VI of the Outer Space Treaty in international documents as well as legal commentary, research into the relationship between international responsibility and these principles is useful for international space lawyers. More specifically, this study limits itself to considerations of specific elements of the respective legal frameworks: international liability for damage resulting from space activities hinges on the concept of the 'launching State', which was already included

and Context' in: Stephan Hobe, Bernhard Schmidt-Tedd, Kai-Uwe Schrogl and Peter Stubbe (asst. ed), *Cologne Commentary on Space Law Volume II; CoCoSL* (Heymanns 2013) p. 10.

[22] Convention on International Liability for Damage Caused by Space Objects (24 UST 2389; TIAS 7762; 961 UNTS 187); adoption by the General Assembly: 29 November 1971 (Resolution 2777 (XXVI)); opened for signature: 29 March 1972 in London, Moscow, and Washington, D.C.; entry into force: 1 September 1972; depositaries: Russian Federation, United Kingdom of Great Britain and Northern Ireland, and United States of America. The relationship between the Outer Space Treaty and the Liability Convention were part of the negotiation discussions of the Convention; and the Convention was expressly intended "as a supplementary set of rules designed to expand on the provisions of the [Outer Space Treaty]"; see e.g.: Lesley Jane Smith and Armel Kerrest, 'Liability Convention "Article II (Absolute Liability)"' in: *Cologne Commentary on Space Law Volume II* (n 21) p. 119.

[23] Convention on Registration of Objects Launched into Outer Space (28 UST 695; TIAS 8480; 1023 UNTS 15); adoption by the General Assembly: 12 November 1974 (Resolution 3235 (XXIX)); opened for signature: 14 January 1975 in New York; entry into force: 15 September 1976; depositary: Secretary-General of the United Nations.

[24] See e.g. von der Dunk, analysing "key principles" of Art. VI Outer Space Treaty and concluding as to the "absence of any authoritative guidance" for their interpretation: Frans G von der Dunk (ed), '1. The Origins of Authorisation: Article VI of the Outer Space Treaty and International Space Law', *National Space Legislation in Europe* (Brill Nijhoff 2011) p. 4, 7.

in Article VII of the Outer Space Treaty and later repeated in the Liability Convention. The 'launching State' is crucial, too, for the registration of objects launched into outer space under the Registration Convention: the registering State of such object must be a launching State, but can only be one in case of a multi-party launch. That State hereafter is referred as 'State of registry'. For an encompassing understanding, these two concepts must be set in relation with Article VI of the Outer Space Treaty. This is the foundation of research question 3 and is analysed in Chapter 5.

The *fourth* relevant aspect to be addressed is that Article VI of the Outer Space Treaty not only addresses international responsibility for activities in outer space, but also formulates a legal norm as to how States are to handle the participation of non-governmental space activities conducted under their auspices (primary norm). If aiming for a holistic assessment of the provision, an analysis is required of the legal obligations States parties to the Treaty are under vis-à-vis their non-governmental entities: namely, 'authorisation' and 'continuing supervision' of non-governmental space activities by the 'appropriate State' party to the Treaty. This aspect is the foundation of research question 4 and is analysed in Chapter 6.

The application of public international law to the law of outer space as demonstrated in the present study leads to two findings. The first is that the rules on attribution of conduct are 'special' under international space law, in comparison to international responsibility law – as mentioned above, they formulate a 'stricter' or 'wider' approach to the kind of conduct of non-governmental entities that a State may incur international responsibility for. The second is that the methodology adopted under international responsibility law for the finding of an internationally wrongful act, and therewith, international responsibility, especially as it can be found in the codification instruments of international responsibility law, is of relevance for and can be applied to the finding of international responsibility for activities in outer space.

The four explained relevant aspects of Article VI of the Outer Space Treaty provide a good overview into why and which research is necessary with regard to the provision and the bigger notion of international responsibility for activities in outer space. The present chapter continues with mapping out the structure and foundation of this study. Section 1.2 offers an introduction on Article VI of the Outer Space Treaty as the underlying legal provision that lies at the heart of this study. In Section 1.3, as a necessary connector to the existing literature of the field, the current state of the art is discussed with regard to scholarship on international responsibility for activities in outer space. The section also highlights the contribution of the present study to academia by pointing out the current lack of an all-encompassing or comprehensive analysis of international responsibility for activities in outer space from an international legal perspective (i.e. coherent interpretation), which is all the more needed as international space law constitutes a branch of public international law. Section 1.4 explains the objectives and delimitations of the present research,

while Section 1.5 presents the research questions that constitute its foundation. Section 1.6 sets out the underlying theory and states the chosen methodology for this study. Finally, Section 1.7 provides a short overview of the structure and content of the ensuing chapters.

1.2. Introduction to Article VI Outer Space Treaty

Article VI of the Outer Space Treaty is a crucial provision for international space law. Firstly, by addressing international responsibility for activities in outer space, it addresses the enforcement of international space law, and therefore is relevant for and applicable to *all* (national) space activities. In other words, the link between international responsibility and the remaining body of international space law is the enforceability of the Outer Space Treaty and international law.[25] Secondly, because of the absence of any further clarification of the 'principle' provision in a follow-up convention or other legal instrument, the importance of the 'original' codification of the principle of international responsibility for activities in outer space in this provision is augmented, in contrast to principles of international space law developed in ensuing conventions (for instance, international liability and responsibility for activities in outer space).

Before presenting the text of the provision and its structure in more detail, the distinction of primary and secondary norms of international law is introduced as a tool facilitating a clarification of its composition and structure, and the terminology as used in the present study regarding rules, norms, principles, notions, and concepts is explained.

1.2.1. The distinction of primary and secondary norms

In international law, primary norms are considered norms which regulate certain conduct – be it actions or omissions – and therefore have a direct relationship with the activities of the State or international organisation which is legally bound by them. Secondary norms, in contrast, are norms that address these initially existing, primary, norms. This concerns for instance the law of treaties, as a body of secondary norms addressing how primary norms should be interpreted. Furthermore, international responsibility law is a major field of law of secondary norms, which addresses the way in which it should be proceeded if primary norms

[25] Lesley Jane Smith and Armel Kerrest, 'Outer Space Treaty Article VII' in: *Cologne Commentary on Space Law Volume I* (n 13).

have been breached (for their norm interpretation, the law of treaties will be relevant once again),[26] and what the consequences of that breach (or the breaches) are.[27] Both fields of law can be understood as together, forming the 'law of international obligations'.[28] With respect to their relationship, a temporal characteristic has been observed:

> In a sense, the law of treaties is the start of the story, i.e. the place where the rules are created; and the Law of State responsibility is the end of the story, where, at the other extreme of the spectrum, the fate of the rules created though the sources is decided once they are breached.[29]

The obligation to make reparations can be understood as a second-level legal obligation, which builds on the foundation of first-level obligations existing at the onset.[30] This characteristic clarifies the terminological choice of distinguishing 'primary' and 'secondary' obligations.

There are limits to the conceptual distinction of norms in primary and secondary ones. For instance, if a legal obligation to make reparation is breached, the originally secondary norm becomes the primary norm that is being breached, and a new secondary obligation is created. However, used as a tool, the distinction can assist the analysis of international responsibility for activities in outer space as it offers a conceptual way to clarify the contents of Article VI of the Outer Space Treaty below. Anticipating the remarks in the later section on theory of international law in the present chapter, it may be pointed out here that some scholars understand the applicability of international responsibility law as a defining feature that determines

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[26] See e.g.: ICJ, *Case Concerning the Gabčíkovo-Nagymaros Project* (Hungary v. Slovakia) Judgment 1997 ICJ Reports 7 (25 September).

[27] Please note that the distinction between primary and secondary norms is not water-tight. This is also true for the law of State responsibility: while most of the rules are considered to be secondary, some are commonly viewed as primary norms (e.g. Art. 16 Articles on State Responsibility on complicity ('aid or assistance'); also Art. 21 of the Articles on self-defence is usually understood as a primary provision and, even, reference to its own field of law: international law on self-defence); see e.g.: James Crawford, *The International Law Commissions' Articles on State Responsibility – Introduction, Text and Commentaries* (CUP 2002) on Arts. 16 and 21 Articles on State Responsibility, p. 145 and p. 166; Vladyslav Lanovoy, *Complicity and its Limits in the Law of International Responsibility* (Hart Publishing 2016) on Art. 16 Articles on State Responsibility. Also, countermeasures to internationally wrongful acts have received attention in this regard, as they can be considered as a circumstance precluding wrongfulness in response to an internationally wrongful act or as a consequence of the finding of international responsibility; see e.g.: Robert Kolb, *The International Law of State Responsibility* (Edward Elgar Publishing 2017) p. 120-121 and 173-184. Ultimately, the assessment of a legal norm as primary or secondary has to be made on an individual basis, and as is presented below, can even be different for every sentence in a provision (cp.: Art. VI Outer Space Treaty Sentences 1 and 3 secondary, Sentence 2 primary).

[28] Kolb (n 27) p. vii.

[29] Ibid.

[30] See also: ibid. p. 7.

international law.[31] The development of the conceptualisation of the distinction of primary and secondary norms and its application in international law and international space law is more closely considered in Chapter 3 of the present study.

1.2.2. The use of rules, norms, principles, notions, and concepts in the present study

A preliminary note should be made on the use of '(legal) rules', 'norms', 'legal principles', 'notions', and '(legal) concepts' in the present study. As these terms are used in various different ways by legal scholars and philosophers of law, clarifying their meaning assists the transparency and accessibility of the present text. A fundamental distinction can be drawn with regard to whether the respective term is legal: while 'rules', 'norms', and 'legal principles' formulate binding law, 'notions' and 'concepts' are used in a conceptual sense of expressing an underlying idea. A (legal) rule is the most explicit form of law in this compilation of terms: it means a clearly defined, rather narrow, expression of law. Legal rules can be codified or reflect international custom; however, in the latter case, the requirement of being of a narrow scope and clarity still applies. It will in most cases be codified, or else be verifiable though, for instance, jurisprudence or other detectable documentation. A (legal) norm is less concrete and less formal than a legal rule yet expresses a demarcated standard. In the distinction of primary and secondary norms above, it can be seen that norms can encompass legal rules, but a legal norm does not necessarily have to be expressed in a legal rule. Legal principles or principles of law often underlie the formulation of rules or norms, but do not necessarily have to. They address general values of the legal system in a more general sense. For example, the principles of good faith (*bona fide*) or *pacta sunt servanda* form part of many legal systems around the globe. They do not have to be codified, which can also be seen in Article 38(1)(c) of the ICJ Statute referencing general principles of law; but they can be – as for instance good faith in Article 31(1) of the *Vienna Convention on the Law of Treaties* or Article 26 of the Convention with regard to *pacta sunt servanda*.[32] In contrast, 'notions' and 'concepts' do not pronounce on the legal value of a standard but on its conception – meaning, the way in which the standard is construed. While notions are more fluid, concepts tend to be demarcated more clearly. It can be helpful to think of Hart's 'penumbra of uncertainty' in this regard, which he formulated in regard of legal rules.[33] In my view, both notions and

[31] Bruno Simma and Dirk Pulkowski, 'Leges Speciales and Self-Contained Regimes' in: James Crawford, Alain Pellet, Simon Olleson and Kate Parlett, *The Law of International Responsibility* (OUP 2010); Samantha Besson, *Theories of International Responsibility Law* (CUP 2022).

[32] Vienna Convention on the Law of Treaties (1155 UNTS 331); adoption: 22 May 1969; opened for signature: 23 May 1969; entry into force: 27 January 1980.

[33] HLA Hart, *The Concept of Law* (Clarendon 1961) p. 12.

concepts have a certain penumbra of uncertainty, which will be larger for notions and smaller for concepts.

These terms are not mutually exclusive. For instance, international responsibility is a general principle of law, as we know from *Chorzów Factory*, and at the same time reflects customary international law. However, it is also a notion: in my understanding of the terms, it was a notion relatively early onwards, when the ICJ adjudicated in *Chorzów*.[34] The Court did not specify the theoretical background of the principle of responsibility, but noted its existence and pronounced on the way in which it was applicable to the case. When the ILC took up its work on State responsibility, it did not question whether the notion and legal principle of international responsibility existed as such, but addressed its conceptualisation. As a result, we now have a relatively narrowly prescribed concept of international responsibility that international lawyers can work with. While conceptualisation speaks to the process of determining a concept, the latter is understood here as the outcome of that process.

With regard to legal principles, a short mention should be made on the five principles resolutions that were adopted by the Committee on the Peaceful Uses of Outer Space (COPUOS) and the United Nations (UN) General Assembly in the earlier years of international space law development. While General Assembly resolutions on international space law are not formally legally-binding, the reference to 'principles' expresses a judgement as to their substance, meaning that those resolutions were meant as expressing a normative value more than other, 'regular', General Assembly resolutions. To this day, the UNOOSA collection of international space law instruments differentiates the five principles resolutions and joins them in a part of its collection different from other General Assembly resolutions adopted in relation to international space law.[35]

'Provision' in the present study refers to a specific article or paragraph in a legal text, regardless of the precise norm or norms that it stipulates or the underlying concept(s). It is thus an evaluation of form, rather than of substance.

Moreover, the present study refers to 'elements' of a provision in the sense of specific expressions that may consist of one or more individual words as legal fractions, that can be interpreted individually and contribute to the overall interpretation of a norm. For example, 'international responsibility' or 'outer space,

[34] PCIJ, *Case Concerning the Factory at Chorzów (Claim for Indemnity) (Jurisdiction)* (Germany v. Poland) 1927 Series A. - No. 9 (July 26).

[35] United Nations, 'International Space Law: United Nations Instruments' (United Nations 2017). The publication differentiates: Part one – United Nations treaties; Part two – Principles adopted by the General Assembly; Part three – Related resolutions adopted by the General Assembly; and Part four – Other documents.

including the Moon and other celestial bodies' constitute such elements in Sentence 1 of the provision, or 'authorisation' or 'continuing supervision' in Sentence 2.

1.2.3. Structure and elements of Article VI of the Outer Space Treaty

The text of the provision is composed of three sentences, which are interconnected, but also illustrate respective aspects of the legal regulation of activities in outer space individually. Three groups of actors are considered in the provision: States, international (intergovernmental) organisations, and non-governmental entities.[36] Table 1 below provides the text of the provision split up in its three individual sentences:

Table 1 **Art. VI Outer Space Treaty – sentence division**	
Sentence 1	States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty.
Sentence 2	The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.
Sentence 3	When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.

While Sentence 1 of Article VI of the Outer Space Treaty addresses activities in outer space carried out by States and non-governmental entities, stipulating that States will be internationally responsible for both kinds of activities, Sentence 2 focuses on the requirements for activities conducted by non-governmental entities. Sentence 3 addresses activities in outer space as carried out by international intergovernmental organisations and pronounces on the international responsibility that can be incurred by both international organisations and States. Table 2 sums up the addressees of the three sentences.

[36] Although the Outer Space Treaty in Sentence 3 of Article VI refers to "international organisations", this has to be understood as relating to international intergovernmental organisations only – leaving aside international non-governmental organisations, as is clarified below in Chapter 4.

Table 2 **Structure in Art. VI Outer Space Treaty regarding actors carrying out space activities**	
Sentence 1 of Outer Space Treaty	Responsibility for activities carried out by States and non-governmental entities
Sentence 2 of Outer Space Treaty	Requirements for activities carried out by non-governmental entities
Sentence 3 of Outer Space Treaty	Responsibility for activities carried out by international (intergovernmental) organisations

It is important to note that this distinction concerns the entity that is carrying out the space activities, and not the entity that will be held internationally responsible if applicable. As non-governmental entities do not have legal standing under the international space law treaty regime, they cannot be addressed directly by an international norm.

As can be seen, the provision provides for States as the primary addressees for a potential finding of international responsibility, and in certain cases adds international organisations as potentially incurring international responsibility. Where the space activity is carried out by a (one or more) State(s), it will be that (or those) State(s) that will incur international responsibility – in the case of a situation calling for international responsibility (Article VI Sentence 1 of the Outer Space Treaty). The provision in principle thus does not exclude shared responsibility between States. Where the space activity or activities are carried out by a non-governmental entity, it will be 'their' respective State or States who will incur international responsibility for the activity, if applicable (Article VI Sentence 1 of the Outer Space Treaty).

Note that with regard to space activities being carried out by non-governmental entities, Article VI Sentence 2 of the Outer Space Treaty is an extension of Sentence 1 and further clarifies the obligations that States are under with regard to space activities carried out by their non-governmental entities. However, it is not the legal basis for international responsibility, which can be found in Article VI Sentence 1 of the Outer Space Treaty. Rather, it is its own primary rule, stipulating the conduct that is required of States when permitting non-governmental entities to conduct space activities.[37]

Article VI of the Outer Space Treaty further stipulates that if an activity in outer space is carried out by an international organisation, that international organisation together with its member States will be internationally responsible for their conduct giving rise to international responsibility (Article VI Sentence 3 of the Outer Space Treaty). This codification demonstrates a legal design where shared responsibility is enshrined in a legal instrument already at a relatively early point in time in comparison to the development of international responsibility law (this will be considered more closely

[37] See for the distinction of primary and secondary norms: Chapter 3 Section 3.2 *Conception of international responsibility*.

below). One remark must be made with regard to the nature of the international organisations referred to in Sentence 3 of Article VI of the Outer Space Treaty: the provision here addresses international organisations that have legal personality under international law, and that do not qualify as non-governmental entity, meaning the provision relates to international intergovernmental organisations. Any organisation that operates without governmental participation, be it on the international plane or in a strictly national context, does not fall under the scope of Article VI Sentence 3 of the Outer Space Treaty.

Table 3
Entity incurring international responsibility according to Art. VI Outer Space Treaty

Entity carrying out activity	***Entity incurring responsibility***	***Legal basis in Art. VI Outer Space Treaty***
Activities carried out by States	Responsibility of State	Sentence 1 of Outer Space Treaty
Activities carried out by non-governmental entities	Responsibility of State	Sentence 1 of Outer Space Treaty
Activities carried out by international organisations	Shared responsibility of international organisation and its member States	Sentence 3 of Outer Space Treaty

In sum, while international responsibility for activities in outer space according to Article VI of the Outer Space Treaty is limited to States (Sentence1) and international intergovernmental organisations (Sentence 3), non-State actors or non-governmental entities, in the wording of the provision, are included in the scope of potential international responsibility of States and international organisations. Moreover, Article VI of the Outer Space Treaty formulates restrictions that aim at a non-governmental entity participation in space activities. The coherent interpretation of the respective legal elements and aspects of the provision constitutes the foundation for the present study.

1.3. Review of literature on international responsibility for activities in outer space

Not all available space law commentary addressing international responsibility for activities in outer space is conducted in the context of international law, as some space lawyers hail from a background of domestic space law and assess international space law from that angle. But there is a substantive amount that does assess international space law as a branch of public international law. However, not much of it draws a clear reference to relevant rules of other fields of international law or takes into account relevant aspects that stand in correlation to international

responsibility. With regard to international responsibility for activities in outer space, there are valid considerations of aspects of the principle, but there is no all-encompassing or holistic assessment that uses the methodology of the international law of treaties, takes into account international responsibility law, and assesses the primary *and* secondary norm aspects of Article VI of the Outer Space Treaty: the requirements of States for their non-governmental space activities and State responsibility. At a time where space activities are becoming increasingly commonplace, a clarification of how existing law is interpreted in a way that best fits the understanding of space law as an integral part of the international legal system (coherent interpretation) is of high value.

The accountability regimes under international space law – international responsibility and international liability – have been a part of international space law since its inception. The relationship between the two notions, hinging on 'national activities' and 'launching State' respectively, has enjoyed relatively little discussion in space law academia,[38] which leads to an uncertainty as to how these notions could or should interact.

While the launching of a space object may at the same time be a national activity, thus under the jurisdiction of the launching State, one provision assigns the *static* (none-time-dependent) status of launching State to that State which entails international liability for that space object until its obliteration. In contrast, the other relates to a category of activities which may well vary over time and can thus be best described as *dynamic*.[39] There is thus all the more reason to necessitate an investigation into what the respective notions entail and how they relate to each other.

In the following, a general overview of the various academic understandings in international space law commentary is presented Regarding the various conceptions of what international responsibility entails and how it is understood, it must be borne in mind that some of the commentary stems from a time where the general legal framework of international responsibility was less refined than it is today. This indubitably had an influence on the legal analysis at the time, and some of these commentaries might no doubt have emerged differently had international responsibility law provided clearer guidance.[40]

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[38] While the relationship has been discussed at instances; given the crucial importance in case of occurring damage of the interrelation of these two notions, it appears surprising that not more in-depth analysis on the topic can be found.

[39] The assignment of static and dynamic properties to norms is introduced in the methodology section below; see: Section 1.6 *Theory and methodology*.

[40] Space law was seen as forming part of international law from the very early discussions onwards. Art. III Outer Space Treaty prescribes that "State Parties to the Treaty shall carry on activities in the exploration and use of outer space […] in accordance with international law, including the Charter of the United Nations".

1.3.1. Review of relevant commentary on international responsibility for activities in outer space

When assessing the literature on international space law with regard to international responsibility, it becomes apparent that many authors opt for a combined consideration with international liability. The interrelationship of these two notions thus becomes part of the review of existing scholarly commentary. The literature reveals different understandings of these two concepts. The distinctive criteria here are the respective conception and the interrelationship of responsibility and liability. The existing views can be divided into three groups of authors that each share certain similarities in their assessment and understanding of what international responsibility for activities in outer space entails.

The *first group* of commentators have an understanding of international responsibility that does not conform to the conception of international responsibility under international responsibility law as we have it today. Two approaches can be found. One treats the concepts of international responsibility and liability the same – meaning, as two references in the Outer Space Treaty in Articles VI and VII respectively which refer to the same legal concept. Supporting arguments for this view that are commonly cited are include that some languages (including some of the UN authoritative languages) do not provide for separate words for the two concepts.[41] Moreover, authors may stem from legal systems that do not make a differentiation between the two legal concepts.[42]

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[41] This is also supported by the French, Russian and Spanish language versions of the Outer Space Treaty as discussed below in Chapter 3 Section 3.2.1 *Terminological understandings and conceptions of responsibility*.

[42] See e.g.: Nathalie L. J. T. Horbach, *Liability versus Responsibility under International Law: Defending Strict State Responsibility for Transboundary Damage* (Leiden University 1996); Pablo Mendes de Leon and Hanneke van Traa, 'Space Law' in: André Nollkaemper, Ilias Plakokefalos and Jessica Schechinger (assist. ed), *The Practice of Shared Responsibility in International Law* (CUP 2017) p. 453, stating that: "Even though the terms 'responsibility' and 'liability' are used interchangeably in space law, and moreover a number of languages do not differentiate between them, for the sake of clarity and consistent use of terms we shall refer in this chapter to liability in order to denote the rules of space law that regulate the consequences of a breach of international space law as lex specialis", ibid. p. 456. (Research carried out within the SHARES Research Project at the Amsterdam Center for International Law (ACIL); see: University of Amsterdam, Centre for International Law (ACIL), 'SHARES | Research Project on Shared Responsibility in International Law' <http://sharesproject.nl/> accessed 27 October 2023.) Another example that sits in between the first and the second groups are Zhukov and Kosolov: in their opus *International Space Law*, they state that international responsibility and international liability form part of the *same* principle of international space law; however, as a matter of fact, the topics in the chapter are considered individually and with great care and depth; Gennady Zhukov and Yuri Kolosov, *International Space Law* (2nd edn, Statut Publishing 2014) p. 67 <https://mgimo.ru/upload/2016/05/KOLOSOV_space_law_eng.pdf> accessed 27 October 2023. Regarding the relationship between international responsibility and international liability, they state: "The principle of the international responsibility of states for national activities in space also includes the international liability of states for damage caused by space objects"; ibid. It may

This view consequentially entails the understanding that international space law deviates from public international law with regard to the conception of international responsibility and international liability, as under the definitions of the ILC, liability can be engaged for conduct that is lawful under international law, whereas international responsibility flows from an internationally wrongful act. Another important consequence of this understanding is that when an internationally wrongful act occurs (following a breach of international law which is attributable to one or several States), which involves the occurrence of damage, under the understanding of this group of commentators, a State (or the States) concerned would be both responsible for the internationally wrongful act and internationally liable at the same time – both triggered by the same conduct or occurrence.

The second approach of the first group of authors understands international responsibility in Article VI of the Outer Space Treaty as different from international liability for damage resulting from space activities, but defines international responsibility under the same Article as a different kind of international responsibility from the concept under international responsibility law. Under this approach, Article VI of the Outer Space Treaty is understood as in fact not referring to international responsibility as we know it under public international law, but to a different kind of responsibility – which can better be called accountability, in order to avoid confusion with international law State responsibility. A difference was drawn between attributability of conduct, which could lead to an internationally wrongful act and, thus, international responsibility on the side of the State, and accountability as a new concept unrelated to international responsibility.[43] It was argued that the reference to responsibility in Article VI of the Outer Space Treaty is not one of attributability, but one of 'accountability', which does not lead to the establishment of an internationally wrongful act and thus, neither to the establishment of international responsibility. One example that was provided in favour of this line of argumentation is the use of Starlink internet services provided by United States based company SpaceX to Ukraine during the ongoing Russo-Ukrainian War. It was argued that if Article VI of the Outer Space Treaty would formulate the same principle of international responsibility as under international law, the provision of internet services would have to be understood as conduct attributable to the United States, based on the fact that Starlink is a non-governmental entity with registered seat in the United States. In turn, this would denote an act of aggression on the part of the United States towards Russia, thus rendering the two nations in military conflict. As the described outcome was evaluated as an undesirable consequence, it was argued that the notions of what of

be noted here that in the Russian version of the Outer Space Treaty, both principles carry the same name (ответственность).

[43] Note here that the use for accountability in this understanding is different from the understanding employed in the present study, where accountability is used as an umbrella term for international responsibility and international liability.

international responsibility is under international space law and under international responsibility law must be different.[44]

A *second group* of commentators focuses on the interpretation of international responsibility, distinguishing this from international liability. They interpret and apply the law of responsibility for activities in outer space; however, the research questions that are discussed – at least from today's perspective – may not be fruitful with regard to a further development of the discourse.

An example of this is an article written by one of the great minds of international space law, Cheng, who already took up the topic of international responsibility for activities in outer space in the earlier days of space law academic commentary. In his book chapter entitled "International Responsibility and Liability of States for National Activities in Outer Space, Especially by Non-governmental Entities", he differentiates between two ways of understanding international responsibility in Article VI: a narrow and a wide interpretation of the extent of international responsibility with respect to the national space activities carried out by non-governmental entities. While under the narrow interpretation, the obligations relevant for breach would be confined to international obligations (State-to-State obligations), under the wide interpretation, obligations would additionally comprise obligations – and even liabilities – under municipal law (State-to-non-governmental-entity obligations).[45] In Cheng's understanding, the narrow interpretation is to be favoured in light of the "usual position in international law", and as such, the appropriate conclusion was drawn.[46] Another, more recent example is a doctoral thesis where the author relates international responsibility to the principle of justice.[47] It is not clear why the assessment of a legal notion under international law should be linked to a political principle.

The *third group* of commentators pronounces on international responsibility for activities in outer space in the understanding that this study represents, namely as a principle of international law that must be assessed in light of international responsibility law and the law of treaties. However, this third group considers only elements of the relevant assessment and does not formulate a comprehensive assessment of international responsibility for activities in outer space. An example of authors that limit themselves to a particular area of application is a publication

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[44] Steven Freeland, opponent in this study's final seminar on 16 March 2023. I would like to add here that the overview of the argument is based on my notes and memory of the oral discussion during the final seminar; any errors in the depiction remain my own.

[45] Bin Cheng, *Studies* (n 13) p. 633-634; note that the referenced publication is the republication of a previous article.

[46] Ibid. p. 634.

[47] Upasana Dasgupta, 'Preventing collisions between space objects in outer space: Clarifying the law of state responsibility for better enforcement' (McGill University, Faculty of Law, Institute of Air and Space Law, Montreal, Canada, June 2022) <https://escholarship.mcgill.ca/concern/theses/ms35tf265> accessed 27 October 2023.

reviewing the ILC's work and conception of both international responsibility and international liability, but limiting itself to the consideration of space debris.[48] Another example of consideration of an element of Article VI of the Outer Space Treaty, rather than a holistic assessment of the provision, is a publication on authorisation of space activities.[49]

The understanding of international responsibility for activities in outer space in the sense of international responsibility law has also been assessed in respect of its relationship with international liability. This part of the space law commentary is relevant and applicable; however, it has its main focus on an assessment of international liability and pronounces on international responsibility incidentally.[50] There is also international space law literature that does not agree on the relationship of Article VI of the Outer Space Treaty with the Treaty's Article VII on international liability and Article VIII on registration of objects launched into outer space. For instance, it can be understood that the qualification as internationally responsible State under Article VI of the Outer Space Treaty does not automatically lead to the conclusion that the responsible State is the launching State.[51] Other commentary connects jurisdiction and control retained by States under Article VIII of the Outer Space Treaty, with international responsibility, as the latter is understood in the sense of jurisdiction.[52]

To conclude the above, while not all of the existing literature on the interpretation and application of international responsibility for activities in outer space assesses the topic in light of public international law, some of the existing commentary provides valuable input on international responsibility for activities in outer space. However, there is a definitive lack of a holistic consideration of the topic – maybe even a general lack of a sense of importance of the subject – and the relevant existing literature limits itself to specific aspects of international responsibility for activities in outer space; mainly in relation to other principles of international space law. This leaves this field of law, which undoubtedly will only grow in importance and relevance due to the developments that the space industry has been and currently is undergoing, with incomplete scholarly assessment.

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[48] Peter Stubbe, *State Accountability for Space Debris – A Legal Study of Responsibility for Polluting the Space Environment and Liability for Damage Caused by Space Debris* (Brill 2018).

[49] Von der Dunk (n 24).

[50] Smith and Kerrest, 'Outer Space Treaty Article VII' (n 25); Smith and Kerrest, 'Liability Convention "Article II (Absolute Liability)"' (n 22).

[51] Gernot Fritz, *Der 'launching state' im Kontext privater Weltraumaktivitäten* (Heymanns 2016) p. 146.

[52] With regard to registration, Schmid-Tedd states that the "qualification as launching State relies on the State Party responsible for those activities according to Art. VI OST". Here, the focus of the invstigation lies with the registration legal regime. Bernhard Schmidt-Tedd, 'Registration Convention Article I (Definitions)' in: *Cologne Commentary on Space Law Volume II* (n 21).

1.4. Scope of the present research

The present section sets the context for the research conducted in this study. It relates the chosen subject to existing legal literature of the field and positions it within its legal context by carefully delimiting which areas are and are not covered

Defining the scope of a study such as this, one must first allow for adequate correlation within the context of the research to clarify the importance of its undertaking and to provide the reader with enough background knowledge to be able to assess the validity of the research undertaken. At the same time, it is necessary to delimit a small enough area to allow for sufficient depth of analysis. Inherently, there is a tension at play, and both aspects must be carefully weighed Elucidating the objectives of the research can usually assist in this task, as it constitutes an overarching bridge between the research questions, the research methodology, and the outcome of the research.

Below follows (1) an explanation of how the present study contributes to contemporary scholarship on international responsibility for activities in outer space; (2) a clarification of the objectives of the present study; and (3) the delimitation of the scope of the research.

1.4.1. Contribution to legal science

With the above-mentioned changes taking place during the current modern space age regarding the kind of space actors and the way space activities are conducted, it has at times been suggested to investigate whether the five UN treaties on outer space, which were primarily negotiated in the 1960s and 1970s, are still fit to serve their purpose and if the adoption of new international legislation applicable to outer space is warranted.[53] The stance taken in the present study is that, generally speaking, the outer space treaties were drafted with exceptional vision, and remain today as valid and relevant as they were at the time of their inception. The drafters were attentive enough to design treaties addressing general principles of law applicable to activities carried out in outer space that today, after more than 60 years of space activities, still remain relevant and purposeful, despite technological

[53] See e.g.: Feyisola Ruth Ishola, Oluwabusola Fadipe and Olaoluwa Colin Taiwo, 'Legal Enforceability of International Space Laws: An Appraisal of 1967 Outer Space Treaty' (2021) 9 New Space 33. By proposing an amendment to the Outer Space Treaty, the authors aim to give COPUOS quasi-judicial capacity to enable the Committee to function as a "procedural system for legal enforcement" of the existing space law framework; ibid. p. 33.

advancements and changes in the way in which space activities are legislated at national level and implemented[54]

Those treaties and the general legal framework on space activities have been subject to much discussion in academic commentary. However, it is striking with regard to literature on international responsibility for activities in outer space, that despite its importance for the enforcement of international space law, it does not appear among the most frequently considered topics in academic literature.[55] There are also certain shortcomings of existing legal commentary that are described in more detail regarding the three schools of thought identified in the literature review above.

Firstly, international responsibility and international liability for space activities are often referred to in the same breath (group 1 of the authors' distinction above in literature review), and there is a tendency to give preference to the consideration of liability for activities in outer space. This might perhaps be so because instead of a limited number of provisions that international responsibility offers under international space law, in respect of international liability, in addition to the principle in the Outer Space Treaty, there is an entire convention to be exhausted, i.e., there is more codified legal detail to be analysed Moreover, the already mentioned incongruency of the legal conceptions of international responsibility and international liability in relation to the respective conceptions as adopted by the ILC and UN General Assembly. For the latter, international responsibility is incurred for unlawful (*wrongful*) conduct whereas international liability arises for damage resulting from *lawful* acts, and thus, this understanding leads to a potential tension between international space law and international responsibility law. The tension cannot be considered to have been intended when consulting the foundational documentation available from the drafting period. The above-provided example of the same conduct leading to international responsibility and international liability displays one of the conceptual shortcomings of this school of thought, as it is at odds with both the architecture of the Outer Space Treaty principles, as well as public international law as developed by the ILC and confirmed by the General Assembly.

A second sub approach of the first group of authors is the understanding of international responsibility in Article VI of the Outer Space Treaty as referring to a different kind of international responsibility from what we have under international responsibility law. Here, the distinction of international responsibility and international liability is upheld as we have it under international law. However, the responsibility in Article VI of the Outer Space Treaty is viewed as a different kind

[54] See e.g. for a supporting view: Tanja Masson-Zwaan, *Widening the Horizons of Outer Space Law* (Leiden University 2023).

[55] The share of academic commentary on international responsibility for activities in outer space is considerably less than other topics such as international liability, different (and evolving) areas of space applications (space tourism, emerging and established satellite services, etc.), resource management, or space safety and space traffic management considerations. This is surprising, as international responsibility for outer space activities affects all of them.

of responsibility than the one that applies under international responsibility law. While the latter is understood as attributability to the State, the former is renamed 'accountability' in order to facilitate the distinction. Here, none of the available documentation from the drafting period of the *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space* (Legal Principles Declaration)[56] or the Outer Space Treaty, nor available statements and documentation of States parties to the Treaty provide grounds to assume the existence of an 'alternative' kind of international responsibility. The Starlink example provided above is considered in the discussion of international responsibility for activities in outer space in Chapter 4.

Secondly, and interestingly, much of the substantively noteworthy commentary on international responsibility for activities in outer space tends to stem from the earlier days of the space age. Hereunder falls the second group of authors mentioned above. At that time, the fundamental principles were given great attention due to the ongoing negotiation process at international level, as well as the question after adoption of the treaties of how those principles were going to play out in practice. In the example provided above of Cheng's assessment of whether municipal law should be assessed as relevant to the principle of international responsibility for activities in outer space, the author draws a (in view of this study, coherent) negative conclusion. It may be questioned, however, why the question of applicability of municipal law was posed in this context. Additionally, not much of contemporary commentary on international responsibility seems to add in terms of substance to the existing literature of this group; despite the fact that in the future, we will undoubtedly be confronted with cases where States will not live up to their international obligations – indeed perhaps already have.[57] In relation to the example provided above on an assessment of international responsibility for activities in outer space in light of the principle of justice, it may be said that while the principle as such may bear some relevant aspects for international responsibility for activities in outer space under specific circumstances, it does not become apparent as such why a political principle should be applied to the interpretation of a legal notion.

Thirdly, the literature review identified authors addressing international responsibility for activities in outer space with a limited scope of assessment, such as in relation to space debris or a specialised publication on authorisation of space activities (group 3 of the identified schools of thought). For instance, while authorisation of space activities comes within Article VI Sentence 2 of the Outer Space Treaty, it also relates to implementation of a primary norm in the domestic

[56] Legal Principles Declaration (n 11).

[57] For instance, the launch of the first four SwarmTech satellites (SpaceBEEs) took place without the required national authorisation; see: Scarlet Wagner, 'BEEs in Space: Swarm Technologies' Unauthorised Deployment of Smallsats and Article VI of the Outer Space Treaty' *Proceedings of the 61st IISL Colloquium on the Law of Outer Space, Bremen, Germany* (Eleven Publishing 2018) p.129.

legal context, and does not concentrate on the consideration of international responsibility as a notion of international law. Moreover, publications were mentioned that raise interesting points and coherent interpretations in the sense of an international legal perspective, but mainly focus on other principles of international space law. In sum, the existing assessment under this school of thought is laudable in reference to the selected specific area of investigation. However, it does not yet meet the need for a legal commentary on international responsibility for activities in outer space which addresses the subject from an internationally legal and holistic perspective.

The present study contributes to the existing literature of the field in two main regards: through the clarification of the law and through its methodology. Firstly, the law of international responsibility for activities in outer space is assessed systematically and comprehensively in order to clarify the legal framework that applies to internationally wrongful acts in outer space within the context of the modern space age. Due to technological developments, the increase in frequency of space activities, and the increase in space actors, the nature of space activities is changing and the assessment of international responsibility for activities in outer space is growing in importance in direct relation to those developments. The contribution of this study to legal discourse in this context is the clarification of the law of international responsibility for activities in outer space by applying established methods of interpretation, that lead to a reliable result. While international responsibility as a principle of space law in the past has been met with uncertainty or has evaded thorough legal analysis, the present study proves that international law already provides all necessary legal regulation for a coherent analysis and interpretation of the law of international responsibility for activities in outer space. There is no need for UN member States to agree on a subsequent international convention or non-legally binding instrument to clarify Article VI of the Outer Space Treaty.

Secondly, there are methodological structures applied in this study can contribute to the international legal discourse in a wider sense. (1) Applying the methodology of the Articles on State Responsibility to international space law as a special field of international law to an assessment of international responsibility under international space law can be replicated by analogy to other special fields of international law. This can also contribute to the legal discourse on fragmentation of international law. One characteristic of the application here is the clarification that *lex specialis* as a principle of law applies on a norm-to-norm basis, and that the field of international space law constitutes a special field of international law. Moreover, the structure as provided by the Articles on State Responsibility is a methodological tool that can be applied in other special fields of international law. Because international courts and tribunals have been receptive of the Articles on State Responsibility since their adoption by the General Assembly, the argument is made that the way in which internationally wrongful acts are established – by consecutively assessing the breach

of an international obligation, its attribution, the assessment of whether circumstances precluding wrongfulness apply etc. – in order to establish international responsibility provides structure and clarity also in a field such as space law, where the principle of international responsibility exists but was codified before the elaboration represented in the Articles on State Responsibility. (2) The present study introduces a methodology coined the 'qualifying factor' with regard to the main emphasis of a provision concentrating primarily on *actors* or *activities*. This is a methodology that can be equally relevant to other international legal contexts, because it is not limited to norms of international space law, but rather concerns the character of a legal norm as such. The methodology can assist in the interpretation of legal norms when they are put in relation to one another. (3) The adoption of non-legally binding instruments has been on the rise not only in international space law, where the development is already taking place for the last four decades, but also in other fields of international law. We are currently witnessing a trend in this direction. In this context, the question of 'soft law' presents itself to international lawyers, and there are different ways in which these instruments are given normative value. The present study takes recourse to non-legally binding instruments in the process of interpretation of legally binding instruments. This constitutes an excellent resolution of the issue that the increasing adoption of non-legally binding instruments at the international plane pose to legal positivists.[58]

1.4.2. Objectives of the present study

The principal objective of this study is to provide a comprehensive assessment of international responsibility for activities in outer space coherent with the idea of space law as an integral part of the international legal system, that takes into account the relevant aspects raised by Article VI of the Outer Space Treaty and related provisions on international responsibility for activities in outer space, as well as the context of current developments of the space industry. The comprehensive consideration of relevant aspects compels setting Article VI of the Outer Space Treaty in relation to public international law and in relation to other norms of international space law.

Setting the research in the context of public international law appreciates that international responsibility as a legal notion is central to public international law and also forms part of the *corpus juris spatialis*.[59] The link between international responsibility for activities in outer space and the body of space law (including international liability for damage resulting from space activities and registration of

[58] See for the methodology applied in the present study: Section 1.6 *Theory and methodology*.

[59] The *corpus juris spatialis*, or body of international space law, is commonly used to describe the international legal framework for activities in outer space.

objects launched into outer space) ensures the enforceability of the Outer Space Treaty as well as international law in a general sense. From a public international law perspective, it is therefore of interest to clarify the relationship between international responsibility for activities in outer space and international responsibility under international responsibility law. This concerns mainly State parties to the Outer Space Treaty, as well as international (intergovernmental) organisations that have declared their acceptance of the rights and obligations under the Outer Space Treaty.

Regarding the relationship of *lex specialis* (international space law) and *lex generalis* (international responsibility law), the present study is set in the context of the discussion on fragmentation of international law (Chapter 3). This aims at clarifying the relationship between fields of international law with respect to international responsibility in a wider sense.

In the following, such clarification entails a more detailed assessment of international responsibility for activities in outer space, and in how far the latter relies on rules of international responsibility law (Chapter 4). Here, the central aim of the thesis is addressed in its core of how Article VI of the Outer Space Treaty is interpreted in a way that best fits with the idea of space law as an integral part of the international legal system. Moreover, the legal analysis – while aiming at a legal assessment of international responsibility in the field of *international space law*, may potentially be relevant by analogy for other fields of international law.

Not only does the present study have as its objective to assess international responsibility for activities in outer space in reference to public international law, but also comprehensively. This means that the results of an interpretation of international responsibility for activities in outer space also has to be put in context within international space law. Therefore, the present study also aims to investigate the repercussions that a clarification of international responsibility for activities in outer space has for other notions of international space law. These are limited to an investigation of the legal concepts of the launching State and the State of registry with regard to objects launched into outer space (Chapter 5).

Another aim that follows from the overarching objective to provide a comprehensive legal analysis of Article VI of the Outer Space Treaty, is a clarification of the requirements of authorisation and continuing supervision that States are under with regard to their non-governmental entities (Chapter 6). This follows from Sentence 2 of Article VI of the Outer Space Treaty, which entails a primary norm for States parties to the Outer Space Treaty when space activities are carried out by non-governmental entities. A comprehensive assessment must also take into account these aspects.

In sum, with the aim of providing a comprehensive overview of the subject of research, the present study takes different perspectives on international responsibility for activities in outer space. It looks at the larger, international plane

of setting it in context within considerations of international law as a legal system; it assesses the topic in legal detail in the context of international responsibility as a legal principle; it looks inward onto international space law as a field of international law by setting the topic in relation to other norms of international space law; and finally, it moves towards the plane of implementing international norms at the domestic level by interpreting Sentence 2 of Article VI of the Outer Space Treaty. Through these perspectives, the present study ultimately aims to clarify the legal framework for international responsibility for activities in outer space as it would be relevant for national or international judicial bodies finding themselves presented with the topic. Even though to date we have not seen fully conducted proceedings involving international responsibility for activities in outer space following the request of a State or international organisation, it is not a question of if, but when.

1.4.3. Delimitation of research

First and foremost, the present study employs a public international law perspective on space activities. It is aimed at a reader familiar with public international law but does not assume prior expertise in international space law. The study understands international space law as a branch of public international law, to which the general rules of public international law are relevant.[60] The latter includes the law of international responsibility as also reflected in the ILC's Articles on State Responsibility[61] and the Articles on Responsibility of International Organisations.[62] The research therefore does not venture into a comparative legal analysis of national approaches to the principle of international responsibility for activities in outer space, nor a comparative legal analysis of the implementation of Sentence 2 of Article VI of the Outer Space Treaty as a primary norm. However, aspects of national implementation are discussed to the extent that they are relevant for the argumentation – both in the context of State practice as well as in the context of national space law understood as interpretation of provisions of international space law at the domestic level.

The present study also considers the available legal framework as it has been adopted and agreed on by the international community of States, including the five UN treaties on outer space, the principles resolutions, and relevant other documents. This, however, presupposes that States have ratified the legally binding instruments, and that they consider themselves subject to the entire legal framework for activities in outer space.[63] The question of how many States have ratified the instruments or

[60] See also: Art. III Outer Space Treaty.

[61] General Assembly Resolution (n 16).

[62] General Assembly Resolution (n 17).

[63] E.g., no persistent objectors.

what their position is towards parts of the legal framework for activities in outer space reflecting customary law is disregarded; the analysis seeks to clarify the law – any considerations of individual positions of States may follow suit after, but are not part and parcel of this study.

The five UN treaties on outer space as discussed here also apply to the *peaceful* uses of outer space; just as the entire work of the (currently) Vienna-based COPUOS, which negotiated the five UN treaties on outer space, is limited to the peaceful uses of outer space.[64] Since the Outer Space Treaty, which lies at the centre of the deliberations discussed in this study, is an instrument applicable to the peaceful uses of outer space, the primary focus of this manuscript lies in the application of international responsibility to peaceful uses of outer space.[65] This does not mean that the findings of this study cannot apply to military uses of outer space per se; however, this would require a separate investigation, which is beyond the scope of the present work.

Lastly, by aiming at a coherent interpretation of the law, the present study assesses *lex lata* for international responsibility for activities in outer space. The question of how international responsibility for activities in outer space *should* be regulated by law (normative dimension) is not considered.

1.4.4. Summary: scope of the present research

As has been shown, legal commentary on international responsibility for activities in outer space demonstrates a void regarding a comprehensive assessment of the subject from a public international law perspective; a void which the present study seeks to fill. It aims to provide a comprehensive and coherent assessment of Article VI of the Outer Space Treaty, therewith setting it in relation to both public international law and international space law. Its scope is carefully delimited so as to provide the reader with sufficient relevant information and to allow for sufficient depth of the commentary to render this study traceable and transparent in addressing

[64] In the first years of its operation, COPUOS was based in the UN headquarters in New York. National security uses of outer space fall under the competence of the UN Conference on Disarmament (CD) in Geneva, which addresses military uses of outer space; including the perspectives of de-weaponisation and demilitarisation of outer space.

[65] However, one caveat to be mentioned is the common employment of what is known as dual-use applications by spacefaring nations. Dual-use comprises space applications that serve both civil and military uses at the same time (or alternating times, but still only one application). A common example would be a reconnaissance satellite that can be used for Earth-imaging with both civil (for instance, agriculture) and military (for instance, observation of neighbouring States) uses. There are different legal schools with regard to the questions of which activity falls under the definition of peaceful uses and how peaceful uses of outer space are interpreted: regarding the definition of what qualifies as military uses, two main doctrines have manifested, the non-military and the non-aggressive doctrine. This study does not consider dual-use applications.

concrete questions of interpretation and application of the law on international responsibility for activities in outer space. While it sets the research within the framework of public international law, including the context on fragmentation of international law; it expressly excludes a domestic legal or comparative legal assessment of the primary norm elements in Article VI Sentence 2 of the Outer Space Treaty. This is explained by the primary focus being on a comprehensive assessment of *international responsibility* for activities in outer space – which entails a careful assessment of Article VI of the Outer Space Treaty. While this provision enshrines the above-mentioned primary norm elements, and thus necessitates their consideration in this study, they are not at the central focus; rather, the latter lies with the assessment of international responsibility for activities in outer space from the perspective of public international law.

1.5. Research questions

Having outlined the context of the research and the objectives, the ground is prepared to present the research questions that the present study analyses. Research questions have the role of defining the topic of investigation, not only in a positive sense by clarifying the objective of the research, but also negatively by delimitating the research by their formulation, and thus set the frame of research to correspond to the scope of the present study as discussed above.[66]

The research questions of the present study reflect the aspects needing to be assessed for a comprehensive assessment of Article VI of the Outer Space Treaty coherent with space law being an integral part of the international legal system. They can be summarised under an umbrella research question, which unifies the various aspects of the present research. The overarching research question takes inspiration from Article VI of the Outer Space Treaty:

> *Overarching research question:*
>
> How is Article VI of the Outer Space Treaty to be interpreted in the modern space age to best fit with the idea of space law as an integral part of the international legal system (coherent interpretation)?

This broad question implies the necessity to analyse international responsibility for activities in outer space, as well as the legal obligations of States with regard to their non-governmental entities carrying out space activities. Based on the content of Article VI of the Outer Space Treaty, the research undertaken is divided into four research questions, which are individually addressed by one chapter each in the

[66] The delimitation of the study was discussed above in Section 1.4 *Scope of the present research*.

present study. The final chapter returns to and seeks to answer the overarching research question.

The four research questions are:

> *Research question 1:*
>
> How do the legal rules on State responsibility contained in international space law relate to the general rules on international State responsibility under international responsibility law?
>
> *Research question 2:*
>
> How do the notions of international responsibility under international space law and under (general) international responsibility law jointly shape international responsibility for activities in outer space as referred to in Article VI Sentences 1 and 3 of the Outer Space Treaty?
>
> *Research question 3:*
>
> How do the findings of research question 2 relate to other central notions of international space law, namely:
>
> (a) the concept of 'launching State' under Article VII and of the Outer Space Treaty and the Liability Convention?
>
> (b) the concept of 'State of registry' under Article VIII of the Outer Space Treaty and the Registration Convention?
>
> *Research question 4:*
>
> Which role does international space law ascribe to non-governmental entities under Article VI Sentence 2 of the Outer Space Treaty?
>
> (a) What does the concept of 'authorisation' of activities in outer space entail, and how is it implemented?
>
> (b) What does the concept of 'continuing supervision' of activities in outer space entail, and how is it implemented?
>
> (c) Which State is the 'appropriate State Party'?

The *first research question* addresses the context of the research and targets the *lex specialis-lex generalis* relationship of international space law and international responsibility law. It builds the foundation for the following research question by triggering an analysis of the relationship between international space law, a special regime of public international law, and international responsibility law. It incidentally also addresses public international law at large due to the systemic role that international responsibility plays for the enforcement of international law.[67]

[67] See: Section 1.6 *Theory and method*.

With that, it sets up the general legal framework for the subsequent research question.

Considerations of fragmentation of international law build on the idea that special legal regimes exist as fields of international law. Special regimes submit that while possessing special rules only applicable to their own area, a field of law will draw on (public) international law for general principles and regulation of matters that are not covered by their own (special) rules. Space law has been viewed as a "separate and distinct field of law" for several decades,[68] and indeed possesses some characteristics that are truly special in the context of public international law, such as the 'special' stipulation of international responsibility.

The *second research question* entails an analysis of the law of international responsibility for activities in outer space. It seeks to investigate whether international responsibility under international space law is different from the regulation of international responsibility under international responsibility law; and if so, what that difference is.

The international responsibility regime for activities in outer space lies at the core of this study. It should be noted here – anticipating the later discussion in the method section below – that the developments that have taken place within the law on State responsibility (general secondary norms) and the law of treaties after the inception of the Outer Space Treaty in 1967 are applicable to responsibility under international space law including its main provision of Article VI of the Outer Space Treaty.

'General' is mentioned in brackets in this research question because international responsibility law for the most part is constituted by secondary norms that find applicability to other fields of international law, and are thus of a somewhat general character. Sometimes, commentators use 'general' international law as a synonym of customary international law. This is not out of place in the case of the Articles on State Responsibility, as much of their content is commonly viewed as a codification of customary international law. In most respects, therefore, the use of 'general' in this study could even be understood in this sense. However, in my use of the word 'general' in research question 2, I aim to pinpoint to the difference between the rules on international responsibility applicable to other – and, more than one – fields of international law, in the absence of more specific legal regulation of international responsibility; and fields of international law that have – at least in part – a more specific regime of legal rules applicable to the assessment of international responsibility for their primary norms; such as is the case with international space law.

[68] In the earlier days of space law, there was discussion as to the relationship of space law with air law and maritime law; see: Joseph Bosco, 'International Law Regarding Outer Space - An Overview' (1990) 55 Journal of Air Law and Commerce 609. The author states that "[t]oday, space law is clearly recognized as a separate and distinct field of law"; ibid. p. 612.

The *third research question* builds on the findings of research question 2 and connects them to international space law. It addresses the relationship of international responsibility for activities in outer space with other relevant principal rules of international space law, namely the legal regulation of international liability for damage resulting from activities in outer space and of registration of objects launched into outer space. International liability is codified in Article VII of the Outer Space Treaty and the Liability Convention; registration of objects launched into outer space is codified in Article VIII of the Outer Space Treaty and the Registration Convention. The three provisions of Articles VI, VII, and VIII of the Outer Space Treaty and respective conventions due to the regulation of their subject matters necessitate an assessment in context, as the relationship between the principles must be analysed in detail in order to reach a holistic result of legal analysis of international responsibility for activities in outer space.

Finally, the *fourth research question* surveys the national law element regarding activities of non-State entities carrying out activities in outer space. It focuses on the primary norm in Article VI Sentence 2 of the Outer Space Treaty. Article VI of the Outer Space Treaty stipulates that activities in outer space may be carried out by non-governmental entities, but that the appropriate State party to the Treaty is obliged to authorise and continuously supervise those activities. This warrants closer consideration as to what the provision stipulates in detail, how it is commonly implemented by States, and what the academic debate contributes to the matter. The three elements of 'authorisation', 'continuing supervision', and 'appropriate State Party to the Treaty' constitute the basis for the formulation of the three sub questions to research question 4.

The first three research questions are connected in the sense that their analysis builds on top of each other. While research question 1 serves as a foundation for the ensuing legal analysis in research question 2, the latter forms the basis for the assessment under international space law in research question 3. Research question 4 is separate from the preceding group of research questions insofar as it changes the focus towards primary obligations of States. It is, however, also connected, as Article VI Sentence 2 of the Outer Space Treaty may well take a role as primary obligation of States that, in case of breach, they can incur international responsibility for.

As mentioned above, the scope of the research question is limited to an international legal perspective on national space legislation and does not undertake a comparative law exercise on the matter.

For all research questions, the general context of developments during the modern space age mapped out above is relevant.[69] They are intentionally phrased rather

[69] Chapter 2 *State- and non-State sector developments in the modern space age.*

generally in order to capture relevant aspects of Article VI of the Outer Space Treaty and the responsibility regime under international space law in a holistic manner.

1.6. Theory and methodology

The present section addresses the theory behind the present study and aims to reveal the underlying assumptions thereof. Therewith, it takes a position regarding the understanding of international law that this study adopts. The considerations are limited to public international law. This section also explains the methodology that is used in order to answer the research questions.

1.6.1. Theory and sources of international law

This study embraces a legal positivist view of international law and is based on classical legal research. This corresponds with the way in which the research questions are formulated, as they focus on analysing *lex lata*.

Contrary to national legal systems, which concentrate on the domestic legal order, international law can offer a wider perspective that brings into focus shared interests of nations. This is true also with regard to the global commons, including outer space, where the shared interest among all nations is particularly emphasised by the legal regulation of the subject matter: the shared international space (i.e., the global common) requires a legal regulation that takes into account the benefits that the legal regulation has to offer for *all* parties. The shared interest can be detected in many instances in the language employed in the five UN treaties on outer space: already the Preamble to the Outer Space Treaty states "*Recognizing* the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes,"[70] and "*Believing* that the exploration and use of outer space should be carried on in the benefits of all peoples irrespective of the degree of their economic or scientific development".[71] The characteristic of international law with regard to shared interests of nations is especially apparent in the realm of international space law, as space activities can hardly be undertaken without taking into consideration the interests of other States. Using a public international law perspective as opposed to a transnational or comparative one in the analysis of space law is therefore particularly beneficial.

There are various ways in which international law as a legal system can be understood. The understanding in the present study identifies State responsibility

[70] Preambular para. 3 Outer Space Treaty.

[71] Preambular para. 4 Outer Space Treaty.

and the sources of law as the two cornerstones of the international legal order.[72] More explicitly, it understands the doctrine of sources of international law in its normative understanding to form the foundation of what can be considered to constitute international law.[73] International responsibility as enforcement mechanism for international law makes apparent the *legal* nature of the international legal order, as without enforcement of international obligations, these could hardly be considered legally binding.

International responsibility as cornerstone of international law

In some understandings of international law, international responsibility is the defining characteristic that sets apart geopolitics from international law: without the enforceability of international law (i.e., the possibility to hold subjects of international law responsible for their internationally wrongful acts), norms cannot be considered legal norms.[74] Already in 1944, Kelsen, adopting a legal positivist stance on the international legal order,[75] formulated his view on the necessity of a coercive legal order in his opus *Peace Through Law*,[76] and similar views have been expressed by a number of renowned international legal scholars in more recent years.[77] When State responsibility emerged – ahead of its counterpart of responsibility of international organisations – as its own "discrete subject for study" at the end of the 19th century, emphasis was put on the nation State and State sovereignty.[78] The emergence of the nation State, State sovereignty, and the notion of enforceability of international law are thus closely related.

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[72] This is in line with the understanding of international law of several international legal commentators; as an example may serve e.g. Sivakumaran's view expressed in: Richard Mackenzie-Gray Scott, *State Responsibility for Non-State Actors: Past, Present and Prospects for the Future* (Bloomsbury Academic 2022) foreword by Sandesh Sivakumaran.

[73] Additionally, the sources of international law as a method stand at the outset of any international legal analysis as is undertaken here with a view to international responsibility for activities in outer space.

[74] E.g., Crawford states that: "Any system of law must address the responsibility of its subjects for breaches of their obligations."; James Crawford, *State Responsibility - The General Part* (CUP 2013) p. 3.

[75] See e.g.: Michael S. Green, 'Chapter 12 - Hans Kelsen's Non-Reductive Positivism' in: Torben Spaak and Patricia Mindus, *The Cambridge Companion to Legal Positivism* (CUP 2021) p. 272-300; Andrea Bianchi, *International Law Theories: An Inquiry into Different Ways of Thinking* (OUP 2016) p. 21-23 (referring to traditional approaches) and p. 40-43 (referring to Jörg Kammerhofer's revisitations of Kelsen's theories).

[76] See: Kelsen famously stating that "[i]t is the essential characteristic of law as a coercive order to establish a community monopoly of force"; Hans Kelsen, *Peace Through Law* (The University of North Carolina Press 1944) p. 3. See also: Ryan Mitchell, 'International Law as a Coercive Order: Hans Kelsen and the Transformations of Sanction' (2019) 29 Indiana International & Comparative Law Review 2.

[77] See e.g.: Crawford *General* (n 74).

[78] Ibid.

In the present study, international responsibility[79] is crucial for the *legal* nature of international law, as the enforceability of international law creates the body of international regulation that can be seen as *law*. This can be explained historically, as State responsibility played a predominant part within the development of the field of international responsibility law. Non-legally enforceable international obligations according to this understanding, thus, per definition, fall outside the scope of what constitutes and defines international *law*.

In line with the traditional legal positivist approach to law, the considerations on legal theory below start with the sources of international law. Article 38 of the ICJ Statute at the same time sets forth both a normative dimension, addressing the concept of law, as well as a method, as a means for the determination of law. With regard to the concept of law, the underlying question is what constitutes legally binding obligations. Here, Article 38 of the ICJ Statute provides guidance in listing international treaties and conventions, international custom, and general principles of law. In its second dimension as a means of determination of the law, Article 38 is consulted in the process of understanding what a legal norm means. These means, as referred to in the provision, are international treaties and conventions, international custom, general principles of law, as well as the subsidiary means for the determination of rules of law: judicial decisions and scholarly teachings. The considerations below address its normative dimension, as the issue addressed is what constitutes law in the sense of this study.[80] Non-legally binding instruments due to their formal lack of legal force cannot be viewed as sources of law in the understanding of legal positivism.

However, since COPUOS since the adoption of the Moon Agreement in 1979 has focussed its work solely on the adoption of non-legally binding guidelines and other documents, international space law showcases a trend towards non-legally binding instruments that can also be witnessed in international law development at large.[81] Doubtlessly, these instruments do express a political will of nations and should be given some weight in the assessment of current international space law. The present study does non-legally binding instruments justice by using them as means of interpretation in the legal assessment of the five UN treaties on outer space. Here, the second dimension of Article 38 of the IJC Statute is applied by defining the means of determination of rules of law. The relevant considerations follow below in the methodology section.

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[79] Or State responsibility in Sivakumaran's view; Scott (n 72).

[80] Art. 38 ICJ Statute in its dimension as a means of determination of the law is revisited in the sub section on the law of treaties under methodology below; see: Sub Section *1.6.2 Methodology*.

[81] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (18 ILM 1434; 1363 UNTS 3); adoption by the General Assembly: 5 December 1979 (Resolution 34/68); opened for signature: 18 December 1979 in New York; entry into force: 11 July 1984; depositary: Secretary-General of the United Nations.

Article 38 of the ICJ Statute lists international conventions, international custom, and general principles of law to be applied by the Court when deciding on disputes submitted to it; the provision does not itself reference 'sources' of international law in its wording. Nevertheless, Article 38 is often viewed as a reflection of the formalised sources of international law.[82] Article 38(1) reads:

> 1. The Court, whose function is to decide in accordance with international law such disputes as are submitted to it, shall apply:
>
> (a) international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;
>
> (b) international custom, as evidence of a general practice accepted as law;
>
> (c) the general principles of law recognized by civilized nations;
>
> (d) subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.[83]

It may be noted that international conventions, international custom, and general principles of law as referred to in Article 38(1)(a)-(c) are not subject to any particular hierarchy of sources. The analysis of the status of given rules as reflecting customary international law with regard to space activities is excluded from the present study, as the debates at the political level in recent years have shown a move towards ambiguity in this regard and once believed consensus appears to be waning.[84] There exists a hierarchy, however, between Article 38(1)(a)-(c) on one hand, and Article 38(1)(d) on the other – the latter referring to judicial decisions and teachings of the most highly qualified publicists – as the provision demotes the latter to be subsidiary. [85]

In sum, it is important to emphasise that the primary sources of international law – international conventions, international custom, and general principles of law – constitute the principal sources to be consulted, which is also reflected in the methodology applied in the following chapters.

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[82] E.g.: James Crawford, *Brownlie's Principles of Public International Law* (8th edn OUP 2012) p. 20; Jean d'Aspremont and Samantha Besson (eds), *The Oxford Handbook of the Sources of International Law* (OUP 2017).

[83] Art. 38 ICJ Statute.

[84] COPUOS debate, my personal knowledge.

[85] See also on the selection of the teachings: Sondre Torp Helmersen, 'Finding "the Most Highly Qualified Publicists": Lessons from the International Court of Justice' (2019) 30 European Journal of International Law 509.

1.6.2. Methodology

The present section rationalises the methodology used in this study. It clarifies the methods that were followed in order to reach the answers to the research questions. This study uses the classical legal method. The primary method employed to reach the findings of the research question is the dogmatic method. Subsequently, treaty interpretation is considered, including the relationship that treaty law has with international responsibility law. The following sub section presents international responsibility law as a methodological tool: it thus takes on a dual role in this study; as a field of law of reference as well as a methodological tool. Lastly, a differentiation between space actors and space activities with regard to norms of international space law is introduced, which corresponds to the dogmatic method in the sense that it contributes to a clarification of what can be understood as purpose of a provision: the 'qualifying factor' of a legal norm. It can be applied to several aspects of international space law.

Dogmatic method

The dogmatic method is usually employed by legal positivists, as it pays attention to principles, rules, and conventions to clarify the law.[86] It is the primary method employed in the present study, as it best meets the requirements of the research questions with a view to systematic assessment of international responsibility for activities in outer space. The dogmatic method originates from Article 38 of the ICJ Statute, and thus follows the primary sources of international law: international conventions, international custom, and general principles of law, while the use of subsidiary means for the determination of rules of law is limited to teachings of the most highly qualified jurists. Article 38 of the ICJ Statute reads in full:

> 1. The Court, whose function is to decide in accordance with international law such disputes as are submitted to it, shall apply:
>
>   a. international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;
>
>   b. international custom, as evidence of a general practice accepted as law;
>
>   c. the general principles of law recognized by civilized nations;
>
>   d. subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.
>
> 2. This provision shall not prejudice the power of the Court to decide a case *ex aequo et bono*, if the parties agree thereto.

[86] Also known as traditional legal method or black-letter law; or as expository or examination of black-letter law; see e.g.: Terry Hutchinson, 'The Doctrinal Method: Incorporating Interdisciplinary Methods in Reforming the Law' (2015) 8 Erasmus Law Review 130.

As mentioned above, any potential understanding of the notion of international responsibility for activities on outer space has recourse to somewhat limited – more so than in other areas of international law – legal sources due to the unusual, for public international law, lack of judicial pronouncements on international space law.[87] However, judicial decisions, as the teachings of jurists, remain subsidiary means of interpretation in the methodology of the Court.

Applied to international responsibility for activities in outer space, this study addresses Article VI of the Outer Space Treaty mainly by reviewing international and national instruments and/or documents of space law and non-legally binding instruments. Scholarly opinions are used to supplement this analysis.

The means used in this study regarding the sources of law doctrine are, more specifically, firstly, to consult the sources of law: these include the five UN treaties on outer space through treaty interpretation where necessary as well as general principles of law (Article 38(1)(c) of the ICJ Statute). With regard to subsidiary means, although there is no international case law referring to the law of outer space, there are judicial decisions from other substantive areas of law that have importance due to their pronouncement on international responsibility law.[88]

The dogmatic method in its application in this study aligns with the systemic vision of international law, whereby international norms are understood as creating a coherent, logical, and hierarchical order.[89] In this understanding of international law, traditional legal tools of interpretation, deduction, and inference are used; additionally, basic principles and underlying norms of the legal systems as a way to provide justification for legal norms.[90]

Non-legally binding instruments in international law

In international law, there is a wide range of instruments, such as General Assembly recommendations, UN general comments, ILC reports, or guidelines, that although lacking legally binding force, can be understood as exerting some form of normative power. They are not sources of law within the realm of Article 38 of the ICJ Statute, but nevertheless may aim to potentially influence subsequent conduct or express a

[87] Because of the lack of judicial decisions, the role that is taken by the other subsidiary means under Art. 38 ICJ Statute, the teachings of the most highly qualified publicists, has been traditionally treated as augmented in significance in the realm of international space law. It may be expected that this will remain so at least until the time comes when it will be possible to draw on judicial decisions. This comes into play easily as international commentators mostly refer to general issues, whereas the work of judges in a given case addresses the specifics.

[88] E.g. *Chorzów Factory* Case (n 34).

[89] Eyal Benvenisti, 'The Conception of International Law as a Legal System Focus Section: Typisch Deutsch: Is There a German Approach to International Law: Views from the Outside' (2007) 50 German Yearbook of International Law 393.

[90] Ibid. p. 396.

political will. They are sometimes referenced as 'soft *law*' – however, the more precise denotation, and terminology of preference in the present study, is 'non-legally binding instruments', as they do not constitute 'law'.[91]

In the field of international space law, non-legally binding instruments play an important role. This is based on the historical development of international space law. In the early days after the establishment of COPUOS, five treaties could be agreed upon and adopted, four of which are considered successful and are still attracting additional States for ratification.[92] 1979 marks the last year – for the time being – that international agreement on a legally binding instrument was achieved.[93] From this initial era concentrating on legally binding instruments up until today, COPUOS has shifted towards the adoption of non-legally binding instruments.[94] Their importance in international space law should not be underestimated.[95]

As COPUOS is a committee operating on the basis of consensus, non-legally binding instruments adopted by this body signify the agreement – or, at least, tacit consent – of member States of the Committee. We have seen this in recent years, for example, with the adoption of the Space Debris Mitigation Guidelines[96] or the Long-term Sustainability Guidelines.[97] Much of the work adopted by COPUOS is consequently confirmed by the UN General Assembly Fourth Committee. The ICJ stated in 1996 that General Assembly resolutions can sometimes have normative value and can provide evidence for a legal rule or emerging *opinio juris*.[98] Indeed,

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[91] This is also in line with a positivist understanding of international law.

[92] UN Doc. A/AC.105/C.2/2023/CRP.3, COPUOS, 'Status of International Agreements relating to activities in outer space as at 1 January 2023' 20 March 2023.

[93] This refers to the Moon Agreement; however, the subsequent ratifications of this agreement were low. The last 'successful' space treaty is the Registration Convention, signed in 1974 and entered into force in 1976.

[94] See also: phases of space law making in the present study, Chapter 4 Section 4.2 *International space law: international responsibility for activities in outer space*.

[95] See for an all-encompassing overview on the role of non-legally binding instruments in international space law: Irmgard Marboe (ed), *Soft Law in Outer Space: The Function of Non-Binding Norms in International Space Law* (1st edn Brill 2012).

[96] General Assembly Resolution A/RES/62/217, International cooperation in the peaceful uses of outer space, 22 December 2007 (endorsing the Space Debris Mitigation Guidelines of COPUOS, ibid. para. 26). Space Debris Mitigation Guidelines: UN Doc. A/62/20, 'Report of the Committee on the Peaceful Uses of Outer Space, Fiftieth session (6-15 June 2007)' paras. 117 and 118 and annex.

[97] UN Doc. A/74/20, COPUOS, 'Report of the Committee on the Peaceful Uses of Outer Space, Sixty-second session (12-21 June 2019)' para. 163 and annex II. The Guidelines have in the meantime also been published in the format of a booklet: <https://www.unoosa.org/documents/pdf/PromotingSpaceSustainability/Publication-_Final_English_version.pdf> accessed 27 October 2023.

[98] ICJ, *Legality of the Threat or Use of Nuclear Weapons* Advisory Opinion 1996 ICJ Reports 226 (8 July) para. 70: "The Court notes that General Assembly resolutions, even if they are not binding, may sometimes have normative value. They can, in certain circumstances, provide evidence important for establishing the existence of a rule or the emergence of an opinio juris. To establish

some authors use them in relation to establishing (emerging) norms of customary international law.[99]

For these reasons, non-legally binding instruments enjoy a high relevance within international space law.[100] However, as is already clarified by their designation as *non*-legally binding instruments, they cannot be considered as part of international space law in a legally binding sense but instead constitute the expression of political will or, possibly, State practice.[101] In this study, they are taken into account as a means of interpretation under the Vienna Convention on the Law of Treaties. This method is considered more closely below after having introduced the main provisions on treaty interpretation under the Convention.

Law of treaties

Treaty interpretation in international law is guided by the law of treaties, which has as its main instrument the Vienna Convention on the Law of Treaties of 1969.[102] The Convention states in section 3 'General interpretation of treaties' (Articles 31-33 of the Convention) the basic rules for interpretation of treaties. In addition to the Convention, with its 116 State parties and 45 signatory States,[103] being considered a successful international agreement, Articles 31 to 33 of the Convention are now considered to reflect customary international law[104] and are therewith binding on the

whether this is true of a given General Assembly resolution, it is necessary to look at its content and the conditions of its adoption; it is also necessary to see whether an opinio juris exists as to its normative character. Or a series of resolutions may show the gradual evolution of the opinio juris required for the establishment of a new rule."

[99] See e.g.: Masson-Zwaan (n 54).

[100] See also for a discussion: ibid.

[101] See also e.g. Pierre-Marie Dupuy, 'Soft law and the international law of the environment' (1991) 12 Michigan Journal of International Law 2; Alan Boyle, 'Soft law in international law-making'; Anthea Roberts and Sandesh Sivakumaran, 'The theory and reality of the sources of international law', both in: Malcolm D. Evans (ed), *International Law* (5th edn 2018) p. 89 and 119.

[102] The Conference was convened pursuant to General Assembly resolutions 2166 (XXI) of 5 December 1966 and 2287 (XXII) of 6 December 1967. The Conference held two sessions, both at the *Neue Hofburg* in Vienna, the first session from 26 March to 24 May 1968 and the second session from 9 April to 22 May 1969. In addition to the Convention, the Conference adopted the Final Act and certain declarations and resolutions, which are annexed to that Act. By unanimous decision of the Conference, the original of the Final Act was deposited in the archives of the Federal Ministry for Foreign Affairs of Austria. The text of the Final Act is included in document A/CONF.39/11/Add.2. It entered into force on 27 January 1980, in accordance with Art. 84(1) of the Convention. See for more details and the text of the Convention: 'United Nations Treaty Collection' <https://treaties.un.org/pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXIII-1&chapter=23&Temp=mtdsg3&clang=_en> accessed 27 October 2023.

[103] See: 'Vienna Convention on the Law of Treaties' <https://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XXIII/XXIII-1.en.pdf> accessed 27 October 2023.

[104] ICJ, *Case Concerning the Arbitral Award of 31 July 1989* (Guinea-Bissau v. Senegal) Judgment 1991 ICJ Reports 53 (12 November) para. 48, stating that "These principles are reflected in

international community of States regardless of their individual ratification of, or accession to, the Convention.[105]

General law on interpretation of treaties

Article 31(1) of the Vienna Convention on the Law of Treaties formulates the basic rule of treaty interpretation:

> A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.[106]

The Article further clarifies in Sub (2) regarding the context for the purpose of the interpretation of a treaty, that in addition to the treaty text, including its preamble and annexes, it shall be taken into account:

> 2. The context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes:
>
> (a) any agreement relating to the treaty which was made between all the parties in connection with the conclusion of the treaty;
>
> (b) any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty.[107]

Article 31(3) lists potentially applicable means of interpretation that expand on the context of the treaty (and are applied in the same step of procedure): subsequent agreements between the parties, subsequent practice, and relevant rules of international law. The paragraph reads in full:

> 3. There shall be taken into account, together with the context:
>
> (a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;
>
> (b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;
>
> (c) any relevant rules of international law applicable in the relations between the parties.[108]

Articles 31 and 32 of the Vienna Convention on the Law of Treaties, which may in many respects be considered as a codification of existing customary international law on the point". See also for a discussion on the phases of the ICJ after the adoption of the text of the Convention: Richard Gardiner, *Treaty Interpretation* (2nd edn OUP 2015) p. 15-17.

[105] Not binding on persistent objectors; see for a discussion: Enzo Cannizzaro (ed), *The Law of Treaties Beyond the Vienna Convention* (OUP 2011).

[106] Art. 31(1) Vienna Convention on the Law of Treaties.

[107] Art. 31(2) Vienna Convention on the Law of Treaties.

[108] Art. 31(3) Vienna Convention on the Law of Treaties.

Lastly, Sub 4 of Article 31 of the Convention states that "[a] special meaning shall be given to a term if it is established that the parties so intended".[109]

If application of Article 31 of the Convention does not lead to the desired clarification of meaning of a treaty or provision thereof, Article 32 clarifies which supplementary means of interpretation may apply.

> Recourse may be had to supplementary means of interpretation, including the preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the application of article 31, or to determine the meaning when the interpretation according to Article 31:
>
> (a) leaves the meaning ambiguous or obscure; or
>
> (b) leads to a result which is manifestly absurd or unreasonable.[110]

Lastly, Article 33 of the Vienna Convention on the Law of Treaties applies in case of treaties that have been authenticated in two or more languages. This is of importance with regard to international space law, as currently, there are six official UN languages: Arabic, Chinese, English, French, Russian, and Spanish. The Chinese, English, French, Russian, and Spanish language versions according to the Outer Space Treaty are equally authentic.[111] The provision reads:

> 1. When a treaty has been authenticated in two or more languages, the text is equally authoritative in each language, unless the treaty provides or the parties agree that, in case of divergence, a particular text shall prevail.
>
> 2. A version of the treaty in a language other than one of those in which the text was authenticated shall be considered an authentic text only if the treaty so provides or the parties so agree.
>
> 3. The terms of the treaty are presumed to have the same meaning in each authentic text.
>
> 4. Except where a particular text prevails in accordance with paragraph 1, when a comparison of the authentic texts discloses a difference of meaning which the application of articles 31 and 32 does not remove, the meaning which best reconciles the texts, having regard to the object and purpose of the treaty, shall be adopted[112]

With regard to applying supplementary means of interpretation in accordance with Article 32 of the Vienna Convention, it may be mentioned that the drafting of both the *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space* (Legal Principles Declaration)[113] and the Outer

[109] Art. 31(4) Vienna Convention on the Law of Treaties.

[110] Art. 31(1) Vienna Convention on the Law of Treaties.

[111] Art. XVII Outer Space Treaty. Arabic only became an official language in the 1970s, therefore, it was not an official language when the outer space treaties were negotiated.

[112] Art. 33 Vienna Convention on the Law of Treaties.

[113] Resolution adopted by the General Assembly 1962 (XVIII). Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, 1280th plenary meeting, 13 December 1963.

Space Treaty took place in English; therefore, the English language version lends itself well for legal interpretation and forms the basis for discussion in this study.[114]

The doctrine of intertemporality

The doctrine of intertemporality concerns the rules of treaty interpretation that should be followed in order to interpret the terms of a treaty: the legal rules applicable at the time of adoption of the treaty, or the legal rules at the time of interpretation. By recourse to the doctrine of intertemporality, today's rules on treaty interpretation will be followed. The doctrine of intertemporality goes back to the *Island of Palmas* case of 1928, where it was outlined by Judge Huber as follows: "[a] judicial fact must be appreciated in the light of the law contemporary with it, and not of the law in force at the time such a dispute in regard to it arises or falls to be settled".[115] Currently, two branches can be distinguished.[116] Whatley summarises them as follows:

> The first branch demands that the legality or validity of an act be evaluated against the standards in force at the time the act occurs. The second requires that we take into account any change in the applicable law over time. The first branch is generally accepted by international lawyers. The second has caused a great deal of controversy and confusion.[117]

The Vienna Convention on the Law of Treaties was adopted in 1969 and entered into force in 1980[118] – it consequently applies to all treaties concluded after its entry into force.[119] Decisive here is the consent to be bound, and not the exact moment of

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[114] This is stated without prejudice to the equal hierarchy of all six official UN languages.

[115] PCA, *Island of Palmas case* (Netherlands v. United States of America) 1928 Reports of International Arbitral Awards Vol. II 829 (4 April) p. 845 (first part of the dictum). See also: Rosalyn Higgins, 'Some Observations on the Inter-Temporal Rule in International Law' in: Jerzy Makarczyk (ed), *Theory of International Law at the Threshold of the 21st Century: Essays in Honour of Krzystof Skubiszewski* (Brill 1996) p. 173.

[116] See for an overview: Steven Wheatley, 'Revisiting the Doctrine of Intertemporal Law' (2021) 41 Oxford Journal of Legal Studies 484. The current discussion concerns the *Chagos Archipelago* proceedings, where the UK argued that the right to self-determination of peoples did not exist at the time of separating the Chagos Archipelago from Mauritius in 1965, prior to the independence of Mauritius in 1968; the ICJ concluded, however, that the norm crystallised with the adoption of General Assembly Resolution 1514 (XV) in 1960 (Declaration on the Granting of Independence to Colonial Countries and Peoples), and its customary law status was confirmed in 1970 with the Declaration on Friendly Relations; General Assembly Resolution A/RES/1514 (XV), Declaration on the Granting of Independence to Colonial Countries and Peoples, 14 December 1960; General Assembly Resolution A/RES/2625 (XVII) Declaration on Principles of International Law concerning Friendly Relations and Cooperation among States in accordance with the Charter of the United Nations, 24 October 1970.

[117] Ibid. p. 484.

[118] See: 'United Nations Treaty Collection' (n 102).

[119] Art. 4 Vienna Convention on the Law of Treaties; consider also: application of Art. 28 Vienna Convention on the Law of Treaties on non-retroactivity to the Convention itself (the application

entering into force of a treaty.[120] However, since Articles 31 to 33 of the Vienna Convention on the Law of Treaties are widely considered to reflect customary international law,[121] they can be applied to an interpretation of the Outer Space Treaty of 1967. This is even more so, as the Outer Space Treaty codifies legal *principles* that guide States in conducting their space activities and necessarily must be assessed in light of contemporary circumstances, including the applicable rules of interpretation.[122]

The doctrine of dynamic interpretation

When taking recourse to the law of treaties, the temporal element is an essential one. It addresses the moment in time that the process of interpretation refers to. There are two approaches that can be distinguished: the static approach and the dynamic approach.[123] The *static* approach, also known as 'principle of contemporaneity', aims at an interpretation of the terms of the treaty in light of the language as it was used at the time of the conclusion of the treaty. To the contrary, the doctrine of *dynamic* interpretation of treaties aims at establishing the meaning of the terms of the treaty at the moment of interpretation of the treaty. It is also sometimes referred to as 'evolutionary interpretation'. International judicial practice as well as academic commentary advocate both approaches. The prevailing view in academic

of the Vienna Convention on the Law of Treaties to interpretation of its own provisions is debated).

[120] Part II of the Vienna Convention on the Law of Treaties, esp. see: Art. 18; see also: Oliver Dörr and Kisten Schmalenbach, *Vienna Convention on the Law of Treaties – A Commentary* (Springer 2012) p. 87.

[121] ILC, Draft Conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties with commentaries, 2018, stating in Conclusion 2 that "Articles 31 and 32 of the Vienna Convention on the Law of Treaties set forth, respectively, the general rule of interpretation and the recourse to supplementary means of interpretation. These rules also apply as customary international law"; International Law Commission, 'Draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties, with commentaries' 2018 p. 2. International courts and scholarship widely recognises Arts. 31-33 of the Convention as reflecting customary international law; see e.g. Dörr and Schmalenbach (n 120) p.524-525.

[122] As can be inferred from the discussion, the distinction between (1) the applicable rules of treaty interpretation and (2) the interpretation of the terms of the treaty in light of either the circumstances at the time of conclusion of the treaty or under contemporary circumstances is not always kept clearly by international courts and tribunals and scholarship. In my understanding, the differentiation assists in determining the relevant rules of treaty interpretation (here, the Vienna Convention as reflecting customary international law; thus methodology) and the ensuing interpretation of the terms of the treaty (here, assessment of the substantial legal regime for international responsibility for activities on outer space).

[123] Dörr and Schmalenbach (n 120) p. 533.

commentary is that the static approach is the basic rule, which can be complemented by dynamic interpretation under particular circumstances.[124]

The ILC discussed the temporal aspect of treaty interpretation in its work leading to the Vienna Convention on the Law of Treaties, but ultimately did not include it expressly in Articles 31 to 33.[125] In judicial practice, resort to the doctrine of dynamic interpretation is taken for the interpretation of generic terms. Dörr and Schmalenbach provide the following overview:

> As an exception to that rule, the dynamic approach is being used for interpreting generic terms, *ie* terms in a treaty whose content the Parties expected would change through time and which they, therefore, presumably intended to be given its meaning in light of the circumstances prevailing at the time of interpretation. This approach was for the first time applied by the ICJ in the *Namibia* opinion to the phrase "sacred trust of civilisation"[126] and in the *Aegean Sea Continental Shelf* case to the formula 'territorial status'.[127] Also, judicial practice in the WTO adopted the evolutionary method for interpreting concepts such as 'natural resources'[128] or 'sound recording' and 'distribution'.[129]

Moreover, the European Court of Human Rights (ECtHR) is known for its recourse to dynamic interpretation by seeing the European Convention on Human Rights

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[124] See e.g., for a comprehensive analysis: Ulf Linderfalk, *On The Interpretation of Treaties – The Modern International Law as Expressed in the 1969 Vienna Convention on the Law of Treaties* (Springer 2007) p. 73-74, concluding that the correct "description of the present legal state-of-affairs is that represented" by "the decisive factor for determining 'the ordinary meaning' of the terms of a treaty" being "either historical or contemporary language, depending on the circumstances"; Dörr and Schmalenbach (n 120) p. 533. The ICJ took recourse to the static approach e.g. in *Rights of US Nationals In Morocco*, when it assessed linguistic usage at the time of conclusion of the treaty, or in *Land and Maritime Boundary Between Cameroon and Nigeria* when it assessed the intention of the parties at the time of conclusion of the treaty; ICJ, *Rights of US Nationals in Morocco* (France v. United States of America) 1952 ICJ Reports 176 (27 August) para. 189; ICJ, *Land and Maritime Boundary Between Cameroon and Nigeria* (Cameroon v. Nigeria; Equatorial Guinea intervening) 2002 ICJ Reports 303 (10 October) para. 59.

[125] Dörr and Schmalenbach (n 120) p. 533.

[126] ICJ, *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) Notwithstanding Security Council Resolution 276 (1970)* Advisory Opinion 1971 ICJ Reports 16 (21 June), para 53.

[127] ICJ, *Aegean Sea Continental Shelf Case* (Greece v. Turkey) (Jurisdiction) 1978 ICJ Reports 3 (19 December) para 77. Note that the term for interpretation 'territorial status' in *Aegean Shelf* was contained in a unilateral declaration; see also: Ulf Linderfalk, 'Doing the Right Thing for the Right Reason: Why Dynamic or Static Approaches Should be Taken in the Interpretation of Treaties' (2008) 10 International Community Law Review 109.

[128] World Trade Organization (WTO) Appellate Body, *United States – Import Prohibition of Certain Shrimp and Shrimp Products* 1998 WT/DS58/AB/R (12 October) para. 130.

[129] WTO Appellate Body, *China – Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products* 2009 WT/DS363/AB/R (21 December) para. 369.

(ECHR) as a 'living instrument', which must be interpreted "in light of present-day conditions".[130] This is commonly reasoned with the "quasi-constitutional character of the ECHR and the need to receive directions from it for effectively implementing human rights guarantees in a modern world",[131] but finds its delimitation in being restricted to asserting existing human rights under the Convention.[132]

This study takes recourse to dynamic interpretation, as it views the Outer Space Treaty as a principles treaty, that codified general principles to guide States in conducting activities in outer space. Specifically, with regard to the generic terms in Article VI it is beneficial to take recourse to the doctrine. As an example, 'international responsibility' is a term referring to an international legal principle and should be interpreted in light of contemporary legal developments, in order not to devoid the content of the provision of its actual meaning.

The relevance of the law of treaties for international space law

In the case of the Outer Space Treaty, which is a branch of public international law subject to the secondary norms of the law of treaties in the absence of a more specific legal regulation, the developments under the law of treaties are relevant despite having taken place after the moment of codification or entry into force of the Outer Space Treaty. International space law does not contain specific rules on treaty interpretation, therefore, the rules on treaty interpretation under the Vienna Convention on the Law of Treaties apply to its interpretation. The interpretation of the UN treaties on outer space as applied in this study uses the text of the treaty, and additionally takes recourse to supplementary means such as the materials available on the UNOOSA website (e.g., COPUOS documents, *travaux préparatoires* of the UN treaties on outer space,[133] as well as audio recordings of hearings). When interpreting treaties – old and young alike – to assess, for example, the 'ordinary meaning' of a provision, today's ordinary language should be used. This is known as the doctrine of dynamic interpretation.[134] It applies to the interpretation of specific treaty term rather than to the treaty as a whole.[135] The doctrine of dynamic

[130] E.g.: ECtHR, *Tyrer v. United Kingdom* 1978 Application No. 5856/72 Series A/26 (25 April) para. 31.

[131] Dörr and Schmalenbach (n 120) p. 535.

[132] ECtHR, *Johnston et al v. Ireland* 1986 Application No. 9697/82 Series A/112 (18 December) para. 53; ECtHR, *Emonet et al v. Switzerland* 2007 Application No. 39051/03 (13 December) para. 66.

[133] However, it is important not to assign the *travaux* a higher value based on the absence of judicial decisions.

[134] See e.g., for a comprehensive analysis: Ulf Linderfalk, *Interpretation* (n 124).

[135] See Linderfalk's and Hilling's publication on the use of OECD Commentaries as interpretative aids and esp. the final paras. of the article on the question of whether the doctrine of dynamic interpretation applies; Ulf Linderfalk and Maria Hilling, 'The Use of OECD Commentaries as Interpretative Aids: The Static/Ambulatory Approaches Debate Considered from the Perspective of International Law' (2014) 2015 Nordic Tax Journal 34.

interpretation is taken recourse with regard to the establishment of the 'ordinary meaning' of certain terms in Article VI of the Outer Space Treaty, that can be considered generic terms that were codified as terms of principles applicable to international space law.

The goal or ultimate outcome of treaty interpretation as applied here is the clarification of the provision of law that is being interpreted; thus, in this study, treaty interpretation serves as a tool to reach the ambition of understanding the law of responsibility for activities in outer space.

Non-legally binding instruments as means of treaty interpretation

International responsibility for activities in outer space is also referred to by non-legally binding international space law instruments – instruments that, despite not being directly legally binding, may nevertheless carry some political or moral weight. In some instances, they can also contribute to the formation or demonstration of customary international law (expression of *opinio juris*), and by this, create legally binding power. Nonetheless, whatever their benefit may be, they do not constitute *legal* instruments in the sense of containing binding international obligations. They can, however, be taken into consideration in the process of interpretation of legally binding instruments.[136] More specifically, modern treaty regimes have been said to draw heavily on complementary non-binding agreements to specify their legally binding obligations. Boyle states:[137]

> Soft law is manifestly a multi-faceted concept, whose relationship to treaties, custom, and general principles of law is both subtle and diverse. At its simplest, soft law facilitates progressive evolution of customary international law. It presents alternatives to law-making by treaty in certain circumstances; at other times it complements treaties, while also providing different ways of understanding the legal effect of different kinds of treaty. Those who maintain that soft law is not law have perhaps missed some of the points made here; moreover those who see a treaty as necessarily having greater legal effect than soft law have perhaps not looked hard enough at the 'infinite variety' of treaties, to quote Baxter once more. Soft law has generally been more helpful to the process of international law-making than it has been objectionable, and that is the key point. It is inconceivable that modern treaty regimes or international organizations could function successfully without resort to soft law. Nor is it likely that the ICJ will take a different view, given the way soft law is used by parties to international litigation to legitimize their legal arguments.

[136] See also: Andreas Zimmermann, 'Possible Indirect Legal Effects of Non-Legally Binding Instruments' [2021] CADHI Expert Workshop 'Non-Legally Binding Agreements in International Law' 26 March 2021 Strasbourg <https://rm.coe.int/1-2-zimmermann-indirect-legal-effects-of-mous-statement/1680a23584> accessed 27 October 2023.

[137] Alan Boyle, 'Soft Law' (n 101) p. 135.

Non-legally binding instruments can take influence on legal interpretation via several avenues. Under Article 31(1) of the Vienna Convention, treaties shall be interpreted "in their *context*", which in accordance with Article 31(2) of the Convention refers to the 'internal' context of the treaty. This presupposes that it was concluded in connection with the conclusion of the treaty itself, which in the case of space law-making, will be rather less often the case than more often. However, in accordance with Article 31(3) of the Vienna Convention, the 'external' context of the treaty shall be taken into consideration during its interpretation. This refers to "any *subsequent* agreement" or "any *subsequent* practice".[138] This understanding of Article 31(3) has also been confirmed by the ILC's work.[139] This constitutes an effective pathway for the inclusion of non-legally binding instruments adopted by COPUOS in the process of interpretation of space law treaties by way of subsequent practice.

Methodological relevance of the Articles on State Responsibility and Articles on Responsibility of International Organisations

The Articles on State Responsibility as well as the Articles on Responsibility of International Organisations, which followed in their wake and to a large extent assumed the former's composition, are built on a particular structure that is clearly set out by their organisation into chapters and by their sequence of articles. Through their structure, they establish a methodology that may be followed when addressing an assessment of international responsibility. In short, international responsibility requires the existence of an internationally wrongful act. For the establishment of an internationally wrongful act, breach and attribution must be assessed (the order of assessment of the two elements is not determined). Once found to exist, the circumstances precluding wrongfulness may prevent the illegality of the conduct if applicable.[140] Finally, the consequences of the internationally wrongful act have to be determined. These consist of reparation, which can take the shape of, preferably, restitution, and alternatively, compensation, and/or satisfaction. A combination of the two or more forms of reparation is possible.

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[138] Art. 31(3)(a) and (b) Vienna Convention on the Law of Treaties.

[139] UN Doc. A/73/10, ILC, 'Report of the International Law Commission, Seventieth session (30 April-1June and 2 July-10 August 2018)' containing the Draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties, with commentaries Conclusion 3, Commentary, para. 4; Conclusion 6, Commentary, para. 23; Conclusion 10 Nr. 1, Commentary, paras. 7 and 9.

[140] Here, the circumstances precluding wrongfulness are understood as rendering impossible the establishment of an internationally wrongful act through removing the illegality of the breach. However, this is not the only way that the impact of circumstances precluding wrongfulness on the establishment of an internationally wrongful act can be understood: in another understanding, the circumstances precluding wrongfulness applied does not affect the existence of consequences of international responsibility. See e.g.: Crawford, *Principles* (n 82) p. 563.

This method of establishment of the internationally wrongful act by assessing the different elements of international responsibility is deemed in this study to be part and parcel of international responsibility law. As such, that methodology – in the absence of a more specific methodology on assessing international responsibility for activities in outer space as part of international space law – can be applied to the latter via the doctrine of dynamic interpretation, as well as through its status of customary international law.[141] It is noteworthy that this methodology of assessing international responsibility offers a number of advantages, such as a clear structure and logical order of the methodological steps to be followed. First is the establishment of an internationally wrongful act through the assessment of its constitutive elements breach and attribution. Consecutively, the applicability of the circumstances precluding wrongfulness is excluded. Once the existence of an internationally wrongful act, and therewith, the existence of international responsibility has been established,[142] the consequences of international responsibility can be determined (reparation). These pose a new legal obligation on the wrongdoing international actor, in addition to the obligations to cease the wrongful conduct and to continuously perform the legal obligation breached. The terms and definitions as used under international responsibility law are applied also to the assessment of international responsibility for activities in outer space.

Conceptually speaking, both the law of treaties and international responsibility law may potentially apply to breaches of treaties. The choice affects the outcome, as international responsibility law is different from the international law of treaties with regard to the consequences that it elicits. While the breach of a treaty under the law of treaties can lead to termination, thus the end of the treaty relationship; the breach of a treaty under international responsibility law leads to a new legal obligation: that of reparation. Sometimes, there is a choice in the field of law that should be applied to a given case.[143]

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[141] It is argued here that the methodology as set out in international responsibility law has become part of international responsibility law through their good reception by the international community of States. See for a collection of international case law on international responsibility: UN Doc. ST/LEG/SER.B/25/Rev.1, United Nations, 'Materials on the Responsibility of States for Internationally Wrongful Acts' (2nd vol United Nations Publication 2023) (ISBN 978-92-1-133822-5). Moreover, the ICJ has since followed the methodology in its case law. See e.g.: Rosalyn Higgins Dbe Qc, 'The International Court of Justice: Selected Issues of State Responsibility' in Rosalyn Higgins (ed), *Themes and Theories* (OUP 2009). It is noteworthy that the elements of breach and attribution can be assessed in indiscriminate order and have been addressed without a fixed sequence by the ICJ. Thus, the sequence of an assessment of breach and attribution is not part of the customary notion of the international responsibility methodology that has emerged from the ILC codification process.

[142] Art. 1 Articles on State Responsibility.

[143] For instance, in *Gabčíkovo-Nagymaros*, the ICJ pronounced on the choice of law to apply the law of treaties or international responsibility law to the case. It stated that the consequences of a breach of an obligation can be found in international responsibility law; see: *Gabčíkovo-Nagymaros Project* Case (n 26). In the *Rainbow Warrior* Arbitration, the legal assessment of a

Since international responsibility as legally regulated for activities in outer space does not formulate a specific methodology with regard to the establishment of an internationally wrongful act, the methodological steps as prescribed by the international responsibility law in the Articles on State Responsibility and Articles on Responsibility of International Organisations are to be followed.

Methodological differentiation between actors and activities – the 'qualifying factor'

International space law, as already highlighted in the title of the Outer Space Treaty: *Treaty on Principles Governing the* Activities *of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies,* is sometimes said to concern itself with activities in outer space.[144] However, when looking closer at this body of law, the reality of norms under international space law is more complex: a general distinction can be made when analysing the applicable law between norms addressing the *activities* carried out in outer space versus addressing the *actors* which carry out activities in outer space. Below, the primary focus of a legal norm on either activities or actors is defined as 'qualifying factor' of a legal norm.

Naturally, both kinds of norms, those primarily addressing activities and those primarily addressing actors, are complementary and mutually dependent, so that an assessment in isolation is not possible. No activity can be carried out with some actor carrying it out; even if the activity is automated, at some point some actor must have taken the decision to start the chain of action. Likewise, no actor can engage in conduct without the necessary action of undertaking an activity. Therefore, on a foundational level, the obvious entanglement of the two aspects, both in the drafting process, and in the analysis of a legal text, must be acknowledged.

However, the difference lies in the finer details of a legal norm: on a superordinated level, does the legal norm *focus* more on the actor or the activity carried out? The distinction of norms in the first place addressing activities vs. norms addressing actors is thus the one that sets the tone and emphasis of the legal norm. While in some legal norms, the activity will stand in the foreground, entailing consequences for its actor; in other legal norms, the *status* of the actor will be more dominant, giving rise to a consequence for the activity due to the legal qualification of the

breach of an arbitration agreement (treaty) was considered to involve both the law of treaties and international responsibility law: while the fulfilment of a treaty or its obligations falls under the law of treaties, the consequences of the breach are to be assessed under international responsibility law; UN Arbitration Tribunal, *Case concerning the difference between New Zealand and France concerning the interpretation or application of two agreements concluded on 9 July 1986 between the two States and which related to the problems arising from the Rainbow Warrior Affair* (New Zealand v. France) Decision 1990 Reports of International Arbitral Awards Vol XX 215 (30 April).

[144] Emphasis added.

actor. This is supported by the title of the Outer Space Treaty as well, which in addition to referring to *activities*, limits those to *States*, i.e., *actors*.

The distinction of activities and actors as the 'qualifying factor' of a legal norm concerns legal norms in general. The considerations below, due to the subject matter of this study, limit themselves the relevant legal norms of international space law. However, a wider application of this methodological tool – beyond international space law, and even in a national legal context, is not excluded.

Examples of legal norms analysed in the present study

In international space law, with the limitation of the legal norms considered in the present study, the methodological differentiation of norms primarily addressing actors or activities leads to the following observations. International responsibility for activities in outer space is assigned for *national activities*, which is commonly interpreted as referring to the jurisdiction of the State executing the activity. In the same vein, the aspect of the actor is not irrelevant, as it is only States (and international organisations, if given legal personality under international law; i.e., international intergovernmental organisations) that can incur international responsibility. However, despite the requirement of the executing actor being a State or international organisation,[145] the emphasis lies with the *activity,* which must qualify as *national* ("States Parties to the Treaty shall bear international responsibility […] for assuring that *national* activities are carried out in conformity with the provisions set forth in the present Treaty"[146]). Therewith, the qualifying factor in the case of Article VI Sentence 1 of the Outer Space Treaty relates to the *activity*. As a characteristic, a legal norm designed with the qualifying factor being the activity, is *dynamic*, because it targets an activity, that besides having to qualify as national, can take various shapes and forms.

An example of the qualifying factor relating to the actor instead can for instance be found in the legal regulation of international liability for activities in outer space. As per Article VII of the Outer Space Treaty and the Liability Convention, a launching State – through the four-fold definition of the launching State as the State procuring the launch, or launching of an object into outer space, or from whose territory or facility an object is launched[147] – is assigned a *status*, bearing the irreversible consequence that the launching State is internationally liable for an object launched into outer space forever ("once a launching State, always a launching State").[148] Thus, while naturally, the definition of the launching State

[145] The actor is the same as under public international law: actors that have legal personality under international law; i.e. States and international organisations.

[146] Art. VI Sentence 1 Outer Space Treaty.

[147] Art. VII Outer Space Treaty.

[148] Naturally, in the event of a transfer of ownership to a non-launching State, this does not preclude the original launching State(s) from concluding an agreement with the purchasing State on taking on the international liability for said object. However, from the perspective of international space

itself refers to the activity of said State (or States), the qualifying factor here is one that primarily relates to the *actor* and assigns a certain status to them (that of 'launching State'). The characteristic of the legal norm must thus be viewed as *static*, as the assignment of the legal status cannot be changed after the launch has occurred.

Temporal dimension – static and dynamic

In sum, the distinction between the qualifying factor relating to activities or actors is essential with regard to its temporal dimension. For the example of international liability for activities in outer space, with its qualifying factor relating to the actor, the actor is assigned a certain status or qualification because of their activity at a defined point in time, bearing as a consequence that assignment of a certain legal status. Because after the fact, here the occurrence of the launch, the status cannot be altered anymore, as it depends on the moment of launch, legal norms with the qualifying factor being actors have a *static* characteristic.

In contrast, legal norms with the qualifying factor being activities bear a *dynamic* characteristic. This is because – while the activity has to fulfil certain requirements, for instance, in the example of international responsibility for activities in outer space, to be a national activity – it does not concern whether the activity has already taken place, but unites all national activities under its umbrella. What kinds of activities are being carried out and qualify as national activities may change over time. The activity as such is not defined, as it is for example with the definition of the launching State, where the launch is defined by the four-fold criteria referred to above.

With that differentiation comes an important aspect that relates to the interpretation of legal norms, especially when putting them into relation to one another. Generally speaking, legal norms that share the same qualifying factor can be easily related to each other. For instance, the principle of international liability in Article VII of the Outer Space Treaty hinges on the launching State, which is a legal norm with the qualifying factor *actor*. Registration of objects launched into outer space in accordance with the Registration Convention[149] also hinges on the concept of the launching State; in this case, limited to one of the (potentially several) launching States. It thus also constitutes a legal norm with the qualifying factor *actor*. When assessing their interrelationship, both norms appear compatible, because both assign

law and a potential victim State suffering damage from this space object, it does not affect the persistence of international liability of the original launching State(s). If the victim State should decide so, it can – under international space law – approach the original launching State(s) for damage, who after fulfilment of compensation towards the victim State can then in turn request the purchasing State to compensate the respective amount.

[149] Note that Art. VIII Outer Space Treaty does not yet define registration of objects launched into outer space as imposed upon the launching State, but addresses State parties to the Treaty who carry the object on their registry.

a certain *status*. For international liability, that status can apply to several States, whereas in the case of registration, a limitation is prescribed of the status of State of registry to one State – so the application of both legal norms does not lead to the same conclusion. However, the assessment as such and relationship between the norms is compatible and does not pose complications.

Norms that do not share the same qualifying factor, however, are less straightforward when putting them into relation to one another. When comparing the principle of international responsibility for activities in outer space, with its qualifying factor *activities*, to international liability for damage resulting from activities in outer space, the two norms have a different qualifying factor. Relating *national activities* to the *launching State*, consequentially, is a more complex task than in the previous example.

Relevance for the modern space age

The differentiation between the qualifying factor relating to actors or activities for legal norms can also be applied to a factual analysis, as in the above-mentioned characterisation of the modern space age. The four relevant factors that affect changes in the modern space age can be broken down into two aspects relating to the kind of space *activities* that are carried out, and two relating to the kinds of *actors* that carry out those activities.

With regard to the qualifying factor of activities, there is an increase in the total amount of space activities that are currently carried out, as well as an increase in the share of activities carried out by non-governmental entities among that total number. With regard to the qualifying factor of actors, there is an increase to be noted in the total number of actors globally that are carrying out space activities (including newcomer space-faring States), as well as an increase in the share among those actors of non-governmental entities. The overall shift towards a stronger emphasis on non-governmental activities and non-governmental actors is what defines the character of the modern space age.

Relevance for primary and secondary norms

The difference between the qualifying factor relating to actors or activities can also be applied to the distinction between primary and secondary norms. Primary norms can entail both legal norms that bear as a qualifying factor the emphasis on activities, as well as on actors. If a primary norm connects via its qualifying factor primarily to activities in outer space, an activity is classified in a specific way. For instance, Article II of the Outer Space Treaty states that "Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means".[150] This provision bears the effect of the *activity* of the (spacefaring) State party to the Outer

[150] Art. II Outer Space Treaty.

Space Treaty being curtailed by means of regulating the conduct. An example of a primary norm connecting via its qualifying factor to the actor is the one mentioned above on international liability of the launching State.

Secondary norms of international law, such as those under the law of treaties or international responsibility law, display a general tendency that the defining feature as per qualifying factor often hinges on the *activity*-characteristic, as it is the *de facto conduct* of the actor that gives rise to the establishment of, under international responsibility law, an internationally wrongful act; or a breach of treaty under the law of treaties.[151] Treaty law, because the conduct breaches the treaty or needs to be in conformity with it, also necessitates interpretation. However, neither aspect – actor or activity – can be regarded as isolated and return within the *systématique* of the Articles on State Responsibility, as elements for the establishment of an internationally wrongful act, for the finding of which both breach (*activity*) and attribution (*actor*) are required.

In sum, the application of the qualifying factor relating either to activities or actors offers the benefit that it can be methodologically assessed whether a provision assigns a certain status upon an actor or curtails the permissible conduct (activities). It furthermore serves in the legal analysis in the following chapters as a basis to clarify the relationship of the conceptions of international liability and international responsibility.

1.7. Structure of the present study

The structure of the main part of this study follows the sequence of the four individual research questions.

Chapter 2 sets the scene of the research within the context of the modern space age. It maps out the fundamental developments of the past years and central characteristics that the current space industry currently operates under, including the introduction of the actor/activity differentiation. As such, it is not based on the discussion of a specific research question, but rather provides the general factual background to the research.

Chapter 3 addresses the relationship between international space law as a field of international law with international law as a legal system. It analyses the interaction

[151] As a matter of international law, the scope of application of international norms by nature of the field of law is limited to actors that have a standing under international law. For primary norms, this will be primarily States and international organisations, and at times non-governmental entities if the primary norms so stipulate (e.g., international environmental law, international criminal law). The scope of application for secondary norms of international law is limited to States and international organisations.

between special and general law and provides for a theoretical context by reference to fragmentation of international law.

Chapter 4 builds on the analysis of the previous chapter. It applies what was generally determined before, to the context of international responsibility. Hence, it analyses the notions of international responsibility law both under international space law and under international responsibility law, and sets them in relation.

Chapter 5 also builds on the analysis of its previous chapter. It sets the notion of international responsibility for activities in outer space as analysed in Chapter 4 in context to other central notions of international space law, namely, those of international liability and registration of objects launched into outer space.

Chapter 6 turns to activities carried out by non-governmental entities and the legal obligations that State parties to the Outer Space Treaty are under: authorisation and continuing supervision.

Finally, Chapter 7 summarises the findings of the previous chapters and answers the overarching research question of this study in the context of the modern space age.

Chapter 2 – State and non-State sector developments in the modern space age

The way in which outer space activities[152] are carried out has undergone several changes in recent decades, which can be summarised under three main headings: firstly, the total amount of space activities has been increasing and continues to rise; secondly, from a traditional State-centred arena, space activities have expanded to encompass increasingly the activities of non-governmental actors in many phases of the activities; and thirdly, we are witnessing an increasing overall commercialisation of space activities.

This period of expansion and change within the global space industry is also associated with a growing start-up culture. The modern space age is sometimes dubbed as 'NewSpace', 'Space 2.0', the 'space industry revolution', 'space entrepreneurship', or the 'emerging space economy,' terms that encapsulate the changes in the way in which global space activities are being undertaken.[153] From an international legal perspective, they pose the challenge that a mostly civilian space market was never foreseen by the drafters of the five UN treaties on outer space.[154]

There is no agreed-upon definition of the terminology used to denote the modern space age. Mainly, it refers to a new way of thinking about outer space that grasps the utilisation of outer space in a new, more business-like, and financially invested

[152] In this study, activities in outer space, space activities, and outer space activities are used interchangeably. However, the terminology is intrinsically linked with the definition of outer space as well as the definition(s) of space activities under national space legislation. Generally speaking, activities in outer space encompass a broader range of activities than space activities do, as the latter might be defined (and limited) under the national space law of a relevant jurisdiction. See also the discussion of the definition and delimitation of outer space in Chapter 4 Section 4.2.3 *Legal assessment of Article VI of the Outer Space Treaty*.

[153] See e.g.: Joseph N. Pelton, *Space 2.0: Revolutionary Advances in the Space Industry* (Springer International 2019); Rod Pyle and Buzz Aldrin, *Space 2.0: How Private Spaceflight, a Resurgent NASA, and International Partners Are Creating a New Space Age* (BenBella Books 2019).

[154] Matthew Pascale, 'Space, the Final Frontier: Navigating the Complexities of Commercial Spaceflight, Resource Extraction, and Colonization' (2023) University of Illinois Journal of Law, Technology & Policy 151.

way, and expresses an aspiration to conquer unknown territory at the very least in a technical and commercial sense, if not the literal sense of conquering unknown areas of outer space. However, the terms are used in slightly different ways by various commentators. Pyle demarks the first space age ("Space 1.0") from the new "Space 2.0" by the end of the shuttle era in 2011, when *Atlantis* took off and returned as the final space shuttle of the programme.[155] Others set the boundary between the first space age and the second space age in the 1980s, when commercial space activities started to emerge on a more significant scale.[156] Arguably, the Ansari X Prize, which was set up to kick start private space flight, and was first awarded in 2004, has played a critical role in defining the modern space age.[157] While the 1950s to 1970s as the first era of the space age were characterised by the space race and heavily State-driven activities, during the 1980s, space activities widened to increasingly encompass commercial interests. By the 1990s, space exploration and space-related technologies were increasingly viewed as commonplace. But it was the award of the Ansari X Prize that led to the construction and launch of the first spaceship *not* funded by a governmental agency, thus jump-starting a new approach to space activities, where small teams can create innovation that before was only open to large governmental ventures. It sparked the creation of a whole industry,[158] and the modern space age had begun.

In the present study, the modern space age is used as a global and rather vague (and political) reference to a new way of approaching space, that is characterised by growth of private sector involvement in space activities and a change with regard to financial structures in the setup, development, and execution of space activities. Several current developments in the space industry facilitate and support a commercialisation of space activities: for instance, the opening of the global space economy; the engagement of a start-up culture; and venture capital investments with relatively short-lived investment-return requirements. Moreover, some States have adopted national legislation favourable to a private, commercial space industry. As an example, currently, the rapidly increasing number of commercial satellite

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[155] Pyle and Aldrin (n 155) p. 6-10.

[156] See e.g.: 'Space Launches by Country' (*ResearchGate*) <https://www.researchgate.net/figure/Space-Launches-by-Country-This-figure-describes-the-total-number-of-space-launches_fig3_320911538> accessed 27 October 2023.

[157] The Ansari X Prize was a space competition tendered out by the XPRIZE Foundation, a non-governmental non-profit organisation that hosts public competitions in order to boost technological developments. Initially called the X Prize, the competition offered a prize of 10 million USD to the first non-governmental organisation to launch a reusable crewed spacecraft into space within two weeks. It was renamed the Ansari X Prize in May 2004 and awarded in October 2004 to Tier One and their experimental spaceplane SpaceShipOne. See: 'XPRIZE Foundation Ansari Prize | XPRIZE Foundation' (*XPRIZE*) <https://www.xprize.org/prizes/ansari> accessed 27 October 2023.

[158] In the process of competing for the Ansari X Prize, 26 teams spent 100 million USD on developing their respective technologies and therewith, opened up a billion USD market.

systems can be witnessed.[159] A recurring element of space activities by private corporations in the modern space era is the creation of a profitable business case; in other words, the commercialisation of space activities is intrinsically linked with the current developments in the space industry. We are also seeing a change in the kind of actors in outer space, which is moving increasingly towards the non-governmental and private end of the spectrum.

2.1. Legal subjects under international law

Before considering the changes in the space industry of recent years in more detail, it should be noted, regarding terminology, that under international responsibility law, a distinction is commonly drawn between the conduct of States, international organisations, and non-State actors. This is primarily connected to legal standing under international law of actors on the international plane: while States are the traditional legal subjects – and actors – of international law, international organisations were awarded legal subjectivity tied to certain conditions as of 1949.[160] Non-State actors, however, traditionally did not possess legal standing under international law.[161]

A similar distinction can be found in Article VI of the Outer Space Treaty, which differentiates between the activities of States, international organisations, and non-governmental entities.[162] The reference to non-governmental entities under

[159] Commercial satellite systems comprise i.a. subscription satellite services, satellite imagery, satellite telecommunications, and satellite navigation.

[160] ICJ, *Reparation for Injuries Suffered in the Service of the United Nations* Advisory Opinion 1949 ICJ Reports 174 (11 April); concluding that the UN "is a subject of international law and capable of possessing international rights and duties, and that it has the capacity to maintain its rights by bringing international claims"; Edward Chukwuemeke Okeke, 'Legal Status of International Organizations' in Edward Chukwuemeke Okeke (ed), *Jurisdictional Immunities of States and International Organizations* (OUP 2018) p. 248.

[161] This is an evolving area, with certain branches of international law developing as precursors. The legal standing of non-State actors under international law is still not the rule but the exception: under international human rights law and international criminal law, for example, individuals may possess legal standing. However, when analysing international responsibility law, the overall tendency is still a rather traditional understanding of the role of non-State actors; although, also here, we see developments towards lowering thresholds for attribution of conduct of non-State actors to States and international organisations (we are, however, still considering situations where States and international organisations possess legal standing and incur international responsibility for the conduct of non-State actors; not non-State actors being granted legal standing under international responsibility law directly).

[162] The principle of international responsibility for activities in outer space as formulated in Art. VI Outer Space Treaty was reiterated in Art. 14(1) Moon Agreement of 1979; due to the prior codification of the principle in the Outer Space Treaty (entry into force 1967) as the foundational international convention for international space law, and the fact that the formulation of Art. 14(1) Moon Agreement to a large extent replicates it, the principle of international responsibility

international space law includes private actors, but also organisations that may either be of a national or international non-governmental nature; for instance, (non-private) universities and research organisations. Table 4 below shows an overview of how the different terminologies under international space law and international responsibility law relate to one another; and that essentially, the same categories of distinction are referenced only by using different labels: while public international law and international responsibility law differentiate between States, international organisations, and non-State actors; under international space law, a rephrasing toward governmental agencies (vs. States) and non-governmental entities (vs. non State-actors) is undertaken. This can be explained by the drafting history of the Outer Space Treaty and especially, by the terminology which was common at the time of negotiating the Treaty in the early 1960s.

Table 4 **Terminology for actors under international space law and international responsibility law**	
International responsibility law	***Responsibility under international space law (Article VI of the Outer Space Treaty)***
States	Governmental agencies
International organisations (intergovernmental)	International organisations (intergovernmental)
Non-State actors (NSA's)	Non-governmental entities (NGE's)

While the first two groups of space actors, States and international organisations, remained relatively unaltered under the conception of public international law in their foundational structures since the beginning of the space age, the nature of non-governmental entities carrying out activities in outer space has developed and expanded in variety and thus deserves further classification. This variety represents the essence of the developments during the current modern space age.

As regards non-governmental entities, a first-level distinction can be made between international and national non-governmental entities. On the international plane, there are numerous international non-governmental organisations engaged in space activities. On the national level, the diversity of non-State actors ranges from domestic non-governmental entities (NGO's) over educational institutions, private and/or commercial corporations, to private individuals, and potentially even terrorist entities.[163] It is also possible to have hybrid national-international non-governmental

for activities in outer space in this study is understood as referring to the same content as Art. VI Outer Space Treaty; even if, technically legally speaking, Art. 14(1) Moon Agreement counts towards the contents of the principle of international responsibility for activities in outer space.

[163] Kyriakopolous, for example, differentiates universities, individuals, organisations of satellite communication services, inter-governmental bodies, private commercial companies, and non-State entities potentially engaging in terrorist attacks; Georgios (George) D Kyriakopoulos, 'Legal Challenges Posed by the Action of Non-State Actors in Outer Space' in: Maria Manoli

organisations that have a multi-facetted organisational structure.[164] Table 5 below shows a (non-exclusive) listing of potential non-governmental players in the current space age.

Table 5 **Types of non-governmental actors engaged in space activities**
International, regional, and national non-governmental space actor categories
Non-governmental international organisations (NGIO's)
Non-governmental regional organisations (NGRO's)
Non-governmental domestic organisations (NGDO's)
Educational and research institutions (e.g. universities)
Private corporations
Private individuals (e.g. space tourism)
Terrorism entities

2.2. Four dimensions of a changing space industry

When analysing the changes that took place in the way in which space activities were carried out over the past decades, it is also possible to identify *four dimensions* regarding the implementation of space activities that have significantly changed in the modern space age. Those dimensions can be understood as the four pillars that have influenced the evolution of the current modern space age, and are shaping the characteristic changes that we are witnessing. Indeed, it can be expected that the trends indicated below will augment and intensify in the coming years.

The four dimensions as identified can be differentiated into two main subgroups. Two relate to an increase of *actors* involved in activities in outer space (points 1 and 2 in the table below), whereas the other two relate to a new kind of utilisation of outer space, or more specifically, a new kind of *activities* carried out in outer space (points 3 and 4 in Table 6 below). Regarding actors, a quantitative overall increase in the total number of space actors can be noted, including both governmental and non-governmental space actors (point 1), as well as a qualitative increase in the share among those space actors classifiable as non-governmental (point 2). Similarly, regarding activities, the total amount of space activities has increased quantitatively (point 3), while the share of space activities carried out by non-

and Sandy Belle Habchi (eds), *Conflicts in Space and the Rule of Law* (William S. Hein & Co., Inc. Publishing 2017) p. 274.

[164] An example is the structure of the *International Red Cross,* which exists on both domestic and international levels. I am not aware of an example in this regard of a space organization, but it can be presumed that a comparable structure may evolve with regard to space organisations.

governmental entities has increased relatively (point 4). These points are elaborated below.

Table 6 **Dimensions of change in the space arena with regard to non-governmental entities**		
	Quantitative increase	***Qualitative increase of non-governmental actors/activities***
Actors	Point 1 - Increase in total number of space actors Increase in total number of space actors, including new and emerging space-faring nations and non-governmental entities conducting space activities	Point 2 - Increase in share of non-governmental actors Increase in share of non-governmental actors among space actors
Activities	Point 3 - Increase in total number of space activities Increase in total amount of space activities, including new kinds of activities	Point 4 - Increase in share of non-governmental activities Increase in relative share of non-governmental (especially, private/commercial) space activities, including new kinds of activities

2.2.1. Increase in total number of space actors (point 1)

With regard to the changing arena of actors carrying out outer space activities, we are seeing changes both with regard to governmental activities as well as activities carried out by non-governmental entities. Firstly, there is an increase in space-faring nations, which includes many of the newcomer (or emerging) space-faring States.[165] These are States that are either actively seeking to become space-faring, often by designing space policies and domestic laws with a focus to boost their national space economies, or they become space-faring 'by association'. This means that they have one or more private or other non-governmental entity/entities under their jurisdiction which carry out space activities and therewith, trigger the State to become a space-faring nation. As the legal framework for activities in outer space is strongly State-centred – see for instance the key provisions on State responsibility, State liability, and registration of objects launched into outer space[166] by the State

[165] See e.g.: 'Emerging Spacefaring Nations' (European Space Policy Institute (ESPI) 2021) <https://www.espi.or.at/wp-content/uploads/2022/06/ESPI-Report-79-Emerging-Spacefaring-Nations-Executive-Summary.pdf> accessed 27 October 2023.

[166] With regard to the terminology used, this study uses objects launched into outer space interchangeably with space objects; however, it must be observed that object launched into outer space is the preferable wording due to (1) there being a somewhat circular definition of space object under international space law ("the term 'space object' includes component parts of a space object as well as its launch vehicle and parts thereof"; Art. I(d) Liability Convention and Art. I(b) Registration Convention); and (2) the possibility that an applicable domestic legal

of registry – activities of non-governmental entities under the jurisdiction of a State have direct repercussions for that State and propel it to design a suitable legal framework. The increase of space-faring States is due to the considerable facilitation of conducting space activities through current technologies such as small satellites, which have as one of their characteristics that a mission, including the development of such a satellite, can be completed relatively quickly.[167] There are also many accelerator programmes and other capacity-building efforts that help non-space-faring or emerging space-faring nations to advance their space capabilities.[168] As a result, we are currently witnessing an increase in national space legislation across the globe, which speaks to the necessity for States to regulate the space activities under their jurisdictions.[169]

2.2.2. Increase in share of non-governmental actors (point 2)

Second is the increase in the share of non-governmental actors carrying out space activities. Much of this development has already been touched on above in the descriptive features of the modern space age. It remains to be added that the emergence of non-governmental and especially private space actors, even if increasing significantly in current times, is not a new attribute to the execution of space activities. The discussion on private actor participation in space activities already goes back to the beginning of the space age, when negotiations on what is now the wording of Article VI of the Outer Space Treaty focussed on finding a compromise between the stance of the United States of America (United States) – wishing for the possibility of participation of private space actors – and the Soviet Union – wishing to limit the space arena to States and international organisations. The famous compromise that was suggested by the Soviet Union and is the basis for

definition of space object might define it more narrowly– thus by referencing objects launched into outer space rather than space objects, all are included.

[167] Among the characteristics of small satellites are typically: (1) reasonably short development times; (2) relatively small development teams; and (3) affordable development and operation costs for the developers. Small satellite missions often involve new non-governmental space actors. Notably, however, it is *not* one of the typical characteristics that small satellite missions have to involve small and low-weight satellites, despite these being nicknamed 'smallsats'. See: UNOOSA and ITU, 'Guidance on Space Object Registration and Frequency Management for Small and Very Small Satellites, Handout on Small Satellites' 2015.

[168] See e.g., the Cooperation Programme on CubeSat Deployment from the International Space Station (ISS) between the UN (UNOOSA) and the Government of Japan "KiboCUBE"; more information is available at: 'KiboCUBE' <https://www.unoosa.org/oosa/en/ourwork/access2space4all/KiboCUBE/KiboCUBE_Index.html > accessed 27 October 2023.

[169] Scarlet O'Donnell and Yukiko Okumura, 'Space Law for New Space Actors: For Governmental Officials and Beyond' Proceedings of the International Institute of Space Law 2022 (forthcoming).

today's formulation, constitutes a strong incorporation of international responsibility of States, extending it to activities carried out by non-governmental entities.[170] Developments showing an increase of private corporations carrying out space activities go back to the 1980s, and therefore are not new as such either.[171] However, in recent years we are seeing a paradigm shift in terms of the role – and significance – that is attributed to non-governmental – and especially, private commercial – space actors as assigned by traditional space actors, i.e., States. One example of this is the policy shift of the United States away from State-funded space activities carried out by the National Aeronautics and Space Administration (NASA) towards the intentional creation of a market structure of private competition, having been introduced with momentum since the time of the retirement of the Shuttle programme and fully taking effect in recent years.[172] Examples include for instance, private companies competing for procurement contracts of NASA for consignment of goods to the International Space Station (ISS) as well as astronaut transportation.[173] As a consequence of this development, the share of non-governmental space actors has been increasing not only in absolute terms but also relatively in comparison to the emergence of new space actors.

2.2.3. Increase in total amount of space activities (point 3)

As a third feature, there has been an increase in the total amount of activities in absolute terms that are carried out involving outer space *per annum*. New kinds of activities are being planned and carried out. Examples include the emergence of space tourism as a new industry,[174] the human return to the Moon as planned by

[170] For a more detailed consideration of the respective proposals by States during the COPUOS drafting negotiations refer to Chapter 4 Section 4.2.3 *Legal assessment of Article VI of the Outer Space Treaty*.

[171] Stephan Hobe, *Space Law* (1st edn Nomos 2019) p. 212-213; Fabio Tronchetti, *Fundamentals of Space Law and Policy* (Springer 2013) p. 20-24.

[172] Retirement of the Shuttle Programme on 31 August 2011.

[173] E.g.: SpaceX has been delivering cargo to and from the International Space Station since 2012, and in 2020 SpaceX began transporting people to the orbiting laboratory under NASA's Commercial Crew Program; see for more information: 'SpaceX ISS' (*SpaceX ISS*) <http://www.spacex.com/human-spaceflight/iss/> accessed 27 October 2023.

[174] See for instance, the first private space tourism flights carried out by Virgin Galactic and Blue Origin in 2021, carrying private space tourists.

several nations,[175] the exploitation and utilisation of space resources,[176] and the development of technologies addressing the ever-growing problem of space debris[177] – to name but few.

The number of launches of launch vehicles per year as well as the number of space objects launched *per annum* has been increasing dramatically. As can be seen in Figure 1 below, from the dawn of the space age until after 2010, the number of space objects launched per year stayed relatively consistent, at about under 200 over that entire timespan of roughly 50 years. It was only after 2010 that the number of space objects launched per year rose dramatically and henceforth has continued this trend.[178]

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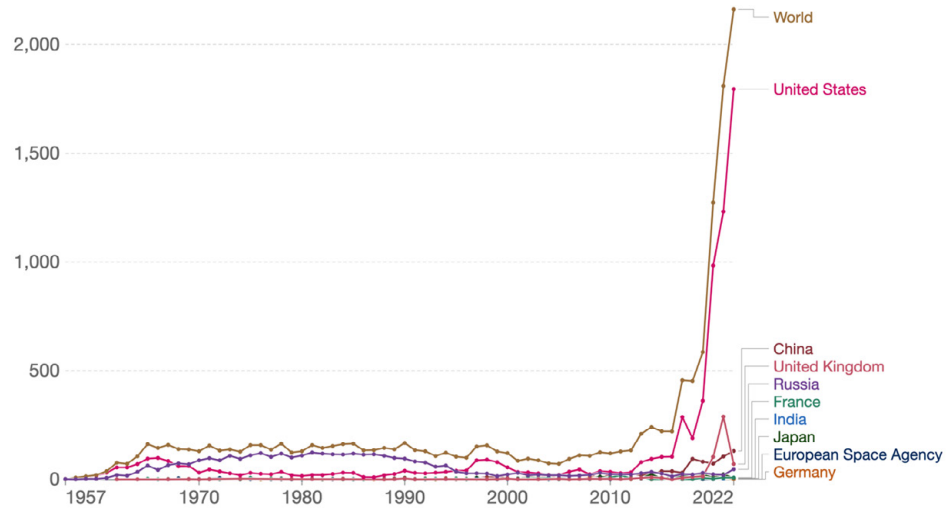
[175] The United States opened the Artemis Accords for signature of participating countries in 2020 (signatories as of 10 October 2023: Argentina, Australia, Bahrain, Brazil, Canada, Colombia, Czech Republic, Ecuador, France, Germany, India, Israel, Italy, Japan, Luxembourg, Mexico, New Zealand, Nigeria, Poland, Republic of Korea, Romania, Rwanda, Saudi Arabia, Singapore, Spain, Ukraine, United Arab Emirates, United Kingdom and Isle of Man, United States); see: 'Artemis Accords - NASA' <https://www.nasa.gov/artemis-accords/> accessed 27 October 2023. The Netherlands announced that they will be signing the Artemis Accords, too: Landbouw en Innovatie Ministerie van Economische Zaken, 'Extra kabinetsbijdrage aan ruimtevaart en deelname aan Artemis-akkoorden - Nieuwsbericht - Rijksoverheid.nl' (2 October 2023) <https://www.rijksoverheid.nl/actueel/nieuws/2023/10/02/extra-kabinetsbijdrage-aan-ruimtevaart-en-deelname-aan-artemis-akkoorden> accessed 27 October 2023. The Chinese Lunar Exploration Programme (CLEP; also Chang'e Project) executed by the China National Space Administration (CNSA) is ongoing since 2004; the Indian Lunar Exploration Programme (ILEX; also Chandrayaan programme) executed by the Indian Space Research Organisation (ISRO) is ongoing since 2008. While the first contact of physical exploration of the Moon (first probe to impact the surface of the Moon) was the Soviet probe Luna 2 in 1959, to date, the United States have been the only nation to have landed humans on the Moon (six times during the Apollo programme between Apollo 11 in 1969 and Apollo 17 in 1972). Six national space agencies have reached the Moon in uncrewed missions of varying success (Interkosmos (Soviet Union), NASA, CNSA, ISRO, the Japan Aerospace Exploration Agency (JAXA), and the European Space Agency (ESA)), as well as two private missions from Israel and Japan. Only four nations have successfully soft-landed on the Moon (Soviet Union, United States, China, and India) with India (ISRO) being the first to land in the southern polar region of the Moon only recently; see: Hari Kumar and others, 'India Moon Landing: In Latest Moon Race, India Lands First in Southern Polar Region' The New York Times (23 August 2023) <https://www.nytimes.com/live/2023/08/23/science/india-moon-landing-chandrayaan-3> accessed 27 October 2023.

[176] The discussion on space resource extraction was amplified by the introduction of the Artemis Accords by NASA in 2020. In the meantime, a Working Group of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) has been established regarding the matter.

[177] E.g. the Japanese company Astroscale is developing technology for space debris removal with its ELSA-d debris removal spacecraft.

[178] The chart was published by Our World in Data and can be accessed at: 'Annual Number of Objects Launched into Space' (*Our World in Data*) <https://ourworldindata.org/grapher/yearly-number-of-objects-launched-into-outer-space?country=OWID_WRL~USA~RUS~CHN~GBR~JPN~FRA~IND~DEU~European+Space+Agency> accessed 27 October 2023.

Figure 1
Annual number of objects launched into outer space[179]



The space objects in the chart above include satellites, probes, landers, crewed spacecrafts, and space station flight elements launched into Earth orbit and beyond.

Comparing the number of objects launched by major spacefaring nations in 2010 and 2022,[180] it can be seen that worldwide, in 2010, 120 space objects were launched, whereas in 2022, it was a total of 2,163 space objects – an increase of 1,702 %.[181] The lion's share were launched by the United States with an increase of 5,031 % (35 space objects launched in 2010 vs. 1,796 in 2022), followed by the United Kingdom with an increase of 2,267% (3 space objects launched in 2010 vs. 71 in 2022), and China with an increase of 555% (20 space objects launched in 2010

[179] Chart retrieved from Our World in Data (chart view), 'Annual Number of Objects Launched into Space' (*Our World in Data*) <https://ourworldindata.org/grapher/yearly-number-of-objects-launched-into-outer-space> accessed 27 October 2023. Our World in Data retrieved the data from the UNOOSA Online Index of Objects Launched into Outer Space in 2023 and applied UNOOSA's style of attribution to countries: when an object is launched by a country on behalf of another one, it is attributed to the latter.

[180] Countries selected in accordance with "The 10 countries most active in space" 21 December 2015 'The 10 Countries Most Active in Space' <https://www.aerospace-technology.com/features/featurethe-10-countries-most-active-in-space-4744018/> accessed 27 October 2023.

[181] Data retrieved from Our World Data at: 'Annual Number of Objects Launched into Space - Table View' (*Our World in Data*) <https://ourworldindata.org/grapher/yearly-number-of-objects-launched-into-outer-space?tab=table&time=2010..latest&country=OWID_WRL~USA~RUS~CHN~GBR~JPN~FRA~IND~DEU~European+Space+Agency> accessed 27 October 2023.

vs. 131 in 2022). Russia increased the percentage of its space objects launched in 2010 and 2022 respectively by a share of 96% (24 space objects launched in 2010 vs. 47 in 2022). The major spacefaring nations, as listed in Table 7 below in decreasing order of their absolute numbers of objects launched into outer space in 2022 are: United States (1,796 space objects), China (131), United Kingdom (71), Russian Federation (47), Luxembourg (9), France (8), Canada (7), India (6), Japan (5), and Germany (2).[182]

Table 7 **Space objects per year of major space-faring nations and the world, comparing 2010 and 2022**			
Country	***2010***	***2022***	***Increase/decrease in %***
Canada	2	7	250%
China	20	131	555%
India	2	6	200%
France	9	8	-11%
Germany	2	2	0%
Japan	9	5	-44%
Luxembourg	2	9	350%
Russian Federation	24	47	96%
United Kingdom	3	71	2,267%
United States	35	1,796	5,031 %
World in total	120	2,163	1,702 %

In addition to the increase in space objects, there has been an increase in launch vehicles taking off *per annum*. Launch vehicles have been developed by 34 States worldwide.[183] The increase in launch vehicles per year is in fact less extreme than the increase in space objects launched per year. This is due to three major factors. Firstly, the more recent launch vehicle designs show a trend towards larger vehicle sizes, resulting in more capacity per vehicle launch. Secondly, many space objects have become smaller. The recent trend of small satellites has the additional consequence that per object, less space is needed within a given launch vehicle. And thirdly, there is an increasing trend towards cluster launches. For example, often a launch vehicle will include one primary payload, such as a large scientific satellite,

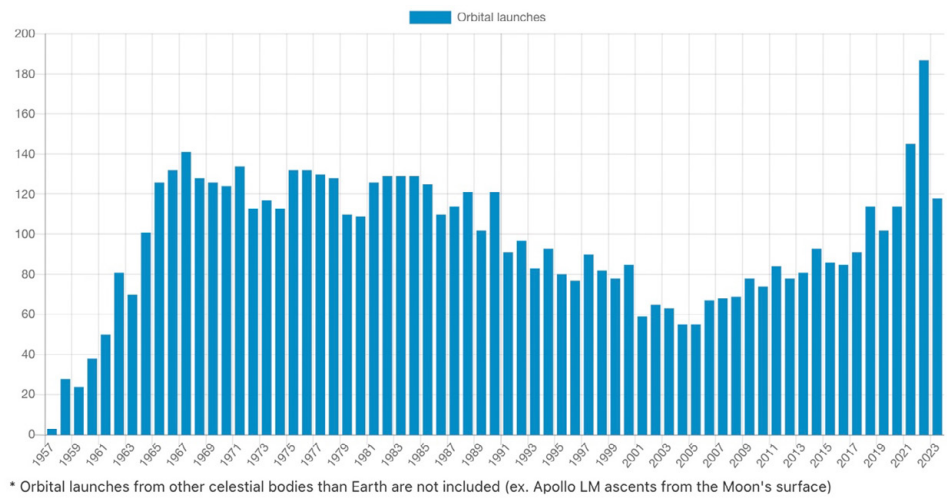
[182] The table lists the countries in alphabetical order.

[183] Argentina, Australia, **Brazil**, Canada, **China** (including Taiwan), Czechoslovakia, Denmark, Egypt, **France**, Germany, **India**, Indonesia, **Iran**, Iraq, **Israel**, Italy, **Japan**, Lebanon, the Netherlands, **New Zealand**, **North Korea**, Norway, Pakistan, Peru, Poland, **Russian Federation** (including Soviet Union), South Africa, **Republic of Korea**, Spain, Switzerland, Turkey, **United Kingdom**, **Ukraine**, **United States** (countries, which have developed an orbital launch capability, are marked bold); see: 'Launch Vehicles - Gunter's Space Page' <https://space.skyrocket.de/directories/launcher.htm> accessed 27 October 2023.

and the remaining space will be sub-sold to other interested parties launching smaller payload that can be incorporated as what is known as a piggyback payload.[184] However, on the opposite side, it has to be mentioned that there are also trends going towards smaller – and thus more cost-effective per kilogramme – launch vehicles, which due to their decreased capacity influence the launch vehicles statistics in the opposite direction.[185]

Figure 2 below provides an overview of the total number of launches worldwide from the beginning of the space age in 1957 to 2022 (the statistics for 2023 are incomplete and are therefore not considered in the analysis). The numbers include attempted launches.

Figure 2
Orbital launches by year 1957-2022[186]



[184] Such has for instance been the case with Indian Polar Satellite Launch Vehicle (PLSV) launch C40 of 12 January 2018, which launched into orbit i.a. the first four SpaceBEE's of Swarm Tech; see for a list of PSLV launches and their payload: 'List of PSLV Launches', *Wikipedia* (2023) <https://en.wikipedia.org/w/index.php?title=List_of_PSLV_launches&oldid=1172030235> accessed 27 October 2023.

[185] E.g., the launch vehicles developed by RocketLab launched from New Zealand. For instance, RocketLab's Electron rocket classifies as a 'reusable small launch vehicle' and aims to provide "dedicated access to space for small satellites"; see: 'Rocket Lab | Frequent and Reliable Access Launch Is Now a Reality' (*Rocket Lab*) <https://www.rocketlabusa.com/> accessed 27 October 2023.

[186] Chart retrieved from Space Stats: Space Stats, 'Launches by Year' <https://spacestatsonline.com/launches/> accessed 27 October 2023.

While the total amount of rocket launches has not increased exponentially in comparison to its previous all-time peak in the 1970s before the beginning of the modern space age (132 launches per year in 1975 and 1976; 1983 being the year with the highest number of successful launches: 127), it is to be noted that in recent years, annual launches have increased significantly and 2022, with a total of 187 launches, was a record year in relation to the entire space age.[187]

In Table 8 the annual orbital launch attempts are shown in absolute numbers, including an indication of successful and failed launch attempts.

Table 8
Space launches per year of space-faring nations 1957-2022, absolute numbers[188]

Year	*Orbital launches attempts (absolute numbers)*	*Thereof successful*	*Thereof failures*
1957	3	2	1
1958	28	6	22
1959	24	10	14
1960	38	19	19
1961	50	29	21
1962	81	64	17
1963	70	52	18
1964	101	84	17
1965	126	107	19
1966	132	112	10
1967	141	122	19
1968	128	114	14
1969	126	105	21
1970	124	112	12
1971	134	117	17
1972	113	105	8
1973	117	109	8
1974	113	104	9
1975	**132**	125	7
1976	**132**	126	6

[187] Alexandra Witze, '2022 Was a Record Year for Space Launches' (2023) 613 Nature Journal 426; Stephen Clark, 'World's Rockets on Pace for Record Year of Launch Activity – Spaceflight Now' <https://spaceflightnow.com/2022/07/06/worlds-rockets-on-pace-for-record-year-of-launch-activity/> accessed 27 October 2023.

[188] Data retrieved from Space Stats: Space Stats, 'Launches by Year' <https://spacestatsonline.com/launches/> accessed 27 October 2023 (partial launch failures counted towards failures). Note that not all statistics define successful and failed launches in the same way, and slight differences in the absolute numbers occur over the years (the statistical accuracy is in most cases not off by more than 1); cp. e.g. the Wikipedia series '[year] in Spaceflight', which for 2022 lists 185 total launch attempts vs. 187 in the table above: '2022 in Spaceflight', *Wikipedia* (2023) <https://en.wikipedia.org/w/index.php?title=2022_in_spaceflight&oldid=1177038467> accessed 27 October 2023. Note that the numbers marked in bold mark the record years before and during the modern space age respectively.

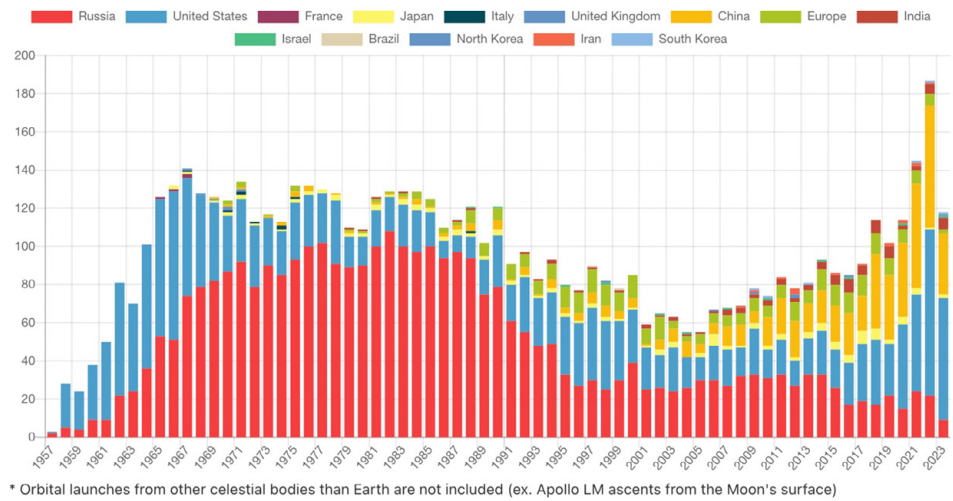
1977	130	124	6
1978	128	122	6
1979	110	105	5
1980	109	102	7
1981	126	117	9
1982	129	119	10
1983	129	**127**	2
1984	129	126	3
1985	125	119	6
1986	110	102	8
1987	114	108	6
1988	121	114	7
1989	102	101	1
1990	121	114	7
1991	91	86	5
1992	97	93	4
1993	83	77	6
1994	93	88	5
1995	80	73	7
1996	77	69	8
1997	90	84	6
1998	82	75	7
1999	78	70	8
2000	85	81	4
2001	59	56	3
2002	65	60	5
2003	63	61	2
2004	55	51	4
2005	55	52	3
2006	67	62	5
2007	68	63	5
2008	69	65	4
2009	78	73	5
2010	74	70	4
2011	84	77	7
2012	78	73	5
2013	81	78	3
2014	93	89	4
2015	86	81	5
2016	85	82	3
2017	91	84	7
2018	114	110	4
2019	102	96	6
2020	114	104	10
2021	145	134	11
2022	**187**	**179**	8
2023[189]	155	146	9

[189] Data collected from 1 January until 30 September 2023.

As can be seen from the absolute numbers of orbital launches over the years, the increase in the 1980s marks the beginning of the modern space age, then launch numbers decline over the 1990s and 2000s, rising above 100 again in 2018.

In addition to developments over the years in absolute launch numbers, changes in the composition per country of annual launches can be seen. Figure 3 below splits up the annual absolute launch numbers into the respective countries undertaking the launch activities.

Figure 3
Orbital launches by country by year 1957-2022[190]



The most striking developments with regard to the distribution of launch activities across countries are a decrease of launches by Russia in recent years in comparison to the 1960s and 1970s; the effects of the United States policy and legal changes with regard to private sector encouragement in recent years; a sharp increase in orbital launch activities by China in recent years; and an overall diversification of spacefaring countries, which renders the landscape of orbital launches increasingly many-faceted.

[190] Source: Space Stats (n 188).

2.2.4. Increase in share of non-governmental activities (point 4)

Lastly, the kind of activities in outer space have changed and shifted more towards non-governmental – especially private and commercial – space activities. This is perhaps the most predictable of the four aspects of changes mentioned here, as it involves the evolution of technology and its ever-growing applications to activities in outer space. It is strongly connected to the paradigm shift that was described under *point 2* with a shift towards more non-governmental space actors. However, governmental space activities are also changing in nature and indicate a trend towards increasingly profit-oriented or commercial space activities. The emphasis of most of those space activities lies with the fact that there is a business case to be made, and that venturing into outer space can be done for profit. An example is the recent trend towards space connectivity, offering high-bandwidth and low latency internet and phone services provided via satellite constellations (mega-constellations of satellites). While SpaceX's Starlink is already steady in the process of building up and partially operable,[191] Amazon's Project Kuiper satellite constellation recently launched its first satellites,[192] and OneWeb has emerged from its restructuring recently with a partially non-governmental ownership.[193]

Indeed, some traditional State-led space agencies have changed their organisational structures and moved towards a more private legal setup, such as Roscosmos, which originated from the Soviet space programme that was founded in the 1950s and emerged in the consequence of the dissolution of the Soviet Union in 1991 as the Russian space agency in 1992.[194] It was restructured in 1999 as the Russian Aviation and Space Agency, and in 2004 as the Federal Space Agency (Roscosmos).[195] In 2015, Roscosmos merged with the United Rocket and Space Corporation, a government

[191] Around 5,000 satellites of the currently 12,000 planned satellites (with a possible later extension to 42,000) are currently in orbit. SpaceX started launching the Starlink satellites in 2019. The current internet services are planned to be extended to phone services after 2023.

[192] The development of Project Kuiper started out in 2018 and plans currently include a constellation of 3,200 satellites. The first two, KuiperSat-1 and KuiperSat-2, were launched on 6 October 2023; 'Amazon Kuiper: Jeff Bezos Joins Satellite Internet Race' BBC News (6 October 2023) <https://www.bbc.com/news/science-environment-67023719> accessed 27 October 2023.

[193] OneWeb is another planned satellite internet access constellation, founded in 2012 and reorganised into a new ownership group in 2020 following its declared bankruptcy in 2020. As largest shareholders emerged the Government of the United Kingdom (UK) and Eutelsat, a French satellite service provider, and its successful integration into the Eutelsat Group was announced in September 2023 (the new subsidiaries now being Eutelsat and Eutelsat OneWeb). Once operable, OneWeb would be the first GEO-LEO operator globally; 'Press Releases | Eutelsat' <https://www.eutelsat.com> accessed 27 October 2023.

[194] 'Roscosmos' <https://www.roscosmos.ru/9156/> accessed 27 October 2023.

[195] 'The Russian Space Agency, Roskosmos' <https://www.russianspaceweb.com/roskosmos.html> accessed 27 October 2023.

corporation, and took its current form as State Space Corporation on 1 January 2016.[196] Another example is ISRO, the Indian Space Research Organisation under the Indian Department of Space directly overseen by the Prime Minister, which established Antrix Corporation in 1992 as a private limited company. Antrix Corporation constitutes the commercial and marketing branch of ISRO and is fully owned by the government of India.[197] These trends towards commercialisation of governmental space activities can be seen as further expression of the modern space age.

2.3. The importance of current changes in the space industry for a legal assessment of international space law

States and international organisations are the traditional legal subjects of international law. They are thus also the subjects that can become a party (States) to international agreements such as the five UN treaties on outer space or accept the rights and obligations thereunder (international organisations). This contrasts with the current developments of the space industry, showcasing a growing trend towards non-governmental actors and non-governmental activities. The four presented pillars of the modern space age: (1) increase in actors overall, (2) shift in actors towards more non-governmental and private activities, (3) increase of activities overall, and (4) shift in activities towards more commercial activities, depict the changes that the space industry is currently undergoing in a structural manner.

An additional dimension that is presented by the current paradigm shift is the possibility that the traditional distinction between State-led and non-governmental space activities will not be able to be upheld in the future, as public-private partnerships are being formed also in the space sector. Sometimes we also see collaborations between various forms of international organisations, such as international intergovernmental organisations collaborating with international non-governmental organisations. Already at the political level, UN COPUOS allows for permanent observers that can be regional or international intergovernmental or non-governmental organisations, such as the International Telecommunication Union (ITU).

The modern space age at times presents legal challenges under international space law, which can be explained by the historical evolution of international space law. Since the five UN treaties on outer space stem from the early days of the space age

[196] 'Russia Dissolves Federal Space Agency' (International Business Times, 28 December 2015) <https://www.ibtimes.com/russias-federal-space-agency-dissolved-responsibilities-be-transferred-state-2240831> accessed 27 October 2023.

[197] Public Sector Undertaking (PSU).

("Space 1.0"), the predominance of private or commercial activities was not considered during the drafting process.[198] Some of these challenges fall under the auspices of Article VI Sentence 2 of the Outer Space Treaty (primary norm), as they concern the authorisation and continuing supervision of space activities by the appropriate State party to the Treaty. Those challenges do not, in essence, involve a questioning of the international legal obligation underlying it as such, but rather, the way of implementation at the national level. The launch of the first batch of four SpaceBEEs in 2018 by the United States-based company SwarmTech constitutes an example in this regard, as the necessary licence to launch was denied by the Federal Communications Commission (FCC) and the launch was carried out despite this.[199] Other challenges concern the coherent interpretation of international space law in light of international law proper. One example in this context is the sale of space objects in orbit to non-launching States. Since the registration of space objects can only be performed by launching States, if the space object is sold once in orbit to another State that was not among the original launching States of the object, a legal challenge presents itself as to how to solve the registration of the space object.[200]

In the light of these emerging legal purposes presenting themselves through new applications and ways to carry out space activities, it is important to consider the international legal framework for responsibility applicable to activities in outer space not only in itself, but also in light of the current developments of the space industry in order to be able to deliver a clear picture of a meaningful application of existing international space law. The present study, by conducting at a legal assessment of all Sentences of Article VI of the Outer Space Treaty, analyses both the primary norm (Article VI Sentence 2 of the Outer Space Treaty), as well as secondary norm (Article VI Sentences 1 and 3 of the Treaty) aspects, thus providing a comprehensive assessment of the provision.

[198] Pascale (n 156).

[199] 'SpaceBEE 1, 2, 3, 4' (*Gunter's Space Page*) <https://space.skyrocket.de/doc_sdat/spacebee.htm> accessed 27 October 2023.

[200] With regard to international responsibility for activities in outer space, this question is considered in more detail in Chapter 4.

Chapter 3 – Approaching international space law in relation to international law

3.1. Introduction

The present chapter addresses the first of the four individual research questions of the present study, which concerns relating international responsibility for activities in outer space to its wider context of public international law. This perspective entails an assessment of various aspects in which international law at large can influence more special legal rules.

Research question 1 reads:

> How do the legal rules on State responsibility contained in international space law relate to the general rules on international State responsibility under international responsibility law?

The research question can be clarified by some remarks. Firstly, the expression in the research question of 'general rules on State responsibility under international law' understands this body of law as reflected in the Articles on State Responsibility and the Articles on Responsibility of International Organisations, which to a large extent follow suit. Secondly, a research question of this range builds on the understanding and nature of international law, which for the present study was explained in the theory section in Chapter 1. By taking a legal positivist stance on international law, I view the doctrine of sources of international law and international responsibility as the cornerstones of the international legal order.

Research question 1 draws on international responsibility as a principle of law. To investigate the conception of international responsibility, the present chapter starts with illustrating the conceptual distinction of primary and secondary norms of international law and portrays the linguistic, terminological, and conceptual differentiations of 'responsibility (Section 3.2).

Moreover, general principles of law play a role in the assessment of this research question. They formulate general legal norms that may or may not be codified and are of a general international legal character, thus, applicable in an overarching

sense. Their relationship with and influence on international space law is assessed in Section 3.3.

The ILC is currently working on the topic of general principles of law and has identified two categories of principles: those of the first category stem from the domestic order and are shared among nations and principles of the second group have emerged under international law.[201] While it must be noted that the work of the ILC on this topic is not yet concluded, its considerations concentrate on a general formulation of aspects relating to general principles of law. The current state of the ILC's work is summarised here. Section 3.3 furthermore considers individual principles of law that in my view, can be understood as general principles of law: the principles of *pacta sunt servanda*; *bona fides* or good faith; *lex superior*; *lex specialis*; *lex posterior*; and *venire contra factum proprium* (estoppel). Consideration of these principles allows us to assess the relationship between international space law and international law in greater detail, as they may influence the legal relationship between these fields of law and thus affect the establishment of the contents of international space law.

Many of these general principles are not codified An important exception in this regard is the principle of *lex specialis derogat legi generali* under international responsibility law. International space law is commonly viewed in academic commentary as a special legal regulation in relation to international law. Therefore, its consideration takes an elevated role in the present chapter. While it is introduced in the above section among other general principles of law, it takes centre stage in the following Section 3.4. Here, an assessment of the relationship between general and special norms, the context of the debate on fragmentation of international law comes into focus.

The debate in international legal scholarship on fragmentation of international law was part of the 1990s and has continued since. At the time, the development and ascertainment of special branches or fields of law under international law sparked vivid discussions on the question whether these special fields of international law, with special legal regulation that pertains to their specific areas of law, endangered the unity of an *international legal system* as such. Had international law become fragmented, or did the overarching unity of the international legal system still exist?

Scholarship in more recent years for the most part has come to terms with the simultaneous existence of international law as a system of law as well as its special fields. However, the understanding of the specific relationship between the special fields and a wider body of international law has been and is continuously developing, due both to the legal developments within special fields, as well as general international law. Central to the debate on fragmentation of international

[201] See: 'International Law Commission' (*General Principles of Law*) <https://legal.un.org/ilc/guide/1_15.shtml> accessed 27 October 2023.

law stands the *lex specialis* principle: the relationship between the general and special legal norms mirrors in a wider sense the relationship between international law and its special regimes.

In the present study I understand the *lex specialis* principle as a principle which applies to the relationship among legal norms, thus, on a norm-to-norm level. I do not treat here an entire special legal field of international law as a whole as *lex specialis*.[202] Rather, for fields of international law, in line with the ILC's conception in its work on fragmentation, the question is relevant as to whether they constitute self-contained regimes under international law.

The final section of the present chapter (Section 3.5) summarises and combines the elements of the analysis and offers an answer to the first research question. By clarifying the relationship between international space law and public international law, it also lays the foundation for the ensuing analysis of the subsequent research questions.

3.2. Conception of international responsibility

Responsibility is used in different contexts, sometimes referring to the international legal concept of international responsibility that pertains to the enforceability of international law, and sometimes referring to a rather moral notion of responsible behaviour. The section below highlights some of these understandings, as well as the translation in the six official UN languages of Article VI of the Outer Space Treaty (Section 3.2.1). As the Outer Space Treaty determines that the Treaty is equally authoritative in all official UN languages, this forms part of the interpretation of the provision in accordance with Article 33 of the Vienna Convention on the Law of Treaties. Due to the close linguistic resemblance in many of these languages to the principle of international liability, the latter is considered too. As a basis of a conceptual clarification of international responsibility, Section 3.2.2 revisits and explains in more detail the distinction between primary and secondary norms in international law.

[202] A prominent part of the fragmentation debate was the relationship between international humanitarian law (IHL) and international human rights law (IHRL) in situations of armed conflict. The position of the United States government at the time was that in times of armed conflict, IHL as a field of law constitutes *lex specialis* and its application had to be prioritised over IHRL. See e.g. for a discussion: Marco Sassòli and Laura M. Olson, 'The relationship between international humanitarian and human rights law where it matters: admissible killing and internment of fighters in non-international armed conflicts' (2008) 90 International Review of the Red Cross 871.

3.2.1. Terminological understandings and conceptions of responsibility

The starting point for clarifying the term 'responsibility' in the sense of its ordinary meaning must be a reference to its linguistic usages. 'Responsibility' is used in philosophical, moral, political, and legal contexts. Especially with regard to international space law, responsibility is sometimes used in a political, and sometimes, moral, sense referring to 'responsible space actors' or 'responsible space activities'.[203] 'International responsibility', in contrast, is a technical legal term that presupposes the existence of an internationally wrongful act.[204] In the present study, 'international responsibility' is used exclusively in its public international legal meaning with reference to the existence of an internationally wrongful act that entails the responsibility of a State. International responsibility law and the law of international responsibility are used interchangeably in this study, and refer to the branch of public international law that seeks to regulate international responsibility of the subjects of international law – thus, primarily States and international organisations.

Both the historical evolution of the principle of international responsibility, as well as its consideration at the ILC, display a dominant role of State responsibility, which impacted the evolution of the later emerging responsibility of international organisations. Therefore, the primary reference and focus of investigation for international responsibility law lies with State responsibility, which is also the way in which the principle is assessed below.

Liability is considered in the present study as a differentiated legal concept from international liability, which – in line with the definition of the ILC's working groups on prevention of transboundary damage from hazardous activities and international liability in case of loss from transboundary harm arising out of

[203] The UN Office for Outer Space Affairs' (UNOOSA) *Space Law for New Space Actors* project used to carry the subtitle "Fostering *Responsible* National Space Activities" (emphasis added); see for instance the presentation of the project at the 2021 International Astronautical Congress (IAC) in Dubai: <https://www.iafastro.org/events/iac/iac-2021/gnf/monday-25-october-2021/space-law-for-new-space-actors-fostering-responsible-national-space-activities.html> accessed 27 October 2023 (the webpage of the project does not carry that subtitle any longer ("Legal Advisory Project – Space Law for New Space Actors"), see: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/capacitybuilding/advisory-services/index.html> accessed 27 October 2023). Another example is the Secure World Foundation (SWF), a private foundation working towards "secure, sustainable and peaceful uses of outer space" (see: <https://swfound.org/about-us/who-we-are/> accessed 27 October 2023), published a *Handbook for New Actors in Space* with "a broad overview of the fundamental principles, laws, norms, and best practices for peaceful, safe, and *responsible* activities in space" (emphasis added); see: <https://swfound.org/handbook/> accessed 27 October 2023.

[204] Art. 1 Articles on State Responsibility.

hazardous activities[205] – is based on consequences of conduct *not* prohibited by international law.[206] The understandings of both concepts – international responsibility and international liability – have developed over recent decades, much through the work of the ILC on these topics, and academic commentary in this process has discussed many conceptions thereof.

It is therefore not surprising that the conceptual understanding(s) of international responsibility and international liability vary over international space law commentary; this reflects not only various conceptions of international responsibility and international liability from a stance of international law, but also the influence of national conceptions of responsibility and liability that have found their way into space law commentary. In fact, those differing conceptions pose difficulties with regard to the existing space law commentary. More specifically, the different conceptions of responsibility and liability in the space law context can be explained as follows.

Firstly, at the time of the codification of the outer space treaties, international responsibility as a notion was long established,[207] but its conceptual definition was not as clearly formulated and shaped as it developed to become under the Articles on State Responsibility and the Articles on Responsibility of International Organisations. The scholarly commentaries therefore can be read and understood against the background of the predominant understanding of international responsibility under international law at the time, as well as the national and international legal background of the commentators themselves.

Secondly, as is widely known, the UN operates in six official languages, which are not given any hierarchy: Arabic, Chinese, English, French, Russian, and Spanish. This means that treaties like the Outer Space Treaty are translated into all official UN languages and there is no language version that is more authoritative than the others,[208] even if the text was drafted and/or negotiated in one of those languages over the others. Legal concepts and the languages that the legal systems operate in are closely related, and a language will only feature a designation for a concept if

[205] For prevention of transboundary damage from hazardous activities, refer to <https://legal.un.org/ilc/guide/9_7.shtml> accessed 27 October 2023; for international liability in case of loss from transboundary harm arising out of hazardous activities, refer to <https://legal.un.org/ilc/guide/9_10.shtml> accessed 27 October 2023. Note that the most recent reference to the proposed texts on the topic as contained in General Assembly resolution 62/68 were adopted in 2022 by the General Assembly; General Assembly Resolution A/RES/62/68, Consideration of prevention of transboundary harm from hazardous activities and allocation of loss in the case of such harm, 8 January 2008; General Assembly resolution A/RES/77/106, Consideration of prevention of transboundary harm from hazardous activities and allocation of loss in the case of such harm, 7 December 2022.

[206] As mentioned in the introduction, accountability is used as an umbrella term for both concepts.

[207] See e.g.: *Chorzów Factory* Case (n 34).

[208] Note, again, that Arabic was adopted as a UN official language in the 1970s and therefore is not one of the original languages of the Outer Space Treaty.

that concept exists in that language. For responsibility and liability, this is not the case regarding *all* six UN languages.

Table 9 below provides an overview of the respective terminology used in official UN languages with regard to international responsibility and international liability in Articles VI and VII of the Outer Space Treaty.

Table 9 **Reference to responsibility and liability in the Outer Space Treaty in UN official languages**			
Language	***Expression for responsibility (Art. VI)***	***Expression for liability (Art. VII)***	***Linguistic differentiation of the concepts***
Arabic[209]	تيلوؤسم تيلود (dwlyt mswwlyt; responsible international)	المسؤولية (aldwlyt almiswwlyt; international responsibility)	No
Chinese	国际责任 (Guójì zérèn)	国际责任 (Guójì zérèn)	No
English	*Responsibility*	*Liability*	Yes
French	Responsabilité	Responsabilité	No
Russian	Ответственность (otvetstvennost')	Ответственность (otvetstvennost')	No
Spanish	Responsibilidad	Responsibilidad	No

Table 9 shows that most UN official languages do not make a linguistic differentiation between the two concepts of accountability in Articles VI and VII of the Outer Space Treaty. This accentuates the need for research into different understandings with regard to international responsibility (and international liability, as is sometimes is implicated due to the understanding of responsibility). However, even if a UN official language uses the same term for both responsibility and liability in the respective provisions of the Outer Space Treaty, the *conceptions* of both types of accountability must be understood as differentiated, because the context and stipulation in each of the two Articles of the Outer Space Treaty is differentiated in the treaty text. While using the same term for the respective type of accountability, the respective provisions will still set it in the context of national activities and international responsibility (Article VI of the Outer Space Treaty) or the launching State and damage (Article VII of the Outer Space Treaty). Therefore, a more useful reference under those languages is to speak of an 'Article-VI-type of responsibility' and an 'Article-VII-type of responsibility,' thus, still leading to an assessment by reference to the different legal elements of those provisions.

[209] Although Arabic was not an official language at the time of conclusion of the Outer Space Treaty, it is included in this overview being a current official UN language.

International responsibility of States and international organisations is based on the wrongdoing of one (or several) State(s) or one (or several) international organisation(s) – constituting an *internationally wrongful act*. The rules on responsibility of States for internationally wrongful acts are codified in the ILC's Articles on State Responsibility of 2001, but international responsibility as a notion is a central and relatively old idea in international law. International responsibility is closely related to the idea of sovereignty of States and legal personality of international organisations. As legal personality of international organisations under international law only developed in the second half of the 20th century,[210] the notion of international responsibility of international organisations is more recent than its counterpart for States. The ILC's Articles on Responsibility of International Organisations were adopted in 2011 by the UN General Assembly in the wake of the Articles on State Responsibility. Formally speaking, due to their adoption in UN General Assembly resolutions, the Articles on State Responsibility and Articles on Responsibility of International Organisations are formally speaking non-legally binding, but for a large part reflect customary international law.[211] They systematised and crystallised some of the older rules of international responsibility and, since their adoption, have been widely supported and adhered to. The adoption of the Articles on Responsibility of International Organisations can be understood as a confirmation of the Articles on State Responsibility due to much of their content being largely identical.

International responsibility and international liability are conceptually different but also related. Both notions exist under public international law as well as international space law and have recourse to the same terminology in both legal contexts. However, due to their different conceptual developments, they may not always be understood congruently.

International liability – like international responsibility – was discussed at the ILC. The topic was sub-divided into *prevention* of transboundary damage from hazardous activities, and *international liability in case of loss* from transboundary harm arising out of hazardous activities.[212] The ILC's differentiation of international liability and international responsibility is founded on the legality of the conduct (including action and omission): if the conduct involves illegal behaviour (a breach of international law), an internationally wrongful act may be established as the basis for international responsibility; if the act does not breach any existing international

[210] *Reparation* Advisory Opinion (n 162).

[211] See for more details below Chapter 4 Section 4.3.2 *Codification efforts by the International Law Commission*.

[212] See the Analytical Guide to the Work of the International Law Commission. For prevention of transboundary damage from hazardous activities, see <https://legal.un.org/ilc/guide/9_7.shtml> accessed 27 October 2023; for international liability in case of loss from transboundary harm arising out of hazardous activities, see <https://legal.un.org/ilc/guide/9_10.shtml> accessed 27 October 2023.

legal norms but concerns what could be described as a misfortune involving damage, thus being based on internationally 'legal' behaviour, international liability may come into play.

The conceptual distinction as applied by the ILC was not always a part of the understanding of the principles of liability and responsibility under international law, and some commentators have even made the case that the two concepts were not only related but two sides of the same coin.[213] In this understanding, the idea of 'accountability' (or sometimes, called 'responsibility' in an overarching sense) is one concept, which can be implemented in 'different shades of grey': strict responsibility being the most 'severe' mode of implementation and fault liability the 'softest'. The concepts of strict liability and strict responsibility also came into play and were used at times as arguments to confirm the concepts of responsibility and liability as being closely related. Assumably in reference to the distinction of strict or absolute liability and fault-based liability, the concept of 'strict responsibility' has been mentioned in commentaries, with its most elaborate formation being one where defences under international responsibility for activities in outer space are inadmissible due to the 'severe' nature of the international responsibility.[214] However, since the ILC's codification processes and conceptual progress in recent decades, the above differentiation of these two fields of law using the reference to the legality of conduct has been widely accepted.

Strict liability versus fault liability – comparable to the conception of strict and 'fault' responsibility – is differentiated by the requirement of fault, and bears consequences for the burden of proof. While strict liability is established based on the occurrence of harm, regardless of the existence of 'fault' or 'intention to cause harm', under fault liability, that 'fault' has to be proven and thus a reference to established standards of care usually closely follows a stipulation of fault liability. An often-cited example for strict liability is a regulation under domestic traffic law, where the vehicle owner may be held liable regardless of the existence of fault.

Both strict and fault liability form part of international space law: absolute (i.e., strict) liability is prescribed for damage caused by a space object occurring on Earth or to aircraft in flight,[215] and in the event of damage occurring "elsewhere than on the surface of the Earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible".[216] A suitable example of formulating the relation

[213] See e.g.: Horbach (n 42).

[214] Ibid.

[215] Art. II Liability Convention.

[216] Art. III Liability Convention.

between the concepts can be found in a Institut de Droit International resolution on environmental damage from as early as 1997, which states:[217]

> **Basic Distinction on Responsibility and Liability**
>
> *Article 1*
>
> The breach of an obligation of environmental protection established under international law engages responsibility of the State (international responsibility), entailing as a consequence the obligation to reestablish the original position or to pay compensation.
>
> The latter obligation may also arise from a rule of international law providing for strict responsibility on the basis of harm or injury alone, particularly in case of ultra-hazardous activities (responsibility for harm alone).
>
> Civil liability of operators can be engaged under domestic law or the governing rules of international law regardless of the lawfulness of the activity concerned if it results in environmental damage.
>
> The foregoing is without prejudice to the question of criminal responsibility of natural or juridical persons.

Here, the Institut differentiates the concepts of international responsibility, strict responsibility, criminal responsibility, and civil liability. The time of adoption of this provision can be out in reference to international legal developments at the time, which saw a relatively progressed conception of State responsibility at the ILC (see the reference to the breach of an obligation and understanding of remedies), a dominant role of international criminal responsibility in the international legal context (international criminal tribunals and negotiation of the Rome Statute of the International Criminal Court), ultra-hazardousness of activities (here related to strict responsibility), and civil liability of non-State actors. The latter part of the provision raises an interesting point, which is the apparent acceptance of legal standing of operators under international law in regard of liability for environmental damage. While the legal standing of non-State actors is incrementally developing in various areas of international law, a general formulation as provided here seems to be beyond current *lex lata*.

[217] Institut de Droit International, 'Responsibility and Liability under International Law for Environmental Damage (Session of Strasbourg 1997, Eighth Commission, Rapporteur: Mr Francisco Orrego Vicuña)'.

3.2.2. The distinction between primary and secondary norms

The distinction between primary and secondary norms constitutes a useful tool in the legal assessment of international responsibility for activities in outer space. As mentioned in the introduction, international responsibility is not the only field of law under international law that is composed of primarily secondary norms (see, law of treaties). However, as the distinction is strongly tied to the conception of international responsibility, the present sub section illustrates it in more detail and with a focus on enforceability of international law, in line with the primary purpose of this study.

Theory of differentiating primary and secondary norms

As elaborated in the previous section, this study understands public international law as made up by several fields of international law, such as law of the sea, (international) humanitarian law, (international) human rights law, the law of treaties, international space law, and (international) responsibility law; and therewith also invites a consideration of the discourse on fragmentation of international law.[218] Some of these fields prescribe a specific legal regulation of particular subject matters (e.g., human rights law, or law of the sea), whereas there are fields that have a broader area of application: the law of treaties and international responsibility law are made of rules that apply to the interpretation, respectively the enforcement, of those norm-prescribing rules of international law. This is commonly referred to as primary and secondary norms: while primary norms prescribe a certain conduct or confer power on the addressee of the norm, secondary rules provide instruction as to how primary rules should be applied.[219]

The distinction between primary and secondary norms is a traditionally well-established concept, which traces back to its original introduction by Hart.[220] Hart famously distinguished in his 1961 opus *The Concept of Law* "a system of primary rules that direct and appraise conduct together with secondary rules about how to

[218] UN Doc. A/CN.4/L.681 and Add.1, ILC, 'Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law, Report of the Study Group of the International Law Commission' 13 April 2006 (n 8). Reference to fragmentation is executed without denying the universality of international law; refer to Section 3.4 *Fragmentation of international law*; see also: Bruno Simma, 'Universality of International Law from the Perspective of a Practitioner' (2009) 20 European Journal of International Law 265.

[219] International law has been said to be made of norms that empower, constrain, or compel States; Alan Boyle, 'Relationship Between International Environmental Law and Other Branches of International Law' in: Daniel Bodansky, Jutta Brunnée and Ellen Hey (eds), *The Oxford Handbook of International Environmental Law* (OUP 2008) p. 126. This is a different level of distinction from the distinction of primary and secondary norms; the latter is not used as a normative distinction in the present study but as a tool to analyse norms entailing international responsibility.

[220] Hart (n 33).

identify, enforce, and change the primary rules".[221] Through the distinction of primary and secondary rules, Hart was able to determine the validity of law in terms of law creating an obligation (coercive order) for citizens in a given legal environment.

Kelsen is also commonly referred to in regard of the distinction of primary and secondary norms. He states in *Primary and Secondary Norms – The Difference between Law and Morality*:

> If it is assumed to be essential for law that a distinction be made between a norm commanding a certain behaviour and a norm prescribing a sanction for the violation of the first norm, then the former norm must be called the primary norm, and the latter the secondary norm – and not the other way around as I have expressed it in earlier chapter. The primary norm can then exist quite independently of the secondary norm.[222]

So far, Kelsen's differentiation appears to agree with Hart's. However, it should be noted that his interest concerned the addressee of the law; and he continues to reason the above quoted text passage by stating that primary norms to not have to be expressly formulated, but that their sanctioning (secondary norm) counterpart is the only reference to a certain behaviour.[223] He states:

> But it is also possible for the primary norm – the one commanding a certain behaviour – not to be *expressly formulated*, and only the secondary norm – the one decreeing a sanction – to be expressly formulated Many legal norms are formulated in this way in modern statutes. A modern legislator does not say (1) 'One is not to commit theft' *and* (2) 'If someone commits theft, he is to be imprisoned' […]. Rather, he usually limits himself to positing the norm which attaches to theft the sanction of imprisonment […]; in other words, the norm prescribing the behaviour which avoids sanction is in fact *superfluous* since it is *implicit* in the sanction-decreeing norm (as was indicated earlier). The norm decreeing a coercive act as sanction then appears as the primary norm, and the norm implicit in it (which is not in fact, and need not be, expressly formulated) the secondary norm. This shows the decisive role which sanctions consisting in coercive acts play in that *coercive order* which is law.[224]

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[221] Ibid. p. xv.

[222] Hans Kelsen, 'Primary and Secondary Norms—The Difference between Law and Morality' in Hans Kelsen and Michael Hartney (eds), *General Theory of Norms* (OUP 1991) p. 142.

[223] In secondary literature, he is also referred as postulating a distinction that State actors are the ones being primarily addressed by norms (sometimes is referred to as 'primary' norms), and that it is they who are under an obligation to implement, apply, and enforce the law towards governed citizens, who are, at most, secondary addressees; see: Drury Stevenson, 'Kelsen's View of the Addressee of the Law: Primary and Secondary Norms' in: D. A. Jeremy Telman (ed), *Hans Kelsen in America - Selective Affinities and the Mysteries of Academic Influence* (Springer 2016) p. 297.

[224] Kelsen (n 224).

As can be seen from the above quotation, Kelsen assigns definitions to primary and secondary norms that are different from those provided by Hart. The context in which he develops his reasoning is essentially one of national legal frameworks, which address citizens. In this regard, the present study follows Hart's postulation rather than Kelsen's. This is especially true, as in the above-quoted passage, Hart defines secondary norms as rules which "identify, enforce, and change the primary rules".[225] However, the conceptual understanding as applied by the ILC arguably constitutes the most suitable understanding, as it enables direct reference to the (proper) international legal context and pronounces on the nature of international law.

Primary and secondary norms under public international law

For State responsibility, the early origins of the distinction can be traced back to the conceptual work of the Italian school of international law and the German school.[226] Also, the Hague Conference of 1930 saw attempts of codification on State responsibility.[227] During the ILC's work on codification of international State responsibility, the distinction was introduced by Second Special Rapporteur Ago,[228] and shaped its work until the final adoption of the Articles on State Responsibility under Special Rapporteur Crawford.[229]

Special Rapporteur Ago states in the Third Report on State Responsibility of 1971:

> The Commission agreed on the need to concentrate its study on the determination of the principles which govern the responsibility of States for internationally wrongful acts, *maintaining a strict distinction between this task and the task of defining the rules that place obligations on States*, the violation of which may be a source of responsibility. A consideration of the various kinds of obligation placed on States in international law, and in particular a grading of such obligations according to their

[225] Hart (n 33).

[226] Italian school, see e.g.: Dionisio Anzilotti, *Teoria Generale Della Responsabilità Dello Stato Nel Diritto Internazionale* (Legare Street Press 2022) (first published in 1902); Arrigo Cavaglieri, 'Règles Genérales Du Droit de La Paix' (1929) 26 Collected Courses of the Hague Academy of International Law. German school, see e.g.: Paul Schoen, *Die völkerrechtliche Haftung der Staaten aus unerlaubten Handlungen* (Kern 1917); Karl Strupp, *Das völkerrechtliche Delikt* (W Kohlhammer 1920).

[227] Clémentine Bories, 'The Hague Conference of 1930 - Chapter 7'; in Crawford and others, *Responsibility* (n 31).

[228] UN Doc. A/CN.4/233, ILC, 'Second Report on State Responsibility by Roberto Ago, Special Rapporteur – the origin international responsibility; Extract from the Yearbook of the International Law Commission: 1970, vol. II' 20 April 1970 p. 178; see also: UN Doc. A/CN.4/SER.A/1970/Add.1, ILC, 'Yearbook of the ILC Vol. II Documents of the twenty-second session including the report of the Commission to the General Assembly' para. 11 and UN Doc. A/CN.4/SER.A/1973/Add.1, ILC, 'Yearbook of the ILC Vol. II Documents of the twenty-fifth session including the report of the Commission to the General Assembly' para. 40.

[229] Crawford, *ILC Commentaries* (n 27); Crawford, *The General* (n 74) p. 64-69.

> importance to the international community, should probably be regarded as a necessary element for assessing the gravity of an internationally wrongful act and as a criterion for determining the consequences it should have. But this must not obscure the essential fact that it is one thing to define a rule and the content of the obligation it imposes and another to determine whether that obligation has been violated and what should be the consequences of the violation. Only the second aspect comes within the sphere of responsibility proper; to encourage any confusion on this point would be to raise an obstacle which might once again frustrate the hope of successful codification.[230]

In the current literature on primary and secondary norms, international responsibility law is often the field of law referred to as consisting of (mostly) secondary norms.[231] While this is undoubtedly so, this study adopts a wider definition of secondary norms, which do not only play towards the coerciveness of the legal order, but are relevant for the interpretation and application – as well as enforcement – of primary norms. Following this understanding, not only sanctioning norms, such as under international responsibility law, but also rules on interpretation of primary norms, as under the law of treaties, are included in the definition of secondary norms. An example of secondary norms outside the realm of public international law is conflict of laws (private international law), as this field of law concerns itself with the determination of which national procedural and substantive rules apply in domestic proceedings of a transnational character.

It is important to note here that this study understands the differentiation of primary and secondary norms as a tool, and it should be considered as such. As is often the case with concepts, the differentiation is, to a certain degree, artificial, and legal reality may showcase instances that do not clearly fall into to one or the other category.[232] Viewed as a tool, however, the compartmentalisation can help by creating a facilitating framework that serves the structural analysis of legal rules. It is an important tool used in the methodology in this study, as it usefully contributes to the analysis of Article VI of the Outer Space Treaty pertaining on one hand to legal consequences of breaching norms when conducting activities in outer space (secondary norm), and on the other, to regulation of conduct of State parties (primary norm).

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[230] UN Doc. A/CN.4/246 and Add.1-3, ILC, 'Third Report on State Responsibility, by Mr. Roberto Ago, Special Rapporteur, the internationally wrongful act of the State, source of international responsibility; Extract from the Yearbook of the International Law Commission: 1971, vol. II(1)' 5 March, 7 April, 28 April and 18 May 1971.

[231] Crawford, *ILC Commentaries* (n 27); Besson, *Theories* (n 31).

[232] See for an in-depth analysis of different understandings of the terminology of primary and secondary rules: Ulf Linderfalk, 'State Responsibility and the Primary-Secondary Rules Terminology – The Role of Language for an Understanding of the International Legal System' (2009) 78 Nordic Journal of International Law 53.

Primary and secondary norms in Article VI Outer Space Treaty

The nature of legal norms that are established in the three sentences of Article VI of the Outer Space Treaty fits well within the primary-norm-secondary-norm methodology. It is worthwhile to analyse the characteristics of the three sentences of Article VI with this in mind.

Primary and secondary norms are characterised by the addressee of the norm. While primary norms are considered to "command a certain behaviour" of subjects of law,[233] secondary norms are those that regulate the way in which primary norms are processed or enforced, and thus address primary norms as such.[234] This differentiation is useful for an analysis of Article VI of the Outer Space Treaty, as with regard to the distinction of primary and secondary norms, it is a provision that combines both perspectives. Commonly, a provision will either qualify as a primary or secondary norm; however, Article VI combines both characteristics in its three sentences. The analysis of Article VI in the present study differentiates on one hand between Sentences 1 and 3 of Article VI as secondary norms, and on the other, Sentence 2 of the same provision as a primary norm. Article VI of the Outer Space Treaty thus constitutes a truly extraordinary provision of international (space) law, in the sense of the 'classic' notion of international responsibility, and a direct address of conduct of States. It can be structured as follows:

Table 10
Primary and secondary norm distinction in Art. VI Outer Space Treaty

Sentence in Article VI Outer Space Treaty	***Type of norm***
Sentence 1	Secondary norm
Sentence 2	Primary norm (but equally: extension of Sentence 1)
Sentence 3	Secondary norm

When analysing the substance of Article VI, it also becomes apparent that it is a far-reaching provision in two central aspects, the coming about of which may possibly be explained by the ultra-hazardousness of space activities, as well as the

[233] Kelsen (n 224) p. 142.

[234] While Kelsen, and many scholars still today, often refer to international responsibility as the class of norms that qualify as secondary due to their power to work towards an enforcement of international law, in my understanding, secondary norms are any norms that address the further processing of primary norms – thus, in my view, in addition to international responsibility law, the law of treaties is another body of law that qualifies as secondary norms (I am referencing here bodies of law for reasons of simplicity; however, in analysis, every provision has to be assessed individually and it is for example possible that a field of law contains mostly primary norms but will also have one or few provisions classifying as secondary norms – international space law is a good example of this allocation). Therefore, the reference to the classification of 'secondary norms' in the following text should be understood as referring to both the law of treaties and international responsibility law.

circumstances of negotiations at the time of drafting. Firstly, it introduces the notion of 'national activities' for international space law, as it pronounces on the international responsibility of States for their national activities in outer space, including all national activities carried out by non-State actors. This constitutes a deviation from the law of State responsibility under international responsibility law, where the act of a non-State entity must be attributable to the State in accordance with an identified set of rules on attribution under the ILC's Articles of State Responsibility. Secondly, it addresses the regulation of non-State actors by States through requiring authorisation and continuing supervision of activities carried out by the former, thereby creating a legal obligation that usually is translated into the domestic legal order of State parties to the Outer Space Treaty.[235]

The analysis of Article VI of the Outer Space Treaty in Chapters 4 and 6 of the present study is built on the division between primary and secondary norms. It corresponds well to the structure of the research questions: while Sentences 1 and 3 of Article VI on international responsibility of States and international (intergovernmental) organisations are addressed in research question 2 (secondary norms, mainly Chapter 4), Sentence 2 on the requirements for non-governmental space activities is addressed in research question 4 (primary norm, mainly Chapter 6).

Due to the central position of Article VI in this manuscript, Sentences 1 and 3, as the legal basis for international responsibility for activities in outer space, are quoted in their entirety below; for ease of reading and ensuing analysis they are split up in Table 11 below. The text reads as follows:

Table 11
Secondary norms in Art. VI Outer Space Treaty

Sentence in Article VI Outer Space Treaty (excerpt)	***Norm***
Sentence 1	States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty.
Sentence 3	When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.

[235] Although Art. VI of the Outer Space Treaty does not set forth a legal obligation to implement national law to the effect of ensuring the authorisation and supervision of space activities, it is often used as (one of) the legal basis (bases) for national space laws.

Through recourse to the distinction of primary and secondary norms for a legal analysis of Article VI of the Outer Space Treaty, it can already be seen that general international legal concepts have a bearing on the interpretation of norms of international space law. There are other avenues of influence of international law on international space law, as follows in the sections below.

3.3. General principles of law

General principles of law constitute a source of law according to the doctrine of sources based on Article 38 of the ICJ Statute. International law knows a number of general principles, which in some cases have been codified, and in many cases, come to the fore through judicial adjudication or expressions of general recognition in international legal documents. This section presents a number of principles that can be considered most relevant for legal interpretation and for international space law. These are:

(1) *Pacta sunt servanda*;

(2) The principle of *bona fides* or good faith;

(3) *Lex superior*;

(4) *Lex posterior derogat legi priori*;

(5) *Lex specialis derogat legi generali*; and

(6) *Venire contra factum proprium* (estoppel).

These general principles, can play a role in the interpretation, application, and implementation of international space law.

3.3.1. Selected general principles of law

Below follows an overview of the respective origin and central notion of the named general principles of law.

(1) *Pacta sunt servanda*, Latin for 'agreements must be kept', expresses the general principle of law that a legal agreement is binding on the parties. Its emergence traces back at least to ancient Roman law, and it is commonly viewed as being a brocard.[236]

[236] A brocard is a legal maxim or principle expressed in Latin, which has traditional legal authority and may derive from sources as old as ancient Roman law. The term refers to Burchard of Worms (*950/965), Bishop of Worms, Holy Roman Empire of the German Nation, who compiled 20 volumes of ecclesiastical rules. His canon law collection is known as the *Decretum*, *Decretum Burchardi*, or *Decretorum libri viginti*.

The principle of *pacta sunt servanda* is known to both civil law and common law jurisdictions. Under national law, it is often referenced in relation to agreements in the context of commercial relationships of non-State actors.

Under international law, the principle of *pacta sunt servanda* serves a central role in its meaning that international law as a legal system can only serve its purpose of a reliable *legal* system if legal obligations once accepted are honoured by their parties (States and international organisations). Its limitation under international law can be found in the application of *jus cogens* rules, which delimit an application of international treaties by being rules of the highest category under international law. Moreover, under certain circumstances, a fundamental change in circumstances can be invoked as a valid justification for not following one's agreement(s).[237]

Vienna Convention on the Law of Treaties codifies *pacta sunt servanda* in its Article 26, stating that "[e]very treaty in force is binding upon the parties to it and must be performed by them in good faith". In this way, the principle of *pacta sunt servanda* is closely related to the principle of acting *bona fides* or in good faith. Under international space law, *pacta sunt servanda* is relevant with regard to the five UN treaties on outer space. Here, the principle as codified in the Vienna Convention can be applied in assessing the implementation of the space treaties.

(2) The general principle of law of *bona fides*, or, as can be used interchangeably in English, good faith, denotes a certain moral or mental dimension of honesty, openness, and in fairness, and the absence of ulterior motives towards achieving a certain outcome.[238] It can be contrasted to acting *mala fide*, in bad faith, or to acting in perfidy.[239] It has a long legal tradition and already in Ancient Rome was one of the foundations of legal relationships and business transactions, where it was

[237] Under public international law, the customary international legal doctrine of *clausula rebus sic stantibus* ('clause as things stand') is often viewed as an 'escape clause' or 'defence' to the general principle of *pacta sunt servanda*. In practice, it is relatively strictly formulated, interpreted, and applied, due to its potential to minimise the legal certainty that international agreements strive to establish. It forms part of the Vienna Convention on the Law of Treaties, which sets out in its Article 62 that the instance for the change of circumstances cannot be invoked unless (a) those circumstances constituted a fundamental basis for conclusion of the treaty and (b) the effect of the change radically transforms the extent of the obligations still to be performed by the treaty; due to it being referred to as as 'fundamental change of circumstances', it can be understood to be substantively (content-wise) part of the *systematique* of the Vienna Convention on the Law of Treaties; however, not formally, as the Convention does not expressly state the designation of *clausula rebus sic stantibus*.

[238] The Latin *bona fides* translates to good faith; its ablative *bona fide*, in good faith, is often used as an adjective expressing the same principle.

[239] Perfidy is for example defined in international humanitarian law in Additional Protocol I to the 1949 Geneva Conventions as "acts inviting the confidence on an adversary to lead him to believe that he is entitled to, or obliged to accord, protection under the rules of international law applicable in armed conflict, with the intent to betray that confidence"; Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), Article 37(1) (adopted by consensus).

considered one of the original virtues. It was also proclaimed by the 1215 Magna Carta.[240] *Bona fides* as a legal principle is especially relevant in reference to matters of equity, which is a perspective especially relevant to international space law. Moreover, treaty norms of international space law that have been ratified by States present the underlying assumption that those norms are interpreted at the national level and implemented with good faith.

The general principles of law of *lex superior*; *lex posterior* and *lex specialis* are kindred principle relating to the interpretation of legal norms. They are relevant in national legal systems in the context of conflict of laws, and are used under international law in the interpretation of norms. As mentioned above, the present study understands the relationship between international legal norms as not necessitating a conflict of norms to find applicability of these general principles of law.

(3) The principle of law of *lex superior* refers to the hierarchy of norms within a given legal order. It entails that a legal norm that can be viewed as lex superior supersedes a legal norm that is viewed as lex inferior. This principle of law pertains to the internal structure of a legal order, and ensures that the latter is not effectively rendered *ad absurdum*. In international law, it is closely linked to the doctrine of sources of law and while being a general principle of law that at times can assist legal interpretation, does not play a predominant role as Article 38 of the ICJ Statute states that there is no hierarchy between international treaties and agreements, international custom, and general principles of law.

(4) The principle of *lex posterior derogate legi priori*, in English, a later law repeals an earlier law, or for short, the *lex posterior* principle, prescribes another directive in legal interpretation and hierarchy of legal norms, which commands that a law or legal rule adopted after another addressing the same subject matter overrides the latter. It is closely related to statutory interpretation in common law systems. By way of affinity, it is in close relationship to the principles of *lex superior* and *lex specialis*. For the international law of treaties, it is codified in Article 30 of the Vienna Convention on the Law of Treaties. In international space law, it is relevant for the present study in relation to international liability for damage resulting from space activities and the registration of objects launched into outer space. This is because both notions are codified as principles in the Outer Space Treaty of 1967, and were specified in ensuing conventions. Here, if a State party is party to these three instruments, the legal regulation in the ensuing conventions will supersede the legal codification of the general principles of the Outer Space Treaty.

[240] The passage addressing good faith is also still valid under the charter of 1225, the version that became the final and definitive version of the Magna Carta and is also the one on the Statute Book of the United Kingdom today.

(5) The legal principle of *lex specialis derogate legi generali*, sometimes also referred to as *generalia specialibus non derogant* – the general does not derogate from the specific, or shortened to the principle of *lex specialis*, concerns the legal interpretation of, and more specifically, the hierarchy of laws. In the instance that two or more laws or legal rules govern the same subject matter, the principle prescribes that the more specific legal regulation 'overrides' the more general *lex generalis*. It does not necessarily require a preceding conflict of laws in order to find applicability.[241] In international law practice, the principle of *lex specialis* is especially relevant when more general laws or legal rules are adopted after the adoption of more specific laws or legal rules. The principle plays a predominant role in the assessment of the relationship between international space law and international law in the present chapter and is revisited below in the section on fragmentation of international law.

(6) The principle of *non licet venire contra factum proprium*, in English, it is not permitted to contravene a proper deed, or estoppel, is the international legal transcription of national legal doctrines found under common law (estoppel) and civil law (*non licet venire contra factum proprium*) traditions. In common law systems, estoppel is the legal doctrine allowing the judicative to prevent ('estop') legal subjects from withdrawing from previously assured concessions or from submitting a particular claim. In the civil legal tradition, the related principles do not require detriment or prejudice, and are closely connected to the civil law understanding of good faith.[242] Under international law, the principle of *non licet venire contra factum proprium* is furthermore based on equity, and therefore of potential relevance to international space law.

The principle "protects legitimate expectations of States induced by the conduct of another State"[243] and therefore, plays a role for the reliability of States' assurances towards other international actors. Under public international law, extensive and restrictive notions of the principle evolved over time, with the restrictive understanding prevailing currently. In its restrictive form, the principle is distinguished from acquiescence[244] and has been worded by the Permanent Court of Arbitration as follows: "[f]urther to this jurisprudence, estoppel may be invoked where (a) a State has made clear and consistent representations, by word, conduct, or silence; (b) such representations were made through an agent authorized to speak for the State with respect to the matter in question; (c) the State invoking estoppel

[241] ILC Fragmentation Report 2006 (n 8).

[242] However, the international legal principle is not identical to its counterparts under domestic legal systems in both common law and civil law traditions.

[243] Thomas Cottier and Jörg Paul Müller, 'Estoppel', *Max Planck Encyclopedias of International Law* <https://opil-ouplaw-com.ludwig.lub.lu.se/display/10.1093/law:epil/9780199231690/law-9780199231690-e1401?rskey=gVXlxC&result=1&prd=MPIL> accessed 27 October 2023.

[244] ICJ, *Gulf of Maine Case (Delimitation of the Maritime Boundary in the Gulf of Maine Area)* (Canada v. United States of America) Judgment 1984 ICJ Reports 165 (30 March).

was induced by such representations to act to its detriment, to suffer a prejudice, or to convey a benefit upon the representing State; and (d) such reliance was legitimate, as the representation was one on which that State was entitled to rely".[245] It can be relevant in international space law with regard to their domestic legal interpretation of international norms of space law, where it prevents States from changing their views on specific issues of space law.

3.3.2. General principles of law at the ILC

The ILC decided at its seventieth session in 2018 that it would include the topic 'General Principles of Law' in its programme of work and appointed a Special Rapporteur for the topic. The first report of the Special Rapporteur was submitted in 2019,[246] and his second report at the seventy-second session of the ILC in 2021.[247] In 2022, the Special Rapporteur submitted his third report.[248] In 2023, at its seventy-fourth session, the Commission adopted the draft conclusions on general principles of law on first reading.[249] The ILC submitted the report of its seventy-fourth session to the Sixth Committee.[250] States have been given until December 2024 to provide comments, thus the work is currently still under consideration.[251]

The draft conclusions address the underlying nature of general principles of law. In their current formulation, they are distinguished between general principles of law that formed in domestic orders, and those formed within the international legal

[245] PCA, Arbitral Tribunal Constituted under Annex II of the United Nations Convention on the Law of the Sea, *Chagos Marine Protected Area Arbitration* (Republic of Mauritius v. United Kingdom of Great Britain and Northern Ireland) 2015 (18 March) para. 438.

[246] UN Doc. A/CN.4/732, ILC, 'First report on general principles of law by Marcelo Vázquez-Bermúdez, Special Rapporteur' 5 April 2019. The report presents his approach to the topic's scope and outcome, as well as the main issues to be addressed.

[247] UN Doc. A/CN.4/741, ILC, 'Second report on general principles of law by Marcelo Vázquez-Bermúdez, Special Rapporteur' 9 April 2020 and Corr.1, which addresses the identification of general principles of law in the sense of Art. 38(1)(c) ICJ Statute.

[248] UN Doc. A/CN.4/753, ILC, 'Third report on general principles of law by Marcelo Vázquez-Bermúdez, Special Rapporteur' 18 April 2022, which discusses the issue of transposition, general principles of law formed within the international legal system, and the functions of general principles of law and their relationship with other sources of international law.

[249] UN Doc. A/78/10, ILC, 'Report of the International Law Commission, Seventy-fourth session (24 April–2 June and 3 July–4 August 2023)' para. 36.

[250] <https://press.un.org/en/2023/gal3698.doc.htm> accessed 27 October 2023.

[251] <https://press.un.org/en/2023/gal3698.doc.htm> accessed 27 October 2023.

system.[252] While the former has proven to be relatively uncontroversial, the latter has been met with a variety of comments by States and widely differing views.[253]

There is a justified debate that relates to the question whether the ILC, as the UN's body tasked with the progressive development of international law, should engage in providing guidance on how international law can be identified in the first place.[254] In a community of States whose shared consent lies at the heart of the international legal order, it is the latter that is imperative for the recognition of a legal norm.[255]

3.3.3. General principles of law in international space law

The general principles of law as selected above constitute established principles of international law that have been resorted to repeatedly at the international level, especially with regard to treaty interpretation. This is also relevant for international space law. The applicability of these principles to international space law displays an additional perspective on the interrelationship of the former with general international law. The application of the *lex specialis* principle is particularly relevant for an assessment of international space law, as here, there are legal norms setting forth concepts that resemble yet deviate from their counterparts under international law. *Lex specialis* is more closely considered below.

3.4. Fragmentation of international law

To provide the background for an assessment of the international responsibility for activities in outer space within the context of fragmentation of international law, the present section presents the history of the fragmentation debate with a focus on the

[252] Conclusion 3 (Categories of general principles of law):
General principles of law comprise those:
(a) that are derived from national legal systems;
(b) that may be formed within the international legal system.

[253] E.g. see: Ori Pomson, 'General Principles of Law Formed Within the International Legal System?' EJIL:Talk! 12 July 2022 <https://www.ejiltalk.org/general-principles-of-law-formed-within-the-international-legal-system/> accessed 27 October 2023 and Matina Papadaki, 'General Principles Formed within the International Legal System: Theoretical Debates and Practical Ramifications in Light the Work of the ILC' Völkerrechtsblog 27 July 2023 <https://voelkerrechtsblog.org/general-principles-formed-within-the-international-legal-system-theoretical-debates-and-practical-ramifications-in-light-the-work-of-the-ilc/> accessed 27 October 2023.

[254] See also identification of customary international law: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N18/043/79/PDF/N1804379.pdf?OpenElement> accessed 27 October 2023 p. 9-10.

[255] Pomson (n 255).

work of the ILC. It includes the theory behind the notion of self-contained regimes, which draws on the ILC's work on fragmentation of international law. In consequence, the present study is positioned in a wider context of an ongoing international legal discourse.

The fragmentation of international law describes the tension between international law as a unified system of law and its breaking up into individual fields of international law that each follow their own set of rules. While the discussion predates the work of the ILC on the matter, the latter contributed to the subject gaining momentum in international legal discourse.

3.4.1. Fragmentation of international law at the ILC

The ILC considered the fragmentation of international law through its Study Group on Fragmentation of International Law (Study Group on Fragmentation), which addressed self-contained regimes in international law. As a result, it took the decision to include the topic "Risks ensuing from fragmentation of international law" in its long-term programme of work during its fifty-second session in 2000.[256] In 2001, the ILC was requested by the UN General Assembly to give further consideration to the topics in its long-term programme. In 2002, it renamed the topic as "Fragmentation of international law: difficulties arising from the diversification and expansion of international law", included it in its programme of work, and established a study group under the chairmanship of Simma for its consideration.[257] The Study Group on Fragmentation adopted recommendations on topics to be considered in 2002 and requested the Chairperson to prepare a study on the function and scope of the *lex specialis* rule and on 'self-contained regimes'.[258] The five topics in its recommendation were:[259]

> (a) [T]he function and scope of the *lex specialis* rule and the question of 'self-contained regimes';
>
> (b) [T]he interpretation of treaties in the light of "any relevant rules of international law applicable in the relations between the parties" (Art. 31(3)(c) of the Vienna Convention on the Law of Treaties), in the context

[256] UN A/CN.4/SER.A/2000/Add.1 (Part 2)/Rev.1, 'Yearbook of the ILC Vol. II (Part 2) Documents of the fifty-second session' para. 729; Gerhard Hafner, 'Risks ensuing from fragmentation of international law' ibid. (annex) p. 143.

[257] UN Doc. A/CN.4/SER.A/2002/Add.1 (Part 2), 'Yearbook of the ILC Vol. II (Part 2) Documents of the fifty-fourth session' paras. 492-494, 511.

[258] Ibid. paras. 512-513.

[259] Ibid.

of general developments in international law and concerns of the international community;

(c) [T]he application of successive treaties relating to the same subject matter (Art. 30 of the Vienna Convention on the Law of Treaties);

(d) [T]he modification of multilateral treaties between certain of the parties only (Art. 41 of the Vienna Convention on the Law of Treaties);

(e) [H]ierarchy in international law: *jus cogens*, obligations *erga omnes* and Article 103 of the Charter of the United Nations as conflict rules.

At its fifty-fifth session in 2003, the ILC appointed Koskenniemi as Chairperson to the Study Group on Fragmentation, and the Study Group drafted a schedule and agreed on a methodology for its work.[260] The Study Group briefed the ILC during its 57th session in 2005 on the status of its work undertaken and the ILC consecutively held an exchange of views. At the end of the 57th session, in 2005, the Study Group announced the submission of a consolidated study and a set of conclusions, guidelines, or principles for the following 58th session in 2006.[261] The consolidated report was disclosed on 13 April 2006.[262]

In the same year, the ILC adopted the Study Group on Fragmentation's conclusions in its document entitled 'Conclusions of the work of the Study Group on the Fragmentation of International Law: Difficulties arising from the Diversification and Expansion of International Law', adopted at the 58th session in 2006 and submitted to the UN General Assembly as part of the ILC's report covering the work of that session.[263]

The Study Group on Fragmentation's consolidated report and conclusions form the basic understanding employed in the present study regarding fragmentation and special or self-contained regimes of international law. This extends to the understanding of application of the *lex specialis* principle to norms of international space law.

[260] UN Doc. A/CN.4/SER.A/2003/Add.1 (Part 2), 'Yearbook of the ILC Vol. II (Part 2) Documents of the fifty-fifth session' paras. 413, 424-435.

[261] UN Doc. A/CN.4/SER.A/2005/Add.1 (Part 2), 'Yearbook of the ILC Vol. II (Part 2) Documents of the fifty-seventh session' paras. 445-493.

[262] ILC Fragmentation report (n 8).

[263] UN Doc. A/CN.4/SER.A/2006/Add.1 (Part 2), 'Yearbook of the ILC Vol. II (Part 2) Documents of the fifty-eighth session'.

3.4.2. Self-contained regimes

In the words of the early work of the ILC Study Group on Fragmentation, "[a] self-contained regime covers the case where a set of primary rules relating to a particular subject-matter is connected with a special set of secondary rules that claims priority to the secondary rules provided by general law".[264] In the ILC's understanding, special regimes are *never* truly self-reliant and free of the need to apply rules from any other field of law. Already the early work of the Study Group on Fragmentation reveals that its understanding of self-contained regimes in international law does not subscribe to their existence fully when it says, "Yet, however, no legal regime is fully self-contained".[265]

Special regimes, in the understanding in this study, may embrace special rules on specific issues but draw on primary and secondary international norms for others. Thus, in line with the ILC's conception that no international legal regime is ever truly self-reliant, special regimes are understood here as regimes that rely to some extent on their own rules for what would otherwise be regulated under general international law, but take recourse to general international law for others.[266]

3.4.3. International space law as a self-contained regime

The understanding of a self-contained regime in this study follows Simma and Pulkowski, who differentiate between special and non-self-contained regimes by resort to general international law of State responsibility.[267] If international responsibility law applies with regard to enforcement of rules of a particular field of international law, the regime cannot be considered self-contained. The expressions self-contained regimes and special regimes are used synonymously in this study.

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[264] ILC Study Group on Fragmentation, 'Fragmentation of International Law: Topic (a): The function and scope of the *lex specialis* rule and the question of "self-contained regimes": An outline' p. 9 <https://legal.un.org/ilc/sessions/55/pdfs/fragmentation_outline.pdf> accessed 27 October 2023.

[265] Ibid. p. 10.

[266] An example that is sometimes mentioned is the understanding of the Vienna Convention on Diplomatic Relations as forming a self-contained regime with regard to international responsibility only concerning its secondary obligations on countermeasures. See for a discussion of the ILC's approach: Ulf Linderfalk, 'Towards a More Constructive Analysis of the Identity of Special Regimes in International Law – The Case of Proportionality' (2013) 2 Cambridge Journal of International and Comparative Law 850.

[267] Bruno Simma, Dirk Pulkowski, 'Of Planets and the Universe: Self-Contained Regimes in International Law' (2006) 17 The European Journal of International Law 3.

Space law has been viewed as a "separate and distinct field of law" for several decades[268] and indeed carries some characteristics that are truly special in the context of public international law. Especially its legal regulation of international responsibility stipulates *lex specialis*, as in part, the rules deviate from international responsibility law. As international space law for the regulation of international responsibility for activities in outer space formulates its own rules, it can be viewed as a special regime. This is true despite the fact that for certain aspects of a legal regulation of international responsibility for activities in outer space, it draws on general international responsibility law. As the principle of international responsibility is prescribed by the Outer Space Treaty, as well as special rules on attribution of conduct, it cannot be seen as possessing a 'special' approach to the principle of international responsibility, and thus constituting a special regime under international law.

3.4.4. Self-contained regimes in international law: *lex specialis* and *lex generalis*

An important consideration in relation to special regimes under international law is the understanding of the *lex specialis* maxim. It can be conceived in different ways. In one understanding, two legal norms are applicable simultaneously and are thus in conflict; a conflict of law which can be resolved, for example, through application of the *lex specialis* maxim.[269] In another understanding, the special and the general rule are not in conflict, but the first can be seen as an elaboration of the latter. In the second understanding, a legal conflict is not prerequisite to the application of the *lex specialis* maxim.[270]

In the consolidated report of the Study Group on Fragmentation, the two conceptions are explained in the following way (and reverse order):[271]

> The principle that special law derogates from general law is a widely accepted maxim of legal interpretation and technique for the resolution of normative conflicts. It suggests that, if a matter is regulated by a general standard as well as by a more specific rule, then the latter should take precedence over the former. The relationship between the general standard and the specific rule may, however, be conceived in

[268] In the earlier days of space law, a discussion was had as to the relationship of space law with air law and maritime law; see Bosco (n 68) stating that "[t]oday, space law is clearly recognized as a separate and distinct field of law".

[269] Other conflict-of-laws rules, also based on Roman law, that can serve the resolution of a legal conflict are *lex posterior derogat legi priori* and *lex superior derogat legi inferiori*.

[270] See also for a discussion of *lex specialis*: Ulf Linderfalk, 'Neither Fish, Nor Fowl: A New Way to a Fuller Understanding of the lex specialis Principle' (2023) 25 International Community Law Review 426.

[271] ILC Fragmentation report 2006 (n 8) paras. 56-57 (footnotes omitted).

> two ways. One is the case where the specific rule should be read and understood within the confines or against the background of the general standard, typically as an elaboration, updating or technical specification thereof. The specific and the general both point, as it were, in the same direction.
>
> Sometimes *lex specialis* is, however, understood more narrowly to cover the case where two legal provisions, both of which are valid and applicable, are in no express hierarchical relationship and provide incompatible direction on how to deal with the same set of facts. In such a case, *lex specialis* appears as a conflict resolution technique. It suggests that, instead of the (general) rule, one should apply the (specific) exception. In both cases, however, priority falls on the provision that is "special", *i.e.* the rule with a more precisely delimited scope of application.

The difference between the two conceptions of *lex specialis* is important in this study, as through the choice of topic – international responsibility – the Articles on State Responsibility are applicable. These contain a provision on *lex specialis* in Article 55, which reads:

> These articles do not apply where and to the extent that the conditions for the existence of an internationally wrongful act or the content or implementation of the international responsibility of a State are governed by special rules of international law.

The understanding in Article 55 of the Articles on State Responsibility follows the conception of *lex specialis* that does not presuppose a conflict. This aligns well with international responsibility under international space law, as international responsibility under the regulation of international responsibility for activities in outer space – especially as in Article VI of the Outer Space Treaty – can be viewed as a refinement of certain aspects of the legal regulation under international responsibility law, adjusted to the ultra-hazardous nature of space activities.

Scholarship in recent years since the adoption of the fragmentation report has continuously revisited the debate on fragmentation of international law and the application of the *lex specialis* principle, but the initial momentum has considerably calmed. In general, a reluctance can be detected on the part of scholars to identify a field of law of their expertise as a self-contained or even special legal regime. An example is Boyle's classification of international environmental law as not making up its own field of international law, but being part and parcel of international law.[272]

[272] Boyle, *Environmental* (n 221).

3.5. The relationship of international space law to international law

The overall aim of research question 1 and the present chapter was to assess how the legal rules on State responsibility contained in international space law relate to the general rules on international State responsibility under international responsibility law. This question necessitates an assessment of the interrelationship of international space law and international law; therefore, the results of this chapter are incidentally relevant to international space law as a whole.

To examine the relationship between international space law and international law, this has presented perspectives that can contribute to the assessment. These included terminological and conceptional aspects of international responsibility, the application of general principles of law to international space law, and the application of the *lex specialis* principle and notion of special regimes to international space law following the definitions adopted in the ILC's work on fragmentation of international law.

The first section considered the character of international responsibility within the international legal order. Because international responsibility law constitutes – for the most part – what is referred to here as secondary norms, it is a field of law of public international law which has a somewhat broader character than other substantive fields of international law due to its relevance for many other fields of public international law. International responsibility law is generally applicable to other fields of public international law setting forth primary obligations.[273]

Generally speaking, branches of public international law may relate to one another in different ways, as the specific kind of interrelationship with another field of law to a great extent depends on the actual subject matter being regulated (i.e., field of law) and the specific legal rule or principle under a field of law. Some fields of international law are more relevant to other fields of international law in a relative sense. Such is for instance the case with international treaty law and international responsibility law, because both fields of law apply to how norms of other fields of law should be addressed It does not matter, which field of law a treaty regulates or which field of law a primary norm falls under for the application of these secondary norms. Article III of the Outer Space Treaty determines that international law is applicable to activities in outer space. Therefore, at the outset it can be concluded

[273] This is for instance the understanding that Crawford took in *State Responsibility – the General Part* (n 74): "the general part" here referring to the part of State responsibility that was relevant in the absence of more specific legal regulation in certain fields of law. Note also, Andrea Bianchi (n 75) p. 22; stating that textbooks on international law generally feature a chapter on responsibility, which in Bianchi's view is not included in the, what is often referred to as 'substantive' areas of international law which may be featured in ensuing chapters.

that international law (in a general sense) is relevant to an interpretation of international space law.

The second section of the present chapter introduced general principles of law to the discussion. Considering the application of general principles of law to international space law reveals another aspect in which international law influences international space law. The principles selected for presentation in the present chapter were *pacta sunt servanda*; the principle of *bona fides* or good faith; *lex superior*; *lex posterior*; *lex specialis*; and *venire contra factum proprium* (estoppel). They all display a relevance for an assessment of international space law, albeit to various degrees. Among the more relevant are *pacta sunt servanda*; good faith; *lex specialis*; and, to a certain extent, estoppel. *Pacta sunt servanda* is applicable to the interpretation of the five UN treaties on outer space and directs legal interpretation with regard to reliance on international agreements. The application of the principle of good faith to international space law reveals that also here, States operate on the international plane and are bound by the same rules of conduct that apply to other areas of international law. Estoppel creates the expectation that States live up to priorly issued interpretations, statements, or other documentation of their position; which is a relevant consideration in a context of rapidly changing technology evoking questions as to how the existing body of international space law is to be interpreted and applied

From time to time, the question arises whether international space law constitutes a special or self-contained regime. Special or self-contained regimes as a reference to the fragmentation of international law were introduced in the discussion of research question 1 above, and the use of their terminology clarified. The present study understands special regimes as distinct fields of international law, that nevertheless form part and parcel of international law and synonymous with 'self-contained regimes' of international law.

The results of the present chapter can be summarised as follows. When comparing international responsibility for activities in outer space under international space law and international responsibility law, a clear relationship of *lex specialis* and *lex generalis* can be assessed However, this is not built on a conflict of laws but on a constructive interrelationship between the two, whereby the more special regime prevails in a specific aspect of the legal regulation (rules on attribution). In this way, the study may serve well as an example for the international discourse on fragmentation of international law, as it displays that while a field of law may set forth special rules in one (or more) specific aspect(s), it still remains part and parcel of international law and other rules of international law, outside its special field, may still apply. This has a significance in terms of the relationships between special regimes of international law among each other as well as the relationship of one special regime of international law with international legal general rules (*lex generalis*). However, it has to be borne in mind that for any meaningful conclusions

in this regard, further research should be undertaken involving at the very least a selection of special regimes under international law.

International space law sets forth its own legal regulation of international responsibility. However, that does not mean that it can be assessed free of its context of general international law, as was shown above. We are therefore presented with the question of how the notions of international responsibility under international space law and international responsibility law relate specifically. While the foundation for this question was assessed in the present chapter, the next chapter investigates the specific way in which international responsibility for activities is interpreted coherently, from the perspective of international law.

As shown above, the three sentences of Article VI of the Outer Space Treaty can be distinguished by reference to primary and secondary norms: while Sentences 1 and 3 constitute secondary norms, Sentence 2 of the provision is a primary norm. This distinction enables us to address the research questions adequately: research question 2 targets the secondary norms in Article VI of the Outer Space Treaty, while research question 4 aims at the primary norm in Sentence 2 of Article VI of the Outer Space Treaty.

Chapter 4 – Responsibility for activities in outer space under international responsibility law and international space law

4.1. Introduction

International responsibility law and international space law both are branches of public international law. As such, they may put forward legal regulation that is only applicable to their specific field of application, but may also showcase interrelation and of legal rules across these legal fields. This relationship between the two branches of public international law was considered in the first research question in the previous chapter.

The present chapter addresses the second research question, which is:

> How do the notions of international responsibility under international space law and under (general) international responsibility law jointly shape international responsibility for activities in outer space as referred to in Article VI Sentences 1 and 3 of the Outer Space Treaty?

In the case of international responsibility law, this branch of law contains general norms, which apply to internationally wrongful acts based on breaches of international obligations in other fields of international law (regardless of whether they constitute a special regime). In other words, while the primary norm at the basis of the internationally wrongful act may stem from any other field of public international law – in the absence of more specific legal regulation of international responsibility in that field – international responsibility law is of a somewhat general character and can be applied It may thus be applicable to international space law. However, international space law is one of those branches of public international law that *does* formulate a specific legal regulation of international responsibility for space activities, as for example shown with regard to Article VI of the Outer Space Treaty. The extent to which international responsibility for activities in outer space is regulated under international space law and to what extent, if so, it falls back on

and depends on the 'general' legal regulation of international responsibility under international responsibility law, is the subject of the present chapter.

While international responsibility law sets forth the general legal regulation of the consequences of an internationally wrongful act, international space law relates to international responsibility for activities in outer space in two ways. Firstly, it sets out the general principle of international responsibility, which it generally declares applicable to space activities under the outer space legal framework (Article VI of the Outer Space Treaty Sentence 1). Secondly, it sets out a refined elaboration of specific aspects of the general legal regulation that can be found under international responsibility law: the rules on attribution of conduct (also Article VI of the Outer Space Treaty Sentence 1).

The reason why international space law is a special area regarding the application of international responsibility as a legal principle is that outer space is an ultra-hazardous terrain, which affects the hazardousness of space activities. In consequence, the Outer Space Treaty formulates a wider range of activities that may fall under the purview of international responsibility borne by States and international organisations. This becomes apparent when looking at the rules of attribution for international responsibility for activities in outer space as contained in the Outer Space Treaty, which include the activities of non-governmental entities. In contrast, these would not suffice (in general terms) under international responsibility law to create a strong enough link to the State or international organisation to incur international responsibility for the conduct.

As international responsibility law sets forth the legal rules that are generally applicable to an internationally wrongful act for all branches of (public) international law, i.e., all activities that fall under (public) international law, it constitutes a general legal regulation – or *lex generalis*. Some fields of (public) international law may set out a more refined legal elaboration of international responsibility for their specific area of application, which is the case for international space law insofar as it concerns the rules on attribution of conduct. Via application of the *lex specialis* principle, being a general principle of international law,[274] the application of the more specific legal regulation of attribution under international space law is given priority and with that, trumps the general rules on attribution under international responsibility law. The overall assessment of international responsibility for activities in outer space therefore takes recourse not only to international space law, but also to the general rules under international responsibility law insofar as international space law does not pronounce on the respective aspects. As such, both fields of law, in careful demarcation, find application for a legal assessment of international responsibility for activities in outer space.

[274] Art. 38(1)(c) ICJ Statute.

This chapter deals with three aspects of the relationship between international space law and international responsibility law: firstly, it assesses international responsibility under international space law; secondly, it assesses international responsibility under international responsibility law, and finally, it compares the notions of 'international responsibility' in each of these fields of law, so as to determine their interrelationship. To this end, it considers and compares the underlying assumptions and central characteristics of international responsibility in both fields of international law: international space law and international responsibility law. Therefore, the background to and development of international responsibility in both fields of law is presented as well as their core conceptions.

In the following section, the available codification of international responsibility for activities in outer space under international space law is presented and analysed (Section 2). Four provisions are relevant for international responsibility under international space law, as well as one preambular reference. The main relevant provision in this regard is Article VI of the Outer Space Treaty – more specifically, its Sentences 1 and 3 (secondary norms).[275] Articles III and IV(1)(b) of the Liability Convention also address fault liability (Article III) and joint and several liability (Article IV(1)(b)) by reference to persons for whom a State is "responsible".[276] These are interesting provisions as they combine the notions of liability and responsibility, and therefore can shed light on the designed interrelationship of the legal notions of international liability and international responsibility under the UN treaties on outer space. Thirdly, Article 14(1) of the Moon Agreement is to a large extent a recapitulation of Article VI Outer Space Treaty and specifies the applicability of the principle of international responsibility to activities on the Moon and other celestial bodies.[277] Lastly, Preambular Paragraph 2 of the Registration Convention recalls the principle of international responsibility of States for their national activities.[278]

The more 'general' body of rules of international responsibility law – in the sense of being relevant for all branches of public international law in the absence of a more specific legal regulation on international responsibility or aspects thereof – is presented in Section 3.[279] The section first provides a brief history of the development of international responsibility law is provided, which culminates in the ILC's Articles on State Responsibility and its Articles on the Responsibility of International Organisations. Following this, the main features of the content of the Articles on State Responsibility and the Articles on the Responsibility of International Organisations are highlighted, in the order set out by the Articles

[275] Art. VI Outer Space Treaty.

[276] Arts. III and IV(1)(b) Liability Convention.

[277] Art. 14(1) Moon Agreement.

[278] Preambular para. 2 Registration Convention.

[279] See for a reference to the use of 'general', Chapter 1 (n 14).

themselves: the conception of international responsibility law; breach; attribution; circumstances precluding wrongfulness; consequences of international responsibility; and collective and ancillary responsibility.

In addition to the relevant provisions of international space law pronouncing on the law of international responsibility for space activities, and in the process of clarifying them, Section 3 examines relevant further-reaching aspects of international space law necessary to coherently interpret and apply the notion of international responsibility for space activities. This includes fundamental conceptions within international space law, such as the definition and delimitation of outer space, as one of the legal discussions reaching back to deliberations at the beginning of the space age still on the COPUOS agenda today.

Following this, Section 4 compares the legal regulation of international responsibility for activities in outer space under the two fields of law, and analyses their interrelationship. This is needed to conclude on the applicable law of international responsibility to space activities taking into account both fields of law.

Lastly, Section 5 presents a summary of the findings and highlights the principal interim results of this chapter. This includes the drawing of a conclusion to research question 2.

4.2. International space law: International responsibility for activities in outer space

With regard to the responsibility regime adopted under international space law, the body of international space law is relevant. Sub Section 4.2.1 provides a brief overview of the law on the development of the body of international space law. Since much has been written on the foundational processes that led to the establishment of the *corpus juris spatialis*, it confines itself to the most prominent points. In addition to Article VI of the Outer Space Treaty as the central provision for responsibility for activities in outer space,[280] which is addressed in further detail below, Sub Section 4.2.4 discusses other provisions that directly address international responsibility for activities in outer space. Sub Section 4.2.5 addresses relevant non-legally binding instruments that may speak to the subsequent practice of States.

[280] See e.g.: Cheng, *Studies* (n 13).

4.2.1. The *corpus juris spatialis*: drafting history and general features

The law on outer space has been in the making already for more than six decades.[281] Despite the fact that, especially regarding outer space technologies, innovative developments arrive fast and are ever-changing, much of its foundational work is still applicable and very relevant today. However, the body of space law has also been consistently evolving over the years to address those changes in the way space activities are conducted on a legal level.

The development of the law of outer space at COPUOS has often been differentiated into different phases. The differentiation in the present study does not strictly follow the timeline of developments, as is done in the case of the phases of law-making, but rather prioritises the legal character of these instruments as a main criterion for differentiation.[282] I do, however, refer to the 'phases' of space law making. The present study identifies five groups of instruments.[283]

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[281] This section considers the UN-made COPUOS-based body of space law. The 'making', as in, consideration, of space law in a wider (and non-legally binding) sense can be traced back further to early academic publications on the matter, such as Laude's paper of 1910 being the first academic paper to consider space law in the 20th century and Mandl's monograph of 1932 being the first legal monograph on space law; see: Emil Laude, 'Questions Pratiques' 1 Revue Juridique Internationale de Locomotion Arienne p. 16-18, Paris 1910 <https://epizodyspace.ru/bibl/inostr-yazyki/fran/Revue_juridique_internationale_de_la_Locomotion_Aerienne/1910/1/Laude_Comment_s%27appellera_le_Droit_qui.pdf> accessed 27 October 2023; Vladimir Mandl, *Das Weltraum-Recht – Ein Problem der Raumfahrt* (J. Bensheimer Publishing1932) <http://epizodsspace.airbase.ru/bibl/inostr-yazyki/nemets/mandl/Mandl_Das_Weltraum-Recht_1932.pdf> accessed 27 October 2023; see also for a comprehensive assessment of the early development of space law: Stephen E. Doyle, *Origins of International Space Law and the International Institute of Space Law of the International Astronautical Federation* (Univelt Publishing 2002) also available through the International Institute of Space Law (IISL) at <https://iislweb.space/wp-content/uploads/2020/01/Origins_International_Space_Law.pdf> accessed 27 October 2023.

[282] Roughly speaking, the various periods of development of space law at COPUOS in their time reference correspond to qualities of legal nature of the documents adopted in those periods; such as the period between 1967-1979, when the five UN treaties on outer space were adopted – constituting the only period that involved adoption of legally *binding* agreements (so far). However, the legal nature of adopted documents and their respective timeline – while sharing comparable phases in broad strokes – do not always work out in the years around the fringe of an identified time period in detail. Here, I have opted – contrary to the more common differentiation following the timeline developments – to base the distinction primarily on the *legal nature* of the documents; such as done e.g., in UNOOSA's publication on UN instruments of international space law; see: UN, 'International Space Law: UN Instruments' (n 35). The booklet differentiates between: (1) UN treaties; (2) Principles adopted by the General Assembly; (3) Related resolutions adopted by the General Assembly; and (4) other documents (the Space Debris Mitigation Guidelines and the Safety Framework for Nuclear Power Source Applications in Outer Space, as the Long-term Sustainability Guidelines had not yet been adopted at the time of publication in 2017).

[283] See e.g.: Hobe, *Space Law* (n 173) p. 42-48 differentiating three phases; Tronchetti (n 173) p. 6-10 differentiating four phases. My distinction of five phases builds on their previous work: Hobe

During the first phase, COPUOS deliberated on fundamental principles applicable to activities in outer space and adopted non-legally binding instruments. During the second phase, the five legally binding treaties on outer space were adopted. In the third phase, general principles were adopted by the Committee. These are formally non-legally binding, due to their adoption as General Assembly resolutions, but are commonly viewed as expressing a strong form of consensus among the international community of States. In the fourth phase, COPUOS adopted non-legally binding General Assembly resolutions or work products, based on specific topics that were addressed in COPUOS working groups. During the latest and current fifth phase, non-legally binding sets of guidelines have been adopted, the latest being the LTS Guidelines[284] of 2018. Table 12 below provides an overview of the individual

structures the phases into three – the early treaty adoption, the principles resolutions, and ensuing General Assembly resolutions, ibid.; Tronchetti additionally splits up Hobe's first phase into two phases, one being the early time of 'preparatory' deliberations on space law and the second starting in 1967 with the adoption of international legally binding instruments; ibid. My differentiation is in line with theirs, but adds a current phase at the end of the timeline, which is seeing the adoption of guidelines by COPUOS and the General Assembly (annex to resolutions).

[284] UN Doc. A/74/20, COPUOS, 'Report of the Committee on the Peaceful Uses of Outer Space, Sixty-second session (12-21 June 2019)' para. 163 and annex II. The UNOOSA website recounts the developments as follows:
"Throughout the years, the Committee on the Peaceful Uses of Outer Space has considered different aspects of the long-term sustainability of outer space activities. Building on previous efforts, in 2010 the Scientific and Technical Subcommittee began considering as an agenda item the long-term sustainability of outer space. A Working Group on the Long-term Sustainability of Outer Space Activities was established, the objectives of which included identifying areas of concern for the long-term sustainability of outer space activities, proposing measures that could enhance sustainability, and producing voluntary guidelines to reduce risks to long-term sustainability. The Working Group and its expert groups addressed thematic areas including sustainable space utilization supporting sustainable development on Earth; space debris, space operations and tools to support collaborative space situational awareness; space weather; and regulatory regimes and guidance for actors in the space arena.
In June 2016 the Committee agreed to a first set of guidelines for the long-term sustainability of outer space activities (A/71/20, annex). In 2018, consensus was reached on a preamble and nine additional guidelines (A/AC.105/1167, annex III and A/73/20), although the Working Group could not agree on its final report.
In June 2019, the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space were adopted (A/74/20, para. 163 and annex II). The Guidelines provide guidance on the policy and regulatory framework for space activities; safety of space operations; international cooperation, capacity-building and awareness; and scientific and technical research and development.
The Committee encourages States and international intergovernmental organizations to voluntarily take measures to ensure that the guidelines are implemented to the greatest extent feasible and practicable. The Committee should also serve as the principal forum for continued institutionalized dialogue on issues related to the implementation and review of the guidelines (A/74/20, para. 163 & 164).
At its sixty-second session in 2019, the Committee likewise decided to establish a new working group on the topic under the Scientific and Technical Subcommittee (A/74/20, para. 165)."
The text and more information as well as related documents:
<https://www.unoosa.org/oosa/en/ourwork/topics/long-term-sustainability-of-outer-space-activities.html> accessed 27 October 2023.

instruments and documents with respect to their structure in the aforementioned phases.

Table 12 **Phases of international space law making**	
Phase	***Adopted instruments***
First phase: Early deliberations (Principles adopted by the General Assembly) (1958-1979)	Resolution 1721 A and B (XVI) of 20 December 1961: International cooperation in the peaceful uses of outer space (1961) Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (General Assembly Resolution 1963)
Second phase: Adoption of legally binding instruments (1967-1979)	Outer Space Treaty (1967) Rescue and Return Agreement (1968) Liability Convention (1972) Registration Convention (1975) Moon Agreement (1979)
Third phase: Principles adopted by the General Assembly (1982-1996)	Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting (General Assembly Resolution 1982) Principles Relating to Remote Sensing of the Earth from Outer Space (General Assembly Resolution 1986) Principles Relevant to the Use of Nuclear Power Sources in Outer Space (General Assembly Resolution 1992) Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries (General Assembly Resolution 1996)
Fourth phase: Related resolutions adopted by the General Assembly (1997 – 2013)	Paragraph 4 of resolution 55/122 of 8 December 2000: International cooperation in the peaceful uses of outer space Some aspects concerning the use of the geostationary orbit Resolution 59/115 of 10 December 2004: Application of the concept of the “launching State” Resolution 62/101 of 17 December 2007: Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects Resolution 68/74 of 11 December 2013: Recommendations on national legislation relevant to the peaceful exploration and use of outer space
Fifth phase: Adoption of guidelines and other documents (2007 – ongoing)	Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, endorsed by UNGA in its Resolution 62/217 of 22 December 2007 (2007) Safety Framework for Nuclear Power Source Applications in Outer Space (joint publication of COPUOS Scientific and Technical Subcommittee and International Atomic Energy Agency) [Guidance on Space Object Registration and Frequency Management for Small and Very Small Satellites (2015) (joint publication of UNOOSA and ITU)] Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space (2019)

Below, the five phases or groups of instruments are considered in further detail.[285]

First phase: Increased interest of the international community in the legal framework for activities in outer space was triggered by the Soviet Union's launch of the first-ever artificial Earth satellite into Earth orbit in 1957. On 13 December 1958, the General Assembly approved Resolution 1348 (XIII), establishing the Committee on the Peaceful Uses of Outer Space – COPUOS – as an *ad hoc* committee to address emerging questions of space law. Following some initial deliberations on the principles that should apply to a legal regulation of outer space, Resolution 1721 A and B (XVI) on international cooperation in the peaceful uses of outer space was adopted in 1961, and the Declaration was adopted by the General Assembly in 1963. Resolution 1721 B lays the foundation for space object registration for non-parties to the Registration Convention up to this day. The Legal Principles Resolution, constituting a non-legally binding instrument, it is considered by some to have reflect customary international law, at least in part, and in the time after its adoption, even served as the basis for Cheng's postulation of *instant custom*.[286] It laid the foundation for and reflected in many respects in the Outer Space Treaty.

Second phase: The Outer Space Treaty, the first of the five UN treaties on outer space, was negotiated and adopted in 1967 – and still lies at the heart of the *corpus juris spatialis*. As a general feature, and as can be inferred from the title of the Outer Space Treaty, international space law as a body of law was created to regulate the *activities* of humankind in outer space, this being the context in which the body of law should be understood.[287] Moreover, as a principles treaty, the Outer Space Treaty sets forth a number of principles for international space law. Among those are, first and foremost, the principle of freedom of exploration and use of outer space, which "shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic and scientific development" and "on a basis of equality".[288] Article II of the Outer Space Treaty also stipulates that outer space "is not subject to national appropriation"; or, what is referred to as non-

[285] This section considers the development of international space law only; the additional source of space law consisting of instruments concluded on a bi- or multilateral basis by spacefaring nations is not included.

[286] Cheng postulated 'instant custom' – a formation of international custom that did away with the requirement of State practice and singularly focused on *opinio juris* – using the examples of General Assembly Resolution 1721A (XVI) of 1961 and the Legal Principles Declaration of 1963, but concluded that while the theory held up, in this instance, instant customary international law had not formed; Bin Cheng, 'United Nations Resolutions in Outer Space: 'Instant' International Customary Law?' in: Cheng, *Studies* (n 13) p. 125-129.

[287] Because of this strong focus, it was even suggested by one scholar that the more appropriate term would be the *law of space activities*; Alexander Soucek, Lecture given in the Advanced Master programme of Air and Space Law at Leiden University, February 2018.

[288] Art. I Outer Space Treaty.

appropriation principle.[289] Article III of the Outer Space Treaty, in conjunction with its Article I, puts an emphasis on international cooperation and the observance of existing international law, including the Charter of the United Nations (UN Charter); in consequence, international law applies to outer space.[290]

Article VI of the Outer Space Treaty enshrines international responsibility for space activities in the Outer Space Treaty. It has been called one of the "many new and path-breaking principles" of the Outer Space Treaty, and constitutes a compromise between mainly the United States' and Soviet Union's point of views.[291] Negotiated at a time where technological progress could not have been foreseen to the extent that it materialised, this provision shares a characteristic with the subsequent provision, the principle of international liability in Article VII of the Outer Space Treaty: both comprise an, at the time, unprecedented strict assignment of responsibility and liability.[292]

In the years following its adoption, the Outer Space Treaty was complemented with four other international agreements drafted and opened for signature at UN level. All four are said to be based on the general principles stipulated in the Outer Space Treaty. The first agreement to follow was the Rescue and Return Agreement in 1968, then the Liability Convention in 1972, the Registration Convention in 1975, and finally the Moon Agreement in 1984.[293]

The five UN treaties have been received with differing degrees of welcome by the international community of States, but overall are considered successful. The most widely accepted instrument is the Outer Space Treaty with 114 ratifications.[294] Second is the Rescue and Return Agreement with 99 ratifications; closely followed by the Liability Convention with 98 ratifications.[295] The Registration Convention to

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[289] Art. II Outer Space Treaty.

[290] List of principles not exhaustive.

[291] Peter Jankowitsch, 'The Background and History of Space Law' in: Frans von der Dunk and Fabio Tronchetti, *Handbook of Space Law* (Elgar 2015) p. 6.

[292] Cheng, *Studies* (n 13) p. 621.

[293] The Registration Convention and Liability Convention are assessed in more detail in Chapter 4 of this manuscript, when State responsibility for activities in outer space is set into context with the international liability for space activities and registration of objects launched into outer space.

[294] The Outer Space Treaty furthermore has 23 signatories; see: UN Doc. A/AC.105/C.2/2023/CRP.3, COPUOS, 'Status of International Agreements relating to activities in outer space as at 1 January 2023' 20 March 2023. Croatia and Panama are the newest State parties to the Outer Space Treaty, with accession/ratification in 2023; see depository notifications <https://www.state.gov/wp-content/uploads/2023/03/Space-Outer-Space-Treaty-Notification-of-Deposit-of-Instrument-Croatia-Mar.-10-2023.pdf> accessed 27 October 2023and <https://www.state.gov/wp-content/uploads/2023/08/Space-Outer-Space-Treaty-Notification-of-Deposit-of-Instrument-Panama-Aug.-9-2023.pdf> accessed 27 October 2023.

[295] The Rescue and Return Agreement has 23 signatories, and the Liability Convention 19; see: UN Doc. A/AC.105/C.2/2023/CRP.3, COPUOS, 'Status of International Agreements relating to activities in outer space as at 1 January 2023' 20 March 2023.

date counts 75 State parties.[296] The Moon Agreement is generally regarded as a failed agreement, as it merely counts 18 ratifying States and four signatories; the latest ratification being in 2018.[297] This is conventionally explained by the fact that it sets up an international resource sharing regime for the exploitation of natural resources on the Moon in accordance with the principle of Common Heritage of Mankind, which not all States are willing to agree to.[298]

Third phase: Since that time, there have been General Assembly resolutions adopted as well as other non-legally binding instruments. During the third phase, from 1982 to 1992, more 'Principles Resolutions' were adopted by the Committee. These are principles adopted in General Assembly resolutions, that with regard to their legal value are on the same level with other General Assembly resolutions; nevertheless, they are often considered different due to their formulation of legal 'principles'.[299] They are comprised of: the Principles Governing the Use by States of Artificial

[296] Paraguay and Romania are the newest State parties to the Registration Convention; see depository notifications C.N.18.2023.TREATIES-XXIV.1 <https://treaties.un.org/doc/Publication/CN/2023/CN.18.2023-Eng.pdf> accessed 27 October 2023 and C.N.44.2023.TREATIES-XXIV.1 <https://treaties.un.org/doc/Publication/CN/2023/CN.44.2023-Eng.pdf> accessed 27 October 2023. The Registration Convention furthermore has 3 signatory State parties; see: COPUOS, Legal Subcommittee Sixty-second session, 'Status of International Agreements relating to activities in outer space as at 1 January 2023' 20 March 2023, UN Doc. A/AC.105/C.2/2023/CRP.3.

[297] See: UN Doc. A/AC.105/C.2/2023/CRP.3, COPUOS, 'Status of International Agreements relating to activities in outer space as at 1 January 2023' 20 March 2023; which counts 18 ratifications; however, Saudi Arabia since has notified the UN of its withdrawal from the Moon Treaty; see: UN Doc. C.N.4.2023.TREATIES-XXIV.2 (Depositary Notification) of 5 January 2023, with the withdrawal becoming effective from 5 January 2024 <https://treaties.un.org/doc/Publication/CN/2023/CN.4.2023-Eng.pdf> accessed 27 October 2023. This might be due to several reasons, such as legal reasons (particularly regarding Saudi Arabia's accession to the Artemis Accords), commercial reasons (the Saudi Arabian industry might consider the Moon Agreement restrictive), or political reasons – or a combination of those; see: Steven Freeland, 'AUDIO: Saudi Arabia withdraws from Moon Treaty' Australian Broadcasting Corporation (ABC) Newsradio 13 January 2023 <https://www.abc.net.au/news/2023-01-13/saudi-arabia-withdraws-from-moon-treaty/101854570> accessed 27 October 2023. The latest accession to the Moon Agreement is Armenia, notifying the UN on 19 January 2018 that the Moon Agreement would enter into force for its jurisdiction on 18 February 2018; see UN Doc. C.N.40.2018.TREATIES-XXIV.2 (Depositary Notification).

[298] See e.g.: René Lefeber, 'Relaunching the Moon Agreement' (2016) 41 Air and Space Law 1 p. 41; Carol R. Buxton, 'Property in Outer Space: The Common Heritage of Mankind Principle vs. the First in Time, First in Right, Rule of Property' (2004) 69 Journal of Air Law and Commerce p. 689.

[299] In this study, their legal value is considered that of General Assembly resolutions, thus, non-legally binding instruments, and their potential reflection of customary international law is not assessed Technically speaking, the Legal Principles Declaration is the fifth of those 'Principles Resolutions', as also reflected in UNOOSA's Space Treaty Instruments collection under "Part two. Principles adopted by the General Assembly"; UN, 'International Space Law: UN Instruments' (n 35).

Earth Satellites for International Direct Television Broadcasting (General Assembly Resolution 1982); the Principles Relating to Remote Sensing of the Earth from Outer Space (General Assembly Resolution 1986); the Principles Relevant to the Use of Nuclear Power Sources in Outer Space (General Assembly Resolution 1992) (Nuclear Power Sources Principles); and the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries (General Assembly Resolution 1996).

Fourth phase: The fourth phase comprises what are called "related resolutions adopted by the General Assembly."[300] They include Paragraph 4 of Resolution 55/122 on International cooperation in the peaceful uses of outer space (some aspects concerning the use of the geostationary orbit; 2000); Resolution 59/115 on the application of the concept of the "launching State" (2004) (Launching State Resolution); Resolution 62/101 on recommendations on enhancing the practice of States and international intergovernmental organisations in registering space objects (2007) (Registration Practice Resolution); and Resolution 68/74 on recommendations on national legislation relevant to the peaceful exploration and use of outer space (2013) (National Space Legislation Resolution). These resolutions share the common denominator of addressing aspects of the application of the five UN treaties on outer space in more detail.

Fifth phase: Finally, the fifth phase, that we are currently still in, addresses wider, more future orientated topics of space activities. These are concerned with future accessibility of outer space, and foundations for safe conduct in space activities. These guidelines and other documents are: the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space (endorsed by the General Assembly in its Resolution 62/217 of 2007);[301] the Safety Framework for Nuclear Power Source Applications in Outer Space, a joint publication of the Scientific and Technical Subcommittee of COPUOS and the International Atomic Energy Agency; and the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space, which were adopted in 2016 (Part one) and 2019 (Part two) respectively. There is also a *joint publication of UNOOSA and ITU on* Guidance on Space Object Registration and Frequency Management for Small and Very Small Satellites of 2015), which is not a COPUOS adopted document itself but noted by the Committee in its final report of 2015.[302]

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[300] Ibid.

[301] General Assembly Resolution A/RES/62/217, International cooperation in the peaceful uses of outer space, 22 December 2007, para. 26. Space Debris Mitigation Guidelines: UN Doc. A/62/20, 'Report of the Committee on the Peaceful Uses of Outer Space, Fiftieth session (6-15 June 2007)' paras. 117 and 118 and annex.

[302] Not a COPUOS document, but as stated in the COPUOS final report of 2015: "The Committee commended the Office for Outer Space Affairs and ITU for preparing a handout on issues related to registration, authorization, debris mitigation and frequency management with respect to small

4.2.2. Legal bases for international responsibility in the space law treaties

With respect to any assessment of international responsibility for activities in outer space, the starting point must be the legal bases for international responsibility under international space law. This is not to say that there may not be other norms applicable from other fields of international law with regard to international responsibility for activities in outer space, such as from international responsibility law, as will be seen in the analysis below.[303]

Overview of relevant provisions for international responsibility in the space law treaties

The instances in which the UN treaties on outer space address international responsibility are fivefold. Article VI of the Outer Space Treaty was introduced above; with regard to international responsibility for activities in outer space, it is applicable by virtue of its Sentences 1 and 3. Articles III and IV(1)(b) of the Liability Convention also pronounce on international fault liability by reference to persons for whom the (liable) State is responsible; in the case of Article III for damage to another launching State, and in the case of Article IV(1)(b) for damage to a third State. The interlinkage of international responsibility and international liability in both provisions calls for analysis. Sentence 1 of Article 14(1) of the Moon Agreement also repeats most of the wording of Article VI of the Outer Space Treaty; the only changes made being editorial with a view to the purpose of the Moon Agreement. Lastly, Paragraph 2 of the Preamble of the Registration Convention reaffirms the principle of international responsibility for activities in outer space, establishing a link between international responsibility and the registration of objects launched into outer space. The verbatim text of the provisions mentioned follows in Table 13 below.[304]

and very small satellites. The handout would become an important source of information for space actors intending to operate such satellites"; ibid. para. 224. Handout: UNOOSA and ITU, 'Guidance on Space Object Registration and Frequency Management for Small and Very Small Satellites, Handout on Small Satellites' 2015.

[303] This follows i.a. from Art. III Outer Space Treaty and Art. 55 Articles on State Responsibility. See: Section 4.4 *Comparison and analysis of international responsibility for activities in outer space under international space law and under international responsibility law*.

[304] Emphasis added.

Table 13 **International responsibility in the five UN treaties on outer space**	
Provision	***Text of provision***
Outer Space Treaty, Article VI Sentences 1 and 3	States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. […] When activities are carried on in outer space, including the moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.
Liability Convention, Article III	In the event of damage being caused elsewhere than on the surface of the Earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible.
Liability Convention, Article IV(1)(b)	If the damage has been caused to a space object of the third State or to persons or property on board that space object elsewhere than on the surface of the earth, their liability to the third State shall be based on the fault of either of the first two States or on the fault of persons for whom either is responsible.
Moon Agreement, Article 14(1) Sentence 1	States Parties to this Agreement shall bear international responsibility for national activities on the Moon, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in this Agreement.
Registration Convention, Preambular paragraph 2	Recalling that the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, of 27 January 1967 affirms that States shall bear international responsibility for their national activities in outer space and refers to the State on whose registry an object launched into outer space is carried, […].

The overview of the mentions of responsibility clarifies that Article VI of the Outer Space Treaty is the core provision with regard to international responsibility on outer space. It is *recalled*, in the Registration Convention, and repeated – almost verbatim – in the Moon Agreement. This shows that the principle of international responsibility as it was phrased in Article VI continued to be considered relevant in codifications following the Outer Space Treaty and is generally accepted by States. It also means, however, that when we assess international responsibility under international space law, in the process of interpretation we must consider *all* references that relate to international responsibility under international space law, and not only Article VI.

4.2.3. Legal assessment of Article VI of the Outer Space Treaty

An overview of Article VI of the Outer Space Treaty was provided in Chapter 1. Several phrases in the wording of Sentences 1 and 3 of the provision require closer attention, which is the task of this section.

Parties to the Treaty

Firstly, Sentence 1 of Article VI stipulates that that the provision only applies to States that have become a party to the Outer Space Treaty. This means that States that have ratified or acceded to the instrument. Signatory States, as under the rules of the international law of treaties are not legally bound by the text of the Treaty as such, but are bound to refrain, in good faith, from acts that would defeat the object and the purpose of those treaties to which they are a signatory.[305]

'National activities in outer space'

Insofar as Article VI refers to 'national activities in outer space', four elements can be identified which require clarification:[306]

1) 'activity': the question as to what constitutes a 'space activity' – is there a definition and which kinds of activities are included?
2) 'in': what does "in" outer space mean – does the activity have to take place exclusively/predominantly/partially in outer space? Does it suffice if the activity takes places on Earth but is directed at outer space?
3) 'outer space': where is outer space and where does it begin?
4) 'national': which activities qualify as 'national' activities?

These points are considered individually below.

Space 'activity'

Space activities are not defined in international space law. Nor is it common among spacefaring nations to define the term in their national space laws. Where this happens, it is usually done via the scope of application of a national space law, which may expressly include or exclude a certain activity.[307] Generally, *all* activities in outer space are considered to be subject to Article VI of the Outer Space Treaty. Gerhard provides the following examples:

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[305] Art. 18(a) Vienna Convention on the Law of Treaties.

[306] See also for an assessment of 'activities on outer space' and 'national activities': Michael Gerhard, 'Article VI' in: *Cologne Commentary on Space Law Volume I* (n 13) p. 107-130.

[307] See: Chapter 6.

The operation and control of a satellite, probe, platform or space station. This is generally understood as the basic control of such objects irrespective of the application which is undertaken by it. So eg the operation and control of a satellite is undertaken through the telemetry, tracking and command of the satellite bus.

The use of such objects, eg for satellite telecommunication, satellite remote sensing, satellite navigation or satellite exploration, ie the application which is done with the satellite or probe bus or platform.

The launching of a space object into outer space.

Manufacturing of materials and other products in outer space.

Exploration, exploitation or use of celestial bodies.[308]

'In' outer space and definition and delimitation of outer space:

Whether an activity can be said to take place 'in' outer space relates to the definition of outer space activities. As Article VI of the Outer Space Treaty does not require any orbiting as is imposed by other provisions of international space law, suborbital flights or the launching of space objects and sounding rockets do not have to orbit in order to potentially trigger a State's international responsibility.[309]

The interpretation of 'in' outer space is not conclusive, and differing scholarly positions can be broadly identified While for some, the activity has to take place in outer space exclusively,[310] for others, it includes activities that may be conducted from Earth but are predominantly and intentionally directed at outer space.[311] The difference between these approaches lies in the attribution rules of international responsibility for Earth-based conducted space activities. Under the former approach, the activity would be governed for example by air law, and thus, predominantly, the rules on attribution of State responsibility as prescribed by the Articles on State Responsibility would apply (requiring the conduct of an organ of the State or with a sufficiently close link to it). Under the latter, in contrast, the

[308] Gerhard (n 308) p. 109.

[309] For instance, Art. II Registration Convention requires the launch of a space object "into Earth orbit or beyond". See for a discussion: Gerhard (n 308) p. 107.

[310] Under this approach, an activity 'in' outer space is an activity "which makes outer space accessible, explorable or usable" reasoned by the mention of the expression at several instances in the Outer Space Treaty; see ibid. See also: Horst Bittlinger, 'Private Space Activities – Questions of International Responsibility' in: International Institute of Space Law, *Proceedings of the 30th Colloquium on the Law of Outer Space* (1987) p. 194.

[311] The underlying rationale here is that if it is possible to potentially incur international responsibility for Earth-conducted space activities, too, the telos of the Outer Space Treaty is adequately met. See e.g.: Bin Cheng, 'Revisited: International responsibility, national activities, and the appropriate State' (1998) 26 Journal of Space Law 7 p. 19.

activity would be governed by space law and thus the (wider) rules of attribution under international space law would apply. State practice in this regard is manifold – there is a pronounced tendency to include the launching of space objects in national space legislation and some States even include a definition of space activity.[312]

The question of where Earth's atmosphere ends and where outer space begins was a relatively early part of the deliberations on space law in the Committee,[313] as was the question in how far this was relevant for the application of space law. When the space law treaties refer to activities taking place "in outer space", it begs the question of what outer space is defined as. Currently, there is no internationally agreed on legal definition of outer space.[314] The discussion has centred around the scientific attributes of the demarcation line between air space and outer space, possible approaches to defining it, as well as the necessity of defining outer space at all.[315] Currently, there is renewed interest at COPUOS in reviving the debate on the definition and delimitation of outer space and to come to an international consensus.[316]

Physically seen, it is not straightforward to determine the physical demarcation of outer space against the atmosphere as, generally speaking, the atmosphere does not distinctly cease to exist at a specific point, but rather gradually decreases in density until the point where none is left, and the void of outer space begins. Moreover, Earth's atmosphere fluctuates, therefore it is not possible to statically determine a specific density at a certain height. Because of physical features like these, it is not

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[312] Gerhard (n 308) p. 108.

[313] In 1966, the topic of 'definition' of outer space was added to the agenda of the Legal Subcommittee following a proposal by France. The current agenda item of 'definition and delimitation' of outer space appeared for the first time in the report of the Legal Subcommittee of 1972, and in the following, the agenda item was renamed in its current 'Matters relating to the definition and delimitation of outer space' and a working group was founded in 1984 ('Working Group on the Definition and Delimitation of Outer Space', established by UN General Assembly Resolution 38/80; General Assembly Resolution A/RES/38/80, International co-operation in the peaceful uses of outer space, 15 December 1983. The working group is still operative, and the agenda item is still actively considered during the Committee sessions.

[314] Additionally, the delimitation of outer space from airspace is contested See: Stephan Hobe, 'Article I' in: *Cologne Commentary on Space Law Volume I* (n 13) p. 25-27.

[315] See e.g. contributions by States during the Legal Subcommittee in 2022: UN Doc. A/AC.105/C.2/2022/CRP.24, COPUOS, 'Definition and delimitation of outer space - Additional contributions received from States members of the Committee' 6 April 2022 <https://www.unoosa.org/res/oosadoc/data/documents/2022/aac_105c_22022crp/aac_105c_22022crp_24_0_html/AAC105_C2_2022_CRP24E.pdf> accessed 27 October 2023.

[316] Recently, a new Chair of the Working Group of the COPUOS Legal Subcommittee on the Definition and Delimitation of Outer Space was appointed See for more information on the Working Group: <https://www.unoosa.org/oosa/en/ourwork/copuos/lsc/ddos/index.html> accessed 27 October 2023.

an easy task to decide where outer space exactly 'begins' from a *scientific* perspective.

Among the *legal* positions towards the definition and delimitation of outer space taken by States, principally, and with some level of simplification, three main approaches can be differentiated that are currently advocated: the school that does not consider a definition and delimitation of outer space necessary, the spatial(ist) approach, and the functional(ist) approach.[317] Under the spatial theory, outer space is delimited from airspace based on the height of an object or activity above mean sea level (MSL). This proposal was first introduced to the Committee by the Soviet Union, with the suggestion to define outer space as above 100-110 km above Mean Sea Level (MSL).[318] Today, a common demarcation by States is the von Kármán line at 100 km above MSL.[319] For instance, the Armenian, Australian, Danish, and Kazakhstani space laws identify the boundary between air space and outer space at 100 km.[320]

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[317] Cheng already differentiated the approaches to the definition and delimitation of outer space in 1995 into the "spatialists", the "functionalists", and the "you-don't-need-to-know school"; Bin Cheng, 'International Responsibility and Liability for Launch Activities' in: Cheng, *Studies* (n 13) p. 600 (first published as a paper presented at the International Symposium on the Use of Air and Space at the Service of World Peace and Prosperity 20 Air and Space Law 6 (1995) p. 297-310).

[318] See: UN Doc. A/34/20, COPUOS, 'Report of the Committee on the Peaceful Uses of Outer Space' (18 June-3 July 1979) p. 7-8, based on the Soviet Union's working paper: UN Doc. A/AC.105/C.2/L.121, Soviet Union, 'Matters Relating to the Definition and/or Delimitation of Outer Space and Outer Space Activities, Bearing in Mind, inter alia, Questions Relating to the Geostationary Orbit' 26 March 1979 and subsequent working paper (verbatim repeating the first – and only – three paragraphs and introducing four new paragraphs regarding the position earlier taken by the Soviet Union on the geostationary orbit): UN Doc. A/AC.105/L.112, Soviet Union, 'Draft Basic Provisions of the General Assembly Resolution on the Delimitation of Air Space and Outer Space and on the Legal Status of the Geostationary Satellites' Orbital Space, USSR: Working Paper' 20 June 1979. See also for a background discussion of the time of discussion: George Paul Sloup, 'Outer Space Delimitation Proposals: Enlightened Jurisprudence or Celestial Shakedown? Some Implications for Private Enterprise' 2 Houston Journal of International Law 1 (Autumn 1979) p. 87-112.

[319] Theodore von Kármán (1881–1963) was a Hungarian engineer and physicist, who spent a large part of his life in the United States and in other countries working in aeronautics and astronautics. The Fédération aéronautique internationale (FAI; or in English: the World Air Sports Federation) defined this line in the 1960s and named it in von Kárman's honour. See also: <https://www.fai.org/page/icare-boundary> accessed 27 October 2023.

[320] The relatively recent Armenian space law of 2018 defines outer space with a distance of more than 100 kilometres above sea level; Law No. HO-152-N on Space-related Activities of the Republic of Armenia. The Australian Space (Launches and Returns) Act of 2018 provides in Section 8 'Definitions' that to "launch (a) a space object, means launch the whole or a part of the object into an area beyond the distance of 100 km above mean sea level, or attempt to do so; or (b) a high power rocket, means launch the rocket into an area that is not beyond the distance of 100 km above mean sea level, or attempt to do so"; Space (Launches and Returns) Act 2018, No. 123, 1998, Compilation No. 10 of 1 September 2021. However, the reference to 100 km according to the Australian COPUOS delegation was not intended to serve as a definition of outer

The recent increase in popularity of spatialist approaches by States follows a period of predominance of the functionalist approach; the latter being challenged by emerging technologies and aerospace activities. Under the functionalist approach, the nature of the activity rather than its location is the determining reference: there is a distinction between aeronautical and astronautical activities which determine the applicability of the space law. Examples for the altering results achieved by the two approaches are the launching of high-altitude balloons, which commonly fly up to a range of 21 to 45 kilometres above MSL, and sounding rockets, which commonly fly up to a range of 48 to 145 km above MSL. While under the spatialist theory, these could be excluded from the applicability of the national space law, under the functionalist theory they could constitute a space activity.[321]

Ultimately, we will have to await international consensus on the matter to know which definition should be referred to in respect of interpretation of Article VI.[322] In this study, Earth-bound activities are considered to constitute space activities, as they are directed at outer space and therewith fall under the characterisation of ultra-hazardous activities. In my view, even if the activity is directed from Earth, such as the moving of positions of a satellite in Earth orbit, the risk of the activity is the risk of an activity in outer space, and therewith, should be regulated under the respective stricter body of law. This does, however, not apply to all activities that have some connection to outer space. For instance, activities that concern the receipt of data from outer space and entail the data's interpretation, in this study are considered data interpretation activities and do not, in many cases, fall under the auspices of international space law.

'National' activities in outer space

What is understood as a 'national' activity in outer space is crucial for the application of Article VI of the Outer Space Treaty, as the provision establishes that

space but as a reference for the Australian space industry; personal knowledge of the author. The Danish Space Act of 2016 provides in Article 4(4) 'Definitions' that "'Outer space' means: Space above the altitude of 100 km above sea level"; Denmark, Outer Space Act 2016, English translation of official Act no. 409 of 11 May 2016. The Kazakhstani Space Act of 2012 states in Art. 1(6) 'Basic definitions used in the present Law' that the following definition is used: "outer space – a space extending beyond the airspace at an altitude of more than one hundred kilometres above the sea level"; Law of the Republic of Kazakhstan on Space Activities, 6 January 2012, No. 528-IV.

[321] In addition to merely subscribing to a functionalist or spatialist approach, States are at liberty to additionally define the scope of application of their national laws by excluding certain activities. This is for instance the case with the Swedish Space Act of 1986, which excludes sounding rockets from the application of the Act; Sweden, Act on Space Activities (1982:963), Art. 1 ("Nor is launching of sounding rockets designated as space activities.").

[322] The COPUOS Legal Subcommittee Working Group on the Definition and Delimitation of Outer Space has recently appointed a new chair, Ian Grosner of the Brazilian Space Agency. See: < https://spacewatch.global/2023/03/ian-grosner-elected-as-chair-of-outer-space-lsc-working-group/> accessed 27 October 2023.

States can be held internationally responsible for their national activities.[323] 'National' in the context of Article VI has two aspects: firstly, it serves in contrast to 'international'; meaning international responsibility on the side of the State can be incurred for *national* activities carried out by the State itself, acting through a governmental agency, or under its authority, when acting through a non-governmental entity. In those instances, the activity in question will be under the decision-making power of the State and not delegated to, for example, an international body.[324]

The second aspect is the actual interpretation of the element 'national'. In space law legal commentary, the reference to 'national activities' has in the past – and since the early days of space law commentary – been commonly interpreted as referring to the jurisdictional realm of a State conducting space activities.[325] The latter may take reference to domestic space laws as subsequent State practice.[326] Jurisdiction is a fundamental concept of international law and is closely linked to State sovereignty; thus, territorial integrity and political independence. Its general principles were expressed in the Permanent Court of International Justice's *Lotus* case in 1927. Here, the Court stated, on one hand, that territorial jurisdiction lies at the heart of international law ("[a State] may not exercise its power in any form in the territory of another State"). On the other, it stated that the foundational principle of international law allows States to act, as long as the conduct is not governed by an explicit prohibition. International law, thus, allows States to extend their jurisdiction beyond their territory as long as it is not prohibited by or contrary to a rule of international law in a given case. The following excerpt from the case is relevant here:

> International law governs relations between independent States. The 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.

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[323] As mentioned above, this is not an exclusive instance of potentially incurring international responsibility for activities in outer space, as States may also be internationally responsible for their 'activities in outer space' through joint responsibility with international organisations that they participate in.

[324] Article VI Sentence 3 Outer Space Treaty, however, stipulates that States bear international responsibility for internationally wrongful acts of international organisations that they are a member to.

[325] The understanding was formulated relatively early in space law commentary by Cheng, and then mostly followed by international space law commentary.

[326] Chapter 6 of this study addresses aspects of national space legislation. Examples from national jurisdictions on the scope of application of national space law are presented in that context.

> Now the first and foremost restriction imposed by international law upon a State is that – failing the existence of a permissive rule to the contrary – it may not exercise its power in any form in the territory of another State. In this sense jurisdiction is certainly *territorial*; it cannot be exercised by a State outside its territory except by virtue of a permissive rule derived from international custom or from a convention.
>
> It does not, however, follow that international law prohibits a State from exercising jurisdiction in its own territory, in respect of any case which relates to acts which have taken place abroad, and in which it cannot rely on some permissive rule of international law. Such a view would only be tenable if international law contained a general prohibition to States to extend the application of their laws and the jurisdiction of their courts to *persons, property and acts outside their territory*, and if, as an exception to this general prohibition, it allowed States to do so in certain specific cases. But this is certainly not the case under international law as it stands at present. Far from laying down a general prohibition to the effect that States may not extend the application of their laws and the jurisdiction of their courts to person, property and acts outside their territory, it leaves them in this respect a *wide measure of discretion* which is only limited in certain cases by prohibitive rules; as regards other cases, every State remains free to adopt the principles which it regards as best and most suitable.[327]

The potential dichotomy between these two principles can be explained by two underlying ideas encompassed by the concept of State jurisdiction over persons, property and territory, namely prescriptive jurisdiction and enforcement jurisdiction.[328] Generally speaking, three types of jurisdictions can be differentiated: prescriptive, adjudicative, and enforcement jurisdiction.[329] Prescriptive jurisdiction is the authority of a State to adopt and enforce legal norms.[330] Exercising its prescriptive jurisdiction, a State is free to "assert the applicability of its national law to any person, property, territory or event, wherever they may be situated or whenever they may occur".[331] Enforcement jurisdiction – meaning the enforcement of its jurisdiction by a State – is usually limited to its territory.[332] While the first of

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[327] PCIJ, *The Case of the S.S. "Lotus"* Judgment 1927 Series A. – No. 10 (7 September) p. 18-10; italics added. Note that there is the final sentence of the last passage cited above has received much criticism and has been "contradicted by the Court in *Anglo-Norwegian Fisheries* and *Nottebohm*"; see: Crawford, *Principles* (n 82) p. 458; ICJ, *Fisheries Case* (United Kingdom v. Norway) Judgment 1951 ICJ Reports 116 (18 December) p. 131-134; ICJ, *Nottebohm Case* (Liechtenstein v. Guatemala) Judgment 1955 ICJ Reports 4 (6 April) p. 20.

[328] Martin Dixon, *Textbook on International Law* (6th edn OUP 2007) p. 142.

[329] Menno T. Kamminga, 'Extraterritoriality' *Max Planck Encyclopedia of Public International Law* [MPEPIL] last updated September 2020 <https://opil.ouplaw.com/display/10.1093/law:epil/9780199231690/law-9780199231690-e1040> accessed 27 October 2023.

[330] Ibid.

[331] Dixon (n 330) p. 143.

[332] As is clarified in the *Lotus* case, a State cannot exercise its enforcement jurisdiction on foreign territory; *Lotus* Case (n 310). This means for example that a person that a State has prescriptive

the *Lotus* principles of jurisdiction ("[a State] may not exercise its power in any form in the territory of another State") concerns the enforcement jurisdiction of that State, the second *Lotus* principle (allowing States to extend their jurisdiction beyond their territory as long as it is not prohibited by or contrary to a rule of international law in a given case) is a principle of prescriptive jurisdiction.

Prescriptive jurisdiction is commonly differentiated in international law into territorial and extra-territorial jurisdiction. *Territorial* jurisdiction refers to the competence of a State on its territory. Since a defined territory is one of the criteria for statehood under the Montevideo Convention,[333] territorial jurisdiction lies at the heart of the concept of jurisdiction under international law. Noteworthy for the context of space activities would be situations, where a State's territory is disputed (for instance, an international dispute between two bordering States) with one of the States carrying out space activities from the disputed portion of the territory. To date, this situation has not presented itself. Extra-territorial jurisdiction in contrast comprises personal jurisdiction as well as, in the words of Cheng, 'quasi-territorial' jurisdiction[334] or, as is used in this study, extra-territorial jurisdiction in the narrow sense. Personal jurisdiction refers to the natural and legal persons under a State's jurisdiction; thus it is linked to nationality and not to territoriality, while extra-territorial jurisdiction applies to, for instance, vessels at sea, in air, and in outer space which can fly under the flag of a nation State, and extend its jurisdiction to their reach.[335] In what follows, the distinction between territorial, personal (as a form of extra-territorial), and extra-territorial (in the narrow sense) jurisdiction is employed.

The application of jurisdictional principles has varied widely as applied by different States; and as supported by the *Lotus* case, States are free to adopt the principles for exercising their jurisdiction themselves.

In addition to the 'international' characteristic of jurisdiction, jurisdiction in the national context of space activities is closely linked to the scope of application of the respective space law(s). Territorial jurisdiction with regard to space activities is

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jurisdiction over needs to enter that State's territory in order for the State to be able to exercise enforcement jurisdiction. There are in some cases "special permissions" that allow for exercise of extra-territorial enforcement jurisdiction, such as the agreement between UK and the Netherlands of 1999, permitting the trial of the Lockerbie subjects by a Scottish court, according to Scottish law, but on Dutch territory; see: Dixon (n 330) ibid.

[333] Convention on Rights and Duties of States adopted by the Seventh International Conference of American States (Montevideo Convention on the Rights and Duties of States), concluded 26 December 1933, entered into force 26 December 1934; more information and the treaty text is available at: <https://treaties.un.org/pages/showdetails.aspx?objid=0800000280166aef> accessed 27 October 2023.

[334] Cheng consistently refers to 'quasi-territorial' jurisdiction in this regard; see Bin Cheng, 'International Responsibility and Liability of States for National Activities in Outer Space, Especially by Non-governmental Entities' in: Cheng, *Studies* (n 13) p. 621-625; and 'Commercial Development of Space: The Need for New Treaties' ibid. p. 659.

[335] This is also the distinction applied by Cheng in his early space law commentary.

among the more common examples in recently adopted space laws. As mentioned above, several States have drawn the line of applicability their space acts at 100 km (more rarely at 80 km).[336] There are variations in the exercise of personal jurisdiction, but the more common approach appears to be to require licencing procedures from own nationals even if the space activities are conducted from abroad. A relevant example is the case of RocketLab, which was founded in New Zealand in 2006 and operates from New Zealand, but moved its headquarters to the United States in 2013; since the company registration in the United States, launch permissions from both countries are required. The scope of application of national space legislation was considered in more detail in Chapter 3.

Article VI Sentence 1 of the Outer Space Treaty and space activities conducted by non-governmental entities

The main relevant provision under international law when considering the undertaking of space activities by non-governmental entities is – once more – Article VI of the Outer Space Treaty. Of its three sentences, the applicable ones here again are Sentences 1 and 2. Sentence 1 clarifies that it is indeed permissible for non-governmental entities to carry out activities in outer space. Sentence 2 sets the conditions for participation of private actors: their activities must be authorised and continuously supervised by the appropriate State party. Many commentators draw a difference between Article VI Sentence 1 and Article VI Sentence 2 of the Outer Space Treaty, one addressing States and the other relating to non-governmental entities. Others have said that Sentence 2 should be viewed as an extension of Sentence 1.[337] Based on the analysis in the previous chapter, it becomes apparent that the distinction of primary and secondary norms is crucial for a coherent interpretation of Article VI in light of international law as a system of law. Sentence 1 of the provision renders international responsibility as an underlying principle of the international legal order applicable to space activities, especially by virtue of the second half of Sentence 1, which replicates the concept in the way that it is defined for international law generally. The relationship with non-governmental entities and Sentence 2 of the Outer Space Treaty in this study is as follows. At the outset, Sentence 2 of the provision clarifies that non-governmental activities are principally permissible in outer space. It does, at the same time, impose on States certain requirements as to how these activities shall be implemented in practice. This constitutes a primary norm, as it directly instructs States with regard to their conduct.

[336] Please refer to the discussion of definition and delimitation of outer space above. e.g., in the definitions of the United Arab Emirates Space Act, the law defines the specified area as any area above eighty kilometres or more than the average sea level.

[337] See in favour e.g. Gerhard (n 308) p. 107-109.

Non-governmental entities as mentioned in the Outer Space Treaty are not defined in the Treaty or elsewhere under international space law. Similarly, national space activities as a notion are not defined in the outer space legal framework. However, even though lacking a clear-cut definition, the notion of what constitutes national space activities was relatively uncontested from the early space age onward and kept its almost uniform (in principle, at least) understanding.[338] Since States usually define well their governmental activities, the assessment of a non-governmental activity in practice does not appear to pose significant difficulties.

Article VI Sentence 3 of the Outer Space Treaty and space activities conducted by international organisations

Sentence 3 of Article VI of the Outer Space Treaty constitutes an extension of Sentence 1, in the sense that it addresses the same fundamental principle of international law, but extends the subjects that it applies to from States to international organisations. It is important to note that by virtue of Sentence 3, international organisations (as well as their member States) can be held internationally responsible for *activities* in outer space. This is thus an instance where the activity in outer space as such – without the additional requirement of having to constitute a *national* activity – suffices to potentially trigger the international responsibility of both international organisations as well as States participating in the organisation. In other words, States may also incur international responsibility for 'activities' in outer space (Sentence 3 of Article VI of the Outer Space Treaty), without them necessarily having to constitute 'national activities' (Sentence 1 of Article VI of the Outer Space Treaty) by virtue of collaborating in an international organisation. While this is a linguistic difference in the sentences of the provision, and should be taken into account in the interpretation of Article VI, it can be doubted whether the difference in wording would affect the application of the principle of international responsibility at a practical level. Recourse to the original documents and recordings from the time of drafting seems to suggest that a difference was made between States, which through sovereignty over their territory are in a position to act within their jurisdictional realm ('national'), and international organisations, which do not operate on the basis of territoriality but of competence, bestowed upon them by their member States.[339]

[338] See discussion above on jurisdiction in relation to the notion of 'national activities' in outer space.

[339] UNOOSA Collection of official records on the Outer Space Treaty <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/travaux-preparatoires/outerspacetreaty.html> accessed 27 October 2023. See also: Paul G. Dembling and Daniel M. Arons, 'The Evolution of the Outer Space Treaty' (1967) Documents on Outer Space Law 3.

Notion of international responsibility under international space law

Lastly, the issue presents itself as to what is meant by the reference to international responsibility for national activities in Article VI Sentence 1 of the Outer Space Treaty. Sentence 1 addresses international responsibility in two ways: firstly, it states that State Parties shall bear international responsibility "for national activities in outer space", and secondly, it adds "for assuring that national activities are carried out in conformity with the provisions" in Outer Space Treaty. The provision has to be understood in good faith in accordance to the ordinary meaning in the Outer Space Treaty's context, and in the light of its object and purpose.[340] The object and purpose of the Outer Space Treaty can be understood in the aim to create a legally enforceable legal regime applicable to outer space activities, that due to the ultra-hazardousness of space activities requires a clear regulation of international responsibility for activities in outer space. The precise division between the two elements in Sentence 1 of Article VI of the Outer Space Treaty, however, is not entirely clarified Article 31(3)(c) of the Vienna Convention on the Law of Treaties provides further means of interpretation of Article VI here, as any relevant rules of international law applicable in the relations between the parties shall be taken into account together with the context of the Treaty.[341]

The notion of international responsibility under general international law at the time of treaty negotiation in the early and mid 1960's was different from the notion of international responsibility that has emerged under international responsibility law in more recent decades. While the core understanding as exemplified in *Chorzów* remained the same and is applicable to the understanding predominant in the drafting period of the Outer Space Treaty, the further developments under international responsibility law clarified the establishment and consequences of international responsibility considerably. Under international responsibility law, it is explicit that the principle refers to the enforcement of international obligations, thus, the content of the second half of Sentence 1 of Article VI, as the Treaty assigns responsibility "for assuring that national activities are carried out in conformity with the provisions" in the Outer Space Treaty; which by way of Article III of the Treaty must be read as "in conformity with international law". Application of Article 31(3)(c) of the Vienna Convention on the Law of Treaties thus already establishes an unambiguous interpretation of Sentence 1 of Article VI.

If, however, one were not satisfied[342] with the results achieved through application of Article 31(3)(c) of the Vienna Convention, the next step would be to take recourse to supplementary means of interpretation by virtue of Article 32(a) of Convention. Here, it would have to be determined at the start that the two mentions of international responsibility for activities in outer space of Article VI Sentence 1

[340] Art. 31(1) Vienna Convention on the Law of Treaties.

[341] Art. 31(3)(c) Vienna Convention on the Law of Treaties.

[342] Argumentation in the alternative.

leave "the meaning ambiguous or obscure".[343] Here, the circumstances of the treaty negotiation are relevant – such as the aforementioned notion of (general) international responsibility under international responsibility law – as well as its preparatory works. When taking recourse to the preparatory works, it is not immediately obvious why that difference in Article VI was made by its drafters regarding the two references of international responsibility for activities in outer space. Already in the predecessor text of Article VI, the Legal Principles Declaration, the segmentation appears in two mentions of international responsibility for activities in outer space. The Legal Principles Declaration is a resolution adopted by COPUOS,[344] and then adopted by the UN General Assembly First Committee. As such, it is non-legally binding.[345] Its Principle 5, the corresponding principle which was later codified in Article VI of the Outer Space Treaty, is very close in wording to its later successor.[346] The most conclusive explanation for the inclusion of the two instances of international responsibility for activities in outer space in Article VI is indeed the understanding of international responsibility at the time of drafting. This understanding was already informed by *Chorzów* and the role of international responsibility in the international legal order, as applying as an enforcement of international legal obligations (see second mention in Sentence 1). But at the time, the rules on attribution were not as accessible as they are today. Much of the subsequent case law following the drafting period of the Outer Space Treaty clarified aspects of it,[347] and it was not until the adoption of the Articles on State Responsibility and their subsequent confirmation by international

[343] Art. 32(a) Vienna Convention on the Law of Treaties.

[344] UNOOSA's website features a page on the documents relevant for the negotiations of the Legal Principles Resolution <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/travaux-preparatoires/declaration-of-legal-principles.html> accessed 27 October 2023. Note that as of 27 October 2023, the following disclaimer applies: "This collection of documents is a work in progress. For those documents that are not yet available on the website, the hyperlink to the PDF will not be active"; ibid.

[345] The UN General Assembly in the area of outer space activities does not have the competence to adopt binding resolution in this area. Generally speaking, its power to adopt binding resolutions is limited to more internal administrative matters, such as e.g. the General Assembly budget.

[346] Sentence 1 of Principle 5 of the Legal Principles Declaration reads: "States bear international responsibility for national activities in outer space, whether carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried on in conformity with the principles set forth in the present Declaration". It is considered in more detail below in Section 4.2.5 *Mentions of international responsibility in non-legally binding instruments as a means of treaty interpretation*.

[347] See e.g. the 'effective control test in the ICJ's *Nicaragua* judgment and the test of 'overall control' enunciated by the International Criminal Tribunal for the former Yugoslavia (ICTY) in *Tadić*; ICJ, *Case Concerning Military and Paramilitary Activities in and against Nicaragua* (Nicaragua v. United States of America) Judgment 1986 ICJ Reports 14 (27 June); ICTY, Appeals Chamber, *Tadić* (Case no. IT-94-1-A) Judgment 1999 (15 July). See also on a relation of these two tests to the ICJ's judgment in Genocide in Bosnia: Antonio Cassese, 'The *Nicaragua* and *Tadić* Tests Revisited in Light of the ICJ Judgment on Genocide in Bosnia' (2007) 18 European Journal of International Law 649.

and State practice that a systematisation and some level of normativity had become part of international law. Therefore, the reference to 'national activities' in the first part of Sentence 1 must be understood as a reference to attribution, and in space legal commentary is given the meaning of referring to the jurisdiction of a State. In sum, while the second mention in Sentence 1 of Article VI is a reference to the principle of international responsibility and the provision's way to enshrine the principle for activities in outer space, the first mention is a reference to the rules on attribution under international responsibility.[348]

From this it follows that today's understanding of Article VI must be informed by contemporary international law – specifically, the contemporary law of international responsibility. Section 4.4 below makes the point that Sentence 1 of Article VI of the Outer Space Treaty must be understood in light of contemporary international responsibility law; which leads to the conclusion that it is the second reference to international responsibility for activities in Outer Space in the Outer Space Treaty which serves as the legal basis for any finding of international responsibility for activities in outer space.[349]

As mentioned above, Article VI is the primary provision addressing international responsibility of States under international space law. The provision is a result of deliberations in COPUOS, especially its Legal Subcommittee, and reflects on the priorities of the time. From today's perspective, it might not seem clear why the drafters of the Outer Space Treaty deemed it necessary to differentiate States' international responsibility for national activities, as well as for ensuring that those national activities are carried out in accordance with the Outer Space Treaty. Our contemporary understanding of international responsibility based on the Articles on State Responsibility is such that the mere fact of not living up to the provisions of international instruments that a State is a party to may lead to the establishment of international responsibility for that State. However, this can be explained by considering the historical context of Article VI of the Outer Space Treaty. At the time, the notion of State responsibility was already under discussion at the ILC; however, it was far from the notion that we understand it as today.

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[348] In this study, the rules on attribution are understood as a sub field of international responsibility law. Contemporary scholarship has recently turned to giving more attention to the rules on attribution, and some scholars offer the opinion that some of the aspects that relate to the rules on attribution have not been sufficiently clarified See e.g.: Gábor Kajtár, Başak Çalı and Marko Milanovic, 'Introduction: Secondary Rules of Primary Importance' in Gábor Kajtár, Basak Çali and Marko Milanovic (eds), *Secondary Rules of Primary Importance in International Law: Attribution, Causality, Evidence, and Standards of Review in the Practice of International Courts and Tribunals* (OUP 2022). The authors here differentiate between standards of review, causation, evidentiary rules, and attribution.

[349] Please refer below to Section 4 *Comparison and analysis of international responsibility for activities in outer space under international space law and under international responsibility law*.

4.2.4. Legal assessment of other provisions of international space law concerning international responsibility for activities in outer space

Articles III and IV(1)(b) of the Liability Convention

Articles III and IV(1)(b) of the Liability Convention refer to responsibility in a reference for the establishment of international liability for activities in outer space. Both articles provide that a State can be found internationally liable in an instance where the damage is due to its fault or the fault of persons for whom it is responsible.[350]

> Article III of the Liability Convention:
>
> In the event of damage being caused elsewhere than on the surface of the Earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is *responsible*.
>
> Article IV(1)(b) of the Liability Convention:
>
> If the damage has been caused to a space object of the third State or to persons or property on board that space object elsewhere than on the surface of the earth, their liability to the third State shall be based on the fault of either of the first two States or on the fault of persons for whom either is *responsible*.

The considerations below are limited to the reference of 'responsible' in the Liability Convention. When assessing the ordinary meaning of the reference to responsibility, the first question that presents itself is whether the reference refers to a moral or legal conception of international responsibility. Since the Outer Space Treaty, including its stipulation of the principle of international responsibility, had already entered into force in 1967, thus before the negotiations of the text of the Liability Convention, it can be concluded that the reference refers to responsibility in a legal sense. As noted in the previous section, the reference of international responsibility for national activities in outer space was understood very early on to refer to the jurisdiction of the State carrying out the space activity. The argument can therefore be made that the reference to persons for whom a State is responsible under Articles III and IV(1)(b) of the Liability Convention should be understood as under the jurisdiction of that State, including its territorial, personal, and extraterritorial jurisdiction.

[350] Emphasis added.

The reference to 'responsible' thus concerns the group of persons or entities for which a State is responsible under the system of the Treaty. As analysed above, the reference quite unambiguously is one of jurisdiction. However, it is important to point out that in doing so, the Liability Convention establishes a system that goes beyond the standards of international law at the time, and even today. Since the group of entities that a State is responsible for under international space law – by inclusion of responsibility for non-governmental activities, i.e., a wider notion of attribution – is wider than under international responsibility law, the reference with regard to liability here is also wider than under general international law (international liability law). In other words, since the Liability Convention here takes recourse to the rules on attribution under international space law as opposed to international law, it expands the scope of its application in the same way as Article VI of the Outer Space Treaty expands it vis-à-vis international responsibility law. This is in conformity with contemporary scholarship on the subject as well as early commentary on the provision.[351]

Sentence 1 of Article 14 paragraph 1 of the Moon Agreement

When considering the Moon Agreement, one should recall at the outset its limited acceptance by the international community. As elaborated above, the Moon Agreement has a total of 18 ratifications[352] and four signatory States.[353] In a world of more than 190 UN member States, this can hardly be considered a successful international agreement.[354] However, as an agreement that was adopted by consensus by COPUOS, it does carry weight; moreover, as stated above, this study considers the entire legal framework on activities in outer space, of which the Moon Agreement forms part. It has also been clarified that the limited acceptance of the Moon Agreement is commonly reasoned by what it sets out in Article 11; therefore

[351] Lachs stated in *The Law of Outer Space*: "The acceptance of this principle removes all doubts concerning immutability"; Manfred Lachs, *The Law of Outer Space: An Experience in Contemporary Law-Making, by Manfred Lachs, Reissued on the Occasion of the 50th Anniversary of the International Institute of Space Law* (Brill Nijhoff 2010) p. 114; Lesley Jane Smith and Armel Kerrest, 'Article III (Fault Liability)' *Cologne Commentary on Space Law Volume II; CoCoSL* (Heymanns 2013) p. 134.

[352] UN Doc. A/AC.105/C.2/2023/CRP.3, COPUOS, 'Status of International Agreements relating to activities in outer space as at 1 January 2023' 20 March 2023; ratifying States: Armenia, Australia, Austria, Belgium, Chile, Kazakhstan, Kuwait, Lebanon, Mexico, Morocco, Netherlands, Pakistan, Peru, Philippines, Saudi Arabia, Turkey, Uruguay, Venezuela (Bolivarian Republic of); notably, none of the ratifying States are major space-faring nations. As mentioned in (n 280), Saudi Arabia since has notified the UN of its withdrawal from the Moon Treaty.

[353] Ibid.; signatory States: France, Guatemala, India, Romania.

[354] However, it is noteworthy that academic opinion quite consistently refers to Art. 11 Moon Agreement being the reason for its low number of ratifications. Art. 11 Moon Agreement relates to the exploration of extraterrestrial resources and declares them Common Heritage of Mankind.

not affecting the consideration of Article 14 in respect of international responsibility.

Article 14 paragraph 1 Sentence 1 of the Moon Agreement states that:

> States Parties to this Agreement shall bear international responsibility for national activities on the Moon, whether such activities are carried on by governmental agencies or non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in this Agreement.

Article 14 of the Moon Agreement reiterates Article VI of the Outer Space Treaty and does not appear to pose any reason for reservations to the Agreement. When comparing the text of Article 14 of the Moon Agreement to Article VI of the Outer Space Treaty, the following differences become apparent:

1. "States Parties to the Treaty" in Article VI of the Outer Space Treaty becomes "States Parties to this Agreement" in Article 14 of the Moon Agreement; *editorial*.
2. "international responsibility for national activities in outer space, including the Moon and other celestial bodies" in Article VI of the Outer Space Treaty becomes "international responsibility for national activities on the Moon" in Article 14 of the Moon Agreement; this is an interesting difference in the texts of the articles, as the Moon Agreement already stipulates in its title that it refers to "the Moon and Other Celestial Bodies".[355] Furthermore, Article 1 of the Moon Agreement clarifies that "The provisions of this Agreement relating to the Moon shall also apply to other celestial bodies within the solar system, other than the Earth".[356]
3. "in conformity with the provisions set forth in the present Treaty" in Article VI of the Outer Space Treaty becomes "in conformity with the provisions set forth in this Agreement" in Article 14 of the Moon Agreement; *editorial*.
4. The second sentence of Article VI of the Outer Space Treaty is reformulated in the Moon Agreement. "The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty" in Article VI of the Outer Space Treaty is reformulated in active voice in the Moon Agreement as "States Parties shall ensure that non-governmental entities under their jurisdiction shall engage in activities on the Moon only under the authority and continuing supervision of the appropriate State Party. While the part of the provision has been

[355] "Agreement Governing the Activities of States on the Moon and Other Celestial Bodies".

[356] Art. 1(1) Moon Agreement, adding "except insofar as specific legal norms enter into force with respect to any of these celestial bodies".

reformulated, it does not affect the underlying requirement of the appropriate State Party to authorise and continuously supervise non-governmental activities in outer space.

The third sentence of Article VI of the Outer Space Treaty, addressing international organisations, is not reflected in the Moon Agreement. In fact, the Moon Agreement does not mention international organisations at all. This can be explained by COPUOS member States choosing to not include international organisations in the scope of the agreement; which until such time as international organisations carry out activities on the Moon or on other celestial bodies, is of little relevance for an interpretation of Article VI.

4.2.5. Mentions of international responsibility in non-legally binding instruments as a means of treaty interpretation

As set out in Sub Section 1.6.2 on methodology, non-legally binding instruments can be taken into account in the process of interpretation of legally binding instruments by virtue of 31(3)(b) of the Vienna Convention on the Law of Treaties as subsequent practice in the application of the treaty. One of these non-legally binding instruments developing legally binding power is the first in the list below, the Legal Principles Declaration – which constitutes the negotiation basis on which the Outer Space Treaty built, and which some commentators consider as reflecting customary international law, at least in part. Apart from the Legal Principles Declaration, which was discussed in Sections 4.2.1 and 4.2.3, non-legally binding instruments mention international responsibility in the following instances.

Principle 8 of the *Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting* (Direct Television Broadcasting Principles) states that "States should bear international responsibility for activities in the field of international direct television broadcasting by satellite carried out by them or under their jurisdiction and for the conformity of any such activities with the principles set forth in this document".[357] In essence, even if not following the wording of Article VI of the Outer Space Treaty explicitly, the principle establishes international responsibility of States that is carried out by their governmental agencies or under their jurisdiction; i.e., including the activities of non-governmental entities that fall under the jurisdictional realm of that State. It can thus be concluded that this understanding of Principle 8 of the Direct Television Broadcasting Principles confirms the previous analysis of Article VI of the Outer Space Treaty in this study, and can be understood as a confirmation of Sentence 1 of Article VI. Secondly, Principle 8 can be viewed as a clarification of the principle of international responsibility in Sentence 1 of Article VI, as it includes a literal

[357] Principle 8 Direct Television Broadcasting Principles.

reference to jurisdiction with regard to the establishment of international responsibility, and thus can be seen as formulating the evolution of the principle of international responsibility under international space law up to the moment of adoption of the Direct Television Broadcasting Principles in 1982.

The same instrument states in its Principle 9, in a similar fashion, a confirmation of Sentence 3 of Article VI, stipulating that: "[w]hen international direct television broadcasting by satellite is carried out by an international intergovernmental organization, the responsibility referred to in paragraph 8 above should be borne both by that organization and by the States participating in it".[358] The wording appears as a recapitulation of the principle of international responsibility as contained in Article VI of the Outer Space Treaty with respect to the area of application of direct television broadcasting.

The Principles Relating to Remote Sensing of the Earth from Outer Space (Remote Sensing Principles) also make in Principle XIV a reference to Article VI of the Outer Space Treaty.[359] The text reads:

> In compliance with article VI of the [Outer Space Treaty], States operating remote sensing satellites shall bear international responsibility for their activities and assure that such activities are conducted in accordance with these principles and the norms of international law, irrespective of whether such activities are carried out by governmental or non-governmental entities or through international organizations to which such States are parties. This principle is without prejudice to the applicability of the norms of international law on State responsibility for remote sensing activities.[360]

This is an interesting instance of reference to the principle of international responsibility for activities in outer space, as it refers to States' 'activities' as the basis of their international responsibility, and thus, omits the 'national' activity requirement. It may be argued that at the time of adoption of the Remote Sensing Principles in 1986, the understanding of the principle of international responsibility by COPUOS had evolved to the point where the reference to 'national' activities did not appear to be required any longer. By addressing States' activities ("*their* activities"),[361] in essence, the text addresses activities under the jurisdiction of the respective States – in effect leading to an interpretation of the principle of international responsibility for activities on outer space that is congruent with what is stipulated in Article VI of the Outer Space Treaty. It may be recalled that COPUOS operates on the basis of consensus and that an agreement on the text of

[358] Principle 9 Direct Television Broadcasting Principles.

[359] General Assembly Resolution A/RES/41/65, Principles Relating to Remote Sensing of the Earth from Outer Space, 3 December 1986 and annex.

[360] Principle XIV Remote Sensing Principles.

[361] Emphasis added.

the Remote Sensing (and all other) Principles signifies the approval or in the very least, abstention, of all State parties to the Committee. Moreover, this understanding appears to confirm the earlier interpretation of Sentence 1 of Article VI of the Outer Space Treaty, which assigns international responsibility for national activities as well as for assuring that States parties act in conformity with the Outer Space Treaty and international law, which concluded that the latter instance of referring to conformity with international law forms the legal basis for assigning international responsibility for activities in outer space, as the reference to 'national' was not retained.

The next mention of the principle of international responsibility for activities in outer space, however, followed six years later and took recourse to the original formulation as it is worded in Article VI of the Outer Space Treaty. Principle 8 of the *Principles Relevant to the Use of Nuclear Power Sources in Outer Space* (Nuclear Power Source Principles) of 1992 states that:

> In accordance with article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, States shall bear international responsibility for *national* activities involving the use of nuclear power sources in outer space, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that such national activities are carried out in conformity with that Treaty and the recommendations contained in these Principles. When activities in outer space involving the use of nuclear power sources are carried on by an international organization, responsibility for compliance with the aforesaid Treaty and the recommendations contained in these Principles shall be borne both by the international organization and by the States participating in it.[362]

However, since the interpretation of Article VI, as presented in the previous section, is in conformity with its recapitulation in, for example, the Nuclear Power Source Principles, and is also in line with the previous evolution of the wording in the Remote Sensing Principles – as all instances are understood in this study to refer to activities that are under the jurisdiction of a State – the recourse to the original wording, while maybe not supporting a clarification of exactly which part of Sentence 1 of Article VI can be viewed as constituting the legal basis for international responsibility for activities in outer space, are considered not to be in conflict but to relate to the same understanding of the principle of international responsibility for activities in outer space.

Table 14 below provides an overview of the different formulations in non-legally binding instruments regarding international responsibility for activities in outer space. While, to emphasise once more, the mentions of international responsibility for activities in outer space in non-legally binding instruments lack legal value, they

[362] Principle 8 Nuclear Power Source Principles; emphasis added.

may be considered as additional clarifications in the legal analysis below in their function of instances of State practice in the sense of Article 31(3)(b) of the Vienna Convention on the Law of Treaties.

Table 14 **International responsibility in non-legally binding instruments on outer space**	
Principle	***Text in instrument***
Legal Principles Declaration, Principle 5 (1963)	States bear international responsibility for national activities in outer space, whether carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried on in conformity with the principles set forth in the present Declaration.
Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting, Principles 8 and 9 (1982)	States should bear international responsibility for activities in the field of international direct television broadcasting by satellite carried out by them or under their jurisdiction and for the conformity of any such activities with the principles set forth in this document.
	When international direct television broadcasting by satellite is carried out by an international intergovernmental organization, the responsibility referred to in paragraph 8 above should be borne both by that organization and by the States participating in it.
Principles Relating to Remote Sensing of the Earth from Outer Space, Principle XIV (1986)	In compliance with article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, States operating remote sensing satellites shall bear international responsibility for their activities and assure that such activities are conducted in accordance with these principles and the norms of international law, irrespective of whether such activities are carried out by governmental or non-governmental entities or through international organizations to which such States are parties. This principle is without prejudice to the applicability of the norms of international law on State responsibility for remote sensing activities.
Principles Relevant to the Use of Nuclear Power Sources in Outer Space, Principle 8 (1992)	In accordance with article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, States shall bear international responsibility for national activities involving the use of nuclear power sources in outer space, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that such national activities are carried out in conformity with that Treaty and the recommendations contained in these Principles. When activities in outer space involving the use of nuclear power sources are carried on by an international organization, responsibility for compliance with the aforesaid Treaty and the recommendations contained in these Principles shall be borne both by the international organization and by the States participating in it.

4.3. Public international law: International responsibility law

In this section, the historical development of the conception of international responsibility is introduced. In some instances, the development interrelates with the development of the conception of international liability, which is therefore considered collaterally.[363] Since research question 2 primarily focuses on international responsibility, the latter remains in focus in the historical overview. Much has been written on the history of international law;[364] this section therefore confines itself to a brief overview of the developments.

Specifically, Section 4.3.1 provides a concise overview of the early development of the law on State responsibility towards becoming a body of public international law. Three main periods of the development of international responsibility law as presented below are the United States diplomatic practice of State responsibility during the 19th and 20th centuries and the resulting rise of State responsibility on the international plain, the German legal theory on State responsibility, and the codification efforts of international responsibility by international bodies starting from 1922 with the efforts undertaken by the League of Nations. Subsequently, Section 4.3.2 considers the codification efforts by the ILC under the auspices of the UN.[365] Finally, focus is lain on the introduction of international State responsibility as it stands today, with reference to the Articles on State Responsibility and the Articles on Responsibility of International Organisations (Section 4.3.3).

4.3.1. Early history of international responsibility

The notion of State responsibility is one of the older notions of international law and closely connected to the latter's inception and development. However, as the branch of law that it is today, international responsibility law has only emerged relatively recently. At its early onset, State responsibility was closely connected and

[363] However, only to the extent required for a depiction of international responsibility. International liability under international space law is addressed in more detail in Chapter 5.

[364] See e.g. Crawford, *ILC Commentaries* (n 27); Crawford, *General* (n 74); Kolb (n 27); Alan Nissel Tzvika, *A History of State Responsibility*, Doctoral thesis at Helsinki University 2016.

[365] The division into United States diplomacy in the 19th century, the German theory on State responsibility, and UN codification efforts of State responsibility takes inspiration from Tzvika, who describes those three chapters in his dissertation project abstract as the "three most influential efforts to establish a legal standard for international enforcement actions"; see Tzvika (n 347) p. 12. I have opted to additionally emphasise the international codification efforts under the League of Nations in the section on early history of international responsibility in order to clarify the existing international consensus before the start of the ILC codification process under the auspices of the UN, which due to its importance for the current codification of international responsibility is structured under its own sub-heading.

intertwined with diplomatic protection. At that time, there was not yet a notion of responsibility of international organisations, and thus no 'international responsibility' for States and international organisations as we use the terminology today. At that time, the international plane was dominated by the emergence of the nation State – the consolidation of which took part under a Eurocentric global power structure, and was characterised by a strong emphasis on national sovereignty.

In the late 18th century, international arbitration or submission of claims to mixed claims commissions stood at the core of the developments of the notion of international responsibility, in connection with the enforceability of international agreements. It was at that time that the concept of what is today understood as international responsibility started to cautiously formulate its beginnings. It triggered interest in legal writings in the wake of writings on substantive fields of law only in the latter half of the 19th century.[366] Only by the end of that century had State responsibility emerged as its own "discrete subject for study" – at the time due to the emphasis on the nation State and national sovereignty only thought of as relevant for international actors.[367]

At a time when 'just war' in accordance with the international regulations on warfare[368] was a legitimate answer to the breach of an international obligation by another State, not only were the rules of warfare defined, but also the consequences of breaches of such rules played a predominant role. This constitutes an early precursor of what we understand today as international responsibility law. However, at the time, the notion of State responsibility was still intertwined with notions of diplomatic protection and protection of persons and assets abroad. Therefore, the early part of State responsibility finds its origin in the law of the treatment of aliens.

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[366] Crawford states that "[f]or a long time, however, responsibility was ignored or touched on only incidentally in international law doctrine. Writers concerned themselves with substantive fields such as the law of the sea, the laws of war, diplomatic relations or the law concerning treatment of foreigners. Their main interest was in identifying specific rules and practices associated with each field and, sometimes, in identifying the mechanisms by which states might seek to vindicate their rights, especially through reprisals and war."; see: Crawford, *General* (n 74) p. 3.

[367] Ibid.

[368] The two 1899 and 1907 The Hague Conventions: Convention with Respect to the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land; and The Hague, 29 July 1899, and Convention respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land. The Hague, 18 October 1907; and later the four Geneva Conventions of 1949: Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field (adopted 12 August 1949, entered into force 21 October 1950); Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea (adopted 12 August 1949, entered into force 21 October 1950); Convention (III) relative to the Treatment of Prisoners of War (adopted 12 August 1949, entered into force 21 October 1950); and Convention (IV) relative to the Protection of Civilian Persons in Time of War (adopted 12 August 1949, entered into force 21 October 1950).

The distinction between those subjects did not take place until the second half of the 20th century.

In the first half of the 20th century, there were a number of *ad hoc* conferences held that aimed at codification of international law, such as the conferences in Vienna in 1814-1815, in Paris in 1856, in The Hague in 1899/1907, or at the London Naval Conference in 1908-1909. Private institutions were established with the same aspiration, such as the Institut de Droit International and the International Law Association, both established in 1873. The League of Nations strengthened those endeavours by engaging in "more systematic intergovernmental efforts" such as the Committee of Experts for the Progressive Codification of International Law (1924), and the 1930 Hague Codification Conference including its Preparatory Committee. However, neither was very successful. A League Assembly resolution, adopted in 1931, addressed the procedure of law codification with an emphasis on the role that governments were to play in the process of codification, and gave direction to the Statute of the ILC, which incorporated many ideas of this resolution.[369]

Starting from 1922, under the auspices of the League of Nations and the Permanent Court of International Justice, international responsibility evolved further in the direction of what we understand it as today. In 1927, the Permanent Court of International Justice decided on a case between Germany and Poland, which dealt with a nitrogen factory in Chorzów, after Upper Silesia had been awarded to Poland.[370] The Court stated that it is a principle of international law that a breach involves the obligation to make reparation. This was reasoned by an enhancement of the application and effectiveness of international law, and the judgment stood out for the general objectives of upholding the rule of international law and prevention of future breaches in terms of a deterrent effect.

4.3.2. Codification efforts by the International Law Commission

The ILC was created in 1947 by the UN General Assembly, following a felt need by the international community of States to develop and systematise international

[369] For more details, see e.g.: Sir Michael Wood, 'Statute of the International Law Commission' United Nations Audiovisual Library of International Law p. 1 <https://legal.un.org/avl/pdf/ha/silc/silc_e.pdf> accessed 27 October 2023; Manfred Lachs, *The Law of Outer Space: An Experience in Contemporary Law-Making, by Manfred Lachs, Reissued on the Occasion of the 50th Anniversary of the International Institute of Space Law* (Brill Nijhoff 2010) <https://brill.com/edcollbook/title/18848> accessed 29 October 2023; Smith and Kerrest (n 22).

[370] *Chorzów Factory* Case (n 34).

law.[371] This followed attempts in the first half of the 20th century to codify and systematise international law, which remained, however, relatively unsuccessful.

The ILC is a subsidiary body of the General Assembly; the latter being tasked in Article 13(1) of the UN Charter to "initiate studies and make recommendations for the purpose of: (a) promoting international co-operation in the political field and encouraging the progressive development of international law and its codification" – a mandate for which it established the ILC.[372] For this reason, the ILC is often referred to as the UN's organ for the "promotion of the progressive development of international law and its codification".[373]

International responsibility was subdivided for consideration by the ILC into State responsibility, and responsibility of international organisations.[374] The ILC selected State responsibility as one of its earliest topics for codification at its first session in 1949.[375] The first attempt of codification took place under ILC special rapporteur

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[371] General Assembly resolution 174 (II) of 21 November 1947, in its annex containing the Statute of the ILC <https://documents-dds-ny.un.org/doc/RESOLUTION/GEN/NR0/038/81/PDF/NR003881.pdf?OpenElement> accessed 27 October 2023.

[372] Art. 13 UN Charter reads in full:

1. The General Assembly shall initiate studies and make recommendations for the purpose of:
    a. promoting international co-operation in the political field and encouraging the progressive development of international law and its codification;
    b. promoting international co-operation in the economic, social, cultural, educational, and health fields, and assisting in the realization of human rights and fundamental freedoms for all without distinction as to race, sex, language, or religion.
2. The further responsibilities, functions and powers of the General Assembly with respect to matters mentioned in paragraph 1 (b) above are set forth in Chapters IX and X.

<https://treaties.un.org/doc/publication/ctc/uncharter.pdf> accessed 27 October 2023.

[373] See e.g.: the text at <https://legal.un.org/ilc/> accessed 27 October 2023; as well as Wood (n 352).

[374] Other, non-State non-international organization actors at the time were not considered to have standing under international law, precluding them from consideration.

[375] <https://legal.un.org/ilc/guide/9_6.shtml> accessed 27 October 2023. The list of the ILC's first selection of topics is as follows:

(1) Subjects of international law;
(2) Sources of international law;
(3) Obligations of international law in relation to the law of States;
(4) Fundamental rights and duties of States;
(5) Recognition of States and Governments;
(6) Succession of States and Governments;
(7) Domestic jurisdiction;
(8) Recognition of acts of foreign States;
(9) Jurisdiction over foreign States;
(10) Obligations of territorial jurisdiction;
(11) Jurisdiction with regard to crimes committed outside national territory;
(12) Territorial domain of States;
(13) Regime of the high seas;
(14) Regime of territorial waters;

García Amador from 1956 and is generally considered not to have been very successful. The second attempt resulted in the adoption of the Articles on State Responsibility in 2001, and was mainly shaped by its last special rapporteur, James Crawford. Following established ILC procedures, the adopted document would normally have served as the basis for treaty negotiations. However, due to the Articles on State Responsibility constituting a comprehensive systematic approach to the topic, it was felt that the system of the Articles as a whole should be maintained, and therefore, the ILC recommended the adoption of the Articles in a General Assembly resolution. The underlying idea was that recourse to the Articles on State Responsibility by States would ultimately result in the Articles gaining the status of customary international law, including those that were contested at the time of adoption of the resolution. As such, the Articles on State Responsibility, due to their adoption in a General Assembly resolution, are not legally binding.

The development of the law saw considerable advancement in the middle of the 20th century, when the law of State responsibility was disconnected from the treatment of aliens and related to *all* breaches of international law. At the time when former colonies became independent, many States strove for a strengthening of enforcement of international law against Western States. The substantive scope of international law also increased considerably, and the beginning of the ILC's codification exercises in the late 1950s was a contribution in this perspective.

The understanding of State responsibility evolved to be one of secondary rules, being a consequence of an internationally wrongful act. Constituting *lex generalis*, those rules apply generally to all other norms of international law. This includes the option that if a field of law ('special regime') has its own rules regarding what happens when an obligation is breached, the 'general law' may be displaced the more specific rules (application of the *lex specialis* principle). They constitute a

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(15) Pacific settlement of international disputes;
(16) Nationality, including statelessness;
(17) Treatment of aliens;
(18) Extradition;
(19) Right of asylum;
(20) Law of treaties;
(21) Diplomatic intercourse and immunities;
(22) Consular intercourse and immunities;
(23) State responsibility;
(24) Arbitral procedure;
(25) Laws of war.

(Emphasis added) See UN Doc. A/CN.4/13 and Corr. 1-3, Report of the International Law Commission on the work of its first Session, 12 April 1949, Official Records of the General Assembly, Fourth Session, Supplement No. 10, published in the first Yearbook of the International Law Commission: UN Doc. of 1949, ILC, 'Summary Records and Documents of the First Session including the report of the Commission to the General Assembly' p. 280-283.

unitary system in the sense that they do not differentiate between contractual and tortuous responsibility or civil and criminal responsibility.

The ILC adopted the text of the then *Draft* Articles on State Responsibility[376] including its commentaries at its 53rd session in 2001, and submitted it to the General Assembly as part of its report covering the work of that session.[377] They were consecutively adopted by the UN in General Assembly resolution 56/83 of 12 December 2001 under the title *Responsibility of States for Internationally Wrongful Acts*.[378]

4.3.3. Articles on State Responsibility and Responsibility of International Organisations

The Articles on State Responsibility provide a comprehensive and unified framework for international law of State responsibility (or international State responsibility law). They clarify the scope and content of international law relating to a State's responsibility for its internationally wrongful acts, addressing topics such as the definition of a breach of an international obligation, the attribution of responsibility to a State, the application of defences[379] and countermeasures, reparation for injuries, and the settlement of disputes. Under the *systématique* of the Articles on State Responsibility, State responsibility can exist independently of its invocation[380] and independent of the existence of damage. Below, a selection of individual elements of the Articles on State Responsibility are assessed.

Internationally Wrongful Act

An internationally wrongful act, in the conception of the Articles on State Responsibility, is the basis for any finding of international responsibility. This is made clear by Article 1 of the Articles on State Responsibility, which states that "[e]very internationally wrongful act of a State entails the international

[376] Due to their wide acceptance by the international community, now commonly referred to as 'Articles'.

[377] UN A/CN.4/SER.A/2001/Add.1 (Part 2)/Rev.1, 'Yearbook of the ILC Vol. II (Part 2) Documents of the fifty-third session'.

[378] General Assembly Resolution A/RES/56/83, Responsibility of States for internationally wrongful acts, 12 December 2001.

[379] Invoking legitimate reasons for committing the internationally 'wrongful' act, which through their successful application will not be wrongful any longer.

[380] I.e., a self-standing existence that does not require the injured party to invoke international responsibility. Invocation of international responsibility relates to the legal standing of subjects of international law, in the sense of whether an actor has legal standing to invoke international responsibility.

responsibility of that State".[381] An internationally wrongful act consists of two constitutive elements: the "conduct consisting of an action or omission (a)" being "attributable to the State under international law";[382] and (b) it constituting "a breach of an international legal obligation of that State".[383] Both elements can be assessed independently and it is not prescribed in which order they should be assessed. In fact, the ICJ does not always follow the same methodology in this aspect. The conduct in question may consist of an act or omission, and is unlawful under international law. Its legal status under national law is not relevant.[384] In consequence, due to the supremacy of international law, national law cannot serve as a defence to a State's obligations under international law.

Attribution

Attribution under State responsibility law refers to the assignment of responsibility for a wrongful conduct to a State: without the attributability of conduct to a State, an internationally wrongful act cannot be established. The rules on attribution of State responsibility are applied to establish whether a State can be held internationally responsible for a breach arising from wrongful conduct by its officials or agents. Thus, the rules require a sufficiently strong link between the State and the actors whose conduct will be attributed to it. Attribution is based on the understanding that States are not responsible for every conduct under their jurisdiction, but that a State should be held accountable for the wrongful acts of its officials or agents, as long as they are acting within their official capacity. The basic rule is that a State is responsible for its organs.[385] The Articles on State Responsibility also define several cases of 'exception' to the general rule, where a breach can be attributed to a State due to a sufficiently close relationship between the State and other actors, that are not its organ(s). Therefore, in some cases, a State may also be held responsible for the actions of private persons or entities, if those are found to have been acting on behalf of the State.

Attribution in the Articles on State Responsibility is addressed in Chapter II (Articles 4-11). The most straightforward case is the general rule in Article 4(1), when the conduct is performed by an organ of the State. Conduct by organs of the State under the system of the Articles on State Responsibility may refer to actions or omissions by the State. With regard to determining whether a particular entity is an organ of the State, national law may be relevant, as under the *systématique* of the Articles on State Responsibility, 'organs' includes "any person or entity which has that status in accordance with the internal law of the State", thus, the Articles apply

[381] Art. 1 Articles on State Responsibility.

[382] Art. 2(a) Articles on State Responsibility.

[383] Art. 2(b) Articles on State Responsibility.

[384] Art. 3 Articles on State Responsibility.

[385] Art. 4 Articles on State Responsibility.

an inclusive definition of State organ.[386] However, national law cannot be decisive;[387] therefore, the assessment is of an *international* legal nature. The general rule of a State being responsible for its organs extends even to those organs that act in excess of their authority, namely those that act outside of their competence under national law (*ultra vires*).[388] This is not a new development of State responsibility law[389] and fits well within the rationale behind the Articles on State Responsibility, as without the inclusion of conduct *ultra vires*, State responsibility law might offer many opportunities to circumvent or avoid the legal framework of international responsibility.[390]

There are six cases in the Articles on State Responsibility that define instances when a State may be responsible for the conduct of persons or entities which are not its organs: these are contained in Articles 5 to 6 and 8 to 11. Article 5 establishes State responsibility for persons or entities empowered to exercise elements of governmental authority. This relates to private entities authorised to fulfil a State function, such as the running of a prison. Article 6 concerns foreign State organs that are placed at another State's disposal. This could concern emergency personnel under the authority of one State being transferred under the authority (command and control) of another State due to an emergency situation. From the perspective of international law, those personnel would be considered employees of the second State and not its State organs. The third case concerns persons or entities acting under the direction and control of the State as stipulated in Article 8 of the Articles on State Responsibility. An example is the *Nicaragua* case, when the question before the Court was whether Nicaraguan insurgents were acting under the direction and control of the United States. The Court found that the United States was not

[386] Art. 4(2) Articles on State Responsibility. Organs may be part of the legislature, the executive or the judiciary under the internal law of the State, or they may in some other closely integrated way carry out a State function.

[387] Art. 3 Articles on State Responsibility.

[388] Art. 7 Articles on State Responsibility.

[389] An example from 1927 of conduct *ultra vires* is the *Mallén* case, when a United States off-duty police officer insulted a Mexican foreign national, then went to fetch his police gun and badge, and then arrested the foreign national. The police officer detained the foreign national and continued to assault him. The Arbitral Tribunal held that the United States was not responsibility for the acts committed by the police officer off-duty, but upon return with the resources put at his disposal by the State (gun and badge), he was acting with the legal powers invested to him by the State, and thus was acting in the capacity of a State organ. This case exemplifies conduct of State organs not being limited to conduct *intra vires* (known as the excess of authority rule) and is reflected in Art. 7 Articles on State Responsibility; General Claims Commission, *Francisco Mallén* (United Mexican States v. United States of America) Award 1927 Reports of International Arbitral Awards Vol IV 173 (27 April).

[390] On the basis of Art. 3 Articles on State Responsibility, State responsibility cannot be limited to conduct *intra vires*.

exercising direction and control with regard to individual operations.[391] Fourthly, as under Article 9, States are internationally responsible for persons or entities exercising elements of governmental authority in default of the official authorities. This could apply for instance in times of revolution, governmental transition, or absence of government, when certain people take the initiative to perform ordinarily public functions. Under Article 10 on successful revolutionary movements which ultimately become the government, States also become retroactively responsible for the acts of that revolutionary movement. Finally, a State is responsible for the conduct of private people where and to the extent that the State acknowledges and adopts the conduct (Article 11). The *Tehran Hostages* case may serve as an example, when rioting students seized the United States embassy in Tehran including its personnel, and the Iranian government subsequently publicly endorsed and adopted the conduct, making Iran internationally responsible for it.[392]

Breach of international law

The breach of an international legal obligation is addressed in the Articles on State Responsibility in Chapter III (Articles 12-15). In accordance with Article 12, a breach of an international obligation by a State occurs when "act of that State is not in conformity with what is required of it by that obligation". However, according to Article 13, the obligation must be in force for the State at the relevant time. Breaches may also be continuing, as stipulated in Article 14 and exemplified by the Rainbow Warrior arbitration: it was held that every day that the French agents were not held in detention following the agreement reached between France and New Zealand was a continuing breach of that obligation.[393] Moreover, breaches may be made up of more than one act or omission but consist of a series of actions or omissions, constituting composite act (Article 15 of the Articles on State Responsibility).

International obligations are generally regarded as being on one level of hierarchy; thus, being of equal legal value. However, the Articles on State Responsibility include exceptional cases of severe gravity in Articles 40 and 41, addressing "serious breaches of obligations under peremptory norms of international law". Articles 40 and 41 thus operate a dual criterion of applying to breaches of peremptory norms only, and the breach having to be serious. If international responsibility for serious breaches of obligations under peremptory norms of international law has been established, *all* other States are under a duty (i) to co-operate and bring breach to an end the serious breach; (ii) not to recognise the legal

[391] However, had they been acting under the direction and control of the United States, the rebels would have been treated as entities for whom the United States was internationally responsible; *Military and Paramilitary Activities in and against Nicaragua* Case (n 330).

[392] ICJ, *Case Concerning United States Diplomatic and Consular Staff in Teheran* (United States of America v. Iran) Judgment 1980 ICJ Reports 3 (24 May).

[393] *Rainbow Warrior Affair* (n 145).

consequences of the serious breach; and (iii) not to aid or assist the continuing breach.[394]

Circumstances Precluding Wrongfulness

The Articles on State Responsibility recognise six instances of defences for conduct, that – when successful – render an act not wrongful and in consequence international responsibility will not arise. They apply at the level of breach of international obligations, which will remove the illegality of the conduct in question.

Firstly, according to Article 20 of the Articles on State Responsibility, when a State consented to a conduct, the conduct of the acting State will not incur international responsibility. Such conduct could be the sending of troops into another State's territory after being called on to do so, in which case the State sending troops would not be committing a wrongful act of aggression. Secondly, force majeure is stipulated in Article 23 and requires three distinct criteria: (i) an irresistible force or an unforeseen event ("neither foreseen nor… easily foreseeable"); (ii) a situation beyond the control of the State (i.e., the State was "unable to avoid or oppose" it); and (iii) the situation beyond control of the State made the performance of the obligation *materially impossible*.[395] Thirdly, 'distress' in Article 24 concerns conduct where a person whose acts are attributable to the State has "no other reasonable way" of saving his or her "life or the lives of other persons entrusted" to his or her care.[396] Fourthly, 'necessity' applies as a circumstance precluding the wrongfulness of an internationally wrongful act under Article 25. It has a high threshold requiring the act to be: (i) "the only way for the State to safeguard an essential interest against grave and imminent peril"; and (ii) that the act "does not seriously impair an essential interest of the State or States towards which the obligation exists or of the international community as a whole".[397] Fifth, self-defence under the UN Charter is a valid circumstance precluding wrongfulness as listed in Article 21 of the Articles of State Responsibility. It is named last in this overview, as it has been criticised for not strictly speaking being a secondary rule.[398] However, it was included in the Articles on State Responsibility for reasons of completion: the ILC strived for the Articles reflecting a 'comprehensive' compilation of all relevant rules concerning the international responsibility of States, and therefore decided to include self-defence in Part I Chapter V of the

[394] See for an example: ICJ, *Namibia* Advisory Opinion (n 120).

[395] Instances of 'impossible' or 'difficult' do not suffice. An example could be the required return of an object that has since been destroyed.

[396] Art. 24 Articles on State Responsibility. Examples may be diversion into another State's airspace to avoid a storm or the landing of aircraft without permission under force of weather.

[397] Art. 25 Articles on State Responsibility.

[398] In common understanding, it is considered a completely self-contained set of primary rules.

Articles.[399] Sixth and lastly, countermeasures are referred to in Article 22 of the Articles on State Responsibility and constitute (lawful, under State responsibility law) measures that may be taken in response to the prior unlawful conduct of another State. At the heart of the concept of countermeasures stands the consideration of how to enforce State responsibility in a system without centralised law enforcement. Countermeasures are only available to *injured States* (see below). The underlying idea and basic definition of countermeasures are stated in Article 49 of the Articles of State Responsibility: States employing countermeasures may only do so in order to induce a wrongdoing State to resume compliance with its legal obligations, and consist of a suspension of the performance of an international obligation by an injured State. As such, countermeasures are not a form of punishment but an attempt of enforcement,[400] and may only be directed at responsible State.

Preconditions for countermeasures are to call upon the responsible State to comply with its obligations, to give notice that countermeasures will be employed, and to offer to negotiate.[401] However, these obligations are without prejudice to a State to take urgent measures to preserve its rights.[402] Countermeasures also have to cease when the wrongful conduct ceases or when the dispute is put before a court or tribunal;[403] and generally, have to be readily reversible. Certain limitations apply, such as refraining from threat or use of force; fundamental human rights must be respected; and reprisals are prohibited.[404] Moreover, countermeasures must be proportionate. This may concern their proportionality with the original injury suffered, with the nature of the wrongful act, or with the rights in question.[405]

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[399] An example is the breach of Art. 2(4) UN Charter, breaching the international obligation not to commit acts of aggression against another State, or not to subject another State to an armed attack. In recourse to such conduct, if a State resorts to self-defence, that would not constitute its own breach of Art. 2(4) UN Charter but fall under Art. 51 of the Charter, that is not a breach of Article 2(4) of the UN Charter and perhaps various other obligations. So, it is somewhat illogical to have it within the Articles on State responsibility as it is really an exceptional category, a set of primary rules on its own.

[400] With regard to breaches of *erga omnes* or *jus cogens* obligations, which might be difficult to enforce, Art. 54 Articles on State Responsibility contains a without-prejudice clause, stating in essence the Articles are without prejudice to the circumstances in which non-injured States might be able to take action in respect of breaches of peremptory obligations of international law. This it opens the door to a potentially applicable other norm (e.g., a rule of customary international law, existing or developing). There is some State practice suggesting that States resort to economic sanctions where there are significant human rights breaches. There is also some (limited) State practice supporting for example military intervention to enforce human rights.

[401] Art. 52(1) Articles on State Responsibility.

[402] Art. 52(2) Articles on State Responsibility.

[403] Art. 52(3) Articles on State Responsibility.

[404] Art. 50 Articles on State Responsibility.

[405] Art. 51 Articles on State Responsibility.

Consequences of State responsibility (legal effects)

In some cases of an attributable breach of an international obligation, there is a choice between resorting to international responsibility or another remedy; in the case of breach of treaty for instance, the choice lies between seeking a remedy under the law of treaties, or under international responsibility law. A fundamental difference of these choices lies in the consequences. While under the law of treaties, the treaty relationship between the two (or more) actors (e.g., two States) persists, and the duty to perform continues under the treaty relationship. Under international responsibility law, once an internationally wrongful act is established on the side of the State having committed the wrong, a new legal relationship between the parties involved is created, which entails the obligation of reparation towards the State that has been wronged, or in other words, towards whom the obligation was owed.

There are concrete consequences that flow from the establishment of an internationally wrongful act. Firstly, there is a continued duty of performance.[406] This is significant as it relays that the existence of an internationally wrongful act does not extinguish the obligation by which the wrongdoing State is still bound. That original obligation persists, and every moment that the wronging State acts in breach thereof gives rise to its international responsibility. Naturally, this obligation only applies if the conduct giving rise to the internationally wrongful act continues; in cases of instant breach, the wrongful conduct is already terminated. Secondly, the wronging State is under an obligation to cease the wrongful conduct and, depending on the circumstances, to offer appropriate assurances and guarantees of non-repetition.[407]

A finding of international (State) responsibility also creates the obligation to make full reparation.[408] The obligation to provide reparation constitutes a (new) legal obligation that flows from the finding of international responsibility and thus, in the *systématique* of the Articles on State Responsibility, it constitutes a primary norm. Were a State found internationally responsible for an internationally wrongful act and were not to not comply with its obligation to provide reparation, this could in turn again lead to the finding of its international responsibility based on this (second) internationally wrongful act.

Reparation can be fulfilled by restitution, compensation, satisfaction, or a mixture of some or all.[409] The order of choice is prescribed by the Articles of State Responsibility; these state that reparation should be made by restitution where

[406] Art. 29 Articles on State Responsibility.

[407] Art. 30 Articles on State Responsibility.

[408] Art. 31 Articles on State Responsibility.

[409] Art. 34 Articles on State Responsibility.

possible.[410] Restitution is preferred in instances where the re-establishment of the *status quo ante* is not impossible or disproportionate, and aims at restitution *ad integrum*.[411] If restitution is not possible, compensation may become relevant.[412] Lastly, satisfaction may be appropriate where restitution or compensation is not possible or appropriate, or in addition to one or both.[413] It could comprise an apology or a formal acknowledgement of wrongdoing.[414]

Collective and ancillary responsibility

With regard to collective an ancillary responsibility, the focus of the system established in the Articles on State Responsibility is on the question of which State or States are entitled to invoke international responsibility. The Articles on State Responsibility state in Article 42 that an *injured* State is entitled to invoke State responsibility when it is injured by another State's internationally wrongful act.[415] Different scenarios are conceivable in which a State could be an injured State. Firstly, an obligation could be breached on a bilateral basis, and the (potentially) injured State could invoke international responsibility based on the bilateral obligation. Secondly, the obligation breached could stem from the protection of a collective interest, but one State might be particularly affected.[416] Thirdly, there could be a scenario where a breach occurs of an obligation owed to a group of States,

[410] Art. 35 Articles on State Responsibility in conjunction with Art. 36 Articles on State Responsibility.

[411] Art. 35 Articles on State Responsibility; referring to re-creating the circumstances as they were before.

[412] Compensation often applies to quantifiable damage that can be assessed in financial terms, and where restitution is not possible; Art. 36 Articles on State Responsibility.

[413] Art. 37 Articles on State Responsibility.

[414] It is not uncommon for international courts and tribunals to hold that giving a judgment against a wrongdoing State is in itself a form of adequate satisfaction.

[415] Art. 42 Articles on State Responsibility reads:
A State is entitled as an injured State to invoke the responsibility of another State if the obligation breached is owed to:
(a) that State individually; or
(b) a group of States including that State, or the international community as a whole, and the breach of the obligation:
(i) specially affects that State; or
(ii) *is of such a character as radically to change the position of all the other States to which the obligation is owed with respect to the further performance of the obligation.*

[416] An example could be an environmental agreement among several States, with the downstream State being particularly (disproportionately) affected by the occurrence of river pollution prohibited under the agreement.

which radically changes the position of all those States:[417] here, every State is an injured State and can invoke State responsibility.

In addition to the injured State, *non-injured* States may also be able to invoke State responsibility in accordance with Article 48 of the Articles on State Responsibility. The provision states two instances where non-injured States are entitled to invoke the responsibility of another State: in respect of obligations *erga omnes* or obligations designed to protect a collective interest of States including that of the invoking State.[418] However, non-injured States are limited in the recourse to available actions. Under Article 48(2) of the Articles on State Responsibility, a non-injured State may call for a cessation of the conduct by the wrongdoing State, assurances and guarantees of non-repetition, and reparation.[419]

Articles on Responsibility of International Organisations

The Articles on Responsibility of International Organisations, commonly abbreviated as DARIO or ARIO, were adopted by the ILC in 2011 and have often been referred to as reflecting the Articles on State Responsibility to a large extent.[420] They apply to both the international responsibility of an international organisation for an internationally wrongful act,[421] and to the international responsibility of a State for an internationally wrongful act in connection with the conduct of an international organisation.[422]

Their structure follows the Articles on State Responsibility closely by assessing the nature of international responsibility for internationally wrongful acts committed by international organisations;[423] setting out the elements of an internationally

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[417] As an example, States may agree to a regional fishery management organisation, and one State through its overfishing efforts alone decimates the stock and reduces it almost to extinction: that one State's conduct would 'radically' change the position of all other States.

[418] Art. 48(1)(a) and (b) Articles on State Responsibility.

[419] Art. 48(a) Articles on State Responsibility reads (excerpt):

> *(a) cessation of the internationally wrongful act, and assurances and guarantees of non-repetition […]; and*
> *(b) performance of the obligation of reparation […] in the interest of the injured State or of the beneficiaries of the obligation breached.*

[420] Report of the ILC, GAOR 66th Sess., Suppl. 10, Doc. A/66/10, 54 et seq. In the first years after their adoption, the Articles on Responsibility of International Organisations were often referred to *Draft* Articles on the Responsibility of International Organizations, abbreviated DARIO; however, in the meantime they have reached a satisfactory level of acceptance similar to the Articles on State Responsibility, and the "draft" is more commonly dropped and the acronym ARIO used.

[421] Art. 1(1) Articles on Responsibility of International Organisations.

[422] Art. 1(2) Articles on Responsibility of International Organisations.

[423] Art. 3 Articles on Responsibility of International Organisations.

wrongful act – as in the Articles on State responsibility[424] – consisting of attribution and breach;[425] the circumstances precluding wrongfulness applicable to conduct of international organisations;[426] and the consequences of international responsibility, which are addressed in the final part.[427] The responsibility of an international organisation in connection with the act of a State or another international organisation is given a separate chapter under Part II and Part III of the Articles on Responsibility of International Organisations.[428] Due to their close following in *systématique* and underlying conception of international responsibility of the Articles on State Responsibility, it is not necessary to revisit the individual elements of assessing international responsibility as assessed above under the Articles on State Responsibility.

4.4. Comparison and analysis of international responsibility for activities in outer space under international space law and under international responsibility law

Following the interpretation of the provisions of international space law addressing international responsibility for activities in outer space by recourse to the law of treaties in Section 4.2 above, the present section offers a legal analysis of international responsibility for activities in outer space with reference to international responsibility law. Due to the clear *systématique* in the Articles on State Responsibility and the Articles on Responsibility of International Organisations, their methodology is followed in the assessment, which in itself constitutes an application of international responsibility law as *lex generalis* to international space law as *lex specialis* (methodolocal application). It may be recalled at this instance that the relationship between the two fields of law in this study is considered to be one free of a conflict of norms, as international responsibility law provides the general framework and methodology for any assessment of international responsibility – also applicable to responsibility for activities in outer space. The *lex specialis* in the special rules on attribution under responsibility for activities in outer space is a refinement, not rules in conflict, to that general framework. This is in line with the understanding of *lex specialis* in

[424] Art. 4 Articles on Responsibility of International Organisations.

[425] Part II Chapter II (Arts. 6-9 on attribution) and Chapter III (Arts. 10-13 on breach) Articles on Responsibility of International Organisations.

[426] Part II Chapter V (Arts. 20-27) Articles on Responsibility of International Organisations.

[427] Part III Articles on Responsibility of International Organisations.

[428] Part II Chapter IV, Part V Articles on Responsibility of International Organisations.

Article 55 of the Articles on State Responsibility, which does not require the existence of a conflict of norms but merely provides for the determination of a hierarchy regarding the applicable law in cases where a special regime of international law – here the law on responsibility for activities in outer space – offers a more specific regulation of all or certain aspects of what is covered under international responsibility law.

It is by reference to the doctrine of intertemporality that today's law on treaty interpretation can be applied to the determination of which rules on treaty interpretation should be used for the interpretation of a treaty. Through application of the doctrine of intertemporality, the Vienna Convention on the Law of Treaties, despite being 'younger' than the Outer Space Treaty and other UN treaties on outer space, applies and is used in this study to find the 'ordinary meaning' of international responsibility for activities in outer space as formulated in the UN treaties on outer space. Moreover, with reference to the doctrine of dynamic interpretation, when interpreting a provision of international space law such as Article VI of the Outer Space Treaty, in order to assess its 'ordinary meaning', today's ordinary language should be used Resulting from applying the doctrine of dynamic interpretation, the developments that have taken place in the law of international responsibility since 1967, when the Outer Space Treaty was adopted, can be taken into account for an interpretation of Article VI of the Treaty. Thus, the contemporary understanding of international responsibility resulting from the existence of an internationally wrongful act, which in turn depends on the establishment of breach and attribution, may be applied to the principle of international responsibility for activities in outer space.

When comparing the notions of international responsibility under international space law and under international responsibility law, it becomes apparent that the general understanding and conception is surprisingly similar. *Surprisingly*, in that the text of the UN treaties on outer space stems from the years 1967 to 1979, whereas the Articles on State Responsibility were adopted in 2001 and the Articles on Responsibility of International Organisations in 2011. There appears to be one main difference, relating to the applicable specific rules on attribution; however, this does not affect the *systématique* of international responsibility as such.

4.4.1. Legal analysis of international responsibility for activities in outer space with recourse to international responsibility law

One of the added values that recourse to international responsibility law offers to a legal assessment of international responsibility for activities in outer space is recourse to the structure or *systématique* of the Articles on State Responsibility and

Articles on Responsibility of International Organisations. First, for the establishment of international responsibility, the existence of an internationally wrongful act is assessed.[429] This is done by establishing a breach of an international obligation as well as its attribution.[430] In this regard, international space law provides that States bear international responsibility for assuring that (their) national activities are carried out in conformity with the Outer Space Treaty and international law.[431] The underlying conception of international responsibility in this regard under both fields of law is very similar, if not the same. Since international responsibility law is more elaborated with regard to the detailed assessment of international responsibility, the principle of international responsibility for activities in outer space takes recourse to the general law provided by both sets of the ILC Articles. There is no deviation but merely the additional benefit of clarifying the content of international responsibility for activities in outer space. The determination of international responsibility under Article VI of the Outer Space Treaty may thus presume that this international responsibility is based on the existence of an internationally wrongful act, and that said act may be established through assessment of breach and attribution.[432]

However, there is a clear difference between the law of international responsibility and international responsibility for activities in outer space when it comes to the legal regulation of attribution of conduct to the legal subjects. The difference is most clearly exemplified with regard to States: under international responsibility law, an express link between the actor and the State is required to allow the conduct to be attributable to the State – see Articles 4 to 11 of the Articles on State Responsibility. In contrast, under international space law, what is required is that an activity qualifies as a 'national activity,' and that this national activity is carried out in conformity with international law (including international space law). The rules on attribution of conduct are thus much 'wider' under international space law, as there is no requirement for the establishment of a sufficiently close link to the State: the sufficiently close link between the State and a non-governmental actor is presumed by the mere carrying out of space activities. This can be explained by space activities qualifying as ultra-hazardous activities, which suffices for the State party to the Outer Space Treaty to be attributed the conduct.

Interestingly, for the *lex specialis* on attribution to apply to the aforementioned legal assessment of international responsibility for activities in outer space, it is required that the State in question is indeed a party to the Outer Space Treaty. This is true in the absence of a determination of customary international law; however, it is not

[429] Art. 1 Articles on State Responsibility.

[430] Art. 2 Articles on State Responsibility.

[431] Art. VI in conjunction with Art. III Outer Space Treaty.

[432] Art. VI Outer Space Treaty in conjunction with Arts. 1 and 2 of the Articles on State Responsibility.

hard to imagine that Article VI can indeed be said to reflect customary international law. In the absence of such determination of customary international law, conduct of States that are not parties to the Outer Space Treaty, but nevertheless carry out space activities that involve a breach of an international obligation, would be assessed with recourse to the rules on attribution under international responsibility law, that is, Articles 4 to 11 of the Articles on State Responsibility.[433] Since, however, the Outer Space Treaty has a relatively large number of State parties, especially among spacefaring nations, this is not a predominant worry.

Once attribution and breach have been established, the next step – in accordance with the methodology of international responsibility law – would be assessment whether any of the circumstances precluding wrongfulness apply. Here, in the absence of a more specific regulation under international space law, international responsibility law applies. The legal assessment of State responsibility for (national) activities in outer space would thus examine whether any of Articles 20 to 25 of the Articles on State Responsibility apply: consent, self-defence, countermeasures, *force majeure*, distress, or necessity. Were one of those found to be applicable, the internationally wrongful conduct could not be considered internationally *wrongful*, thus there would result no finding of international responsibility for that State. The consequences of international responsibility would also apply as set out under international responsibility law, as there is no other more specific regulation under international space law.

A few remarks are in order on the conception of international responsibility as stipulated in instruments of international space law other than the Outer Space Treaty. As has been concluded above in Section 4.2 on international responsibility in all space law instruments, generally speaking, there does not appear any deviation in the understanding or conception of international responsibility for activities in outer space within the rules of space law. Rather, the consecutive instruments recall and affirm the principle first formulated in Article VI of the Outer Space Treaty. The Liability Convention contains a reference to international responsibility in its Articles III and IV, which address fault liability and damage to a third State by two or more jointly and severally liable launching States. The close link between the different concepts under international space law is hereby exemplified Preambular paragraph 2 of the Registration Convention recalls the Outer Space Treaty's affirmation of States bearing international responsibility for their national activities in outer space. Interestingly, no additional reference is included to States bearing international responsibility for assuring that national activities are carried out in

[433] Note that this assessment does not consider the potential reflection of a customary international law notion on international responsibility for activities in outer space, which – based on the relatively uniform repetition of the principle of international responsibility for activities in outer space in other space law instruments (legal and non-legally binding), might well exist. If this was true, non-State parties to Outer Space Treaty would fall under the 'wider' rules on attribution under international space law, too.

conformity with the provisions set forth in the Outer Space Treaty; nor to authorisation and supervision of activities carried out by non-governmental entities; nor any reference to the international responsibility of international organisations. Article 14(1) Moon Agreement is interesting, as it repeats in part Article VI of the Outer Space Treaty, but deviates from its original in some respects. Firstly, it states that "States Parties to this Agreement shall bear international responsibility for national activities on the Moon" and leaves out other celestial bodies, as referred to by Article VI Outer Space Treaty. This is noteworthy as the Moon Agreement also applies to other celestial bodies within the solar system, insofar as not more specific legal norms have been put in place with regard to those celestial bodies.[434] It does, however – unlike the Registration Convention – repeat the half-sentence of Article VI Outer Space Treaty on international responsibility for "assuring that national activities are carried out in conformity with the provisions" set forth in Outer Space Treaty or Moon Agreement; which is the element that – in the understanding of this study – constitutes the legal basis for establishment of international responsibility.

These five references to international responsibility provide the basis for the legal analysis of international responsibility for activities in outer space; enriched by their (at least, formally) non-legally binding counterparts in Section 4.5 below.

4.5. International responsibility for activities in outer space

Research question 2 concerned the relationship between international responsibility as a notion of international space law and as a notion of international responsibility law. As the analysis in this chapter has shown, both fields of law (international responsibility law and international space law) are applicable to activities in outer space and have an elaborated interrelationship, consisting of functional interaction and potential synergy, which is presented in the final part of the section. Thus, through analysing the synergy and interaction of both fields of law, a workable interpretation of international responsibility for activities in outer space is presented that can assist in (potential) cases involving space activities which are calling for a legal assessment of international responsibility.

The analysis in this chapter can be summarised as follows. International responsibility law as reflected in the Articles on State Responsibility and the Articles

[434] Art. 1 Moon Agreement states: "(1) The provisions of this Agreement relating to the Moon shall also apply to other celestial bodies within the solar system, other than the Earth, except insofar as specific legal norms enter into force with respect to any of these celestial bodies. (2) For the purposes of this Agreement reference to the Moon shall include orbits around or other trajectories to or around it."

on Responsibility of International Organisations applies to and is relevant for the establishment of international responsibility for activities in outer space. The notions of international responsibility under both international space law and international responsivity law are congruent. Only in respect of attribution of conduct to States does international space law formulate special rules, which are given preference by virtue of Article 55 of the Articles on State Responsibility or, as the case may be, Article 64 of the Articles on Responsibility of International Organisations.

On a more general level, State responsibility as formulated in Article VI of the Outer Space Treaty is a special conception that entails two main paradigms. Firstly, Article VI pronounces on the application of the law of State responsibility to activities in outer space (and here, a wide definition of space activities is implied, including the operation of space activities from Earth). The issue of attribution is dealt with differently under space law than under international responsibility law, with space law being the more special regime. Article VI in this regard stipulates that States are responsible for their national activities in outer space – whether they are carried out by governmental or non-governmental entities. The text of the provision states that these activities have to be in conformity with the Outer Space Treaty, which not only encompasses the provisions set forth in the Outer Space Treaty itself, but also international law in general including the UN Charter.[435]

In sum, this chapter has set out that the *principal* conception of international responsibility under both fields of law – international responsibility law and international space law – is congruent; both relate to the principle of international responsibility as it was formulated by the ICJ in *Chorzów* and further developed into a notion that, for international responsibility law, is reflected in the Articles on State Responsibility. However, the conception under international space law deviates in one important aspect from international responsibility law, which is based on the *lex specialis* principle giving preference to the application of the more special rules. Under international space law, the rules on attribution of conduct to an actor who has standing under public international law (States and international organisations) are special: these prescribe that the conduct of non-governmental entities can be attributed to a State. Here, an application of the *lex specialis* principle leads to the precedence of Article VI of the Outer Space Treaty over Articles 5 to 11 of the Articles on State Responsibility. This certainly applies to States parties of the Outer Space Treaty, as these are bound by the provisions of the Treaty. It may, moreover, also apply to State non-parties to the Treaty, as a convincing argument can be made that Article VI reflects customary international law due to its apparent acceptance over the years by the international community, the absence of persistent objectors,

[435] Art. III of the Outer Space Treaty.

and its almost *verbatim* origin in the Legal Principles Declaration, which by many is considered to reflect customary international law.[436]

With the identification of what is the notion of international responsibility for activities in outer space, we can now turn to setting the results in context of other norms or concepts of international space law.

[436] A study like this one is not competent to judge whether a codified rule under international law reflects customary international law; we will have to await a pronouncement of a body with international legal authority.

Chapter 5 – Relationship of international responsibility for activities in outer space with liability and registration

5.1. Introduction

The present chapter relates the findings of the previous chapter on international responsibility for activities in outer space to elements in other central principles of international space law, namely those of (1) international liability and (2) registration of objects launched into outer space. The two essential notions of international space law were chosen to exemplify the relationship between the secondary norms on international responsibility for activities in outer space with other primary norms. The principle of international liability for space activities is codified in its principle in Article VII of the Outer Space Treaty (1967) and further refined in the Liability Convention of 1972. The principle of registration of objects launched into outer space, correspondingly, is codified in Article VIII of the Outer Space Treaty and further refined in the Registration Convention of 1976.

The selection of these principles is based on the fact that Articles VI, VII, and VIII of the Outer Space Treaty are often referred to as key provisions concerning the relationship between States with their non-governmental entities.[437] For instance, the workshops on national space legislation held during Project 2001 and Project 2001 Plus – a successful collaboration between the University of Cologne and the German Aerospace Center which aimed to identify current space law and develop it further – identified five building blocks on national space legislation: (1) authorisation of space activities; (2) supervision thereof; (3) registration of space objects; (4) indemnification regulation (including liability for space activities); and

[437] See in addition to the following example of Project 2001 and Project 2001 Plus: 'Model Law on National Space Legislation' by the International Law Association and General Assembly Resolution A/RES/68/74, Recommendations on national legislation relevant to the peaceful exploration and use of outer space, 11 December 2013; both addressed in more detail in Chapter 6 considering activities in outer space activities carried out by non-governmental entities.

(5) additional regulation.[438] These building blocks, in turn, correspond to the elements in Articles VI (building blocks 1 and 2), VII (building block 4), and VIII (building block 3) of the Outer Space Treaty.[439]

More specifically, the present chapter does not compare the entire liability regime or the entire registration regime with international responsibility for activities in outer space, but it takes legal concepts in elements of the respective provisions and sets these in interrelation. In Chapter 3 we saw that for international responsibility as a secondary norm (Sentence 1 of Article VI of the Outer Space Treaty), '*national activities*' is a central element, because States parties of the Outer Space Treaty are internationally responsible for these. Moreover, Chapter 3 also showed that Sentence 2 of Article VI of the Treaty is a primary norm, that obliges the '*appropriate State*' to authorise and supervise space activities. These two elements have been chosen for an analysis in the present chapter with regard to international responsibility. For international liability, while the legal framework is briefly presented as a whole, the analysis concentrates on the concept of the '*launching State*' as an element of both Article VII of the Outer Space Treaty and Article I(c) of the Liability Convention. The legal framework for registration also hinges on the launching State, but it defines more narrowly than the liability regime in Article II(2) of the Registration Convention that when there is two or more launching States, only one of them shall register the space object. I will henceforth in this regard refer to the '*State of registry*', which is but one of the potentially several launching States.

Linking Article VI of the Outer Space Treaty to other norms of international space law is important in two respects, which relate to the primary and secondary norm aspects of the provision. First, with regard to the secondary norm on international responsibility, the activities of the modern space age may increasingly lead to situations involving the breach of a primary norm of space law as it may not be an easy task for States to supervise non-governmental entities in all situations. Second, regarding the primary norm in Article VI, there may be non-governmental activities that lead to situations where the appropriate State that has to authorise and supervise is also the State that qualifies as launching State, and situations where this is not so. These relationships stand at the centre of analysis in the present chapter.

It is important to note that when we consider the legal principles of responsibility, liability, and registration, we are considering norms of a constraining and

[438] Stephan Hobe, 'Project 2001 Plus: Global and European Challenges for Air and Space Law at the Edge of the 21st Century Session 4: Other Legal Matters II, Including Legal Aspects of Property Rights on the Moon' (2005) 48 Proceedings on the Law of Outer Space 327 p. 329. Project 2001 and Project 2001 Plus were two consecutive projects addressing challenges of space law cooperatively organised by the Institute of Air and Space Law (now: Institute of Air Law, Space Law and Cyber Law) of the University of Cologne and the German Aerospace Center (DLR).

[439] Building block 5 is disregarded here as it refers to additional regulation, which may concern any of the above-mentioned categories.

compelling character. Generally speaking, norms of international law can either empower, constrain, or compel States in various and at various levels.[440] While the freedom of exploration of outer space, as enshrined in Article I(2) of the Outer Space Treaty, constitutes a fundamental basis for conducting space activities under the system of the Treaty and thus constitutes an empowering norm, many of the principles codified in international space law set boundaries to that freedom in order to balance out the freedom of space exploration. These can be of a constraining or compelling nature. Those are for instance: the prohibition of national appropriation in Article II of the Outer Space Treaty; the imposition of existing international law to the realm of outer space in Article III of the Treaty; or the regulation of legal accountability – as enshrined in Article VI on international responsibility and Article VII and the Liability Convention on international liability.[441] The obligation to register objects launched into outer space as set out in Article VIII and the framework of registration under the Registration Convention also constitute a curtailment of the freedom of exploration, as States launching objects into outer space must fulfil a certain action as a consequence of the law. When we compare these principles, we are thus discussing norms that share a fundamental characteristic: that of being of a restrictive (constraining or compelling) character, rather than an empowering one. This constitutes the basis for the following analysis, as the underlying aims of the norms correspond, which positively affects the process of comparison.

What sets the legal regulation of international liability and registration apart from the legal regulation of international responsibility under international space law, is the degree to which the principles have been developed All three principles were included in the Outer Space Treaty as the first treaty on international space law ('Principles Treaty'). However, both Article VII and Article VIII were refined and further developed in their respective ensuing conventions. This stands in contrast to Article VI Sentence 1, which formulates the principle and was repeated or recalled in similar wording by some ensuing instruments, though it has never been further developed on its own by the Committee or expanded into a dedicated convention. As has been concluded from the analysis in previous chapters, Sentence 2 of Article VI constitutes its own primary norm of international space law. It is, as such, not a legal basis for international responsibility for activities in outer space. In the context of Sentence 2 of Article VI, which can be referred to as a legal basis for national space legislation, General Assembly Resolution 68/74 must be noted, which formulates recommendations for the adoption of national legislation for space

[440] Boyle, 'Relationship' in: *Environmental* (n 221).

[441] Smith and Kerrest state that the concept of international liability constitutes a counterpart to the freedom of exploration; Smith and Kerrest, 'Article VII' *Cologne Commentary on Space Law Volume I* (n 25) p. 130.

activities.[442] More specifically, it addresses authorisation and supervision of space activities; thus, elements that fall under Sentence 2 of Article VI. However, as Sentence 2 of Article VI constitutes its own primary norm and is not a legal basis for international responsibility, Resolution 68/74 is not relevant for an interpretation of international responsibility for activities in outer space in the sense of 'national activities'. However, the present chapter does address an assessment of the element 'appropriate State party' as enshrined in Sentence 2 of Article VI, and this is where Resolution 68/74 becomes relevant.

It can be summarised that the contrast between the respective degrees of legal development of the four elements compared in the present chapter has an influence on their comparison, as with 'launching State' (international liability) and 'State of registry' (registration of objects launched into outer space) we are provided with more legal refinement as opposed to 'national activities' and 'appropriate State party' (for the latter, Resolution 68/74 provides some refinement).

Recalling the review of space law literature, international responsibility and liability are at times treated in one breath, and can to a certain extent be considered related This can most likely be traced back to their legal development in the last decades under international law, which provided a conceptualisation only relatively recently, as well as to their analogies in domestic law, which showcase various concepts ranging from fault to strict liability and responsibility. Moreover, as shown below, the Liability Convention to a certain extent creates a connection between the two notions by stipulating in Articles III and IV(1)(b) that States may incur liability for persons for whom they are responsible.

As can be inferred from the above, the clarification of the relationships between the three notions – international responsibility, international liability, and registration of objects launched into outer space – is a *sine qua non* with regard to any comprehensive assessment of international responsibility for activities in outer space. Both international liability and registration of space objects hinge on the concept of the launching State: while under the principle of international liability, several States can be designated launching States, for the registration of objects launched into outer space, only one launching State can register such an object. The relationship between the principle of responsibility for activities in outer space with those elements is at focus of research question 3 at the centre of the present chapter.

[442] General Assembly Resolution A/RES/68/74, Recommendations on national legislation relevant to the peaceful exploration and use of outer space, 11 December 2013.

Research question 3 reads:

> How do the findings of research question 2 relate to other central notions of international space law, namely:
>
> (a) the concept of 'launching State' under Article VII and of the Outer Space Treaty and the Liability Convention?
>
> (b) the concept of 'State of registry' under Article VIII of the Outer Space Treaty and the Registration Convention?

The legal regimes applicable to international liability for space objects and registration of objects launched into outer space are considered more closely below. Section 5.2 below maps the historical evolution of international liability for damage resulting from space activities and describes the principal provisions and scope of the principle. Then, the respective overview is offered for registration of objects launched into outer space in Section 5.3. Following this, both principles are set in relation to international responsibility (Section 5.4). Finally, Section 5.5 summarises the findings to provide an answer to research question 3.

5.2. Liability for space activities

The liability regime under international space law is set out by the Outer Space Treaty and the Liability Convention, and is confined to State liability. International liability in the Outer Space Treaty is addressed in its Article VII. The provision sets out the general principle of international State liability for space activities and fulfils a central role in the system of the Outer Space Treaty. Together with Article VI, it ensures that States conducting space activities are internationally accountable.

The general principle of international State liability in Article VII was expanded and detailed by the Liability Convention, which was adopted by the General Assembly in 1971 and entered into force in 1972. The Convention confirms and refines the general principle of State liability, and in broad strokes defines a strict liability regime for damage occurring on Earth, including airspace, and a fault liability regime for damage occurring elsewhere (i.e., outer space).

This section considers in more detail various aspects of international liability, starting with the conception of international liability under international space law (Sub Section 5.2.1). The considerations include the process of international agreement that led to the adoption of Article VII of the Outer Space Treaty and the consensus that was reached as a result of the process. This is followed by an analysis of the relationship between Article VII of the Outer Space Treaty and the subsequent Liability Convention, the latter being regarded *lex specialis* in relation to the former, and an overview of the scope and conception of international liability under international space law.

Sub Section 5.2.2 then summarises international liability as regulated under public international law, thus applicable to activities on Earth. Similar to its work on international responsibility, the ILC also worked on international liability and adopted draft articles for a legal regulation. Interestingly, the public international legal conception (i.e., earth-bound activities) differentiates between hazardous and non-hazardous activities on Earth. Here, a conceptual analogy can be drawn between the 'strict' responsibility regime applicable to outer space due to the ultra-hazardous nature of activities in outer space. Like in the previous chapter, which compared the application of the law of international responsibility regarding outer space vs. Earth-bound activities, there then follows a comparison of conceptions in different special fields of international law: international space law and international liability law.

5.2.1. State liability under international space law

A legal regulation of international liability was part of the early discussions of COPUOS, and can be considered to have been instrumental for international space law from the beginning.

Drafting history of international liability

Liability as a principle was already formulated in the Legal Principles Declaration, which – as mentioned above – was a non-legally binding formulation of principles applicable to space activities that preceded the codification era of international space law.[443] In Principle 8, it is stated:

> Each State which launches or procures the launching of an object into outer space, and each State from whose territory or facility an object is launched, is internationally liable for damage to a foreign State or to its natural or juridical persons by such object or its component parts on the Earth, in air space, or in outer space.

This principle already contains the core characteristics that the later legal regulation of international liability for activities in outer space would follow. Firstly, the principle establishes international liability, and links it to the existence of damage. Secondly, the concept of international liability as understood by the Legal Principles Declaration creates liability towards third parties, and thus limits itself to third-party liability. Thirdly, the Principle 8 of the Legal Principles Declaration mentions the

[443] Legal Principles Declaration of 1963; "non-legally binding" here refers to its formal status; as (at least part of) the Declaration has been argued to contain customary international legal norms. While this may well be so, it has to be pointed out here that it is academics, thus subsidiary means in the meaning of Art. 38 ICJ Statute, who have expressed those views and there is not (yet) any other sources of Art. 38 ICJ Statute clarifying the legal status of the Legal Principles Declaration.

four-fold definition of the launching State (launching, procuring the launch, launch taking place from territory, or facility).

This can be explained by the negotiations for the later conclusion of the Liability Convention, which at the time of the adoption of Legal Principles Declaration had already begun. Already in 1959, the Committee – then still an *ad hoc* committee – stated the main principles in its report.[444] After the transition of the Committee to a permanent international body in 1959, liability for damage resulting from space activities, together with international responsibility and the return of astronauts, was one of the paramount legal issues.[445] Discussions on liability were strongly influenced by the stance of the United States, in alliance with other Western countries, to formulate practicable rules without the discussion of basic principles applicable to outer space as sought by the USSR.[446]

Accordingly, Principle 8 of the Legal Principles Declaration heavily influenced the codification of the principle of international liability for activities in outer space in the Outer Space Treaty. The Outer Space Treaty, being a principles treaty as mentioned above, enshrines the principle of liability for damage resulting from outer space activities in its Article VII with the following wording:

> Each State *Party to the Treaty that* launches or procures the launching of an object into outer space, *including the Moon and other celestial bodies*, and each State *Party* from whose territory or facility an object is launched, is internationally liable for damage to *another State Party to the Treaty* or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, *including the Moon and other celestial bodies*.[447]

In comparison to the Legal Principles Resolution, the changes in the text of Article VII can be considered editorial. The change from "each State" to "each State Party to the Treaty" refer to the application of the Outer Space Treaty, which, contrary to a General Assembly resolution addressing all UN States, is limited in scope of application to its parties. The addition to "outer space" of "including the Moon and other celestial bodies" also mirrors the language of the Outer Space Treaty in other provisions and provides for further clarification that indeed the Moon and celestial bodies fall under the regime of the treaty as opposed to mere void outer space. The underlying established legal principle of international liability was not altered with adoption of the Outer Space Treaty, but now became legally binding.

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[444] UN Doc. A/4141, ad hoc COPUOS, 'Report of the *Ad Hoc* Committee on the Peaceful Uses of Outer Space' 14 July 1959 p. 64.

[445] See for more detail: Smith and Kerrest, 'Article VII' (n 25) p. 130.

[446] Ibid. p. 131.

[447] Art. VII Outer Space Treaty (emphasis added).

The legal principle adopted is one of third-party liability. It is an instrument of international law, in that it does not consider damage to a State party's own nationals, compensation of which would fall under domestic law of the respective State. It is victim-oriented towards other affected States and formulates a clear legal obligation to compensate for damage caused. Again, here we can see the ultra-hazardous nature of space activities influencing the legal regulation, as could be seen with the heightened conception of international responsibility for activities in outer space.

Already before the adoption of the Legal Principles Resolution in 1963, the United States provided the first draft of the Liability Convention in 1962 and an amended draft in 1964, which set forth many of the principles that found their way into the Convention. In the following years, other countries proposed drafts of the Convention. Article VII was expanded into the 1972 Liability Convention, which was considered and negotiated by the Legal Subcommittee of COPUOS between 1963 and 1972. It was adopted by the UN General Assembly in 1971 (General Assembly resolution 2777 (XXVI)), opened for signature on 29 March 1972, and entered into force on 1 September 1972.[448] The Liability Convention refines the principle of State liability more specifically by stipulating absolute and fault liability depending on where in relation to Earth the damage takes place. While the Outer Space Treaty has more parties than the Liability Convention,[449] ratification of the Convention is open to all States and does not depend on a ratification of the Outer Space Treaty. The principle of international liability for damage resulting from space activities is viewed by many as reflecting customary international law.[450]

While non-legally binding instruments do not form part of the legally bindings instruments for activities in outer space in their own right, they may be of relevance in the interpretation of treaties.[451] In 2004, the Committee adopted Resolution 59/115 on the application of the concept of the launching State. In its operative part, the resolution:[452]

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[448] See for more information on the Liability Convention UNOOSA's dedicated webpage: 'Liability Convention' <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introliability-convention.html> accessed 27 October 2023.

[449] 114 State parties to the Outer Space Treaty; 98 State parties to the Liability Convention (27 October 2023).

[450] Smith and Kerrest, 'Article VII' (n 25) p. 136; Dimitri Maniatis, 'The Law Governing Liability for Damage Caused by Space Objects' (1997) XXII Annals of Air and Space Law 369 p. 376. Note that this affects also Principle 8 of the (non-legally binding) Legal Principles Declaration, which thus can be considered to reflect customary international law.

[451] Refer to the discussion of non-legally binding instruments in Chapter 1 1.6 *Theory and methodology*.

[452] General Assembly Resolution A/RES/59/115, Application of the concept of the "launching State", 10 December 2004.

1. *Recommends* that States conducting space activities, in fulfilling their international obligations under the United Nations treaties on outer space, in particular the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, the Convention on International Liability for Damage Caused by Space Objects and the Convention on Registration of Objects Launched into Outer Space, as well as other relevant international agreements, consider enacting and implementing national laws authorizing and providing for continuing supervision of the activities in outer space of non-governmental entities under their jurisdiction;

2. Also recommends that States consider the conclusion of agreements in accordance with the Liability Convention with respect to joint launches or cooperation programmes;

3. Further recommends that the Committee on the Peaceful Uses of Outer Space invite Member States to submit information on a voluntary basis on their current practices regarding on-orbit transfer of ownership of space objects;

4. Recommends that States consider, on the basis of that information, the possibility of harmonizing such practices as appropriate with a view to increasing the consistency of national space legislation with international law;

5. Requests the Committee on the Peaceful Uses of Outer Space, in making full use of the functions and resources of the Secretariat, to continue to provide States, at their request, with relevant information and assistance in developing national space laws based on the relevant treaties.

The resolution confirms the existing liability regime and addresses issues that stem from the way in which space activities were executed at the time. As the then-visible practices of conducting space activities have intensified rather than diminished, Resolution 59/115 remains of value for the modern space age. However, the resolution does not offer guidance for the application of the legal concept of launching State and its four criteria.[453]

The launching State

The concept of the launching State is included in the Liability Convention as the State which launches or procures the launching of a space object or from whose territory or facility a space object is launched.[454] The kinds of liability are further refined as liability for damage caused by a space object on the surface of the Earth

[453] Maxtalen Sánchez Aranzamendi, Frank Riemann, and Kai-Uwe Schrogl, 'Launching State Resolution: Historical Background and Context' in: Stephan Hobe, Bernhard Schmidt-Tedd, Kai-Uwe Schrogl and Peter Stubbe (asst. ed), *Cologne Commentary on Space Law Volume III; CoCoSL* (Heymanns 2015) p. 369.

[454] Art. I (c) Liability Convention.

or to aircraft flight, for which State parties are absolutely liable,[455] and for damage being caused elsewhere than on the surface of the Earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, for which State parties bear fault liability.[456] Fault liability is usually defined by certain standards of care, which have not been ultimately defined at the international level.

The Liability Convention as lex specialis in relation to Article VII of the Outer Space Treaty

The Liability Convention offers, if the parties concerned agree, the establishment of a Claims Commission, which is at liberty to issue a binding decision in relation to a damage claim presented under the Convention.[457] Some national State parties to the Convention have in the process of acceding to the Convention issued a declaration stating that they will accept the decision of a Claims Commission established under the Liability Convention as legally binding.[458]

Interestingly, damage under the notion of international liability under the Outer Space Treaty, as well as the Liability Convention, is a constitutive element of international liability, meaning that liability is established in the case of occurrence of damage, and *only* then. With this, the principle of liability for activities in outer space, as already negotiated in the early 1960s during the negotiations of the Legal Principles Declaration, anticipated the conception of international liability under international liability law as we have it today, as a result of the work of the ILC with its constitutive element of damage.

Damage prevention in this regard is an interesting issue to consider, as the expectation on a space actor with regard to the prevention of damage will be assessed by a certain standard of care. However, this only concerns cases where damage has in fact occurred In all other cases, the discussion moves to the currently very topical discussion on space traffic management (STM).

5.2.2. International liability under public international law

The consideration of international liability under public international law is limited here to its discussion at the ILC, as comparable to the ILC's work on international

[455] Art. II Liability Convention.

[456] Art. III Liability Convention.

[457] Art. XIV Liability Convention.

[458] See for instance Sweden. See also: Niklas Hedman, 'Swedish Legislation on Space Activities' in: Christian Brünner and Edith Walther, *Nationales Weltraumrecht – National Space Law* (Böhlau 2008) p. 73.

responsibility; this constitutes the most up-to-date conception of international liability that is based on a certain degree of international consensus.

The ILC started working on international liability after commencing its work on international responsibility in the 1970s. The basic and most prominent feature of its understanding of international liability is based on a conceptual distinction between internationally lawful and non-internationally lawful activities that lead to the occurrence of damage. While under the current conception of international responsibility, damage may arise but does not necessarily have to, and international responsibility exclusively can be incurred for internationally wrongful acts – thus, the activity itself has to be in contradiction of the international legal obligations of a State and be internationally *unlawful* – the conception of international liability as introduced by the ILC is juxtaposed and international liability can only be incurred for activities that are internationally *lawful*.

During its work, the ILC subdivided the topic into *prevention* of transboundary damage from hazardous activities, and *international liability in case of loss* from transboundary harm arising out of hazardous activities.[459] It concluded its work in the 2000s, and as a result, the whole time period of the topic under ILC consideration follows after the adoption of the Outer Space Treaty. The conception of international liability for activities in outer space therefore precedes its refinement under public international law, similar to the Articles on Responsibility of States for Internationally Wrongful Acts.

The ILC's contribution in defining and developing international liability has greatly influenced the modern discourse on this subject. Its work exemplifies the evolution of liability within the realm of public international law, shaping the way States and organisations perceive and address the consequences of lawful activities resulting in transboundary harm.

This works equally well in the conceptual distinction of responsibility and liability in international space law, as liability from the early space law negotiations onwards was considered to be dependent on damage; a similar approach to that adopted in later years at the ILC with respect to international law in general.

[459] See the Analytical Guide to the Work of the International Law Commission. For prevention of transboundary damage from hazardous activities, see <https://legal.un.org/ilc/guide/9_7.shtml> accessed 27 October 2023; for international liability in case of loss from transboundary harm arising out of hazardous activities, see <https://legal.un.org/ilc/guide/9_10.shtml> accessed 27 October 2023.

5.3. Registration of space objects

Registration of objects launched into outer space is an important instrument under international space law, as it allows for the exercise of jurisdiction and control over a space object by its State of registry. It is more precise to speak of registration of objects launched into outer space vs. registration of space objects. This is because registration of a space object depends on its registration under national law, and therefore, the national definition of 'space object' becomes decisive. Not every State operates under the same definition of 'space object', and moreover, international space law is not very helpful in this regard as the definition of a space object here is somewhat circular ("a space object is a space object including its component parts"[460]). Addressing registration of 'objects launched into outer space', avoids the possibility of excluding an object based on the fact that it does not qualify as a space object under its applicable domestic legal system. In this study, sometimes registration of 'space objects' is used because of the shorter wording, but it refers to registration of 'objects launched into outer space'.

5.3.1. Drafting history of registration of objects launched into outer space

The international legal system of registration of objects launched into outer space is twofold, due to its historical evolution. Firstly, Article VIII of the Outer Space Treaty enshrines the principle of registration of objects launched into outer space, and is based on its predecessor principle in the Legal Principles Declaration. It declares that the State party that registers its space object retains jurisdiction and control over said object. It is important to note here the establishment of a national *registry* of space objects, which will be maintained by the State or registry, and which constitutes the primary link to Article VIII of the Outer Space Treaty. Additionally, States are incentivised, once their space objects are registered nationally, to submit the relevant information internationally to the UN Secretary-General. The UN Secretary-General has delegated the keeping of the international *register* to UNOOSA, who offer on their website a searchable online index with registration information submitted to them and additional relevant information that they have learned via other sources.[461] The index states the source of information and links to the registration documents, where applicable. The international register

[460] Art. I(b) Registration Convention, which reads: "the term 'space object' includes component parts of a space object as well as its launch vehicle and parts thereof".

[461] The UNOOSA online index is available at <https://www.unoosa.org/oosa/osoindex/search-ng.jspx?lf_id=> accessed 27 October 2023. An online version of the international register is currently under development.

serves the transparency and facilitation of international cooperation of space activities globally.

There are two main ways of submitting registration information to the UN Secretary-General. In practice, the UN Office for Outer Space Affairs (UNOOSA) discharges the Secretary-General of his duty. Under the system of the Registration Convention, States parties to the Convention may submit registration information under Article IV. Additionally, there is a mechanism via which States that have not (yet) ratified the Registration Convention are able to submit their national registration information.

Before agreement on the Legal Principles Declaration, but doubtlessly emerging from the same efforts, COPUOS and thereafter the General Assembly adopted Resolution 1721 (XVI) 'On International co-operation in the peaceful uses of outer space'. This was referred to by USSR Chairman of the Council of Ministers Khrushchev in his letter to United States President Kennedy in March 1962 as "a resolution concerning the initial principles of space law".[462] It still serves today in its part B as the legal basis for submission of registration information on objects launched into outer space for States that are not party to the Registration Convention.

General Assembly Resolution 1721B of 20 December 1961 constitutes a precursor to the Registration regime set up by Article VIII of the Outer Space Treaty and the Registration Convention. It requests UNCOPUOS, in cooperation with the UN Secretary-General and the Secretariat, to provide for voluntary exchange of information relating to outer space activities. As Resolution 1721B has been adopted by consensus by COPUOS and the UN General Assembly, it can be considered to be accepted by a large part of the international community and may potentially serve as a customary international legal basis for the exchange of information. It is still of value today as an instrument of international space object registration for any State not being a party to the Registration Convention.

Article VIII enshrines the principle in the following wording:

> A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth. Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be

[462] UN Doc. A/AC.105/2, 'Letter dated 21 March 1962 from the Deputy Permanent Representative of the Union of Soviet Socialist Republics Addressed to the Acting Secretary-General', forwarding a letter entitled 'Message dated 20 March 1962 from Chairman Khrushchev to President Kennedy on the Question of the Exploration and Use of Outer Space' 21 March 1962 p. 5.

returned to that State Party, which shall, upon request, furnish identifying data prior to their return.

Registration of objects launched into outer space[463] entails two main aspects: registration in the national registry of space objects and submission of registration information to the international register that is maintained by the UN Secretary-General, who has delegated this responsibility to UNOOSA. According to the Registration Convention, States parties are required to establish a national space object registry and to notify the UN Secretary-General (UNOOSA) thereof.

In 2007, COPUOS and the General Assembly adopted the Registration Practice Resolution, which focuses on enhancing the practice of States and international intergovernmental organisations in submitting registration information.[464] It encourages adherence to the Registration Convention, emphasising that universal accession to the Convention benefits the establishment of registries, procedures, and information sharing, and contributes to uniformity in space object registration. The resolution recommends harmonising registration practices, suggesting uniform information standards and additional data, including orbital information, decay dates, and links to official records. It highlights the importance of collaboration among States and launch service providers to ensure proper registration. In cases of changing space object supervision, it advises on providing relevant information, such as the date of change, new ownership, orbital position, and function changes. To facilitate the registration process, the resolution tasks UNOOSA with creating a model registration form, making focal points' contact details public, and establishing web links to appropriate registries.

In the following, based on the parameters in the Registration Convention and the Registration Practice Resolution, UNOOSA provided a template to facilitate registration of space objects in the international register of space objects. Already General Assembly Resolution 1721 B (XVI) mentioned the issuance of relevant parameters for information transmission to the UN, which were further refined by the Registration Convention.

[463] With regard to the terminology used, this manuscript uses registration of objects launched into outer space interchangeably with registration of space objects; however, it must be observed that object launched into outer space is the preferable wording due to (a) there being a somewhat circular definition of space object under international space law ("the term 'space object' includes component parts of a space object as well as its launch vehicle and parts thereof"; Art. I(d) Liability Convention and Art. I(b) Registration Convention; and (b) any applicable national definition of space object might define it more narrowly so as to exclude an object that was launched into outer space – thus by referencing the latter, all is included.

[464] General Assembly Resolution A/RES/62/101, Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects, 17 December 2007.

5.3.2. Conception of registration of objects launched into outer space

Registration of space objects is, like international responsibility for activities in outer space, a foundational principle of international space law, and was incorporated both in the Legal Principles Resolution and the Outer Space Treaty at the onset of the space age. It addresses one of the most crucial aspects of outer space activities: transparency of activities in outer space in a level playing field where the participating actors were, and are, of equal standing and could gain national security advantages through not disclosing some of their capabilities.

The importance of registration in the international legal framework for space activities is mainly derived from the fact that the registering State of a space object retains jurisdiction and control over said object. In a realm where national jurisdiction cannot be declared territorially,[465] jurisdiction and control over a State's space object is all the more important, especially when considering national security interests.

It is difficult to trace the degree of registration of space objects in national registries, as these are not always kept publicly and often in the official language of the State maintaining the registry. However, the submission of international registration information to the Secretary-General offers a good insight into the status of space objects in domestic legal orders. At the international level, a relatively high percentage of space objects are registered.

A differentiation must be made between functional and non-functional objects. While registration of a space object *per se* does not depend on its functionality – jurisdiction and control can also be retained for non-functional space objects – the functionality is part of the voluntary information provided by States during the registration process and supports the aim of the registration regime to foster transparency of space activities at the international level.

Table 15 below provides an overview of registration information on space objects furnished in 2021 and 2022.[466]

[465] Art. II of the Outer Space Treaty.

[466] Unfortunately, for 2022, most data was only available until September.

Table 15 **Increase in space objects**		
	2021	***2022 (counting until September)*** ***Potential recipient State(s)***
Launched	1,812[467] launched	1,850[468] launched
Functional space objects	1,895 functional	1,285 functional
Non-functional space objects	41 non-functional	31 non-functional
Re-entry notifications	172 re-entry notifications	49 re-entry notifications

UNOOSA states that 87% of all space objects launched into space are registered with the UN register of space objects.[469] This only relates to the submission of registration information to the UN; the actual domestic, legally effective numbers are not deductible from these. However, it can be assumed that objects that are submitted to the international register have been included in the national registry prior to the submission, therefore, the estimated number of registered objects under national registries is likely higher. With the enormous increase in launches – 35% of all space objects were launched within the last 3 years[470] - there is a simultaneous trend of decreasing delays in submitting registration information at the international level. See Figure 4 below for an overview of the developments over the years.

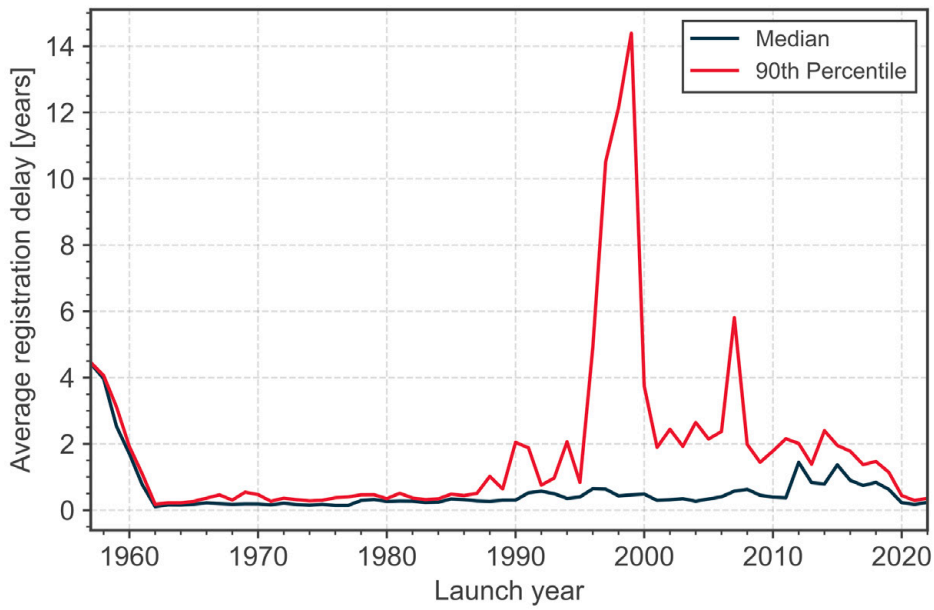
[467] UNOOSA, 'Search OSOidx' <https://www.unoosa.org/oosa/osoindex/search-ng.jspx?lf_id=#?c=%7B%22filters%22:%5B%7B%22fieldName%22:%22object.launch.dateOfLaunch_year_s%22,%22value%22:%22*2021*%22%7D%5D,%22sortings%22:%5B%7B%22fieldName%22:%22object.launch.dateOfLaunch_s1%22,%22dir%22:%22desc%22%7D%5D,%22match%22:%22%22,%22termMatch%22:%222021%22%7D> accessed 27 October 2023.

[468] The launch figure for all of 2022 was 2,478 according to UNOOSA: UNOOSA, 'Search OSOidx' <https://www.unoosa.org/oosa/osoindex/search-ng.jspx?lf_id=#?c=%7B%22filters%22:%5B%7B%22fieldName%22:%22object.launch.dateOfLaunch_year_s%22,%22value%22:%222022%22%7D%5D,%22sortings%22:%5B%7B%22fieldName%22:%22object.launch.dateOfLaunch_s1%22,%22dir%22:%22desc%22%7D%5D,%22match%22:%22%22,%22termMatch%22:%222022%22%7D> accessed 27 October 2023. See also: 'UN Office for Outer Space Affairs and United Kingdom Launch New Partnership on Registering Space Objects' (*United Nations: Information Service Vienna*) <https://unis.unvienna.org/unis/en/pressrels/2022/unisos574.html> accessed 27 October 2023. See also on the creation of space object registration data bases: S Le May and others, 'Representing and Querying Space Object Registration Data Using Graph Databases' (2020) 173 Acta Astronautica 392.

[469] See: "To date approximately 87% of all satellites, probes, landers, crewed spacecraft and space station flight elements launched into Earth orbit or beyond have been registered with the Secretary-General"; UNOOSA, 'United Nations Register of Objects Launched into Outer Space' <https://www.unoosa.org/oosa/en/spaceobjectregister/index.html> accessed 27 October 2023.

[470] 'UN Office for Outer Space Affairs and United Kingdom Launch New Partnership on Registering Space Objects' (*United Nations: Information Service Vienna*) <https://unis.unvienna.org/unis/en/pressrels/2022/unisos574.html> accessed 27 October 2023.

Figure 4
ESA: Delay between launch and registration by launch year[471]



While in the decade of 2010 to 2020, there was a historical high in delayed registration submissions (see grey median line in Figure 4), this tendency is currently subsiding and it seems, registration submissions are given more importance. This fits well during the modern space age where the increase in space objects necessitates a transparent and expeditious submission of registration information.

Registration of objects launched into outer space – by (one of) the launching State(s) – entails that the State of registry retains jurisdiction and control over the object. Herewith, a link to the jurisdiction of the State of registry is created. This in turn has consequences that link back to international responsibility in Article VI Sentence 1 of the Outer Space Treaty. This has also been noted by commentators.[472]

[471] ESA Space Debris Office, 'ESA's Annual Space Environment Report', Issue 7.1, 12 September 2023, GEN-DB-LOG-00288-OPS-SD, p. 51 <https://www.sdo.esoc.esa.int/environment_report/Space_Environment_Report_latest.pdf> accessed 27 October 2023.

[472] Bernhard Schmidt-Tedd, Nataliya Maysheva, Olga Stelmakh, Leslie Tennen and Ulrike Bohlmann, 'Article II (National Registries/Registration Obligation)' in: *Cologne Commentary on Space Law Volume II* (n 21) p. 249-297; Gabriel Lafferranderie and Daphné Crowtheer (eds), *Outlook on Space Law over the Next 30 Years* (Kluwer Law International 1997).

5.4 The concepts of the launching State and the State of registry in relation in relation to international responsibility for activities in outer space

The present section relates the findings of research question 3 to the elements of international space law of 'launching State' and 'State of registry'. Below follows an analysis of the three notions – international responsibility, international liability, and registration of objects launched into outer space – compared in their core elements. While Article VI of the Outer Space Treaty refers to the elements 'national activities' and the 'appropriate State', the principle of international liability as enshrined in Article VII of the Outer Space Treaty as well as the Liability Convention refer to the four-fold definition of the 'launching State' – as does the principle of registration of objects launched into outer space based on Article VIII of the Outer Space Treaty and the Registration Convention.

5.4.1. Applying the methodology of 'qualifying factor'

Referring to the methodology of a differentiation of legal rules as introduced in Chapter 1, with the qualifying factor referring primarily to either *activities* in outer space or the space *actor*, an important difference between the elements concerned can be distinguished. The concepts of launching State and State of registry in Articles VII and VIII of the Outer Space Treaty as well as the Liability Convention and Registration Convention, confer a *status* on the respective State, which results from a fact that occurs at the moment of launch and therefore is 'frozen' in time. Applying the temporal dimension of this methodology leads to the conclusion that this concept is *static* and the qualifying factor here relates to the space *actor*. In other words, it is the actor – the launching State – that is the necessary connecting factor to the design of the provision. Since the State of registry as a concept is based on the concept of the launching State, albeit with the difference being that it can be but one of the original launching States, the same reasoning applies here as well.

This is different with regard to Article VI of the Outer Space Treaty, where we are confronted with a more complex provision. At the outset, Article VI of the Outer Space Treaty references two notions: that of 'national activities', with regard to incurring international responsibility of States (secondary norm), and that of the 'appropriate State Party to the Treaty' as the relevant State to authorise and continuously supervise the space activity. Based on the distinction of primary and secondary norms, it can be seen that Article VI here formulates two distinct legal norms in its Sentences 1 and 2. The fact that these norms are subsumed in one

provision does not affect their individual existence as separate legal norms. As mentioned at the outset of the study, a 'provision' describes the form of codification, and not its content; it may thus house more than one legal norm or rule. As Sentences 1 and 3 of the Outer Space Treaty constitute differentiated legal norms the qualifying factor methodology must be applied to them individually. 'National activities' already linguistically, but also content-wise, concern a kind of activities and therefore relate to the connecting factor of *activities*. The concept is therefore one of a *dynamic* characteristic. In contrast, 'appropriate State' is the allotment of a *status* and therewith has a qualifying factor of relating to the *actor*.

In sum, three of these elements have a static characteristic, and one, the 'national activities', has a dynamic one. Legal concepts that share the same qualifying factor will not produce difficulties in being compared or simultaneously applied Application of the qualifying factor methodology thus reveals that 'appropriate State party', 'launching State', and 'State of registry' can be compared and put into relation with one another. A State can at the same time be the appropriate State Party to authorise and continuously supervise a non-governmental space activity under its jurisdiction as well as the launching State for the respective space object as well as State of registry, if so agreed with the other launching States.

However, when the qualifying factors differ, it is more complex to assess the interrelationship of the legal concepts. Thus, applying the qualifying factor methodology here reveals that a comparison or application of 'national activities' with any of the other three named concepts will not lead to straight-forward results. In this way, a State that conducts a national space activity – thus a space activity under its jurisdiction, be it governmental or non-governmental – may not necessarily be the launching State or State of registry for an involved space object.

Table 16 below provides an overview of the qualifying factors of the concepts discussed.

Table 16 **Elements under international space law selected for this chapter**				
Legal basis		***Concept***	***Addresses primarily***	***Relates to qualifying factor***
Article VI Outer Space Treaty		'National activities'	Space activity	National activity (jurisdiction): ***activity/dynamic***
		'Appropriate State' (with regard to activities of non-governmental entities)	Space actor (State)	Appropriate State (jurisdiction): ***actor/static***
Article VII Outer Space Treaty	Liability Convention	'Launching State' (all launching States involved in the launch accumulatively)	Space object	Launching State: ***actor/static***
Article VIII Outer Space Treaty	Registration Convention	'State of registry' (based on 'launching State', only one State)	Space object	State of registry/launching State: ***actor/static***

A good illustration of the relationship between the concepts occurs in situations, where space activities are taken over by one State from another. It is not uncommon in modern space activities, especially with respect to commercial activities, that satellites are sold while in orbit. The operational activity is thus sometimes transferred to a new State, or non-governmental entity thereof. For the determination of who is the internationally responsible State with regard to that activity, these transactions hardly cause any juridical issues. As international responsibility hinges on the dynamic concept of 'national activities', when the activity is transferred to another State, so is its legal evaluation and thus, the acquiring State becomes the State that can potentially incur international responsibility in case of existence of an internationally wrongful act. However, these transactions can potentially cause difficulties with regard to the purview of the international liability regime under international space law. Two situations must be distinguished in this regard. Firstly, there are instances where the transaction does *not* pose any difficulties for application of international space law: when the purchasing State (or appropriate State of a non-governmental entity) was already among the original launching States, the qualification of 'launching State' persists and the acquiring State will be internationally liable for damage resulting from the operation of the satellite in question. However, when the acquiring State is not one of the original launching States, the legal *systématique* of the space international liability regime displays its limits, as the State will be operating a satellite while at the same time not being liable for damage resulting from its operation. States have found a way around this

by resort to bilateral agreements, which transfer the obligation of compensation on the acquiring State. However, the *legal* assessment under *international* space law of which State qualifies as launching State is thereby not affected. This issue will be revisited below in the present sub section with a suggestion of how 'launching State' could be interpreted in the future.

In sum, analysing the traditional view on the topic clarifies once more the *statics* of the concept of the launching State. In comparison to the dynamic element of 'national activities', we can see a notable difference: were a national activity taken over by another State's government or non-governmental entity, the potential incurrence of international responsibility would move along with the activity to the acquiring (new) State without any conceptual difficulties in the legal concepts.

Legal independence of concepts that do not share a qualifying factor: 'launching State' and 'national activities'

The relationship between international responsibility as codified in Article VI of the Outer Space Treaty, here considered by virtue of its element of 'national activities', and international liability for activities in outer space, as contained in Article VII of the Outer Space Treaty and the Liability Convention, hinging on the concept of the 'launching State', is characterised by legal independence. The two elements are structured and set up with a different character and may or may not *de facto* overlap. Meaning, a State that qualifies as launching State for a particular space object or space activity, is not necessarily the State that carries out the national activity and thus bears international responsibility for said activity. Also in reverse, a State that qualifies as the State whose national activity is an activity in outer space, and therefore bears international responsibility, is not necessarily the State (or one of the States) that qualifies as launching State.

There are, however, situations in which those qualifications may overlap or coincide. It is possible that a State, whose national activity is a certain activity in outer space – thus, the internationally responsible State – also qualifies as launching State, because it launched or procured the launch of the space object or it was launched from its territory of facility. The qualifications are thus not mutually exclusive, but purely legally *independent* of each other. The legally independent overlap is depicted in Table 17 below.

Table 17 **Overlap of the two qualifications internationally responsible and internationally liable State**				
Principle under international space law	***Legal basis***		***Notion under international space law***	***Potential recipient State(s)***
International responsibility	Article VI Sentence 1 Outer Space Treaty		National activities	**National activities**: jurisdiction of State
Authorisation and supervision of non-governmental entities	Article VI Sentence 2 Outer Space Treaty		Appropriate State	**Appropriate State**: jurisdiction of State
International liability	Article VII Outer Space Treaty	Liability Convention	Launching State	**All original launching** States remain potentially liable for damage
Submission of international registration information to the UN	Article VIII Outer Space Treaty	Registration Convention	Launching State	Only **one of the original launching** States can register an object launched into outer space

It may be recalled here from analysis in earlier chapters, that methodologically structured legal analysis leads to the result that the qualification as internationally responsible State depends on the activity in outer space being a *national* activity of the State, as per Article VI Sentence 1 of the Outer Space Treaty and the previous analysis in Chapter 4. It does not depend on the State qualifying as the appropriate State as per Article VI Sentence 2 of the Outer Space Treaty, as the appropriate State is the State who authorises and continuingly supervises activities of its non-governmental entities – these activities do not categorically have to qualify as national activities as referred to in Sentence 1 of Article VI of the Outer Space Treaty; although in practice, the internationally responsible State will often be appropriate State.

Potential victim perimeter

As international responsibility is independent of invocation and damage, it does not matter whether there is a claim for international responsibility or if a court or jurisdiction pronounced on it yet, nor if damage actually occurred. However, for a finding of international liability, damage is required via Article VII of the Outer Space Treaty and Articles II and III of the Liability Convention. Here, it is important to differentiate the modes: (1) according to Article VII of the Outer Space Treaty, damage is relevant if it occurs towards another State party to the Outer Space Treaty or its natural or juridical persons; (2) according to Article II of the Liability Convention, absolute liability is instated for damage to anyone else – *de facto*,

hinging on the existence of the victim State;[473] and (3), according to Article III of the Liability Convention, fault liability can be found for damage occurring elsewhere than on the surface of the Earth if it is caused to the space object of a launching State (hinging on the existence of fault by the State or persons for whom it is responsible). The perimeter of a potential victim (State) is therefore different depending on where the damage occurs: for States being a party to the Outer Space Treaty, international responsibility can be incurred for internationally wrongful acts towards the international community of States and international liability can be incurred for damage caused to parties to the Outer Space Treaty; for States being a party to the Liability Convention, international liability can be established for damage caused by their space object on the surface of the Earth or to aircraft in flight (absolute/strict liability) towards the international community of States and damage caused elsewhere than on the surface of the Earth (fault liability) to launching States can be established towards the international community of States – provided that they are launching States. Table 18 below provides an overview.

Table 18
Potential victim perimeter

Principle under international space law	***State potentially incurring responsibility/liability is party to***	***Legal basis***	***Covers damage occurring towards***	***In order to invoke responsibility/liability, potential victim State(s) is party to***
International responsibility	Outer Space Treaty, carries out 'national activites'	Article VI Sentence 1 Outer Space Treaty	States (international community of)	---
International liability	Outer Space Treaty, is 'launching State'	Article VII Outer Space Treaty	***State party to Outer Space Treaty*** (including natural and juridical persons)	***Outer Space Treaty***
	Liability Convention, is 'launching State'	Article II Liability Convention *(strict/absolute liability)*	States (international community of)	---
	Liability Convention, is 'launching State'	Article III Liability Convention *(fault liability)*	Launching State	---

[473] A legally interesting situation occurs in cases where the territory on Earth that the damage occurs on does not constitute part of a recognised State or constitutes international non-claimable territory such as the high seas or parts of Antarctica.

Naturally, national space laws can adopt stricter or other regulation – as long as they are not a party to one of the mentioned treaties and legislate in contravention to their international obligations.

The link of jurisdiction: 'State of registry' and 'national activities'

As mentioned in Section 5.3, the registration regime stipulates that the State of registry retains jurisdiction and control over an object that it carries on its national registry.[474] This creates an important link between registration and international responsibility. As through registration of the space object, jurisdiction is retained by the State of registry, and as 'national activities' are commonly interpreted by way of reference to jurisdiction, the jurisdiction based on registration may lead to the assessment that the activity in relation to said space object qualifies as a national one. Therefore, in effect, it may be the State of registry that can incur international responsibility. However, this conclusion from a legal perspective does not work in reverse: it does not follow that the State, whose national activity a certain space activity is, will also be the State of registry for the object of said activity. This is because in order to become a State of registry, the State will have to have qualified as one of the original launching States of the space object involving the activity. This displays well the legal independence of the two concepts, based on the fact that they do not share a qualifying factor.

The legal assessment is straight-forward for 'traditional' space activities, where the launch and operation of a space object is carried out by one State. But in the modern space age, the way in which space activities are carried out has changed and complex undertakings involving several States are no longer an exception. If, for instance, State A operates a satellite which was launched and is owned by State B, it will be State B who qualifies as launching State and is thus in a position to register the space object. In consequence, it will retain jurisdiction and control over the satellite flowing from the act of registration. It could, in principle, agree with State A to hand over the exercise of jurisdiction.[475] Then, State A by exercising jurisdiction would carry out 'national space activities' and thus, be potentially internationally responsible for any breaches of international legal norms with regard to the operation of the satellite. It would have to be clarified in the agreement how jurisdictional competences are divided specifically and whether the notion of shared responsibility could be relevant. Complex jurisdictional agreements are not a novelty in space activities per se.[476]

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[474] Art. II Registration Convention.

[475] Crawford, *Principles* (n 82) 206-214.

[476] See e.g. the International Governmental Agreement (IGA) applicable to the International Space Station (ISS) or the example of Baikonur Cosmodrome, which is on Kazakh territory but operation of the facility is contractually handed over to Russia. Jurisdictionally speaking, the launch complex is under Kazakh authority, but the agreement between the States agrees on a

5.5. The relationship between international responsibility, international liability, and registration of space objects

This chapter has analysed the third research question of this study concerning an assessment of the relationship of international responsibility for activities in outer space to other essential concepts of international space law, namely international liability for space activities, and registration of objects launched into outer space. Registration, along with international liability and international responsibility, constitutes what has been referred to as the cornerstone of the Outer Space Treaty provisions.[477]

The most prominent elements requiring clarification with regard to liability and registration are the elements of the launching State and the State of registry. The launching State or launching States are those that will be liable for any damage occurring from space activities. They are defined by the famous four-fold definition of launching, procuring the launch, or launching from the territory or a facility of a State and due to the intrinsic connection with the moment of launch, the famous reference applies: *once a launching State, always a launching State*.

International liability under public international law, particularly within the purview of the International Law Commission (ILC), has evolved over time. The ILC's understanding of international liability notably differs from international responsibility. While international responsibility is linked to internationally wrongful acts and contravention of international legal obligations, international liability, as conceptualised by the ILC, pertains to activities that are internationally lawful. This distinction forms the foundation of international liability as articulated by the ILC. This conceptual distinction also parallels the differentiation between responsibility and liability in international space law, where liability was historically contingent on damage, a principle later mirrored in the ILC's broader work on international law. While for international liability damage is a constitutive element, for international responsibility, damage may occur but is not constitutive in the sense of being required for a finding of international responsibility. What matters

complexity of aspects, that i.a. names for the appointment of the commander of the spaceport "the President of the Russian Federation in coordination with the President of the Republic of Kazakhstan"; and prescribes an "interaction of law enforcement agencies of the Russian Federation and the Republic of Kazakhstan on implementation of functioning of the Baikonur complex in the conditions of its lease"; see: 'Agreement between the Russian Federation and Republic of Kazakhstan on the basic principles and conditions of use of the Baikonur spaceport' of 28 March 28 1994 <https://cis-legislation.com/document.fwx?rgn=8648> accessed 27 October 2023 (unofficial translation).

[477] Project 2001 and Project 2001Plus.

for the latter is the existence of an internationally wrongful act – which may very well transpire without the occurrence of damage.

As mentioned in earlier chapters, there is an array of crucial principles codified in the legal framework for outer space, of which international liability and registration of objects launched into outer space are but two. The selection of international liability and registration for the purpose of research question 3 is based on the close, but unclarified relationship of the concepts formulated therein with international responsibility. Both international liability and registration are based on the concept of the launching State, whereas international responsibility for activities in outer space refers to national activities. In addition, Sentence 2 Article VI of the Outer Space Treaty stipulates that the appropriate State is the State that should authorise and continuously supervise its non-governmental space activities.

It should be emphasised that while both liability and registration depend on the (same) four-fold concept of the launching State, a significant difference between the concepts of 'launching State' and 'State of registry' can be found in the fact that with regard to the former, in case there is more than one launching State, any of these could be approached and will be under a legal obligation to answer by a victim State, whereas with regard to the 'State of registry', only one of the launching States was previously agreed to register the object launched into outer space and thus retains jurisdiction and control.

A differentiation is made in this study between the national registration of space objects and the submission of their registration information to the UN. While the national registration is determinative of the juridical status of an object as 'registered', and therewith allows the State of registry to retain jurisdiction and control over that object, the submission of the registration information to the UN is considered to serve the transparency of space activities and the collaboration of the international community. States do not have to have ratified the Registration Convention in order to be able to submit registration information to the UN: through Resolution 1721B, they have an alternative pathway.

As has been shown, both are interpreted by States in practice as referring to jurisdiction over the (national or non-governmental) space activity in their country. However, the division that characterises Article VI of the Outer Space Treaty already when applying the primary/secondary norms methodology (national activities fall under a secondary norm whereas the appropriate State Party is assigned under a primary norm), also continues under application of the qualifying factor methodology. The application of the qualifying factor methodology – which purports that legal norms will either predominantly hinge on the actor being addressed by the provision or the activity that it addresses, by the 'qualifying factor' either relating to *actors* or *activities* – allowed us to shed light on the interrelationship between the different notions of international responsibility, international liability, and registration of space objects.

More specifically, this chapter analysed 'national activities', 'appropriate State party', 'launching State', and 'State of registry'. The analysis of the four elements by resorting to the qualifying factor methodology showed, that three of them – the launching State, State of registry, and appropriate State party – confer a *status* on a State and are thus *static* concepts. National activities, however, relate to the connecting factor of *activities* and are therefore a concept that has a *dynamic* characteristic. The qualifying factor methodology assists in determining the complexity of setting various legal concepts in relation to one another. If the concepts compared share the qualifying factor, they can be related to each other without conceptual difficulty. However, when the compared legal concepts relate to different qualifying factors, these concepts can be considered *legally independent* from each other. When we differentiate between launching and operational space activities, the launch constitutes a *static* event, with the legal assessment at the moment of launch being 'frozen' in time, whereas the operation is a *dynamic* space activity which may change over time; with, for instance, the operation of a satellite being taken over by another State. Assessing the relationship between the internationally responsible and internationally liable State for the moment of launch does not pose a problem, because by assessing only one moment in time, the 'national activity' is assessed only at one specific moment and can therefore be applied in a static manner. However, if we address the operation of satellites, as an activity that stretches over time and may change, we are presented with legal issues at the moment where the activity that triggers the static characteristic ('launching State') changes. As an example, the transfer of satellites in orbit was mentioned, where in accordance with the Liability Convention acquiring States cannot incur international liability when they do not qualify as an original launching State of the space object involved. The analysis suggested that one pathway towards resolving this legal issue could be to add a dynamic dimension to the interpretation of the concept 'launching State'. If the procurement of launch can be informed by State practice understanding it to apply also retroactively by way of a legal fiction, States that were not launching States for a space object at its time of launch could become launching States upon the transfer of the object. State practice currently is largely insufficient to allow for a conclusion that this would constitute current law, but it could offer a way forward in the future.

The fact that the two elements of Article VI of the Outer Space Treaty that were considered here ('national activities' and 'appropriate State'), connect to different qualifying factors, strengthens the above analysis that Article VI houses two separate legal norms. Sentence 1 (and with it, Sentence 3 regarding international organisations) of the provision and its Sentence 2 were differentiated in earlier chapters by applying the methodology of primary and secondary norms of international law. Sentence 2 was found to constitute its own, self-standing international primary norm, that – if breached – could lead to the establishment of an internationally wrongful act committed the 'appropriate State'. Additionally, the different legal character of Sentences 1 and 2 is substantiated by the application of

the qualifying factor methodology. Here, the analysis in the present chapter showed that indeed, the norms have a differing qualifying factor. The concept of 'appropriate State' will be revisited in the following chapter giving attention to space activities carried out by non-governmental entities.

Chapter 6 – Non-governmental entities carrying out space activities

6.1. Introduction

The task that remains to this chapter is to answer research question 4, which concerns non-governmental entities involved in activities in outer space. The question targets, in a general sense, the role that non-governmental entities have been assigned under international space law; and more specifically, what this entails for the notions of authorisation, continuing supervision, and the appropriate State Party as referred to in Article VI Sentence 2 of the Outer Space Treaty. As such, it addresses a primary norm of international space law, and thus, the prescription of positive obligations on the part of the State party to the Outer Space Treaty to authorise and continuously supervise the activities carried out by 'its' non-governmental entities.

As was discussed in Chapter 4, international space law puts forward a *lex specialis* regulation of attribution with regard to the establishment of an internationally wrongful act, being the basis for a finding of international responsibility. In accordance with Sentence 1 of Article VI, under international space law, States may – in addition to incurring responsibility for the conduct of their organs, etc. – incur international responsibility for the space activities of their non-governmental entities. As this was covered above, the present chapter does not discuss international responsibility borne by *States* for the national activities of their non-governmental entities in the sense of secondary norms. Rather, it focuses on Sentence 2 of Article VI as a primary norm. To recapitulate, Sentence 2 reads:

> The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.[478]

The three central elements for a legal analysis of Sentence 2 of Article VI are: (1) authorisation of activities of non-governmental entities in outer space; (2) their

[478] Art. VI Sentence 2 Outer Space Treaty.

continuing supervision; and (3) the appropriate State party to the Outer Space Treaty who is to execute those obligations.

These three elements can also be found in the research question addressed in the present chapter. The requirements of authorisation and continuing supervision, both related to the activities of non-governmental entities in outer space, address an aspect of relationship between the State and its subjects. They are analysed under sub research questions 4 (a) and (b) respectively. Sub research question (c) concerns the status of a State party to the Outer Space Treaty under the Treaty, namely whether it qualifies as the appropriate State party to implement the elements of the previous research sub questions. The research question limits the investigation thus to State parties to the Outer Space Treaty.

Research question 4 reads:

> Which role does international space law ascribe to non-governmental entities under Article VI Sentence 2 of the Outer Space Treaty?
>
> (d) What does the concept of 'authorisation' of activities in outer space entail, and how is it implemented?
>
> (e) What does the concept of 'continuing supervision' of activities in outer space entail, and how is it implemented?
>
> (f) Which State is the 'appropriate State Party'?

While national law can be informative in this perspective, the analysis here focuses on the international legal aspects. However, since for an assessment of the aforementioned elements in Sentence 2 of Article VI, national implementation is relevant (the question includes a reference to implementation), in addition to sources of international law, this chapter uses reference to national space legislation. This does not constitute a comparative legal assessment of various approaches under domestic space legislation; rather, national practices are understood here as potentially representing State practice in an international legal perspective.

The chapter is structured as follows: as a foundation, Section 6.2 provides for a detailed overview of the contents of Sentence 2 of Article VI. Section 6.3 continues with an overview of the context and participation of non-governmental entities in outer space activities, including its historic evolution, elements of national space legislation that implement legal obligations based on Article VI, and jurisdictional aspects of such activities. Consecutively, the elements as mentioned in the sub research questions – 'authorisation' of space activities by States (Section 6.4), their 'continuing supervision' (Section 6.5), and the 'appropriate State party' (Section 6.6) are examined in sequence. Finally, the conclusion of this chapter in Section 6.7 summarises the legal analysis of the present chapter and provides reflection on research question 4.

6.2. Sentence 2 of Article VI Outer Space Treaty in detail

The participation of non-governmental entities in activities in outer space was discussed intensely at the beginning of the space age, when a potential legal system was negotiated and designed at the international level sparked by the launch of Sputnik-1. The discussions commenced already with the very early work of COPUOS, which crystallised first in the Legal Principles Declaration in 1963, and then in the Outer Space Treaty in 1967. With that, Sentence 2 of Article VI builds on previous discussions of the prospective State parties to the Treaty as well as previously agreed principles of international space law.

Because of the relevance of the foregoing discussions and the Legal Principles Declaration, Sentence 2 of Article VI cannot be considered in isolation, but must be assessed within the context that led up to its adoption – including the Legal Principles Declaration. The methodology followed with reference to the law of treaties is that in accordance with Article 31(1) of the Vienna Convention on the Law of Treaties, the ordinary meaning of the terms of the Outer Space Treaty is established in the latter's context and in the light of the object and purpose of the Treaty.[479]

It can be argued that the Legal Principles Declaration can be understood in the sense of Article 31(2)(b) of the Vienna Convention as an instrument made in connection with the Outer Space Treaty, as it constitutes the basis for its negotiations, and accepted by the other parties as an instrument related to the Treaty.[480] The acceptance of the Legal Principles Resolution as an instrument related to the Treaty is beyond dispute, as from the outset it was considered as a pathway to agreement on a legally binding regulation of outer space. Moreover, its non-legally binding nature, as a resolution adopted by the General Assembly, quickly sparked a discussion at the time of whether the Declaration was reflecting customary international law and is considered as reflecting customary international law now.[481] As per Article 31(3)(b), subsequent practice may also be taken into account.[482] This is the sense in which reference to national law is made in the present study.

Alternatively, it can be argued that the Legal Principles Declaration constitutes a supplementary means of interpretation as referred to in Article 32 of the Vienna Convention, which can be considered "preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the

[479] Art. 31(1) Vienna Convention on the Law of Treaties.

[480] Art. 31(2)(b) Vienna Convention on the Law of Treaties.

[481] The Legal Principles Declaration inspired the debate on whether 'instant' customary law had formed, see above.

[482] Art. 31(3)(b) Vienna Convention on the Law of Treaties.

application of article 31".[483] Regardless of the route taken, the Legal Principles Declaration must be viewed as relevant to an interpretation of the Outer Space Treaty. The following text, therefore, illustrates the relevant legal principles in both the Legal Principles Declaration and the Outer Space Treaty and considers their drafting process. Due to their similarity, it is the second sentence in both provisions that constitutes the basis for comparison.

The second sentence of Principle 5 of the Legal Principles Declaration reads: "The activities of non-governmental entities in outer space shall require authorization and continuing supervision by the State concerned".[484] In comparison to Article VI Sentence 2 of the Outer Space Treaty, two elements were altered in the process of legally binding codification:[485] firstly, "outer space" was more closely defined in line with the remaining references to outer space in the Outer Space Treaty as "outer space, including the Moon and other celestial bodies", and the "State concerned" was altered to read "the appropriate State Party to the Treaty". See also the comparison including italics in the overview table below.

Table 19
Principle 5 Sentence 2 Legal Principles Declaration and Art. VI Sentence 2 Outer Space Treaty compared

Principle 5 Legal Principles Declaration	***Art. VI Outer Space Treaty***
The activities of non-governmental entities in outer space shall require authorization and continuing supervision by the State concerned[486]	The activities of non-governmental entities in outer space*, including the Moon and other celestial bodies*, shall require authorization and continuing supervision by the *appropriate State Party to the Treaty*.[487]

The difference between 'in outer space' vs. 'in outer space, including the Moon and other celestial bodies' can be regarded as relating to the question of the definition and delimitation of outer space, which was elaborated on in the course of the drafting negotiations of the Outer Space Treaty. The same wording can also be found in almost all other provisions of the Treaty,[488] and therefore, can be regarded as editorial in the sense of being evenly included in Article VI as in relation to its

[483] Art. 32 Vienna Convention on the Law of Treaties. Note that the present chapter does not consider Art. 33 Vienna Convention on authentic languages of the Outer Space Treaty, as this was discussed in Chapter 3 Sub Section 3.2.*1 Terminological understandings and conceptions of responsibility*.

[484] Principle 5 Legal Principles Declaration.

[485] Legally binding upon State parties to the Outer Space Treaty.

[486] Emphasis added.

[487] Emphasis added.

[488] See the title of the Treaty and Arts. I, II, III, V, VII, VIII (with the wording "in outer space or on a celestial body" without explicit reference to the Moon), IX, X, XI, XIII of the Outer Space Treaty.

other provisions.[489] However, the change from 'State concerned' to 'appropriate State Party to the Treaty' relates to the content of the provision and may be clarified by reference to the drafting history of the Outer Space Treaty.[490]

When applying the law of treaties, Articles 31 to 33 of the Vienna Convention on the Law of Treaties provide guiding orientation. In accordance with Article 33, considerations in this manuscript are based on the English language version of the Outer Space Treaty, which is equally authoritative with the other five official languages of the UN and corresponding versions of the Outer Space Treaty.[491] When applying the rules on the interpretation of treaties, Article 31 of the Vienna Convention prescribes that, in this case the Outer Space Treaty, "shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose".[492] There are no other agreements relevant in the sense of Article 31(2)(a) and (b) of the Vienna Convention.[493] As stipulated in Article 31(3), interpretation shall take into account subsequent agreements, subsequent practice of States, or any relevant rules of international law. shall also be taken into account, in that it considers the agreement of the parties regarding its interpretation (Article 31(3)(b)).[494] Article 32 applies if

[489] See for more information on the definition and delimitation of outer space: Chapter 4 Section 4.3 *Definition and delimitation of outer space*.

[490] Gerhard, *Cologne Commentary on Space Law I* (n 308) p. 105.

[491] The other five official languages of the UN being Arabic, Chinese, French, Russian, and Spanish. Art. 33(1) of the Vienna Convention on the Law of Treaties prescribes that "[w]hen a treaty has been authenticated in two or more languages, the text is equally authoritative in each language, unless the treaty provides or the parties agree that, in case of divergence, a particular text shall prevail" and furthermore, Art. 33(3) states that "[t]he terms of the treaty are presumed to have the same meaning in each authentic text". I am not aware of any documentation to the effect of an agreement by the parties to give preference to a particular language version; and moreover, in fact, discussions in COPUOS in the last few years have shown that the official languages treaty versions of the Outer Space Treaty are recalled and considered in equal hierarchy.

[492] Art. 31 Vienna Convention on the Law of Treaties.

[493] Art. 31(2) Vienna Convention on the Law of Treaties reads. "[t]he context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes:
(a) any agreement relating to the treaty which was made between all the parties in connection with the conclusion of the treaty;
(b) any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty".

[494] Article 31(3) Vienna Convention on the Law of Treaties reads: "[t]here shall be taken into account, together with the context:
(a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;
(b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;
(c) any relevant rules of international law applicable in the relations between the parties".
Article 31(3)(a) Vienna Convention on the Law of Treaties does not apply here, as there are no subsequent agreements among the parties that would clarify the term of 'appropriate State Party to the Treaty'. Regarding Art. 31(3)(c) Vienna Convention on the Law of Treaties on relevant

the ordinary meaning of the term is not sufficiently clarified by application of Article 31 of the same instrument, or in the words of the provision, when the "application of article 31 […] (a) leaves the meaning ambiguous or obscure; or (b) leads to a result which is manifestly absurd or unreasonable".[495] Sub (b) of Article 32 can be excluded from application in this case, as the meaning of the 'appropriate State Party to the Treaty' is not manifestly absurd or unreasonable. However, a case can be made for applying Article 32(a), as the meaning can be viewed as ambiguous: it is not entirely clear, in light of the object and purpose of the Outer Space Treaty, which State is the appropriate State to authorise and continuously supervise the space activities of non-governmental entities. Is it the State party that is internationally responsible for national space activities under Article VI of the Outer Space Treaty? An argument against this understanding is that Sentence 1 of Article VI, addressing international responsibility of States, concerns States' *national* space activities; however, Sentence 2 of the same provision speaks of 'activities of non-governmental entities' and does not require those activities to be *national*.[496] How then may we understand the situation of a non-governmental space activity being a shared activity between several States, only one of which may be under the legal obligation of its authorisation and continuing supervision, as Sentence 2 of Article VI of the Outer Space Treaty only addresses '*the* appropriate State Party to the Treaty'?[497] The word 'appropriate' could also be understood to refer to the launching State, as it is the launching State that can register a space object in its national registry and through this legal act, can establish jurisdiction and control in outer space over said object.

By applying Article 32(a) of the Vienna Convention on the Law of Treaties to 'the appropriate State Party to the Treaty', it is possible to apply supplementary means of interpretation in order to shed light on its meaning. This includes, as per wording of Article 32, the "preparatory work of the treaty and the circumstances of its conclusion" – thus opening the door to considering the Legal Principles Resolution, its circumstances of drafting, and the drafting process of the Outer Space Treaty –

rules of international law, a lot is relevant with regards to other elements of international space law (such as e.g. the UN Charter being relevant in light of 'peaceful purposes' under international space law); however, there is no relevant rules of international law that specifically concern the term 'appropriate State Party to the Treaty'.

[495] The provision reads *in toto*: "[r]ecourse may be had to supplementary means of interpretation, including the preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the application of article 31, or to determine the meaning when the interpretation according to article 31:
(a) leaves the meaning ambiguous or obscure; or
(b) leads to a result which is manifestly absurd or unreasonable"; Article 32 Vienna Convention on the Law of Treaties.

[496] Emphasis added.

[497] Emphasis added.

especially the work of the COPUOS Legal Subcommittee Working Group L6 which concerned itself with the text of what is now Article VI.

The alteration from 'State concerned' to 'appropriate State Party to the Treaty' concerns the fundamental discussion that occurred in the process of the drafting history between mainly the United States and the Soviet Union. While the Soviet Union, in alignment with its political views, did not favour the participation of any actors other than States in outer space,[498] the United States were already planning to support privately operated telecommunications satellites[499] and therefore took an opposing stance. The negotiation process began in spring 1962 with submissions during the first session of the Legal Subcommittee and the original proposal by the Soviet Union read: "all activities […] shall be carried out solely and exclusively by States".[500] In the ensuing draft resolution presented by the Soviet Union, again the proposed text stated: "All activities of any kind pertaining to the exploration and use of outer space shall be carried out solely and exclusively by States; the sovereign rights of States to the objects they launch into outer space shall be retained by them".[501] Due to the rejection of the proposal by the United States, the United Kingdom suggested an alternative wording which read: "[a]ll States shall, for themselves and for their nationals, have equal rights in the exploration and use of outer space. These rights shall be exercised in accordance with international law and with the principles affirmed in this declaration".[502] Subsequently, the United States presented a counter proposal, which read: "A State or international organization from whose territory or with whose assistance or permission a space vehicle is launched bears international responsibility for the launching, and is internationally liable for personal injury, loss of life or property damage caused by such vehicle on the earth or in airspace".[503] As a first reaction, the Soviet Union rejected the proposal and at the end of the session in March 1962, no agreement was reached.[504] However,

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[498] See, for more literature on the Soviet stance on activities in outer space, e.g.: Frans von der Dunk, 'Authorisation' (n 24) p. 3; Zhukov and Kolosov (n 42) esp. p. 4–17, 36.

[499] Gerhard, *Cologne Commentary on Space Law I* (n 308) p. 105.

[500] UN Doc. A/AC.105/C.2/L.1 of 6 June 1962 para. 7 (not currently available on UNOOSA documents) as cited in: ibid.

[501] UN Doc. Doc. A/C.1/879, 'USSR: Draft declaration of the basic principles governing the activities of States pertaining to the exploration and use of outer space' 10 September 1962 para. 7.

[502] Ibid. para. 4.

[503] UN Doc. A/C.1/881, 'Letter dated 8 December 1962 from the representative of the USA to the Chairman of the First Committee'14 October 1962 para. 6.

[504] UN Doc. A/AC.105/06, COPUOS, 'LSC Report - First Session' 9 July 1962, stating in the 'Summary by the Chairman of the Sub-Committee's conclusions' that "No agreement has been reached on any of the proposals submitted to the Sub-Committee. However, it is the consensus of all delegations who participated in this session that the meetings offered the possibility for a most useful exchange of views" para. 16, p. 9 <https://www.unoosa.org/pdf/reports/ac105/AC105_006E-1963dec.pdf> accessed 27 October 2023 and via the UNOOSA parent page

as a side note, before that session COPUOS agreed on its consensus procedure, which has remained the Committee's characteristic and exceptional working procedure to this day.[505] The Soviet Union proposed the following wording around half a year later: "[a]ll activities of any kind […] shall be carried out solely by States. If States undertake activities in outer space collectively […] each State participating in such activity has the responsibility to comply with the principles set forth in this declaration".[506] During the General Assembly First Committee session 1962, it was noted in the report that the Legal Sub-Committee under the chairmanship of Manfred Lachs (Poland) had profited from a "useful exchange of views", but that "no agreement was reached on any of the proposals which were submitted".[507]

<https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/travaux-preparatoires/declaration-of-legal-principles.html> accessed 27 October 2023.

[505] The consensus procedure entails that decisions in COPUOS are not taken by vote but by consensus of all States members of the Committee. Interestingly, even though the Committee has grown from its original 18 States members in the *ad hoc* Committee founded in 1958 (General Assembly resolution 1348 (XIII)) to in the meantime 102 States members (2022, General Assembly resolution 77/121) – and with that being one of the larger UN committees, the consensus procedure still serves the Committee well. In the LSC Report, it is stated that "In his opening statement, the Chairman reminded the Sub-Committee of an agreement reached in the Committee on the Peaceful Uses of Outer Space on 19 March 1962, concerning the conduct of work in the following terms: 'It has been agreed among the members of the Committee that it will be the aim of all members of the Committee and its Sub-Committees to conduct the Committee's work in such a way that the Committee will be able to reach agreement in its work without need for voting.' He urged members of the Sub-Committee to reach agreement on vital legal issues in accordance with this procedure." UN Doc. A/AC.105/12, COPUOS, 'Report of the Legal Sub-Committee on the Work of its Second Session (16 April – 3 May 1962) to the Committee on the Peaceful Uses of Outer Space' para. 3.

[506] UN Doc. A/AC.105/C.2/L.6, 16 April 1963 para. 7; [not currently available on UNOOSA documents]; as cited in: Gerhard, *Cologne Commentary on Space Law Volume I* (n 308) p. 105. In the LSC Report – Second Session, UN Doc. A/AC.105/12, COPUOS, 'Report of the Legal Sub-Committee on the Work of its Second Session (16 April – 3 May 1962) to the Committee on the Peaceful Uses of Outer Space', the Soviet proposal is referred to as being published in: UN Doc. A/5181, COPUOS, 'International Co-operation in the Peaceful Uses of Outer Space – Report of the Committee on the Peaceful Uses of Outer Space' 27 September 1962, annex III, A entitled 'Union of Soviet Socialist Republics: draft declaration of the basic principles governing the activities of States pertaining to the exploration and use of outer space' and with a footnote stating that the text is a reproduction of A/AC.105/L.2. However, it has to be concluded that the cross reference to A/AC.105/L.2 must be a mistake and that the correct document that matches the text repeated in A/AC.105/12 should have been A/AC.105/C.2/L.6, as A/AC.105/12 replicates in annex I A a text proposal that (almost) matches Gerhard's reference of A/AC.105/C.2/L.2, and definitely does not correspond to the text proposal printed in A/AC.105/L.2. UN Doc. A/5181, COPUOS, 'International Co-operation in the Peaceful Uses of Outer Space – Report of the Committee on the Peaceful Uses of Outer Space' 27 September 1962 restates the Report of the Legal Sub-Committee of its First Session as well as submissions by States parties to the Committee.

[507] UN Doc. A/5181, COPUOS, 'International Co-operation in the Peaceful Uses of Outer Space – Report of the Committee on the Peaceful Uses of Outer Space' 27 September 1962, referring to 'Opening Statement by the Chairman, made at the 10th meeting of the Committee, on 10 September 1962' annex II p. 2.

Answering to its own previous suggestion, the Soviet Union then proposed the text that constitutes the basis for what was later agreed in Article VI of the Outer Space Treaty. The suggestion read: "[States] bear international responsibility for national activities in outer space […], whether such activities are carried on by governmental agencies or non-governmental bodies corporate by the State concerned. The activities of non-governmental bodies corporate shall require authorization and continuing supervision of the State concerned". By this, the origin of today's legal requirement of authorisation and continuing supervision of activities of non-governmental entities in Article VI of the Outer Space Treaty was born.

The Legal Principles Declaration – or 'Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space' – was adopted by consensus by the General Assembly in its resolution 1962 (XVIII) on 13 December 1963.[508]

[508] See for more information also: Vladimír Kopal, UN Audiovisual Library of International Law, Historic Archives, Law of Outer Space <https://legal.un.org/avl/ha/tos/tos.html> accessed 27 October 2023.

Table 20 **Overview of proposals in the drafting history of Principle 5 Legal Principles Declaration**	
UN Doc.	***Text proposal***
A/AC.105/C.2/L.1 of 6 June 1962, Paragraph 7	All activities […] shall be carried out solely and exclusively by States. *(Soviet Union)*
A/AC/105/L.02 of 10 September 1962,[509] Paragraph 7	All activities of any kind pertaining to the exploration and use of outer space shall be carried out solely and exclusively by States; the sovereign rights of States to the objects they launch into outer space shall be retained by them. *(Soviet Union)*
A/C.1/879 of 12 October 1962, Paragraph 4	All States shall, for themselves and for their nationals, have equal rights in the exploration and use of outer space. These rights shall be exercised in accordance with international law and with the principles affirmed in this declaration. *(United Kingdom)*
UN Doc. A/C.1/881 of 14 October 1962, Paragraph 6	A State or international organization from whose territory or with whose assistance or permission a space vehicle is launched bears international responsibility for the launching, and is internationally liable for personal injury, loss of life or property damage caused by such vehicle on the earth or in airspace. *(United States)*
A/AC.105/C.2/L.6 of 16 April 1963, Paragraph 7	[A]ll activities of any kind […] shall be carried out solely by States. If States undertake activities in outer space collectively […] each State participating in such activity has the responsibility to comply with the principles set forth in this declaration. *(Soviet Union)*
A/AC.105/C.2/L.6 (A/5181, annex III, A)	All activities of any kind pertaining to the exploration and use of outer space shall be carried out solely by States. If States undertake activities in outer space collectively, either through international organizations or otherwise, each State participating in such activities has a responsibility to comply with the principles set forth in this Declaration.[510] *(Soviet Union)*
	[States] bear international responsibility for national activities in outer space […], whether such activities are carried on by governmental agencies or non-governmental bodies corporate by the State concerned. The activities of non-governmental bodies corporate shall require authorization and continuing supervision of the State concerned. *(Soviet Union)*
A/RES/1962 (XVIII) of 13 December 1963, Principle 5 *(Final text)*	States bear international responsibility for national activities in outer space, whether carried on by governmental agencies or non-governmental entities, and for assuring that national activities are carried on in conformity with the principles set forth in the present Declaration. The activities of non-governmental entities in outer space shall require authorization and continuing supervision by the State concerned. When activities are carried on in outer space by an international organization, responsibility for compliance with the principles set forth in this Declaration shall be borne by the international organization and by the States participating in it.

[509] UN Doc. A/AC/105/L.02, 'USSR: Draft declaration of the basic principles governing the activities of States pertaining to the exploration and use of outer space' 10 September 1962.

[510] Note, in addition to added text, there are small editorial changes to the version above. It could not be clarified whether those differences stem from the original text of UN Doc. A/AC.105/C.2/L.6 or from text editing/processing during the creation of the Cologne Commentary on Space Law.

The wording of Article VI of the Outer Space Treaty today – and as adopted in 1966 – was slightly reworked, based on the above-cited Soviet proposal, in a working group which is known as Working Group (WG) L6. Article VI in its Sentences 1 and 2 is the primary provision under the international legal framework for outer space activities that regulates the participation of non-governmental entities in such activities. Firstly, through Sentence 1, the performance of outer space activities by non-governmental entities is principally admissible under international space law (albeit, that States bear the international responsibility for the former's conduct). Secondly, by virtue of Sentence 2 of Article VI, legal obligations are placed on the 'appropriate State Party' with regard to the regulation of conduct of non-governmental entities under their jurisdiction.

As can be inferred from Table 21 below, there are further provisions under international space law in the Moon Agreement which pronounce on non-governmental entities, namely Articles 11 and 14 of the Agreement. It may be recalled that the Moon Agreement has a limited number of ratifications and signatures.[511] Article 11(3) of the Agreement recalls the non-appropriation clause for the applicability of the Agreement. Article 14(1) Sentence 1 of the Moon Agreement recalls Sentence 1 of Article VI of the Outer Space Treaty, whereas Article 14(1) Sentence 2 of the Moon Agreement recalls Sentence 2 of Article VI of the Outer Space Treaty. Interestingly, Article 14(1) Sentence 2 of the Moon Agreement refers to activities on the Moon "only under the authority and continuing supervision" of the appropriate State; as opposed "authorization" required under Article VI Sentence 2 of the Outer Space Treaty.[512] The italics in the table below have been added.

[511] The Moon Agreement currently has 18 ratifications and 11 signatures. The more recent States acceding are: Saudi Arabia and Türkiye in 2012, Kuwait in 2014, Venezuela (Bolivarian Republic of) in 2016, and Armenia in 2018. Saudi Arabia has notified the UN of its withdrawal from the agreement, which will become effective on 5 January 2024. See for more information on the timeline of States accessing the Moon Agreement: <https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXIV-2&chapter=24&clang=_en> accessed 27 October 2023 and <https://treaties.unoda.org/t/moon> accessed 27 October 2023.

[512] This is given more attention under the section below on authorisation of space activities (Section 6.4 *Authorisation of space activities* in this chapter).

Table 21 **Legally binding references to non-governmental entities in the legal framework for outer space activities**	
Provision/instrument	***Text***
Article VI Outer Space Treaty (Sentence 1)	States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty.
Article VI Outer Space Treaty (Sentence 2)	The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.
Article 11(3) Moon Agreement (Sentence 1)	Neither the surface nor the subsurface of the Moon, nor any part thereof or natural resources in place, shall become property of any State, international intergovernmental or non-governmental organization, national organization or non-governmental entity or of any natural person.
Article 14(1) Moon Agreement (Sentence 1)	States Parties to this Agreement shall bear international responsibility for national activities on the Moon, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in this Agreement.
Article 14(1) Moon Agreement (Sentence 2)	States Parties shall ensure that non-governmental entities under their jurisdiction shall engage in activities on the Moon only under the authority and continuing supervision of the appropriate State Party.

There are also a number of instances in the non-legally binding instruments that form part of the framework for outer space activities. These are listed below, starting with the already discussed Principle 5 of the Legal Principles Declaration. They may be understood as (non-legally binding) expressions of what States understand the regulation to be of non-governmental entities in their execution of activities in outer space.

Table 22 **Non-legally binding references to non-governmental entities in the legal framework for outer space activities**	
Paragraph/non-legally binding instrument	***Text***
Legal Principles Declaration, Principle 5 (Sentence 1)	States bear international responsibility for national activities in outer space, whether carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried on in conformity with the principles set forth in the present Declaration.
Legal Principles Declaration, Principle 5 (Sentence 2)	The activities of non-governmental entities in outer space shall require authorization and continuing supervision by the State concerned
Remote Sensing Principles, Principle XIV (Sentence 1)[513]	In compliance with article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, States operating remote sensing satellites shall bear international responsibility for their activities and assure that such activities are conducted in accordance with these principles and the norms of international law, irrespective of whether such activities are carried out by governmental or non-governmental entities or through international organizations to which such States are parties.
Space Benefits Declaration, Principle 4[514]	International cooperation should be conducted in the modes that are considered most effective and appropriate by the countries concerned, including, inter alia, governmental and non-governmental; commercial and non-commercial; global, multilateral, regional or bilateral; and international cooperation among countries in all levels of development.
Launching State Resolution, Preambular paragraph 6[515]	Noting also that changes in space activities since the Liability Convention and the Registration Convention entered into force include the continuous development of new technologies, an increase in the number of States carrying out space activities, an increase in international cooperation in the peaceful uses of outer space and an increase in space activities carried out by non- governmental entities, including activities carried out jointly by government agencies and non-governmental entities, as well as partnerships formed by non-governmental entities from one or more countries,

[513] General Assembly Resolution A/RES/41/65, Principles Relating to Remote Sensing of the Earth from Outer Space, 3 December 1986 and annex.

[514] General Assembly Resolution A/RES/51/122, Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of all States, Taking into Particular Account the Needs of Developing Countries, 13 December 1996.

[515] General Assembly Resolution A/RES/59/115, Application of the concept of the "launching State", 10 December 2004.

While international responsibility for non-governmental activities borne by States and international organisations was subject to analysis in the previous chapters, the present chapter focuses on the legal obligations of States vis-à-vis their nongovernmental entities carrying out space activities.

6.3. Participation of non-governmental entities in outer space activities

The participation of non-governmental entities in activities in outer space encompasses private actors as well as non-governmental organisations. They may be domestic or international, or any hybrid form thereof. This is based on the understanding of Sentence 3 of Article VI of the Outer Space Treaty that the reference to "international organisations" here in fact regards international intergovernmental organisations only; as it addresses organisations with State members.[516] Section 6.3.1 provides a short recapitulation of the circumstances that should be taken into account historically when considering the participation of non-governmental entities in activities in outer space.[517] Since Sentence 2 of Article VI of the Outer Space Treaty is a primary obligation, how its elements have been understood by States parties to the Treaty with regard to the implementation in their domestic legal frameworks is addressed in Section 6.3.2.[518]

6.3.1. Short historic evolution of non-governmental participation in space activities

Non-governmental entities carrying out space activities were considered from the outset of the discussions on the legal regime applicable to outer space. While, in practice, initially, their role was rather limited, it grew over the past decades to the extent that in the current modern space age has become significant. This trend appears to be still on the rise, so that a stronger manifestation of these characteristics in the space industry can be expected.

The inclusion of non-governmental entities in the legal principles applicable to activities in outer space prompted discussions from the onset of the negotiations of

[516] See Chapter 4 of this study.

[517] Art. 32 Vienna Convention on the Law of Treaties (circumstances of the treaty's conclusion). See also for non-governmental activities in outer space: Chapter 2.

[518] Art. 31(3)(b) of the Vienna Convention on the Law of Treaties (subsequent practice).

the fundamental space law principles.[519] While the Soviet Union initially was opposed to the idea that non-governmental entities should be considered in the international legal framework, the United States were adamant that they should be taken into account at international level from the beginning. Although negotiations were undertaken by more than the two prevalent space powers of the time (18 initial Committee members), the principal level of agreement was dominated by the United States and Soviet Union and their respective alliance States.

A significant rise of non-governmental participation in space activities did not take place until the 1980s, and has, in the last or so decade, achieved an almost exponential increase.

6.3.2. National space legislation for non-governmental activities

The analysis of national space legislation can provide insight into what States understand certain concepts of international space law to be, such as which activities they understand to constitute space activities, where they understand outer space to begin and whether they opt for a spatial or functional delimitation, or what they understand certain keywords in the five UN treaties on outer space to be (international liability, registration of space objects, authorisation/licensing, supervision etc.).[520]

Sentence 2 of Article VI of the Outer Space Treaty stipulates that States are under a (positive) international obligation to authorise and continuously supervise the 'activities' of non-governmental entities. This means that any State being a State party to the Outer Space Treaty that hosts non-governmental entities carrying out space activities (falling under its jurisdiction) has an interest in being aware of those non-governmental activities and with a certain likelihood, and also has an interest in setting up a national legal framework for those activities. State practice shows that States consider national legal frameworks beneficial for their non-governmental entities. Setting up a national legal framework can contribute positively to the development of the domestic space industry and space economy, as it provides security for the non-governmental space sector. Since the State is under the obligation to authorise and continuously supervise, it may also favour the idea of regulating its international obligations at the domestic level in such a way as to ensure that its international obligations can, in a practical sense, be fulfilled. However, there is no requirement under international space law to regulate the

[519] Refer to the drafting history of Principle 5 Legal Principles Declaration in Section 2 of this chapter.

[520] A limitation is provided by the State being a party to the respective international agreement.

domestic non-governmental sector by law.[521] Theoretically, States may equally opt to set up any non-legal arbitrary system, as long as the requirements of authorisation and continuing supervision can be fulfilled.[522]

National space law can be analysed beneficially by resort to a substantive identification of elements, which reflect back on its underlying international obligations under international space law. COPUOS has worked in the past through a Working Group of the Legal Subcommittee on ascertaining common elements that are shared between States' national space legislations. The final Report of the Working Group identified seven elements that have a high relevance for an adopted space law. These seven categories are:

1. Scope of application of the national space law;
2. Authorisation and licencing;
3. Continuing supervision of activities of non-governmental entities;
4. Registration;
5. Liability and insurance;
6. Safety;
7. Transfer of ownership or control of space objects in orbit.

The seven elements of national space law were also reflected in the National Space Legislation Resolution of 2013, which was adopted by the General Assembly.[523] Selected elements are considered in closer detail in this chapter.[524] Additionally, and prior to their discussion, I introduce an 'element zero' in this section, which analyses legal bases for national space legislation. While the scope of national space legislation provides insight into which activities States consider to constitute space activities and to be in need of domestic regulation, and thus lies at the foundation of national space legislation, from an international legal perspective, it is beneficial to identify provisions of international space law that States have identified as the basis

[521] There is no reference in the international legal regime for activities in outer space to any obligation to implement national space laws.

[522] An interesting example in this regard is Germany, as it is usually viewed among the major space-faring nations, but nevertheless has until now not adopted or implemented a law that would regulate German non-governmental space activities. It may be argued that non-governmental space activities in Germany – because of the absence of authorisation – could incur the State responsibility of Germany due to a breach of Article VI Sentence 2 Outer Space Treaty.

[523] General Assembly Resolution A/RES/68/74, Recommendations on national legislation relevant to the peaceful exploration and use of outer space, 11 December 2013.

[524] Note in this regard also: UN Doc. A/AC.105/C.2/2023/CRP.28, COPUOS, 'Schematic Overview of National Regulatory Frameworks for Space Activities' 20 March 2023; UN Doc. A/AC.105/C.2/L.224, COPUOS, 'Review of existing national space legislation illustrating how States are implementing, as appropriate, their responsibilities to authorize and provide continuing supervision of non-governmental entities in outer space Note by the Secretariat' 22 January 2001.

of their national space legislation. This can prove helpful with regard to establishing the 'subsequent State practice' in terms of how States interpret a provision of international space law. A closer look at the seven elements of national space legislation will for that reason start off with 'element zero': the legal basis of national space legislation.

The remainder of this section comprises a short consideration of element 1 'scope of application of the national space law', due to its overarching relevance for the character of national space legislation. Element 2 on 'authorisation and licencing' is considered in Section 6.4 and element 3 'continuing supervision of activities of non-governmental entities' is considered in Section 6.5.[525]

Element 'zero': legal basis of national space legislation

As mentioned, the legal basis of national space law is not one of the seven elements of national space laws, but constitutes their foundation. The relevant question is what the State adopting the space legislation considers as legal basis or bases under international space law for its domestic legislation. From an international legal perspective, this concerns the implementation of international norms into the domestic legal framework. Not all States with national space legislation in place are outspoken about the provisions of international space law they consider to be at its foundation.

The legal basis for national space legislation can be found in international space law as well as national constitutional and policy documents. Some States specify, in their national space laws or their preparatory works, the international legal basis that the national framework is built on. This, incidentally, may also depend on the State's constitutional set up, and whether international law is regarded as being of a higher hierarchy than national law.[526] Below are two selected examples of States that have adopted national space laws and have chosen different approaches.

Finland has ratified the Outer Space Treaty, the Rescue and Return Agreement, the Liability Convention, and the Registration Convention. It opted for an open approach, with the website of its Ministry of Economic Affairs and Employment stating that Finland is committed to the UN treaties on outer space and that the Finnish Space Act constitutes an implementation into national law of Finland's international obligations under the UN treaties on outer space.[527]

Sweden has also ratified the Outer Space Treaty, the Rescue and Return Agreement, the Liability Convention, and the Registration Convention. It adopted a more

[525] Elements of national space legislation 4. 'registration' and 5. 'liability and insurance' form part of Chapter 5 of this study.

[526] Note the different approaches of national legal systems to international law (monism, dualism, etc.).

[527] <https://tem.fi/en/spacelaw> accessed 27 October 2023.

specific and transparent approach by specifying the legal bases in international space law of its national space legislation.[528] The latter is based on the Outer Space Treaty, the Liability Convention, and the Registration Convention:[529] more specifically, on the following international instruments and provisions:[530]

- *Outer Space Treaty*: Articles VI and VII of the Outer Space Treaty were mentioned in the preparatory work as legal bases for the legislation.
- *Liability Convention*: A general reference relates to the Liability Convention as being a supplement to Article VII of the Outer Space Treaty.
- *Registration Convention*: The provisions of the Decree on Space Activities regulating the national registration of space objects are based on the Registration Convention.

The Rescue and Return Agreement was not mentioned in the preparatory works or references to international space treaties. This can be explained by the Swedish Space Act constituting a basic legal framework for space activities without reference to specific details.[531]

Scope of application of national space legislation

The scope of application of national space legislation is a fundamental element of the seven elements of national space legislation.[532] By defining the scope to include or exclude certain activities or certain actors, States can steer the extent of application of their domestic legislation significantly. Most commonly, national space legislation determines its applicability by addressing in the law the space actors that fall under the act, and/or by outlining the space activities that fall under it.

There are different formal approaches which can be taken by States with regard to their national space law(s) when implementing them in their national legal order. This may depend on the constitutional order of the country, its administrative legal

[528] Act on Space Activities, 1982:963 and Decree on Space Activities, 1982: 1069. Note that Sweden is currently reviewing its national legal framework for space activities.

[529] Hedman (n 460).

[530] Regeringens proposition 1981/82:226.

[531] The act is available at <https://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/sweden/act_on_space_activities_1982E.html#:~:text=Space%20activities%20may%20not%20be,anywhere%20else%20without%20a%20licence.&text=A%20licence%20to%20carry%20on%20space%20activities%20is%20granted%20by%20the%20Government> accessed 27 October 2023. The Swedish Space Act contains 6 sections and therewith can be considered one of the more concise national space legislations.

[532] UN Doc. A/AC.105/C.2/101, COPUOS, 'Report of the Working Group on National Legislation Relevant to the Peaceful Exploration and Use of Outer Space on the work conducted under its multi-year workplan' 3 April 2012.

regulation, as well as other factors. For instance, States can opt to adopt and implement unified acts, a combination of acts, or a combination of various forms of national legal instruments.[533] More decisive than the legal form in this regard is the adaptation or capability to adapt to the national legal framework to the kind of space activities carried on under their jurisdiction, including specific needs and practical considerations.[534]

The scope of national space legislation can be understood in terms of jurisdiction: the applicability of the law or legal framework in this instance is linked to the State's jurisdiction. An example of a careful design of the scope of application is provided by the Belgian space legislation.[535] The Belgian law applies to any activity which is carried on by operators under Belgian territorial jurisdiction.

Since most national space laws apply territorially, the legally interesting aspects are mostly connected to a State's exercise of extra-territorial and personal jurisdiction, as these offer the potential of the law to apply outside of the State's territory.[536] To link back to the methodology introduced in Chapter 1 identifying a 'connecting factor' for a legal text or provision, in this understanding, the connecting factor is the space *actor* that is regulated by the domestic legislation. As an example, the Finnish Space Act applies to space activities carried on within the territory of the State of Finland or on board a vessel or aircraft registered in Finland.[537] The Act also applies to space activities carried on by a Finnish citizen or a legal person incorporated in Finland.[538] Under the United Arab Emirate's space law, its scope of application is defined as (a) in the State's Territory or the State's establishments outside the State's Territory, (b) from ships or aircraft registered with the State or Space Objects registered by the State, or (c) by persons who hold the nationality of the State, or companies that have a headquarters in the State.[539]

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[533] General Assembly Resolution A/RES/68/74, Recommendations on national legislation relevant to the peaceful exploration and use of outer space, 11 December 2013.

[534] Ibid.

[535] Law of 17 September 2005 on Activities of Launching, Flight Operation or Guidance of Space Objects (revised by the Belgian Parliament on 1 December 2013); Royal Decree of 19 March 2008. See also: <http://www.belspo.be/belspo/space/beLaw_en.stm> accessed 27 October 2023.

[536] Recall also in this respect the question of definition and delimitation of outer space.

[537] Act on Space Activities entered into force on 23 January 2018; supplemented by the Decree of the Ministry of Economic Affairs and Employment on Space Activities.

[538] Space objects cannot yet be launched from Finland; a Finnish actor typically procures the launching of a space object outside Finland and afterwards operates it from Finland.

[539] Federal Law No. 12 of 2019 on the Regulation of the Space Sector. See also: <https://u.ae/en/about-the-uae/science-and-technology/key-sectors-in-science-and-technology/space-science-and-technology/the-uae-space-law#:~:text=According%20to%20the%20law%2C%20no,of%20regulating%20the%20space%20sector> accessed 27 October 2023.

The scope of national space legislation can also be understood in terms of the kind of space *activities* that are covered by a State's national space law or space legal framework; this being the perspective of the activity-connecting factor. For instance, space activities in Armenia that fall under Armenia's space law of 2018 are defined as remote sensing and satellite communications.[540] The Belgian Space Law adopts a functionalist approach to space activities and defines activities that require an authorisation (launching operations, any in-orbit operations or guidance manoeuvres, transfer of such activities with the criterium of actual control of the space object). Moreover, some States limit their national legislation to only apply to space activities carried out by non-governmental space actors,[541] such as Brazil's "Resolution on Commercial Launching Activities from Brazilian Territory"[542] and the Norwegian Act of 1969 – the latter being the first national space law to enter into force globally.[543] Canada's legal framework for remote sensing may serve as an example of both a limitation to certain activities (remote sensing) as well as a limitation to non-governmental entities at the same time.[544] Under the Space Affairs Act of South Africa of 1993, 'space activities' means the activities directly contributing to the launching of spacecraft and the operation of such craft in outer space; the mere reception of data or signals is thus excluded from applicability of the Act.[545]

It is also possible that, in situations where a State has a national legal framework for space activities consisting of two or more space laws, the scope of application regarding the kind of activities covered may vary among the individual legislative acts. With regard to the kind of space activities covered by the scope of a national space law or legal framework, it is worth mentioning that a distinction is often made between the launch and operation of space objects versus the mere reception of signals or data – which is for instance the case with radio and television broadcasting, or sometimes also the reception of data sent by remote sensing satellites.

[540] Law No. HO-152-N on Space-related Activities of the Republic of Armenia.

[541] This approach often refers as the basis for enacting national legislation to Article VI of the Outer Space Treaty and its Sentence 2 requirement to authorise and supervise non-governmental space activities.

[542] Resolution n. 51 of 26 January 2001.

[543] Currently under review.

[544] Canadian Remote Sensing Space Systems Regulations of 2007, under the legal framework of the (a) Canadian Remote Sensing Space Systems Act, 2005 (amended 2007), (b) the Canadian Space Agency adoption of the IADC Space Debris Mitigation Guidelines, 2012, and (c) the Canadian Client Procedures Circular (CPC) for Licensing of Space Stations of 2014.

[545] Section 1 South African Space Affairs Act.

6.4. Authorisation of space activities

While authorisation of space activities is required by Article VI Sentence 2 of the Outer Space Treaty, the Treaty does not indicate in which shape or form it is supposed to take place. States parties to the Treaty are free to implement an approach they deem most suitable for their national frameworks.[546] Therefore, States would be at liberty to apply a completely arbitrary system of authorisation, if they so wished. However, from a national legal perspective, predictability and legal certainty of the domestic legal system are generally viewed as desirable. It is for that reason that many States opt to design a national law regulating space activities under their jurisdiction, and therein include a legal regulation of authorisation of space activities carried out by their non-governmental entities. In order to assess tendencies in international State practice in this regard, the text below provides examples of national approaches to implementation of authorisation of space activities at the end of the present section.

Preliminarily it may be recalled that as set out by Article VI Sentence 2, activities carried out by non-governmental entities require authorisation by the appropriate State Party to the Treaty. In consequence, space activities carried out by the State and its organs or commissioned entities do not require authorisation under international space law. In contrast, Article VI Sentence 1 stipulates that States are internationally responsible for their national space activities; this applies to the State's own space activities (carried out by its organs) as well as the activities carried on under its jurisdiction by non-governmental entities.

Interestingly, Article 14(1) Sentence 2 of the Moon Agreement refers to activities on the Moon "only under the authority and continuing supervision" of the appropriate State; as opposed 'authorisation' under Article VI Sentence 2 of the Outer Space Treaty.[547] The present section therefore is based on the interpretation of the Outer Space Treaty. However, it is contended that the different wording does not affect the substantive interpretation of the legal element and that the findings with regard to Article VI Sentence 2 of the Outer Space Treaty can be applied to the Moon Agreement.

When enacting national space legislation, States often consider Article VI at least partially as a legal basis, and commonly give substance to the provision by introducing an authorisation regime. Often, authorisation is implemented as some sort of licencing or permit system, whereby – following an application process with often explicit detail – permission is granted to a private space actor to conduct a specific activity. Usually, the conditions for granting, but also for changing or

[546] Although there is no positive international legal obligation to make the implementation of authorisation suit the domestic requirements, it is commonly so done based on national interest.

[547] This is given more attention under the section below on authorisation of space activities (Section 4 Authorisation of space activities in this Chapter).

withdrawing, are stipulated in the national space laws. Because of these practices, although the international legal framework of space activities itself does not prescribe licencing as a legal obligation, it constitutes a common element of national space legislation.[548] Licences – or, authorisation – may be grouped in different categories. Several space-faring nations have opted in their space laws to differentiate between, for instance, commercial or experimental licences.

6.4.1. State practice on authorisation of space activities

Below follow examples of how authorisation of space activities has been implemented in some States at the national level in order to provide for illustration on how States interpret their obligation of 'authorisation' under Article VI Sentence 2 of the Outer Space Treaty.

Armenia views outer space activities as having the potential to serve as its platform for cooperation and partnership with other space-faring nations, and therefore assigns a high importance to regulating the activities.[549] It adopted its legal framework for space activities only recently in 2020 and 2021.[550] The latter is industry-friendly, by for instance promoting a regime that requires 0% VAT and 0% profit tax of its non-governmental entities.

The Belgian legislation requires authorisation only for non-governmental space activities; it is not necessary for governmental space activities. This is reasoned by the Belgian interpretation of Article VI Sentence 2 of the Outer Space Treaty, which is limited to non-governmental entities.

The Danish Outer Space Act determines that "[a] space activity may only be carried out after prior approval from the Minister for Higher Education and Science".[551] The Act lists the required application for the approval and necessary documentation.[552]

[548] See: COPUOS seven elements of national space legislation (n 510) (n 511).

[549] Armenia proclaims that its space industry and IT industry constitute the major industries for the country's economic development in the coming years.

[550] Relevant for authorisation of space activities: Law No. HO-152-N on Space-related Activities of the Republic of Armenia; Decree of the Government of the Republic of Armenia On the Rules and Conditions of Licensing of Space Activities and the Approval of the License Form (Ref. N 1984-N).

[551] Art. 5 Danish Outer Space Act (act no.409 of 11 May 2016). Translation used: <https://ufm.dk/en/legislation/prevailing-laws-and-regulations/outer-space/outer-space-act.pdf> accessed 27 October 2023.

[552] Ibid. Art. 6.

It confers the compensation for damage to the operator[553] and stipulates penalties for non-compliance with the Act.[554]

The Finnish Act on Space Activities stipulates provisions regarding the authorisation of space activities and conditions thereof.[555] Special focus in the process of considering applications is given, for example, to ensuring the operator's technical expertise and financial capacity, a risk assessment of the activity, minimisation of creation of space debris and adverse environmental impact, insurance requirements, and their alignment with Finland's international obligations and foreign policy interests.[556] The authorisation procedure and the provisions concerning supervision do not apply to space activities carried out by the Defence Forces.

The South African Space Affairs Act of 1993 established the South African Council for Space Affairs.[557] This body has the power to issue,[558] amend, suspend, or revoke licences[559] and the provisions covering licencing constitute a substantial part of the Act. Activities requiring a licence include: launches from South African territory; launches outside the territory of South Africa by or on behalf of a juristic person incorporated or registered in South Africa; operation of a launch facility; and the participation in space activities by any juristic person incorporated or registered in South Africa.[560] Moreover, the conditions of a specific licence can be amended whenever the Council deems it necessary or expedient, and after the licensee was given the opportunity to make representations to it.[561]

The examples show that most States opt for a system of licencing or permits as a way to authorise their non-governmental space activities. Licences are often differentiated by activity (launch, operation, etc.) or by the character of the space activity (e.g. experimental licences).

6.4.2. Authorisation in relation to international responsibility

As the authorisation of space activities constitutes a legally binding international obligation under international space law applicable to State parties to the Outer

[553] Ibid. Art.11.

[554] Ibid. Part 9.

[555] Act on Space Activities (63/2018). Translation used: <https://finlex.fi/en/laki/kaannokset/2018/en20180063.pdf> accessed 27 October 2023.

[556] Ibid. Section 5.

[557] Section 4 South African Space Affairs Act.

[558] Section 11 South African Space Affairs Act.

[559] Section 13 South African Space Affairs Act.

[560] Section 11 South African Space Affairs Act.

[561] Section 13 (1) South African Space Affairs Act.

Space Treaty, the breach of said obligation, thus non-performance of authorisation, if attributable to the appropriate State party, may constitute an internationally wrongful act and incur international responsibility.

One interesting example in this regard was the initial launch of the SwarmTech satellites in early 2018.[562] In brief, SwarmTech,[563] a United States-based then-start-up, in a volatile situation calling for the short-dated and time-sensitive delivery of its technology and satisfaction of business investors, decided to go ahead with a planned launch of its satellites from Indian territory despite the absence of authorisation from the United States. This situation created a discussion among the international community of space lawyers, as nothing comparable had been known to have happened before. The legally interesting question regarding the incurrence of international responsibility by the United States for this event relates to the question of how authorisation and continuing supervision in Article VI are interpreted and implemented In how far were the United States under a legal obligation based on Article VI to keep informed about SwarmTech's plans to go ahead with the launch? If found in breach of the obligation in Article VI to authorise and continuously supervise SwarmTech, the United States were potentially responsible for committing an internationally wrongful act – which would be the first (publicly known) example of such an occurrence.

Another example, equally under United States jurisdiction, is the so-called Starlink Mars Independence Statement.[564] The Starlink Terms of Service[565] state under section 12, "Governing Law", that "[f]or Services provided on Mars, or in transit to Mars via Starship or other spacecraft, the parties recognize Mars as a free planet and that no Earth-based government has authority or sovereignty over Martian activities. Accordingly, Disputes will be settled through self-governing principles, established in good faith, at the time of Martian settlement".[566] In other words, the Starlink Terms of Service claim that the participating parties do not recognise the existing legal framework of international space law as being applicable to Mars. This is despite the Outer Space Treaty as well as ensuing conventions consistently referring to apply to "outer space, including the Moon and other celestial bodies"[567] and the United States being party to the Outer Space Treaty, the Rescue and Return

[562] See: Wagner (n 57).

[563] See: <https://swarm.space/> accessed 27 October 2023.

[564] See: Brett Tingley, '10 weird things about SpaceX's Starlink internet satellites', at number 5, 27 December 2022 <https://www.space.com/spacex-starlink-satellites-10-weird-things> accessed 27 October 2023.

[565] Starlink terms of service <https://www.starlink.com/legal/documents/DOC-1020-91087-64> accessed 27 October 2023.

[566] Ibid. Section 12 Sentence 2.

[567] See e.g.: Art. I Outer Space Treaty.

Agreement, the Liability Convention and the Registration Convention.[568] Interestingly, SpaceX was successful in concluding numerous agreements with the United States government including its military;[569] raising the question if the United States have accepted section 12 of the Starlink Terms of Service therein. If so, the assurance towards Starlink to full independence from any government on Earth when present on Mars may likely constitute a breach of Article VI Sentence 2,[570] which requires the authorisation and continuing supervision of activities in outer space carried out by non-governmental entities, as well as a series of other provisions of international space law referring to the legal status of outer space, including the Moon and other celestial bodies, such as for example Article I of the Outer Space Treaty. SpaceX previously communicated its plans to reach Mars with humans by the end of the decade;[571] if it succeeds, space lawyers may witness, and indeed discuss, the ensuing legal application in the not too distant future.

6.5. Continuing supervision

Similarly to authorisation of space activities, regarding 'continuing supervision', the legal framework for activities in outer space in general, and specifically Article VI Sentence 2 of the Outer Space Treaty, does not prescribe anything beyond the requirement that there be supervision. This means that neither the form of supervision, nor its frequency are prescribed. For this reason, recourse to national comparison – again – can be a useful means to assess State practice in this regard. Notably, the requirement only applies to space activities carried out by non-

[568] UN Doc. A/AC.105/C.2/2023/CRP.3, COPUOS, 'Status of International Agreements relating to activities in outer space as at 1 January 2023' 20 March 2023, p. 9, referencing also the status of the United States as depository of the Outer Space Treaty, the Rescue and Return Agreement, and the Liability Convention (as additional information, the Registration Convention is deposited with the Secretary-General of the UN and thus not available for national depositories) <https://www.unoosa.org/res/oosadoc/data/documents/2022/aac_105c_22022crp/aac_105c_22022crp_10_0_html/AAC105_C2_2022_CRP10E.pdf> accessed 27 October 2023.

[569] See for instance SpaceX's United States Air Force contract of 2022; e.g. Sandra Erwin, 'SpaceX wins $102 million Air Force contract to demonstrate technologies for point-to-point space transportation' 19 January 2022 <https://spacenews.com/spacex-wins-102-million-air-force-contract-to-demonstrate-technologies-for-point-to-point-space-transportation/> accessed 27 October 2023; Chelsea Gohd, 'SpaceX snags $102 million contract to rocket military supplies and humanitarian aid around the world: report' 28 January 2022 <https://www.space.com/spacex-air-force-102-million-dollar-contract-rocket-transport> accessed 27 October 2023.

[570] Being a primary norm; see also the discussion in Chapters 3 and 4 of this study.

[571] Mike Wall, 'Humanity will go to Mars 'in this decade,' SpaceX president predicts' 6 May 2022 <https://www.space.com/humanity-mars-2020s-spacex-president-shotwell> accessed 27 October 2023.

governmental actors under the jurisdiction of a State party to the Outer Space Treaty.[572]

In many jurisdictions that have national space legislation, continuing supervision is implemented in similar or comparable ways. The provision or provisions under the national legal framework then constitute the legal basis that the non-governmental space actors are bound by. State practice implementing the requirement of continuing supervision displays two main features. Firstly, most States with a supervision framework require reporting by the non-governmental entity in a recurring manner. Often, annual reports are required by private operators or actors in order to keep the State informed. However, as Sentence 2 of Article VI does not state anything beyond the mere mention of the term 'continuing supervision', and more specific requirements are not clarified anywhere else in the international legal framework for space activities, States are at liberty to choose the interval of their check-ups, as well as the form of latter. Secondly, many States with a supervision framework opt for on-site visits or *in situ* inspections of facilities of the non-governmental entities under their jurisdiction. This depends to a great extent on the nature of the space activity and the operation of the private actor involved. The practical implication for non-governmental entities such as space object owners or operators is a constant obligation to document their activities, and to stand ready to assist the authorities in any acquiring of intelligence that the latter deem necessary.

6.5.1. State practice on continuing supervision

Below, examples are given that provide for an overview of State practice on the requirement of continuing supervision of non-governmental entities and thus serve in the assessment of the corresponding international legal obligation. Through understanding the subsequent State practice regarding Article VI in this respect, the term itself in Article VI may be clarified in its 'ordinary meaning'.

Supervision of space activities and compliance with the Danish Outer Space Act is granted to the Minister for Higher Education and Science.[573] For this purpose, any information required by the Minister has to be provided by owners and operators and the operator's installations, buildings, or other premises are always available for access to the Minister, unless exemption is granted.[574] Costs for supervision may be charged to the owners and operators.[575]

[572] The question of whether and if so, in how far Art. VI Outer Space Treaty constitutes customary international law is here omitted

[573] Art. 16 (1) Danish Outer Space Act.

[574] Arts. 16 (2), 17, and 18 Danish Outer Space Act.

[575] Art. 19(2) Danish Outer Space Act.

The Finnish Act on Space Activities lays down provisions on the operator's obligations and on supervision relating to space activities.[576] Supervision is carried out by the Ministry of Economic Affairs and Employment.[577] It is noteworthy that supervision is specified as relating to the "compliance with this Act" – thus the Finnish Act encompasses all necessary regulation for operators.[578] The Act requires annual reports on space activities with the possibility of further information being required[579] and stipulates a right of inspection.[580]

The Law of Ukraine on Space Activity of 1996 stipulates a system of compliance certification that applies to the operation of space facilities and is issued by the Ukrainian National Space Agency.[581] The licencing system does not differentiate between facilities that are owned or operated by Ukrainian persons or entities versus foreign persons or entities. The procedures of licencing come under the authority of the Cabinet of Ministers of Ukraine.

Continuing supervision can take various forms, and States usually adapt the requirements to their national legal frameworks. Many States opt for a regulated submission of documentation, for instance, on an annual basis, and some ask in addition to pay visits on site. This can be every couple of years, or as unlimited as whenever they so wish.

6.6. The appropriate State party

The notion of the appropriate State party in Article VI Sentence 2 of the Outer Space Treaty relates to the State that is competent to authorise and continuously supervise non-governmental entities. It should be noted that appropriate States are not mutually exclusive. Contrary to, for instance, the Registration Convention, which limits the State of registry of an object launched into outer space to only one State, the Outer Space Treaty does not mention any limitations on the number of potential appropriate States. This is comparable to the notion of the launching State with regard to international liability, which also does not explicitly state that there may

[576] Chapter 3 Act on Space Activities (63/2018).

[577] Ibid. Section 14.

[578] Ibid.

[579] Ibid.

[580] Ibid. Section 15.

[581] Art. 10 Ordinance Of The Supreme Soviet Of Ukraine, On Space Activity Law of Ukraine of 15 November 1996 (VVRU, 1997, p. 2). Unofficial translation used: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/ukraine/ordinance_on_space_activity_1996E.html#sect02> accessed 27 October 2023.

be more than one launching State; however, it has become a usual practice that space objects are launched by more than one launching State.[582]

It is thus possible that one non-governmental space activity will trigger two or more appropriate States, meaning that it will require authorisation from all appropriate States concerned. An example of this is Rocket Lab in New Zealand: due to its geographical location, its activities fall under the New Zealand Space Act and require the New Zealand licencing procedure. However, because of a link of the company to the United States, United States licencing procedures also need to be followed. In practice, this will depend mostly on the respective national provisions that define their scope of application for licensing of their non-governmental activities.

An important aspect to be discussed with regard to the appropriate State is the reference to 'activities' in Sentence 2 of Article VI. While Sentence 1 of Article VI refers to '*national* activities' in contravention to the Treaty and international law giving rise to international responsibility, Sentence 2 of the same provision relates simply to activities. It is theoretically possible that an activity does not qualify as a *national* activity; but triggers the primary obligation of the appropriate State to authorise and continuously supervise. In this instance, the State (or States) would authorise and continuously supervise an activity of their non-governmental entities that it could not incur international responsibility for.

The decisive aspect here is the understanding given to 'the appropriate State Party to the Treaty'.[583] Since Chapter 4 previously concluded that 'national activities' can be understood to refer to activities under the jurisdiction of a State,[584] if the appropriate State party were to mean jurisdiction, too, both references would be synonymous, and an appropriate State authorising and continuously supervising a non-governmental entity (under its jurisdiction) would potentially always be able to incur international responsibility for the conduct of its non-governmental entities. If, however, the two terms (national activities and appropriate State) were not to refer to the same nature of activities, it might be possible that a State would not be able – under international space law – to incur responsibility for some of the activities of its non-governmental entities. See Table 23 below for a comparison of the wording in both sentences of Article VI of the Outer Space Treaty.

[582] See: Chapter 5.

[583] 'Appropriate State' is used in this manuscript as a shortened but synonymous version of the 'appropriate State Party to the Treaty',

[584] See: Chapter 4.

Table 23 **Comparison of 'activities' in Art. VI Sentences 1 and 2 of the Outer Space Treaty**	
Art. VI Outer Space Treaty Sentence 1	***Art. VI Outer Space Treaty Sentence 2***
States Parties to the Treaty shall bear international responsibility for national *activities* in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty.	The *activities* of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.

Following the methods of the law of treaties, the ordinary meaning of 'appropriate State Party to the Treaty' is relevant once again.[585] This should be assessed in context, and in light of the object and purpose of the Outer Space Treaty.[586] When assessing the context, there are no subsequent agreements or instruments that might clarify the meaning of the term as referred to in Article 31(2) of the Vienna Convention on the Law of Treaties; as the Legal Principles Resolution refers to the State 'concerned'. Additionally, although application of the provision leads to the preamble of the Outer Space Treaty being relevant, there is no further reference to the 'appropriate State Party' in the Outer Space Treaty.[587] Moreover, together with the context of the Outer Space Treaty, subsequent practice may be taken into account as well as any relevant rules of international law that are applicable between the parties of the Outer Space Treaty.[588]

6.6.1. State practice on appropriate State

To clarify the subsequent practice, it is helpful to turn to national space laws that are addressing the authorisation and continuing supervision of non-governmental space activities. The meaning of appropriate State is closely connected to the scope of application of national space laws as mentioned above as the first of the seven elements of national space legislation as identified by COPUOS. For instance, the Finish Act on Space Activities of 2018[589] refers to non-governmental entities it

[585] Art. 31(1) Vienna Convention on the Law of Treaties.

[586] Ibid.

[587] The term is mentioned again in Art. 14 Moon Agreement, but this is a later repetition of Art. VI Outer Space Treaty and therefore not relevant for this interpretation.

[588] No subsequent agreements as referenced in Art. 31(3)(a) Vienna Convention on the Law of Treaties is applicable.

[589] Finland, Ministry of Economic Affairs and Employment, *Act on Space Activities* (63/2018), translated from Finnish (legally binding only in Finnish and Swedish)

seeks to regulate as 'operators',[590] which includes legal and natural persons. Furthermore, the scope of application of the Act is defined as under Finland's territorial jurisdiction, personal jurisdiction, and extra-territorial jurisdiction aboard Finnish-registered vessels or aircraft.[591] It follows that the appropriate State party is usually the State that has jurisdiction over the space activity.

6.7. Legal obligations of States in respect of non-governmental space activities

This chapter has answered the fourth and final research question, which concerns space activities carried out by non-governmental entities. The method applied in this instance was described in Chapter 1. Since the clarification of Sentence 2 of Article VI of the Outer Space Treaty lies at the heart of the present chapter, the international law of treaties can serve with its methodology to clarify the meaning of 'appropriate State Party to the Treaty'. This is true despite the fact that Principle 5 of the Legal Principles Declaration does not constitute a provision of a legally binding instrument,[592] the Legal Principles Declaration being a General Assembly resolution, as it is referred to only secondarily in order to assist in the identification of the meaning of Article VI Sentence 2. After summarising the sub questions, this section provides an overall assessment of research question 4, considering the role played by non-governmental entities in international space law.

It may be recalled that Sentence 2 of Article VI, concerning the participation of non-governmental entities in the space arena, bears two general characteristics. Firstly, it is an extension of the principle of international responsibility in Sentence 1 of the

<https://tem.fi/documents/1410877/3227301/Act+on+Space+Activities/a3f9c6c9-18fd-4504-8ea9-bff1986fff28/Act+on+Space+Activities.pdf?t=1517303831000> accessed 27 October 2023.

[590] Section 4(3) ('Definitions') Finnish Space Act 2018, stating that "operator means a natural or legal person who carries on or intends to carry on space activities or is effectively responsible for such activities".

[591] Section 1 ('Scope of Application') Finnish Space Act 2018 states:
"This Act applies to space activities carried on within the territory of the State of Finland.
The Act also applies to space activities outside the territory of the State of Finland if they are carried on
1) on board a vessel or aircraft registered in Finland; or
2) by a Finnish citizen or a legal person incorporated in Finland".

[592] The Legal Principles Declaration, in whole or in part, has occasionally been said to express customary international law; see e.g., Cheng for a strong assessment of customary international law formation in the early days of space law: Cheng (n 270). This manuscript does not extend to an assessment of the customary international law status of international responsibility for activities in outer space, including the obligation of States to authorise and continuously supervise.

provision.[593] Secondly, and contrary to Sentence 1 of Article VI, it classifies as a primary norm and thus entails obligations under international space law for States parties to the Treaty, meaning that States can incur international responsibility for their (attributable) breach of Article VI Sentence 2.

The analysis has shown that there is no international legal requirement to enact national space legislation. Authorisation of space activities is one of the seven key elements of national space legislation as identified by COPUOS, and thus the way in which this international legal obligation (based on Sentence 2 of Article VI) is implemented in the national context is up to States, as there is no further specification in the legal framework for activities in outer space that would clarify the shape that authorisation of space activities should take. From a national legal perspective, States are thus entirely free to implement this legal obligation in any way they deem suitable to their national legal system and constitution.

However, when turning to State practice for further clarification, authorisation of space activities can take various shapes and forms at the national level. It is striking that most States appear to implement a form of licencing or permit system. The specific coordinates thereof may differ per requirements of individual needs and aims, but there is a widespread practice among States that have adopted national space legislation regulating non-governmental entities under their jurisdiction to take recourse to licencing or permits in order to implement Sentence 2 of Article VI at the national level. Similarly, the continuing supervision of non-governmental space activities by States can be observed Most States use either/or, or a combination of, distance reporting and *in situ* inspection in order to keep abreast of the activities of their non-governmental entities.

Regarding the ordinary meaning of 'appropriate State party' to the Outer Space Treaty, it was shown that there is a difference between Sentence 1 of Article VI of the Treaty referring to international responsibility of States for 'national activities' (including the activities of their non-governmental entities) and Sentence 2 of the same provision creating a legal obligation for 'activities' of non-governmental entities on the side of the State. This means that there does not necessarily need to be an overlap of activities which a State authorises/supervises/is the appropriate State party for. Theoretically, it is possible that these two groups of activities do not coincide, and that a State could authorise and supervise more activities of its non-governmental entities than it is potentially internationally responsible for. However, in practice, the omission of 'national' in the second reference to activities in Article VI may not matter as much. As was concluded in Chapter 4, 'national' activities are commonly understood as referring to the jurisdiction of a State. It is not unlikely that States would implement their obligation to authorise and continuously supervise activities of their non-governmental entities in line with the delimitation

[593] Gerhard, *Cologne Commentary on Space Law Volume I* (n 308) p. 105.

of their jurisdiction for space activities; in practice, thus, the different reference in both Sentences of Article VI of the Outer Space Treaty may not matter.

To connect the findings in this chapter with those of the previous chapters, it should be emphasised that the rules on attribution of State responsibility under Article VI bear *only* on Sentence 1 of the provision. The ordinary meaning of appropriate State party has no consequences for the legal fact that States are internationally responsible for national activities in outer space, regardless of whether they are carried out by governmental agencies, or by non-governmental entities.

Chapter 7 – Conclusion

7.1. Overview

By providing a comprehensive legal analysis of international responsibility for activities in outer space, the present study resolves the current underrepresentation of the topic in space law commentary. It offers a structural legal assessment of Article VI of the Outer Space Treaty, which clarifies the interpretation of the provision in coherence with the view of international space law as an integral part of the international legal system. In addition, this study has provided a methodology for the assessment of international responsibility for activities in outer space, which is another novel contribution to the field. This legal analysis is all the more important, as in the current modern space age the space industry is changing and expanding with momentum. Since the beginning of the space age, when space activities were primarily a governmental domain, the arena has moved towards more private and increasingly commercial activities, and displays a general increase in activities and actors. This development is referred to under various headings, of which 'NewSpace', 'Space 2.0', the 'space industry revolution', 'space entrepreneurship', or the 'emerging space economy' are but some. Their common denominator is an increasing financial investment in outer space, and the understanding of the space industry as a for-profit one. To provide context, *The Space Report* Q2 2023 projects an 41% increase in the global space economy over the next five years.[594]

The modern space age not only results from development of space technology and investments of the private sector. It was to a large extent initiated by governments, who have for instance, incentivised the private space industry through favourable conditions under domestic policy and law, offer tenders and financial investments, and developed their international and national legal frameworks for space activities. As the threshold of entering the space arena lowers, there is also an increasing number of space-faring nations around the globe.

[594] The Space Report Q2 2023; a publication of Space Foundation, a non-governmental organisation offering information, education and collaboration for the global space ecosystem. See: Space Foundation Editorial, 'Space Foundation Releases The Space Report 2023 Q2, Showing Annual Growth of Global Space Economy to $546B' (*Space Foundation*, 25 July 2023) <https://www.spacefoundation.org/2023/07/25/the-space-report-2023-q2/> accessed 27 October 2023.

The changes of the modern space age were outlined in detail in Chapter 2 of this study and presented along four dimensions of the changing space industry. By introducing a structure that differentiates on one hand, between *actors* and *activities*, and on the other, between *qualitative* and *quantitative* increases, this study provided insights into the structural architecture of developments affecting the space industry worldwide. The global increase in space activities and space actors also manifests in the number of States deciding to participate in the development of space policy and law at the international level. UN COPUOS has been consistently growing in member States over the past years and with 102 States members, is one of the largest UN committees.[595]

Indeed, the legal framework for activities in outer space is increasingly confronted with questions as to how to apply this body of law to current space activities. One of the central notions of international space law is international responsibility for activities in outer space. International responsibility under international law generally, ensures the enforceability of the legal order. This is true just as much for international space law. Interestingly, the notion of international responsibility for activities in outer space has received relatively little scholarly attention in international space law commentary, compared to other areas of international space law. This may be due to international responsibility yet never having been invoked for activities in outer space – thus, to date, the question remains a relatively theoretical one. Even though there are arguably a number of situations in which international responsibility may play a role, such as the case of unauthorised launch of the first four SpaceBEES by SwarmTech, these have not been presented at the forefront of space law commentary.

This study is inspired and driven by the current lack of a comprehensive and detailed general legal assessment of international responsibility for activities in outer space from the angle of public international law. Without it, ambiguity remains as to how this notion applies to outer space activities. The core of the present study is a legal assessment of international responsibility for activities in outer space. Because the central provision for that is Article VI of the Outer Space Treaty, this provision is in the spotlight of this study. Other relevant norms were considered insofar as they assist a legal analysis of international responsibility for activities in outer space.

The study posed the overarching research question:

> How is Article VI of the Outer Space Treaty to be interpreted in the modern space age to best fit with the idea of space law as an integral part of the international legal system (coherent interpretation)?

[595] UNOOSA, 'COPUOS Membership Evolution' <https://www.unoosa.org/oosa/en/ourwork/copuos/members/evolution.html> accessed 27 October 2023.

This question is addressed by way of four individual research questions, which have been answered in Chapters 3 to 6. The present final chapter of this study summaries these findings in Section 7.2 below, referring to the individual research questions as presented in Chapter 1, so as to provide an answer to the overarching research question in Section 7.3. Finally, Section 7.4 offers considerations on the potential future relevance and application of those findings.

7.2. Summary of findings

7.2.1. The four research questions recalled

The four research questions in this study reflect aspects of the overarching research question. They build on one another, and their sequence in this study allows each chapter to build on the previous, and to serve as the starting point for the next research question.

A fundamental differentiation was made at the outset between primary and secondary norms of international law. This permitted a structural analysis from the beginning of the research regarding the kinds of norms that are set forth in Article VI of the Outer Space Treaty and facilitated the legal assessment thereof.

The research questions are recalled in Table 24 below.

Research question 1 was addressed in Chapter 3, including its theoretical foundations, general principles of law, and fragmentation of international law. Research question 2, aiming at a legal analysis of international responsibility for activities in outer space, was addressed in Chapter 4. The assessment of the third research question on the relationship between international responsibility for activities in outer space and international liability and registration of objects launched into outer space followed in Chapter 5. Research question 4 was addressed in Chapter 6, which discussed the primary obligations of the 'appropriate State' to require 'authorisation' and 'continuing supervision' of activities of non-governmental entities under Article VI of the Outer Space Treaty, as well as aspects of their domestic implementation. The following sub sections recall the findings individually.

Table 24 **Table overview of research questions**			
Number	***Text***	***Sub questions***	***Chapter/content***
Overarching research question	**How is Article VI of the Outer Space Treaty to be interpreted in the modern space age to best fit with the idea of space law as an integral part of the international legal system (coherent interpretation)?**	**n/a**	**Chapter 7**
Research question 1	How do the legal rules on State responsibility contained in international space law relate to the general rules on international State responsibility under international responsibility law?	n/a	Chapter 3 *International space law in relation to international law*
Research question 2	How do the notions of international responsibility under international space law and under (general) international responsibility law jointly shape international responsibility for activities in outer space as referred to in Article VI Sentences 1 and 3 of the Outer Space Treaty?	n/a	Chapter 4 *International element of Article VI Outer Space Treaty (secondary norm)*
Research question 3	How do the findings of research question 2 relate to other central notions of international space law, namely:	(a) the concept of 'launching State' under Article VII and of the Outer Space Treaty and the Liability Convention?	Chapter 5 *Relationship of Article VI Outer Space Treaty with other relevant international space law provisions*
		(b) the concept of 'State of registry' under Article VIII of the Outer Space Treaty and the Registration Convention?	
Research question 4	Which role does international space law ascribe to non-governmental entities under Article VI Sentence 2 of the Outer Space Treaty?	(a) What does the concept of 'authorisation' of activities in outer space entail, and how is it implemented?	Chapter 6 *National element of Article VI Outer Space Treaty (primary norm)*
		(b) What does the concept of 'continuing supervision' of activities in outer space entail, and how is it implemented?	
		(c) Which State is the 'appropriate State Party'?	

7.2.2. Findings on international space law as a field of international law (research question 1)

Article III of the Outer Space Treaty determines international law, including the UN Charter, to be applicable to outer space. Therefore, international space law must be viewed as a branch of public international law, and as such, must be assessed in light of other relevant fields of international law.[596] The legal assessment therefore concerns a field of law that cannot be viewed as independent of the international legal order, but that stands in correlation with other fields of international law.

The interplay between international space law and other fields of law can be considered from various vantage points. In the assessment of research question 1, the perspectives of the conception of international responsibility, of general principles of law, and of fragmentation of international law were considered. The conceptual analysis in Chapter 3 was based on general aspects of the distinction between primary and secondary norms. This enabled dividing up Article VI of the Outer Space Treaty, which, as was shown, contains more than one legal norm. The distinction of primary and secondary norms thus served as a tool for identifying the legal norm setting out international responsibility for activities in outer space. While in a normative dimension, it is not a watertight distinction, it constitutes a useful instrument that highlights important characteristics of international responsibility. International responsibility law is generally considered to consist of foremostly secondary norms, which apply to the legal assessment of primary norms.

The relationship between international space law and general principles of law was also considered. A number of well-recognised general principles of law were presented and highlighted in their relevance for international space law. These were the principles of *pacta sunt servanda*; *bona fides* or good faith; *lex superior*; *lex posterior*; *lex specialis*; and *venire contra factum proprium* (estoppel). The analysis showed that *pacta sunt servanda*, good faith, and estoppel play a pertinent role in international space law. The principle of *lex specialis* also carries essential relevance for an assessment of the relationship between international space law and international law.

Finally, international space law as a field of international law was posited in the context of fragmentation of international law. The ILC's work provided the foundation for the analysis, as in the sense of its work, special or self-contained regimes were understood to display some degree of regulation deviating from international law, but as incapable of ever being truly self-reliant or self-contained While the term special regime in the present study has been used interchangeably with self-contained regime, it cannot be concluded that fields of international law can exist in isolation, free from any interaction with any other fields of international law. Special regimes, while possessing special rules only applicable to their own

[596] Art. III Outer Space Treaty.

area, will draw on public international law for general principles and regulation of matters that are not covered by their own (special) rules.

The ILC's work, furthermore, provides the foundation for the understanding of the principle of *lex specialis* as used in this study. While different legal schools assign varying properties to the principle, the conception here was built on the supposition that the applicability of the principle does *not* presuppose a conflict of norms. It is possible, that two overlapping legal norms 'point towards the same direction', rather than in adversarial directions. The principle of *lex specialis* was defined as applying at a norm-to-norm level, which results in the specific legal assessment of legal norms or rules as opposed to the characterization of an entire field of law. With reference to the ILC's work on fragmentation, it can be concluded that international space law, due to its distinct regulation of international responsibility, constitutes a special field of international law.

Research undertaken in Chapter 3 established a clear relationship between *lex specialis* and *lex generalis* applicable to international responsibility for activities in outer space, whereby international space law can take recourse to other relevant fields of international law such as international responsibility law and the law of treaties. The research also showed that different fields of law are not mutually exclusive, and their norms can be applied simultaneously to establish the legal regulation of a certain subject area. With regard to international responsibility for activities of outer space, it is thus clear that it may draw from norms of international space law, norms of the law of treaties, and norms of international responsibility law. Conclusions of such general character have the potential to be relevant also for specific subject areas regulated under international law other than international responsibility for activities in outer space. With this, the study gains wider relevance, concerning for instance, the discourses on norm identification and international law as a system of law.

7.2.3. Findings on international responsibility for activities in outer space (research question 2)

The second research question concerned the commonalities and differences of the legal regime applicable to international responsibility for activities in outer space from the general body of international responsibility law, the latter being mainly reflected in the ILC's Articles on State Responsibility and the Articles on Responsibility of International Organisations. As the previous chapter concluded that various fields of international law may simultaneously apply in coherently interpreting a norm such as international responsibility of outer space, in Chapter 4 international space law, international responsibility law, and the law of treaties were applied to the codified norm in Article VI Sentences 1 and 3 of the Outer Space Treaty.

It was concluded that the basic conceptions of international responsibility under international space law and under international responsibility law are congruent, despite the fact that the Outer Space Treaty was adopted in 1967 and the Articles on State Responsibility in 2001. This study offered an explanation for this by clarifying that the Articles on State Responsibility drew on decades of international jurisprudence and codified some of the pre-existing norms of customary international law. Through the adoption of the Articles on State Responsibility, an immense leap was achieved in this field of law, which – although based on previously existing interpretation and legal *dicta* – importantly, clarified, the legal rationale and application of international State responsibility law and was confirmed by subsequent practice. Therewith, the drafters of Article VI of the Outer Space Treaty considered the notion of international responsibility at the time of the negotiations, and it also found its way into the Articles on State Responsibility.

Legal interpretation of international responsibility for activities in outer space concentrated on the interpretation of Article VI Sentences 1 and 3 of the Outer Space Treaty, as other provisions of international space law addressing international responsibility were examined and the conclusion was drawn that these constitute repetitions or affirmations of the previously codified Article VI of the Outer Space Treaty. The legal interpretation of Article VI Sentences 1 and 3 showed that the main differences between international responsibility law and responsibility under international space law lie in the attribution of conduct to States and international organisations. Under international responsibility law, in addition to the conduct of State organs being attributable, the conduct of a non-governmental entity can only be attributed to the State of a sufficiently close connection can be established (conduct on behalf of the State). Under international space law, in contrast, attribution is far-reaching and includes any conduct by a non-governmental entity that qualifies as a national activity.

As was elaborated in Chapter 4, national activities since the beginning of the space age have been interpreted as activities falling under the jurisdiction of a State. Regarding the international responsibility of international organisations under Article VI, the reference to 'national' activities is dropped and international organisations as well as their member States are responsible for 'activities' carried out by such organisations. The far-reaching vision of international responsibility for space activities can be explained by reference to the ultra-hazardousness of the activities: the conduct of any non-governmental entity performing a (national) activity in outer space will potentially incur the responsibility of its State or performing international organisation.

The interrelation of the applicable law to international responsibility for activities in outer space was assessed as follows. In essence, the applicable law consists of a provision of international space law that enshrines the principle for the field of law (in Article VI of the Outer Space Treaty) and a whole body of law that has evolved since the codification of that provision and may be relevant to its application

(international responsibility law). A coherent legal interpretation of Article VI thus entails that the general framework of assessing international responsibility as set out in the Articles on State Responsibility applies and follows the methodology of the Articles. However, regarding the rules of attribution, Article VI provides a more specific legal regulation, which finds application by way the *lex specialis* principle. As a result, instead of applying Articles 5 to 11 of the Articles on State Responsibility on establishment of a sufficiently close link between the acting non-governmental entity and the State, Article VI Sentence 1 applies as the more special rule of attribution and determines that the State may incur international responsibility for all national activities carried out by non-governmental entities under its jurisdiction.

In the conception of the Articles on State Responsibility, international responsibility is borne for an internationally wrongful act, which is a direct reference to the conduct of a subject of international law (State in the case of the Articles on State Responsibility) – including acts and omissions. This corresponds to the second mention of international responsibility in Article VI: the assurance that national activities are carried out in conformity with the provisions of the Treaty, and thus as an enforcement mechanism of international law. The second mention of international responsibility for activities in outer space is therefore the decisive element of Article VI that forms the legal basis for any international responsibility assessment for activities in outer space. Article VI must be read in conjunction with Article III of the Outer Space Treaty, stipulating that international law, including the UN Charter, is applicable to space activities. Therefore, an internationally wrongful act may build on a breach of either a rule contained in the Outer Space Treaty or another rule of international law, including the UN Charter.

When applying international responsibility law to inform Article VI of the Outer Space Treaty, the concepts of international responsibility under both fields of international law require closer attention. From today's understanding under international responsibility law, built on the Articles on State Responsibility and Articles on Responsibility of International Organisations, the two instances in which Article VI assigns responsibility have to be assessed individually.

7.2.4. Findings on the relationship between responsibility, liability, and registration of space objects under international space law (research question 3)

The third research question relates the findings of research question 2 to other relevant provisions of the Outer Space Treaty, in that it places a strong focus on the concept of the 'launching State', which is defined in the Treaty and consecutive international space law treaties (Liability Convention, Registration Convention) as

the State Party "that launches or procures the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched".[597] What is referred to as the fourfold definition of the concept the launching State is at the core of the legal regulation of international liability for activities in outer space (Article VII of the Outer Space Treaty and Liability Convention) and registration of objects launched into outer space (Article VIII of the Outer Space Treaty and Registration Convention).

Chapter 5 assessed the detailed relationships between specific elements of the respective notions, namely the concepts of 'national activities', 'appropriate State party', 'launching State', and 'State of registry'. As a methodology to assess the compatibility of concepts in the process of interpretation, it took recourse to the 'qualifying factor methodology'. This was introduced in Chapter 1 of this study and developed in accordance with the changes in the space industry during the current modern space age.

There are many situations where the 'appropriate State party' in Article VI of the Outer Space Treaty overlaps with the concept of the launching State, thus creating a harmonious interplay of the provisions. There is a fundamental difference between these concepts: while the phrase 'national activities' in Article VI emphasises the process of the *activity*, the determination of the launching State is a factual assessment that freezes in time the moment of launch of an object launched into outer space and is therefore of a more *static* nature.

The example was provided of a case of transfer of ownership of an object launched into outer space from a launching State to a State that does not qualify as a(n original) launching State. While both international liability and registration of said object may be addressed and redistributed bilaterally (or multi-laterally) between the States involved, this does not affect the results under international space law. The acquiring (non-launching) State may be under a contractual obligation by such agreement to perform obligations arising from incurred international liability, thus being under a bilateral (or multi-lateral) treaty obligation to perform compensation; however, the original launching State(s) is/are unable to withdraw from their obligations under international space law to perform said compensation even after the sale and conclusion of bilateral (or multi-lateral) agreement. In consequence, the old adage 'once a launching State, always a launching State' remains unerringly valid and a victim State party (or State parties) to the Outer Space Treaty and/or consecutive conventions (Liability Convention and Registration Convention), if deeming it more promising for the delivery of compensation, may lawfully approach one or more of the original launching States in order to realise its/their claim(s).

[597] Quoted *exempli gratia*, Art. VII Outer Space Treaty on international liability.

7.2.5. Findings on States' legal obligations for space activities carried out by non-governmental entities (research question 4)

The fourth research question addressed the role that international space law ascribes to States with regard to the activities carried out by non-governmental entities. It focussed on the primary legal obligations of States (the 'appropriate State Party to the Treaty') in the authorisation and continuing supervision of 'their' non-governmental entities. Primary norms may consist of rights and obligations. In international space law, we can see the burgeoning of legal rights and obligations with the adoption of the Legal Principles Declaration (although non-legally binding).

Chapter 6 first provided an overview of the historic evolution of non-governmental activities in outer space, and then compared the role that international space law ascribes to non-governmental entities carrying out space activities. In closer detail, it analysed what the concepts of 'authorisation' of activities of non-governmental entities in outer space by the relevant State party(ies) to the Outer Space Treaty and 'continuing supervision' of the same. For both elements, it provided an overview of current implementation in national frameworks as an overview of how State practice evolved in both regards and how Article VI of the Outer Space Treaty is implemented in national legal systems of space-faring nations. The results were linked back, by application of the law of treaties, to an interpretation of the second sentence of Article VI of the Treaty. Moreover, the chapter examined what may be understood under the reference of the 'appropriate State Party' to the Outer Space Treaty, which is under an obligation to authorise and continuously supervise activities of non-governmental entities. Examples in this section clarified where potential complication might arise with regard to the 'appropriateness' of a State party to the Outer Space Treaty.

7.3. Conclusion: Article VI of the Outer Space Treaty

Having reiterated the findings of the four individual research questions above, the task at hand is now to combine these to answer the overarching question of this study: how is Article VI of the Outer Space Treaty to be interpreted in the modern space age to best fit with the idea of space law as an integral part of the international legal system (coherent interpretation)? As mentioned in Chapter 1, the relevance of this question stems from current lack of common or shared approach to an interpretation and understanding of what Article VI of the Outer Space Treaty entails. This lacuna is of concern because space activities are increasingly carried

out by non-governmental entities and, in order to minimise the occurrence of harm, require adequate regulation by their competent States. Without a clarification of the principle of international responsibility for activities in outer space, States may also be ignorant to the consequences of not living up to their obligations under international space law.

Moreover, the analysis in this study reveals that the concept of responsibility in international space law is closely related to the one under international responsibility law. It must be clarified for spacefaring States that they can indeed be held internationally responsible if failing to live up to their international obligations under space law, same as they can in respect of other fields of international law. A clarification of primary norms of international space law assists them in ensuring that they can meet these obligations.

The absence of clarity of the provision can be noted in several respects. Chiefly, there is no subsequent convention that clarifies its 'principle' notion, as is the case with some of the other provisions of the Outer Space Treaty. Nor was a subsequent non-legally bindings instrument adopted at, for instance, COPUOS, that could clarify central notions of Article VI of the Treaty. Additionally, to date there has not arisen any legal conflict or dispute at the international level where one or more States invoked the provision; neither during judicial proceedings, nor during other dispute settlement procedures. To a certain extent, Article VI has been subject to academic debate, but also here it can be noted that some of the available literature treats superficially the legal assessment of international responsibility for activities in outer space; in any case, little has been written on Article VI when compared to other areas of space law. In the course of this research, I have at times encountered the statement that Article VI or respectively, international responsibility for space activities, has never been dealt with in a comprehensive fashion.[598] It is my sincere hope, that this study contributes to expanding the scholarship on the topic.

The lack of a uniform understanding of Article VI of the Outer Space Treaty is becomes a greater cause for concern given changes in the way activities in outer space are being conducted. The space industry is currently undergoing significant developments and changes, and it is also in light of those that it is necessary to survey their impacts and effects on the legal regulation of accountability regimes in international space law. Most new developments can be summarised under the term modern space age, which, in rough terms, refers to an increase as well as privatisation and commercialisation of space activities.

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[598] See e.g. Frans von der Dunk, 'Liability vs Responsibility in Space Law: Misconception or Misconstruction?' (1992) Proceedings of the Thirty-fourth Colloquium on the Law of Outer Space, pp. 363-371, p. 363 <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1020&context=spacelaw> accessed 27 October 2023; Space Legal Issues Blog on 'Responsibility' <www.spacelegalissues.com> (website not active as of 27 October 2023).

The emergence and growth of the private sector involved in space activities from the 1980s until today, including the current modern space age, are thus directly affected by the interpretation of this provision. What is noticeably missing in international space law at this point, however, is a well-structured, methodical, and comprehensive assessment of the provision, shedding light on all its components, their possible interpretations, and – last but not least – the relationship that Article VI of the Outer Space Treaty has with other norms of international law and other provisions of the Outer Space Treaty. This has been the objective of the present work. Based on the aspiration to assess the law on international responsibility for activities in outer space – a fairly broad field – this study has sought to examine the relevant elements severally, therefore moving step by step through the important aspects that this examination touches upon.

I have argued that by recourse to the doctrine of dynamic interpretation, the developments under international law after the adoption of the Outer Space Treaty are relevant for the ensuing development of international space law. Through this understanding, the developments under the law on State responsibility as well as the law of treaties could be put in reference to international space law.

The main references in the clarification of international responsibility for activities in outer space is international responsibility law and the law of treaties, and the comparison and interaction between these fields of international law. Within this framework, the central objective of this study to clarify the existing law on responsibility for activities in outer space (*lex lata*) has been accomplished It is important to add that the understanding of Article VI of the Outer Space Treaty in this study is entirely based on existing law, and merely clarified it. The conception of said principle as stipulated in Article VI aligns well with the conception of international responsibility under international responsibility law. Therewith, international responsibility law can be referred to in order to clarify the content and to establish a methodology of international responsibility for activities in outer space as was shown in the preceding chapters. This is true despite relatively recent and significant changes in the space industry in the modern space age, as the rules on attribution of international responsibility under international space law are sufficiently far-reaching as to encompass any national activity of a non-governmental entity. And should such an event occur, a use case has been created for when an internationally wrongful act involves activities in outer space.

The emphasis of the present study lies with the notion of international responsibility for activities in outer space, which is regulated chiefly in Article VI. This angle was chosen, as the provision – being the primary one to enshrine the principle of international responsibility for space activities in the *corpus juris spatialis* – is central to the body of international space law. Article VI is one of the essential provisions of international space law, as it addresses States' international responsibility for their space activities. State responsibility as a legal principle constitutes a cornerstone of international law, and in the same way, State

responsibility for activities in outer space – and therewith, Article VI of the Outer Space Treaty – constitutes a cornerstone for international space law. This broad question implies the necessity to analyse international responsibility for activities in outer space, as well as the legal obligations of States with regard to their non-governmental entities carrying out space activities.

A necessary part of this assessment is also the relationship of Article VI to other relevant provisions of international space law regarding international responsibility, which *en gros* reiterate the notion set forth in Article VI; such as Article 14 of the Moon Agreement stipulating international responsibility for national activities on the Moon. Thus, the assessment includes the general concept of international responsibility in international space law, based on *all* relevant codified provisions of international responsibility for space activities – in other words, while Article VI of the Outer Space Treaty is the main provision of international space law addressing international responsibility for space activities, it is not the only one, and the concept of international responsibility for space activities must be assessed in its entirety.

Being a study of public international law, the study also posited the topic of research within the discourse on the fragmentation of international law, by taking account of international space law as a branch of public international law. The questions from the introduction are recalled below and answered briefly with respect to the scope of this study.

- How can the *lex specialis* principle be applied in the assessment of a relationship between different fields of international law?
    - The *lex specialis* principle provides guidance in situations of conflict of legal norms or overlap of the content of the norms as to which of the legal norms should take precedence over the other(s).
- What role does the *lex specialis* principle play with regard to the interpretation of treaties?
    - It is codified in the Vienna Convention on the Law of Treaties and one of the underlying principles of treaty interpretation.
- Can a field of international law ever be truly independent of other fields of international law?
    - There is far-reaching consensus that special fields of law can never be truly self-reliant or independent of international law (self-contained is therefore defined as not truly self-reliant).
- Can the application of the *lex specialis* principle under a special regime be informed by its application in other special regimes (analogy)?

    - Yes, as the *lex specialis* principle is applied as a general principle of law, the way in which it is applied can inform its application in other fields of law by analogy.

- Does the development towards an increasingly more specialised and diversified international law pose a threat to the unity of the international legal system?
    - International law displays both a unity as a legal system as well as special fields of international law. These can co-exist simultaneously, therefore, more specialised and diversified international law does not pose a threat to the unity of the international legal system.

The brief answers as formulated above limit themselves to the scope of the research in the present study. Naturally, no general statements that are valid for public international law as such can be drawn from the investigation of but one of its branches.

Article VI of the Outer Space Treaty sets forth a far-reaching concept of international responsibility, in that States can incur international responsibility for space activities not only for their own space activities, carried out by their organs; but also, for space activities which are carried out by a private, or – in the words of the Outer Space Treaty – non-governmental entity. Under international law, and this is equally applicable to international space law, international responsibility exists when there is an internationally wrongful act.[599] To prove the existence of an internationally wrongful act, a breach of an international legal obligation and its attribution to one or more State(s) is required.[600] Under international responsibility law, this is based on the main rule that acts of State organs are considered acts of that State.[601] There are other categories of acts that can be attributed to a State, but these are specifically mentioned in the Articles on State Responsibility.[602] Thus, the attribution of conduct (actions and omissions) to the State under Article VI is different from the rules on attribution under the law of international responsibility. Its wider scope is explained by the ultra-hazardous properties of the outer space environment, which render space activities ultra-hazardous activities.

[599] Art. 1 Articles on State Responsibility.

[600] Art. 2 Articles on State Responsibility.

[601] Art. 4 Articles on State Responsibility.

[602] Arts. 5-11 Articles on State Responsibility.

7.4. Outlook: relevance for the future of the legal framework of international responsibility for activities in outer space?

This study has shown that Article VI of the Outer Space Treaty, in conjunction with other provisions of international space law that are relevant as well as international responsibility law under general international law, offers a sufficient legal basis to serve the finding of international responsibility for activities in outer space for the foreseeable future. Crucially, this study has provided proof and methodologies for interpreting international responsibility for activities in outer space in a contemporary context. This shows that the five UN treaties on outer space, despite having been codified around five decades ago, remain applicable and relevant, and stand ready to serve as a legal framework of space activities for the years to come. Given the importance of international responsibility as the enforcement mechanism under international (space) law, this finding is of considerable importance.

With reference to norms and methodologies of international law, this study has eliminated ambiguities regarding a coherent legal interpretation of Article VI of the Outer Space Treaty, and presented a solution that enables a continuing application of the existing legal framework for outer space. It remains to be hoped that a practical application of this theoretical assessment of international responsibility for activities in outer space will not be necessary for a very long time. However, the clarification of a coherent interpretation now stands ready for when that time comes. The present research carries an additional benefit of highlighting international responsibility for activities in outer space as an essential notion of international space law, which – as may be forgivingly repeated – lies at the core of international space law just as (general) international responsibility lies at the heart of public international law. This in turn may guide the interpretation of other notions of international space law in a more general sense, and can therefore be beneficial for the interpretation of the entire body of international space law.

Some of the findings in this study concern the nature of international law at large and the relationship of different fields of international law. The previous section has revisited brief answers to a number of questions that were raised in this regard in the introduction. Future research may continue the deliberations regarding other branches of public international law in this regard, so as to assess whether the tendencies expressed in the chapter can be considered true for other fields of law as well. It could investigate these questions in a broader frame of reference and find answers of a more general character. The conclusions in this study may possibly also be relevant by analogy for an analysis of other norms or special regimes under public international law.

When compared to the era of the space race, the Ansari X Prize heralded a new way in which space activities are undertaken. The space industry is changing and evolving, and will likely continue along its present path in the years to come. Given the increase in for instance, space launches, in space objects in orbit of the Earth, the emergence of an unseen diversity of space actors, and its increasing financial incentives, it seems preordained that the current trends will continue into the future and lead to space activities increasingly becoming commonplace for people around the globe. It will be interesting to see whether in a situation like this, space activities will still be considered ultra-hazardous activities. If we compare the developments under air law, the commercial use of aeroplanes has had an immense effect on the legal framework that air activities fall under. As technology advances and the cost barrier of launch, along with the per kg of payload, becomes more accessible, the sky is no longer the limit for human's innovative use of outer space. As this use continues to increase exponentially, international space lawyers and organs and institutions of international space law need to ensure the legal framework for activities in outer space, including the five UN treaties on outer space, remain robust.

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