



Pursuing a liability claim for damage caused by space objects under the municipal law of launching states

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ABSTRACT

The *Liability Convention* was the first step in public international law to define liability suffered due to damage caused by a space object and to ensure that damage can be recovered from a "launching state". However, the *Liability Convention* is only applicable to states and international intergovernmental organisations, if such organisations declare their acceptance of the rights and responsibilities contained in the *Liability Convention*. States, therefore, need to submit a claim to the launching state in terms of the *Liability Convention* within one year from the identification of the state liable, or the occurrence of the damage.

However, states could possibly refuse to institute a claim in terms of the *Liability Convention*, based on diplomatic, economic or other considerations. This creates a problem for business enterprises who have suffered damage as defined in the *Liability Convention*. However, Article XI(2) of the *Liability Convention* states that nothing in the convention precludes a natural or juridical person from pursuing an action in a court, forum or tribunal of the launching state for damages suffered.

The scope of this research will focus on a comparative study, whereby the municipal law of selected countries (South Africa, Australia, France, UK) will be investigated to determine the actions that natural or juridical entities could institute to recover damage in the municipal law of the respective states. The research will heavily focus on the national space legislation of each state, alternatively the identification of other civil/common law remedies available, as well as bilateral/multilateral treaties that could have an influence on the determination of the liable party.

TABLE OF CONTENTS

ABSTRACT.....	I
LIST OF ABBREVIATIONS.....	IX
Chapter 1 Introduction	1
1.1 Title.....	1
1.2 Keywords.....	1
1.3 Problem Statement.....	1
1.4 Research Aims and Objectives.....	8
1.5 Premises, Assumptions and Hypotheses.....	8
1.6 Research Methodology.....	9
1.7 Framework.....	9
1.8 Relevance for the Research Unit.....	11
1.9 Statement Regarding Ethics.....	11
1.10 Conclusion.....	11
Chapter 2 International Space Law	12
2.1 Brief History of Air and Space Law	12
<i>2.1.1 History of Air Law</i>	<i>12</i>
<i>2.1.2 History of Space Law</i>	<i>13</i>
2.2 Delimiting Space	14
2.3 International Space Law Framework.....	16

<i>2.3.1 Framework of Space Treaties</i>	<i>16</i>
<i>2.3.2 Outer Space Treaty (OST)</i>	<i>18</i>
2.3.2.1 "Peaceful Purposes"	18
2.3.2.2 Non-Appropriation.....	20
2.3.2.3 Liability and Responsibility	21
2.3.2.4 In Accordance with International Law.....	22
<i>2.3.3 Rescue Agreement.....</i>	<i>22</i>
<i>2.3.4 Liability Convention.....</i>	<i>25</i>
2.3.4.1 Definitions	25
2.3.4.2 Liability Regime	26
2.3.4.3 Claim Procedure.....	29
2.3.4.4 Previous Claims in terms of the <i>Liability Convention</i>	33
<i>2.3.5 Registration Convention</i>	<i>35</i>
<i>2.3.6 Moon Agreement</i>	<i>40</i>
2.3.6.1 Overview of the <i>Moon Agreement</i>	40
2.3.6.2 Common Heritage Problem in the <i>Moon Agreement</i>	42
2.4 Legal Status of International Space Law.....	44
<i>2.4.1 Status of Space Treaty Law</i>	<i>44</i>
2.4.1.1 The Vienna Convention	44
2.4.1.2 Space Treaties from the <i>Vienna Convention</i> perspective	46
<i>2.4.2 Space Law as International Customary Law.....</i>	<i>47</i>

2.4.2.1 Settled Practice (<i>usus</i>)	47
2.4.2.2 Opinio Juris	49
2.4.2.3 Jus Cogens	50
2.4.2.4 International Customary Law in Space Law.....	51
<i>2.5 Incorporating space law into municipal Law</i>	<i>52</i>
2.6 Conclusion	52
 Chapter 3 South African Space Law	 54
3.1 Introduction	54
3.2 South Africa's participation in space activities.....	54
3.3 International Law in South Africa.....	56
<i>3.3.1 Status of International Law in South Africa.....</i>	<i>56</i>
<i>3.3.2 Incorporating International Law into Municipal Law</i>	<i>57</i>
3.4 South African National Space Legislation and Institutions.....	57
<i>3.4.1 South African Council for Space Affairs (SACSA)</i>	<i>58</i>
3.4.1.1 Object and Purpose.....	58
3.4.1.2 Licensing	59
<i>3.4.2 South African National Space Agency (SANSA).....</i>	<i>63</i>
<i>3.4.3 South African National Space Policy of 2008</i>	<i>63</i>
<i>3.4.4 Future Developments of South African National Space law</i>	<i>64</i>
3.5 Claiming under the Municipal Law of South Africa.....	65

<i>3.5.1 Introduction</i>	<i>65</i>
<i>3.5.2 Pursuing a Delictual Claim</i>	<i>66</i>
3.5.2.1 Basic Principles of the Law of Delict	66
3.5.2.2 Proving the Elements of a Delictual Claim	67
<i>3.5.3 Pursuing a Claim for Constitutional Damages.....</i>	<i>70</i>
3.5.3.1 Human Rights Obligations of the State Towards People Within its Territory.....	71
3.5.3.2 Extra-Territorial Application of Human Rights Principles.....	71
3.5.3.3 Locus Standi in Claiming for Constitutional Damages.....	73
3.5.3.4 The Principle of Constitutional Subsidiarity.....	74
<i>3.5.4 Statutory Considerations and Restrictions.....</i>	<i>75</i>
<i>3.5.5 Conclusion.....</i>	<i>77</i>
3.6 Conclusion	77
 Chapter 4 Claiming in Foreign Jurisdictions.....	 79
4.1 Introduction	79
4.2 Australia	80
<i>4.2.1 Australia's Involvement in Outer Space Activities</i>	<i>80</i>
<i>4.2.2 Australian National Space Law.....</i>	<i>81</i>
<i>4.2.3 Licensing of Space Activities</i>	<i>82</i>
4.2.3.1 Launch Facility Licenses.....	82
4.2.3.2 Launch Permits	83

4.2.3.3 High-Power Rocket Permits.....	84
4.2.3.4 Overseas Payload Permits.....	84
4.2.3.5 Return Authorisations.....	85
<i>4.2.4 Scope of Liability in Australian Law</i>	<i>85</i>
<i>4.2.5 Claiming under the Municipal law of Australia</i>	<i>87</i>
4.2.5.1 Damage Caused by Launches and Most Returns	88
4.2.5.2 Returns Conducted by Overseas Nationals.....	89
4.2.5.3 Claim Procedure.....	90
4.2.5.4 Restrictions to a Claim.....	90
4.2.5.5 Compensation Claims by Foreign Countries.....	90
<i>4.2.6 Law of Tort</i>	<i>91</i>
<i>4.2.7 Insurance and Financial Requirements for Launch.....</i>	<i>92</i>
4.2.7.1 Minimum Amount of Insurance	92
4.2.7.2 Maximum Probable Loss Methodology	93
<i>4.2.8 Conclusion.....</i>	<i>94</i>
4.3 French Republic.....	95
<i>4.3.1 French Participation in Space Activities.....</i>	<i>95</i>
<i>4.3.2 French National Space Law.....</i>	<i>96</i>
4.3.2.1 Definitions	96
4.3.2.2 Unpacking the "Launch" and "Command" Phases.....	97
4.3.2.3 Authorisations.....	98

4.3.2.4 Insurance and Financial Requirements	100
<i>4.3.3 Liability in French Law.....</i>	<i>102</i>
4.3.3.1 Operator Liability	102
4.3.3.2 Arianespace Program	103
<i>4.3.4 Claim Procedure</i>	<i>104</i>
<i>4.3.5 French Law of Tort</i>	<i>105</i>
<i>4.3.6 Limitations to a Claim.....</i>	<i>106</i>
<i>4.3.7 Conclusion.....</i>	<i>107</i>
4.4 United Kingdom.....	108
<i>4.4.1 UK Participation in Space Activities.....</i>	<i>108</i>
<i>4.4.2 UK National Space Law</i>	<i>109</i>
4.4.2.1 Outer Space Act 1986	110
4.4.2.2 Space Industries Act 2018	111
<i>4.4.3 UK Liability Regime</i>	<i>113</i>
4.4.3.1 Liability in terms of the <i>SIA</i>	113
4.4.3.2 Liability in terms of the <i>OSA</i>	116
<i>4.4.4 Conclusion.....</i>	<i>118</i>
4.5 Conclusion	118
Chapter 5 Conclusion	120
5.1 Introduction	120

<i>5.1.1 Overview of chapters</i>	120
5.2 Findings of the Study	121
<i>5.2.1 South Africa.....</i>	121
<i>5.2.2 Australia.....</i>	122
<i>5.2.3 France 12122</i>	
<i>5.2.4 United Kingdom.....</i>	123
5.3 Hypothesis, Aims and Objectives.....	123
<i>5.3.1 Hypothesis</i>	123
<i>5.3.2 Aims and Objectives.....</i>	124
5.4 Conclusion and Recommendations	125
BIBLIOGRAPHY	127

LIST OF ABBREVIATIONS

AA	Acta Astronautica
AJICL	African Journal of International and Comparative Law
AJIL	American Journal of International Law
AUJIL	Australian Journal of International Law
ASA	Australian Space Agency
ASAT	Anti-Satellite Weapons
BIICL	British Institute of International and Comparative Law
BOTAS	Bulletin of The Atomic Scientists
CAA	Civil Aviation Authority
CJIL	Chicago Journal of International Law
CNES	Centre National d'études Spatiales
CWILJ	California Western International Law Journal
CWRJIL	Case Western Reserve Journal of International Law
CWRLRJ	Case Western Reserve Law Review Journal
DIRCO	Department of International Relations and Cooperation
DTI	South African Department of Trade and Industry
ECHR	European Convention on Human Rights
EJCLG	European Journal of Comparative Law and Governance
EU	European Union
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
ESA	European Space Agency
ESPI	European Space Policy Institute
FILJ	Fordham International Law Journal
FSOA	French Space Operations Act No 2008-518 (2008)

HJIL	Houston Journal of International Law
ICJ	International Court of Justice
ICCPR	International Covenant on Civil and Political Rights
IISL	International Institute of Space Law
IJSSP	International Journal of Space Politics and Policy
ISS	International Space Station
JALC	Journal of Air Law and Commerce
JAS	Journal of Australian Studies
JEAIL	Journal of East Asia and International Law
JSL	Journal of Space Law
JSTOR	Journal Storage
MLJ	McGill Law Journal
MPLM	Australian Maximum Probable Loss Methodology of 2019
NSW	New South Wales
PAJA	Promotion of Administrative Justice Act 3 of 2000
OSA	UK Outer Space Act of 1986
OST	Outer Space Treaty of 1967
PELJ	Potchefstroom Electronic Law Journal
SA	South Africa
SAA	Space Affairs Act 84 of 1993
SACSA	South African Council for Space Affairs
SALJ	South African Law Journal
SAMLJ	South African Mercantile Law Journal
SANSA	South African National Space Agency
SANSA Act	South African National Space Agency Act
SASREC	South African Space Regulatory Council

SCJIL	Santa Clara Journal of International Law
SIA	UK Space Industry Act of 2018
SLR	Stellenbosch Law Review
UCILR	University of California Irvine Law Review
UK	United Kingdom
UKS	UK Outer Space Act of 1986
UN	United Nations
UNGA	United Nations General Assembly
UNCLOS	United Nations Convention on the Law of the Sea (1982)
UNCOPUOS	United Nations Committee on the Peaceful Use of Outer Space
UNOOSA	United Nations Office for Outer Space Affairs
USA	United States of America
JALC	Journal of Air Law and Commerce
WMELPR	William & Mary Environmental Law and Policy Review
WWI	World War 1
WWII	World War 2
YJIL	Yale Journal of International Law

Fly me to the Moon,
let me play among the stars
Let me see what spring is like
on Jupiter and Mars
~Frank Sinatra~

CHAPTER 1 INTRODUCTION

1.1 Title

Pursuing a liability claim for damage caused by space objects under the municipal law of launching states.

1.2 Keywords

Outer Space law; *Liability Convention*; National space legislation; Access to Justice.

1.3 Problem Statement

1.3.1 Background

"Here men from the planet Earth first set foot upon the Moon, July 1969 A.D. We came in peace for all mankind."- Apollo 11 plaque.¹

Space has fascinated humankind for millennia, capturing the imagination of scientists, sailors, travellers and many more. The stars became the subjects of epic myths, poetry and stories, which were mere attempts to address their undeniable mystique. On 20 July 1969, Neil Armstrong became the first person to set foot on the Moon, aboard a spacecraft named Apollo 11.² The voice of Neil Armstrong, echoing on the radio, represented a new era for humanity: an era of space exploration.

On 4 October 1957, Sputnik I was sent into orbit by the Soviet Union as the first man-made object to orbit Earth. The Soviet Union landed the first blow in the space race by also launching the first person into space.³ However, the United States of

¹ Nasa 2017 <https://science.nasa.gov/resource/apollo-11-plaque/>. Also see Harrington "Preserving Humanity's Heritage in Space: Fifty Years After Apollo 11 and Beyond" *Journal of Air Law and Commerce* 301-304.

² See Devezas et al "The Struggle for Space: Past and Future of the Space Race" in *Technological Forecasting and Social Change-an International Journal* 966-977, Nasa 2017 <https://science.nasa.gov/resource/apollo-11-plaque/> and McDougall 1985 "Sputnik, the Space Race and the Cold War" *Bulletin of the Atomic Scientists* 20-24.

³ Baczyńska-Wilkowska "Outer Space Treaty During Fourth Industrial Revolution" 67. Also see Siddiqi *The Soviet Space Race with the Apollo 5-15*, as well as Lyall and Larsen *Space Law: A Treatise* 3-25.

America (USA) would go on to become the first nation to put a man on the Moon. George Orwell, in a 1945 article, stated that:

...the prospect of two or three monstrous super-states, each possessed of a weapon by which millions of people can be wiped out in a few seconds, dividing the world between them..... 'peace that is no peace'.⁴

Following the conclusion of World War II, the USA and the Soviet Union emerged as the leading superpowers in the world, just as Orwell predicted. This ushered in a "cold war" period, with neither side engaging in active warfare, but with a real potential to engage in a conflict that could kill millions.⁵ Space law developed with the Cold War as the backdrop,⁶ with the fears of active warfare always looming. The USA and the Soviets prioritised development, technology and weaponry during this period, which also led to a "space race" between the two states.⁷ Space law was born from the fears that either or both superpowers would weaponise space and use it for military purposes.⁸

The development of space law is thus characterised by the core principle that space should be used for peaceful purposes and to the benefit of all humankind.⁹ The fundamental body of international space law is found in five (5) main international treaties, promulgated by the United Nations General Assembly (UNGA) between 1967 and 1979. These treaties are the *Outer Space Treaty* (OST),¹⁰ the *Liability*

⁴ Orwell *Tribune* 2.

⁵ See Ferreira-Snyman 2014 *PELJ* 2.

⁶ Siddiqi *Challenge to the Apollo: The Soviet Union and the Space Race* 16-17.

⁷ Siddiqi *Challenge to the Apollo: The Soviet Union and the Space Race* 16.

⁸ For further research on the space race that took place between the USA and the Soviet Union, see Kallen 2019 *Constellations* 2-17 and Garcia 2024 *The Measure* 17-28.

⁹ Article IV UNGA Declaration of Legal Principles Governing the Activities of States and the Exploration and use of Outer Space XVIII (1962). Hereafter "*Declaration of Legal Principles*".

¹⁰ UNGA Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and other Celestial Bodies (1967). Hereafter known as the "*OST*".

Convention,¹¹ the *Registration Convention*,¹² *Rescue Agreement*¹³ and the *Moon Agreement*.¹⁴

The *OST* is seen as the "*magna carta*" of space law¹⁵ and was the first instrument to recognise international liability of a state against other states for damage caused by a space object.¹⁶ The *Liability Convention* specifically focused on the issue of establishing an international space liability regime.¹⁷ However, as will be seen below, this framework for providing a liability regime is inadequate for the intricacies of the challenges that space activities present.

1.3.2 Motivation

Liability Convention

The *Liability Convention* was the first step in public international law after the *OST* to define damage suffered due to damage caused by a space object and to ensure that damages were recoverable from a "launching state". However, the *Liability Convention* is only applicable to states and international intergovernmental organisations, if such organisations declare their acceptance of the rights and responsibilities in the convention,¹⁸ and thus only states or such organisations can institute a claim in terms of the *Liability Convention*. Furthermore, states need to submit a claim one year from the occurrence of the damages or the identification of the state liable.¹⁹

¹¹ Convention on International Liability for Damage Caused by Space Objects (1972). Hereafter referred to as the "*Liability Convention*".

¹² UNGA Convention on Registration Objects Launched into Outer Space (1974). Hereafter "*Registration Convention*".

¹³ UNGA Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968). Hereafter "*Rescue Agreement*".

¹⁴ UNGA Agreement Governing the Activities of States on the Moon and other Celestial Bodies (1979). Hereafter "*Moon Agreement*".

¹⁵ Xinmin "Development of Space Law: Framework, Objectives and Orientations" 1-12 and Von der Dunk 1991 *IISL* 363.

¹⁶ Article VII *OST*.

¹⁷ Article I-XXIV of the *Liability Convention*.

¹⁸ Article XXII *Liability Convention*.

¹⁹ Article X *Liability Convention*.

States can, however, refuse to institute a claim or fail to institute a claim in terms of the *Liability Convention*, based on diplomatic, economic or other considerations. This creates a problem for individual and juridical persons who have suffered damages as defined in the *Liability Convention*. Article XI(2) of the *Liability Convention* states that nothing in the convention precludes a natural or juridical person from pursuing an action in a court, forum or tribunal of the launching state for damages suffered. However, this claim will not be pursued under the provisions of the *Liability Convention*, but under the domestic law of the launching state concerned.

A relevant scenario can be created to demonstrate the problem: Suppose a Russian satellite crashes into a university in South Africa, causing physical damage as well as personal injury to over 200 people. The South African government, prioritising diplomatic relations with Russia, refuses to institute a claim in terms of the *Liability Convention*.²⁰ This leaves both the university and the persons who suffered damage caused by the space object in a position without a remedy, except for a remedy they can institute under the Russian domestic law. However, instituting a claim in a foreign state without any knowledge of the provision of the law on such matters in that state poses a high degree of risk, as well as its own set of problems and issues.

Parties affected by damage caused by a space object, whether those parties are natural or juridical, will struggle to identify the appropriate avenue of recourse in a foreign state, should the state in which they are citizens or where they are registered, not institute a claim in terms of the *Liability Convention*. This, combined with the fact that there is no real precedent for such a claim in any municipal law, places a person/entity in a very difficult position. It can furthermore be argued that it is an issue of international access to justice for vulnerable people.

The main research problem that will be addressed in this contribution, is how parties that have suffered damage caused by a space object can institute proceedings to

²⁰ Both Russia and South Africa are parties to the *Liability Convention*. Refer to UNOOSA Treaty Status Webpage <https://www.unoosa.org/oosa/de/ourwork/spacelaw/treaties/status/index.html>.

claim damages under the municipal law of South Africa, Australia, France and the United Kingdom (UK).²¹ The overarching contribution will attempt to provide solutions that are alternative to a claim lodged under the *Liability Convention*, specifically focusing on claims that can be brought in the municipal law of a launching state, as provided for in Article XI(2) of the *Liability Convention*. However, as noted again, this type of claim is permitted by the *Liability Convention*, but it will not take place in terms of the *Liability Convention*, but rather in terms of the domestic law of the state concerned.

In an attempt to answer the research question, the research will first investigate the international legal framework wherein space law operates. Thereafter, the South African space law framework will be investigated with the aim of determining possible courses of action, first within the national space legislation of South Africa and thereafter from a common law perspective.²² For the states of Australia, France and the UK, the same procedure will be followed: First, the national space legislation of the states will be analysed to determine if it affords an avenue of recourse and thereafter, common/civil law alternative remedies will be briefly touched on to determine if such a possibility exists. During this research, a wide array of sources will be utilised, which will include international law, foreign law, case law, and legislation.

National Space Law

The emergence of private industry stakeholders in the space industry has flipped the script in the space industry, which was dominated by government entities up until very recently. Private entities such as SpaceX, Blue Origin and Virgin Galactic, now seem to be headlining almost every advancement made in space activities. This increased private sector interest in the commercialisation of space has stimulated a need for an urgent update of national space law frameworks.

²¹ All of the mentioned states have ratified the *Liability Convention*, see the UNOOSA treaty status webpage at <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/status/index.html>.

²² With specific reference to the *Constitution of the Republic of South Africa* of 1996. Hereafter referred to as the "*Constitution*".

South Africa, Australia, France and the UK all have existing national space law frameworks, operating in accordance with international space law conventions. Main spacefaring nations²³ were excluded from this study, mainly due to their extensive scope that will not allow for adequate comparison within the limitations of this study. In South Africa, the *Space Affairs Act*²⁴ mainly governs space activities, but there are other legislative instruments such as the *South African National Space Agency Act*²⁵ and the *Non-Proliferation of Weapons of Mass Destruction Act*.²⁶ However, the South African legislation has not kept up to date with the developments in the space law arena and is ill equipped to handle contemporary issues in space law. There has been discussion for the introduction of a new, *Outer Space Bill*,²⁷ but no draft version of this new Bill has been tabled with the legislature yet.

Australia has had a number of interesting developments in its national space law arena.²⁸ The *Australian Space Activities Act* of 1998,²⁹ was amended by the *Space (Launches and Returns) Act* of 2018.³⁰ Several supplemental "rules" have also been promulgated, which included the *High-Power Rocket Rules* of 2019,³¹ the *Insurance Rules* of 2019,³² the *Flight Safety Code* and a *Maximum Probable Loss Methodology* of 2019.³³

France has also, although not as extensively as Australia laid some of the groundwork for the development of its national space law, with the promulgation of the *French Space Operations Act*.³⁴ This has been followed by a few national decrees, which expanded the national space framework of France. France also has a close relationship with the European Space Agency, which could impact its liability

²³ Reference here is given to the USA, Russia and China, who are the current main role players in outer space activities

²⁴ *Space Affairs Act* 84 of 1993.

²⁵ *South African National Space Agency Act* 36 of 2008.

²⁶ *Non-Proliferation of Weapons of Mass Destruction Act* 87 of 1993.

²⁷ Parliamentary Monitoring Group 2017 <https://pmg.org.za/committee-meeting/24641>.

²⁸ On this see Lisk and de Zwart 2019 *Federal Law Review* 446, as well as Schneider 2022 *International Institute of Space Law* 433.

²⁹ *Australian Space Activities Act* of 1988

³⁰ *Space (Launches and Returns) Act* 123 of 2018.

³¹ *Space (Launches and Returns) (High Power Rocket) Rules* 2019.

³² *Space (Launches and Returns) (Insurance) Rules* 2019.

³³ *Maximum Probable Loss Methodology* 2019.

³⁴ *French Space Operations Act* No 2008-518 (2008).

for damage caused by a space object. This will be investigated when France is researched.

The UK has also made efforts to develop its national space law. The *Outer Space Act* of 1986³⁵ has been partially replaced by a new framework, in the form of the *Space Industries Act* of 2018.³⁶ Further to this, an exhaustive amount of regulations in the form of the *Space Industry Regulations* of 2021³⁷ fill in the details regarding the regulation of the space industry in the UK.

The above pieces of legislation of the states of South Africa, Australia, France and the UK, form part of the legislative framework that could possibly contain procedures and avenues that may be followed, in the case where damage is caused by a space object. On the other hand, where a state's national space law does not provide for an avenue and/or procedure through which a claim may be instituted for damage caused by a space object, alternative procedures will be investigated. This could possibly be in the form of a claim in terms of the law of delict/tort of the state concerned. If a state's national space law does not provide for an avenue/procedure through which a claim may be instituted for damage caused by a space object, this research contribution will investigate the possible civil/delictual claims in the domestic law of the state concerned.

The focus of this research is on identifying the exact means by which a person, natural or juridical, who suffered damage caused by a space object, can institute a claim under the municipal law of a launching state in which the responsible party is domiciled or registered. If a party does not have an avenue through which they can institute a claim against the responsible party, this will result in that party being vulnerable and without a remedy. This contribution aims to bridge this gap in the existing framework and provide a possible alternative remedy for such a party who has suffered damage caused by a space object.

³⁵ *Outer Space Act* of 1986.

³⁶ *Space Industries Act* of 2018.

³⁷ *Space Industry Regulations* of 2021.

1.3.3 Research Question

How can an affected party, who suffered damage caused by a space object, institute a claim under the municipal law of South Africa, Australia, France, and the UK?

1.4 Research Aims and Objectives

The aim of the study will be to attempt to identify an avenue for a vulnerable person (natural or juridical) to claim damages suffered for harm caused by a space object in the respective jurisdictions of South Africa, Australia, France, and the UK.

The objectives of the study will be to explore the current international liability framework for damage caused by a space object and the international instruments; to analyse the current South African space legislation and identify possible recourse to claim damages; to analyse the national space legislation of Australia, France, and the UK and identify possible courses of action in these jurisdictions; to identify any international bilateral/multilateral agreements that may influence a claim for such liability; and to explore the possibility of a delictual or civil law remedy as an alternative remedy where no other remedies are available.

1.5 Premises, Assumptions and Hypotheses

Premises and Assumptions

The research study will operate on the assumption that a claim under the municipal law is not subject to the restrictions in the *Liability Convention*. The assumption will also be that a claim under the *Liability Convention* is not extinguished by a claim under municipal law of a state the obligation of a state under the *Liability Convention* will not simply "cease" to exist. However, the *Liability Convention*, subject to consensus under international law, may serve political/economic motives, rather than provide a remedy for an affected party that suffered damages. The premise on which this research is conducted, is that alternative remedies are required for damage caused by a space object, apart from the remedies provided for in the *Liability Convention*.

Hypothesis

There should be a method to institute claims for harm caused by a space object in terms of the domestic law of South Africa, Australia, France, and the UK, whether through enabling national space legislation or through common/civil law remedies and processes.

1.6 Research Methodology

The research methodology that will be used to answer the research question is a desktop-based qualitative literature study by way of a comparative study, with sources ranging from academic journals, case law, legislation, regulations, textbooks and internet sources. Specific focus will be placed on foreign and international law during this study, the interpretation thereof and inferences that can be drawn from therefrom.

A critical comparative method will be utilised in order to determine the avenues through which recourse can be sought in the municipal law of the identified states of South Africa, Australia, France, and the UK. The reason for comparing these states, is due to their current or possible future participation in space activities. All of these states have ratified the *Liability Convention*. Furthermore, these states present diversity in their makeup: South Africa is a developing country, as opposed to the developed countries of Australia, France and the UK. South Africa (as a mixed legal jurisdiction), Australia and the UK operate on common law legal systems, while France operates on a civil law legal system. All of these states have also promulgated national space legislation, which could possibly contain provisions relating to liability for harm caused by a space object and an associated procedure to be followed for claiming such damages.

1.7 Framework

Chapter one contains the basic synopsis of this contribution as a general overview and will serve the purpose of laying the foundation for the subsequent discussion. Chapter two will briefly provide an overview of the international space law

framework, including the relevant conventions and accords, which are the *OST*, *Liability Convention*, *Registration Convention*,³⁸ *Rescue Agreement*³⁹ and the *Moon Agreement*.⁴⁰ Specific focus will be placed on the liability regime and the definitions of "damages", "space objects" and what a "launching state" is. Attention will also be given to the legal status of international space law in the broader international law framework and the way in which states are influenced by the international space law instruments. Certain shortcomings in the current international space law framework and the interlinked nature of international and national space law will also be noted.

Chapter three will look at instituting a claim in South African law, including the method an individual or a juristic entity can follow to claim in terms of South African law. Chapter four will turn towards investigating foreign law and examine how a claim can be instituted in the local jurisdictions (municipal law) of Australia, France and the UK. In both chapters three and four, the current national space legislation of the respective states will be analysed to determine whether methods for instituting a claim for harm caused by a space object exist in such legislation. In the case where the national space legislation does not provide any means by which a claim for harm caused by a space object can be instituted, alternative avenues will be investigated in the municipal law of the states. This may take the form of investigating the law of tort/delict in the respective states to ascertain whether a claim may exist in such law for damage caused by a space object.

Finally, Chapter five will present a coherent conclusion and recommendations based on the findings of the research conducted during this contribution, specifically focusing on consolidating the findings and providing recommendations based on these findings.

³⁸ Convention on Registration Objects Launched into Outer Space (1974). Hereafter "*Registration Convention*".

³⁹ Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968). Hereafter "*Rescue Agreement*".

⁴⁰ Agreement Governing the Activities of States on the Moon and other Celestial Bodies (1979). Hereafter "*Moon Agreement*".

1.8 Relevance for the Research Unit

The research will fall within the North-West University's research unit of Law, Justice and Sustainability. It will firstly be classified within the subcategory of vulnerable societies, since it will attempt to provide information relevant to assisting vulnerable persons (persons who suffered damage caused by a space object) who have no other remedy for such damage. Secondly, it can be classified under the subcategory of finance, trade and innovation, especially since the commercial exploitation of space has become relevant (e.g. space tourism). It is particularly applicable to innovation, since space regulation is becoming increasingly important, nationally and internationally. South Africa itself is in the process of transitioning to new space legislation in the form of the *Outer Space Bill*,⁴¹ which will require expertise on handling a number of matters. In essence, space law is at a crossroads in history where states are starting to realise the importance of regulating space on a national level, pointing to the legislative innovation of national space law.

1.9 Statement Regarding Ethics

This research does not involve interviews, questionnaires or human participants.

1.10 Conclusion

This research will thus attempt to answer an extremely important question about the functioning of space liability law within the states of South Africa, Australia, France and the UK. While it relates to international space law and the context of such law should always be taken into consideration, the focus will be on determining an avenue for recourse under the municipal law of the abovementioned states for damage caused by a space object.

⁴¹ Parliamentary Monitoring Group 2017 <https://pmg.org.za/committee-meeting/24641>.

CHAPTER 2 INTERNATIONAL SPACE LAW

2.1 Brief History of Air and Space Law

2.1.1 History of Air Law

On 17 December 1903, Wilbur and Orville Wright made history by flying an airplane they had built for 12 continuous seconds.⁴² This marked the first time that humans engineered an object that took off with its own power and with sustained flight.⁴³ Before this, advances were made by the Montgolfier brothers, experimenting with hot air and hydrogen balloons in the late 1700's.⁴⁴ However, the biggest problem that was encountered during this experimentation, was that these balloons were non-dirigible and therefore extremely dangerous.⁴⁵

Aviation technology continued to develop, first as a novelty, but later on as a weapon. During the First World War,⁴⁶ due to the static warfare in trenches, airplanes were used for reconnaissance.⁴⁷ However, the need for these planes to be armed led to the development of fighters, such as the Albatross, Spad and British S.E.5 fighters that were used during battles in the First World War.⁴⁸ After the conclusion of WWI, it became apparent that a new dimension of warfare had opened up and that the war in the sky would increase in importance.

During the Second World War (WWII), the war in the air was as integral as the war on the ground, with significant improvements in both the engines and the

⁴² McCloy *French Inventions of the Eighteenth Century* 10-20.

⁴³ NASA 2008 <https://www.nasa.gov/image-article/wright-brothers-first-flight/>.

⁴⁴ Lyall and Larsen *Space Law: A Treatise* 137-138.

⁴⁵ These balloons were dangerous, due to the fact that they could not be effectively steered. With no internal support structure, the form of these balloons was dependent on them keeping consistent internal air pressure. Since these ships primarily used Helium for being "lighter than air", the risk of them catching fire was extreme, as witnessed by the Hindenburg disaster in 1937. This, of course, did severe damage to the reputation of these balloons as "dangerous". Furthermore, these balloons were very susceptible to wind and air currents, which made steering them even harder.

⁴⁶ First World War during the period of 1914-1918. Hereafter "WWI".

⁴⁷ Note that balloons were used as military craft long before the First World War, most notably during the period of the French Revolution and the American Civil war. For further reading on the use of balloons as military craft, see Haydon *Military Ballooning During the Early Civil War* 2-28, Hopkins 2019 *American Intelligence Journal* 114-115 and Scott 2014 *Army History* 7-24.

⁴⁸ Guilmartin 2023 <https://www.britannica.com/topic/aviation-in-World-War-I-2229993>.

armaments carried by fighter and bomber airplanes.⁴⁹ Airplanes were also used for commercial transport of goods, supplies and troops during this period. Famous battles were won and lost due to the Germans, the Japanese or the Allies having air superiority.⁵⁰

The increased use of the air inevitably led to an attempt to regulate the use of airspace. The Convention relating to the Regulation of Aerial Navigation⁵¹ and the *Convention on International Civil Aviation*⁵² were signed in France (post WWI) and in the USA (post WWII) and are currently still the cornerstone of modern air law.

2.1.2 History of Space Law

On 4 October 1957, Sputnik I was sent into orbit by the Soviet Union as the first man-made object to orbit Earth. The Soviet Union landed the first blow in the space race by also launching the first person into space.⁵³ However, the USA would go on to become the first nation to put men on the Moon. George Orwell, in a 1945 article, stated the following:

...the prospect of two or three monstrous super-states, each possessed of a weapon by which millions of people can be wiped out in a few seconds, dividing the world between them..... 'peace that is no peace'.⁵⁴

Following the conclusion of WWII, the USA and the Soviet Union emerged as the leading superpowers in the world, just as Orwell had predicted. This ushered in a "cold war" period, with neither side engaging in active warfare, but with a real potential to engage in a conflict that could kill millions. Space law developed with the cold war as the backdrop,⁵⁵ with the fears of active warfare always looming. The

⁴⁹ McMasters and Cummings 2012 *Journal of Aircraft* 10. For more information on the development of aircraft during WW1 and WW2, see Jarret *Aircraft of the Second World War: The Development of the Warplane 1939-45* and Morrow 1994 *Technology and Culture* 626-628.

⁵⁰ Particularly the Battle of Britain that comes to mind. The atomic bombs dropped on Hiroshima and Nagasaki effectively ended the war in the Pacific.

⁵¹ Paris Convention Relating to the Regulation of Aerial Navigation (1919).

⁵² Chicago Convention on International Civil Aviation (1944).

⁵³ Baczyńska-Wilkowska "Outer Space Treaty During Fourth Industrial Revolution" 67.

⁵⁴ Orwell *Tribune* 2.

⁵⁵ Siddiqi *Challenge to the Apollo: The Soviet Union and the Space Race* 16-17.

USA and the Soviets prioritized development, technology and weaponry during this period, which also led to a "space race" between the two states.⁵⁶

Space law was born from the fears that either or both superpowers would weaponise space and use it for military applications.⁵⁷ Resolution 1724 of the UN states the following:

Noting with concern that the continuing arms race is a heavy burden for humanity and is fraught with dangers for the cause of world peace,

Conscious of its responsibilities under the Charter of the United Nations, for disarmament...⁵⁸

The development of space law is thus characterized by the core principle that space should be used for peaceful purposes and to the benefit of all humankind.⁵⁹ While this is a very brief exposition of the history of air and space law, the intention is not to focus on the history of air and space law as such, but to provide a basic understanding of space law as a whole for the subsequent discussion.

2.2 Delimiting Space

Roman property law made use of the maxim *cuius est solum, eius est usque ad coelum et ad inferos*, which translates to "whomsoever it belongs, it is his all the way to the heavens and all the way to hell".⁶⁰ However, this principle was applied with the knowledge the Romans had, with human flight, never mind spaceflight, not being within their framework.⁶¹ The principles of air law will not be discussed here, as this dissertation focuses on space law and is therefore more concerned with where the atmosphere ends and where space begins. This is extremely

⁵⁶ Siddiqi *Challenge to the Apollo: The Soviet Union and the Space Race* 16. Also see Ziemblicki and Oralova 2021 *Space Policy* 3.

⁵⁷ Gabrynowicz 2004 *Suffolk University Law Review* 1042-1054. Also see Jankowitsch "The Background and History of Space Law" 1-9 for a further detailed discussion on the background of space law and its development during the Cold War.

⁵⁸ UNGA Resolution on the Question of Disarmament 1722 (XVI) (1961).

⁵⁹ Article IV UNGA Declaration of Legal Principles Governing the Activities of States and the Exploration and use of Outer Space XVIII (1962). Hereafter "*Declaration of Legal Principles*".

⁶⁰ Abramovitch 1962 *MLJ* 247.

⁶¹ Lyall and Larsen *Space Law: A Treatise* 137.

important to determine, since it may prescribe which liability regime is applicable, as will be discussed in 2.3.4 below, as well as several other contentions.

There are two main theories when it comes to determining where outer space begins and where airspace ends, namely the functional approach and the spatialist approach.⁶² The functionalist approach looks at the physical activities and uses those as a basis to determine the distinction between air and space. It denies the physical division between airspace and outer space and states that space activities and air activities should be regulated by their own laws, irrelevant of the altitude they are performed at.⁶³ A great example of the application of this theory, is that aeroplanes use aerodynamic lift for flight, while spacecraft rely on force that works against gravity to reach escape velocity and enter space.⁶⁴

On the other hand, the spatialist approach advocates for the establishment of a boundary line where space begins, and airspace ends: a vertical height limit to space.⁶⁵ Generally, the Kármán line is regarded as the boundary between air and space (between 80 and 100 kilometres), based on calculations where aircraft can no longer rely on lift aerodynamics for flight.⁶⁶ The Kármán line utilises the science of the functionalist approach, but the boundary of the spatialist approach. It can

⁶² It must be noted that these are not the only theories used to delimit space. See Lyall and Larsen *Space Law: A Treatise* 143-148, where the spatialist and functionalist approaches are discussed as the two main theories, but note that other niche theories exist, such as the "effective control" theory, a sub-theory of the spatialist approach. It must be noted, however, that many of these theories were developed very long ago and have become outdated with the development of new technology. For further research on this topic, see Von der Dunk 2013 *CWILJ* 269-342, Cheng 1995 *Air and Space Law* 296-300 and Ferreira-Snyman 2014 *PELJ* 9-16.

⁶³ Rhys *The Sky's the Limit? Establishing a Legal Delimitation of Airspace and Outer Space* 23.

⁶⁴ Rhys *The Sky's the Limit? Establishing a Legal Delimitation of Airspace and Outer Space* 26. The functionalist approach simply looks at the use of an object to determine which legal regime is applicable. Objects that rely on lift provided by air/atmosphere for flight will be governed by air law. However, if an object does not rely on the airlift for flight, but rather on its own propulsion to escape the atmosphere, it will be governed by space law. Altitude, for the purpose of the functionalist approach, is irrelevant.

⁶⁵ De Oliveira Bittencourt Neto 2015 *Defining the Limits of Outer Space for Regulatory Purposes* 35-37.

⁶⁶ Betz 2024 <https://www.astronomy.com/space-exploration/the-karman-line-where-does-space-begin/>.

be noted that the Kármán line is not a fixed line, but rather an area where the atmosphere starts to end and space gradually begins.⁶⁷

During the Cold War period, the delegates of the USA seemed to be in favour of the functionalist approach, while the USSR delegates favoured the spatialist approach.⁶⁸ However, while many studies have been done, both from a scientific and a legal perspective, but without guidance from international consensus, this will remain a contentious topic in academic literature. Ideally, a middle ground between the functionalist and spatialist approach would result in the most legally and scientifically accurate delimitation of space in future.⁶⁹ For now, however, the generally accepted standard is the Kármán line, somewhere between 80 and 100 kilometres above the surface of the Earth.⁷⁰ Masson-Zwaan and Freeland,⁷¹ however, draw attention to the 2008 *Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects*, where space was defined in Article 1(a) as "space beyond the elevation of approximately 100 kilometres above ocean level of the Earth".⁷²

2.3 International Space Law Framework

2.3.1 Framework of Space Treaties

In 1958, an *ad hoc* committee on the peaceful use of outer space was established,⁷³ which changed to United Nations Committee on the Peaceful Uses of Outer Space

⁶⁷ See Cheng 1995 *Air and Space Law* 298, who divides the schools of thought into three: spatialists, functionalists and the people who argue it is irrelevant and we do not need a precise boundary.

⁶⁸ De Oliveira Bittencourt Neto 44-45.

⁶⁹ De Oliveira Bittencourt Neto 93-98.

⁷⁰ Ferreira-Snyman 2014 *PELJ* 10 notes that the Kármán line is exactly 100 kilometres above sea level, while the USA regards 80 kilometres above sea level as the borderline. There is thus still uncertainty in this regard and the interpretation borders from state to state.

⁷¹ Masson-Zwaan and Freeland 2010 *AA* 1603.

⁷² Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects (2008). The definition of "space beyond the elevation of approximately 100 kilometres above ocean level of the Earth" seems to support the spatialist approach for delimiting space, rather than the functionalist approach. Refer to 2.2 above, as well as footnotes 62-65.

⁷³ UNGA Resolution on the Question of the Peaceful Use of Outer Space 1348 (XIII) of 1958.

(UNCOPUOS) in 1959.⁷⁴ In 1962, the United Nations General Assembly (UNGA) made a declaration on the *Legal Principles Governing the Activities of States and the Exploration and Use of Outer Space*,⁷⁵ in which several principles were established. These principles include the concepts that the exploration and use of outer space should be to the benefit of all humankind,⁷⁶ non-appropriation of celestial bodies or outer space,⁷⁷ liability for national activities in outer space,⁷⁸ registry of objects⁷⁹ and the status of astronauts as "envoys of mankind".⁸⁰ It is important to note that the 1962 Declaration of Legal Principles does not have the same binding powers as a treaty. However, as Dembling and Arons note, it:

"...reflects a certain international understanding of the principles which ought to govern the exploration and use of outer space and celestial bodies and, therefore, provides evidence of customary international law in that regard".⁸¹

Whether international space law can be classified as customary international law will be discussed under 2.4 below. However, the *Declaration of Legal Principles* would guide the UNGA in the development of further international treaties, focused on defining and supplementing the principles and ensuring that states that ratified the treaties would be bound by the treaties. As mentioned earlier, the fundamental body of international space law is found in five (5) main international treaties, promulgated by the UNGA between 1967 and 1979. These treaties are the *Outer Space Treaty (OST)*,⁸² the *Liability Convention*, the *Registration Convention*,⁸³ the

⁷⁴ UNGA Resolution on International Co-Operation and the Peaceful Use of Outer Space 1472 (XIV) of 1959.

⁷⁵ UNGA Declaration of Legal Principles Governing the Activities of States and the Exploration and Use of Outer Space XVIII (1962). Hereafter "*Declaration of Legal Principles*".

⁷⁶ Article 1 *Declaration of Legal Principles*.

⁷⁷ Article 2 *Declaration of Legal Principles*.

⁷⁸ Article 5 *Declaration of Legal Principles*.

⁷⁹ Article 7 *Declaration of Legal Principles*.

⁸⁰ Article 9 *Declaration of Legal Principles*.

⁸¹ Dembling and Arons *JALC* 425.

⁸² UNGA Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and other Celestial Bodies (1967).

⁸³ UNGA Convention on Registration Objects Launched into Outer Space (1974).

*Rescue Agreement*⁸⁴ and the *Moon Agreement*.⁸⁵ These will be individually discussed below.

2.3.2 *Outer Space Treaty (OST)*

The first major international space law treaty came in the form of the Outer Space Treaty (*OST*) in 1967. As of 1 January 2025, 116 states have ratified the *OST* and it is the most ratified treaty of all the UN space law treaties.⁸⁶ The principles of the *OST* are very similar to the principles contained in the 1962 Declaration of Legal Principles and it is seen as the *magna carta* of space law.⁸⁷ There are several key principles contained in the *OST*, some of which will be discussed below.

2.3.2.1 "Peaceful Purposes"

The first key principle is that space should be used for peaceful purposes.⁸⁸ Article I of the *OST* states that exploration of outer space, the Moon and other celestial bodies must be to the benefit of all states, while Article III very importantly indicates that the exploration of outer space, the Moon and other celestial bodies must be carried on in accordance with international law, which includes the principles contained in the UN Charter.⁸⁹ Furthermore, such exploration should always be focused on maintaining international peace and security, while also promoting international co-operation and understanding.⁹⁰

However, the *OST* goes further than merely stating that space exploration should be for peaceful purposes. Article IV of the *OST* expressly bans the establishment of military bases, weapons, installations, or the performance of military manoeuvres in outer space or on celestial bodies. There is a further prohibition on the placing of objects in space that carry nuclear weapons or any weapons of mass destruction.

⁸⁴ UNGA Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968).

⁸⁵ UNGA Agreement Governing the Activities of States on the Moon and other Celestial Bodies (1979).

⁸⁶ UNOOSA 2025 <https://www.unoosa.org/res/oosadoc/data/documents/2025>.

⁸⁷ Xinmin "Development of Space Law: Framework, Objectives and Orientations" 1-12.

⁸⁸ Lyall and Larsen *Space Law: A Treatise* 166.

⁸⁹ Charter of the United Nations (1945).

⁹⁰ Article III *OST*.

Military personnel are, however, allowed in space, if for scientific research or any other peaceful purpose. It is important to note that the *OST* does not in fact ban the weaponisation of space, as the treaty only calls for the "peaceful use" of outer space.⁹¹ This, of course, still includes a wide array of military activities which can be seen as peaceful activities. Indeed, space technology inevitably will have a dual application in most cases (both civil and military) and the lines could blur very quickly.⁹² A great example is that of a satellite, which can be used for sending and receiving radio signals, but that same satellite can also deviate its course independently and be used as a Kamikaze object or kinetic weapon.⁹³ Similarly, a space object can also be designed to self-destruct, which could cause space debris.⁹⁴ The *Test Ban Treaty* similarly prohibits testing nuclear weapons in the atmosphere, space or under water.⁹⁵

Satellites in themselves can be used as espionage instruments. It is, therefore, a common theme for states to experiment with anti-satellite weapons (ASAT), with states such as the USA, Russia, China and India all conducting ASAT testing.⁹⁶ Burbach and Johnson Freese state that, due to each state's inherent right to self-defence, ASAT testing is deemed to be politically acceptable.⁹⁷

A recent affirmation of the concept that space should be used for peaceful purposes, can be found in the report of the UNCOPUOS working group on the long-term sustainability of outer space activities. In this report, 21 voluntary guidelines were developed,⁹⁸ which highlight measures for long-term sustainable space activities and

⁹¹ See Meyer 1969 *German Journal of Air and Space Law* 29-32. What is meant by the term "weaponisation" of outer space, it can be argued what the exact definition of "weaponisation" entails. However, for the purpose of this dissertation, "weaponisation" should be interpreted as "placing weapons" in outer space.

⁹² Burbach and Johnson-Freese 2019 *BOTAS* 139.

⁹³ Referring to the practice where Japanese pilots in WWII used their planes to crash into ships. These planes were known as Kamikaze pilots or "suicide planes". Satellites can similarly be used as weapons, if they are directed to crash into other space objects for the purpose of damaging or destroying such objects.

⁹⁴ See Tronchetti 2014 *German Journal of Air and Space Law* 110-115 for an extremely detailed discussion on different methods on how space can be weaponised.

⁹⁵ Article I Nuclear Test Ban Treaty (1963).

⁹⁶ Oberhaus 2019 <https://www.wired.com/story/india-anti-satellite-test-space-debris/>.

⁹⁷ Burbach and Johnson-Freese 138.

⁹⁸ UNCOPUOS Guidelines for the Long-term Sustainability of Outer Space Activities (2021).

enhance the safety of space operations.⁹⁹ Guideline B3 of the Guidelines requests that states "Promote the collection, sharing and dissemination of space debris monitoring information". There are also several other guidelines contained in the report, but unfortunately, all of these guidelines are merely voluntary and states can choose whether to follow them or not. However, it is undeniable that the OST promotes the use of space for peaceful purposes.

2.3.2.2 Non-Appropriation

Space is to be regarded as the "province of all mankind" and to the "benefit and interests of all countries."¹⁰⁰ Article II of the *OST* 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.¹⁰¹

While states cannot claim sovereignty in outer space, it becomes contentious whether states and consequently, subjects of a state, can appropriate resources from outer space.¹⁰² MacWhorter specifically states that the *OST* prohibits the ownership of real property, but does not rule out the ownership of extracted materials.¹⁰³ This is not a foreign concept, since the same can be seen from the UN Convention on the Law of the Sea (UNCLOS) where it relates to seabed mining,¹⁰⁴ as well as the Antarctic treaty.¹⁰⁵ Other authors, such as Wrench, also advocate for the distinction between the use and appropriation of resources and real property, indicating that the use and appropriation of resources or extracted materials in outer space could be to the benefit of the broader international community.¹⁰⁶

Taking into account the cold war context wherein the *OST* was drafted, it is submitted that it is the correct interpretation to distinguish between real property

⁹⁹ Durbach and Johnson-Freese 139.

¹⁰⁰ Article I *OST*.

¹⁰¹ Article II *OST*.

¹⁰² Lyall and Larsen *Space Law: A Treatise* 182-183.

¹⁰³ MacWhorter 2016 *WMELPR* 661.

¹⁰⁴ UN Convention on the Law of the Sea (1982).

¹⁰⁵ Antarctic Treaty and Related Agreements (1959).

¹⁰⁶ Wrench 2019 *CWRJIL* 460.

and the use of extracted materials. This concept will be further discussed under the *Moon Agreement* below.

2.3.2.3 Liability and Responsibility

Article VI contains a very interesting provision, which states that:

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...

State parties to the treaty thus bear the responsibility for activities carried out by governmental or non-governmental organisations. Article VII extends this concept by stating that each state party from whose facility or territory an object is launched will be liable to another state party, or to its natural or juridical persons. There is also an obligation on state parties to continually supervise and authorise space activities. The importance of Articles VI and VII will be illustrated later by means of the *Liability Convention*.

An important note to add with the concept of "liability" under the *OST*, is that a distinction can be drawn between the concept of "liability" and "responsibility" of states.¹⁰⁷ Article VI of the *OST* clearly ascribes "responsibility" for national activities in outer space, while Article VII of the *OST* uses the wording that states are "internationally liable" for damage to another state party. "Responsibility" arises from prohibited acts, while "liability" arises from permissible acts.¹⁰⁸

The *OST* seems to ascribe "responsibility" as a general rule for parties carrying out actions in outer space, but that "liability" should be dealt with, within the rules of liability of the *lex specialis*, namely the *Liability Convention* in the case of outer space law.¹⁰⁹ It must be noted, however, that the distinction between the concepts of "responsibility" and "liability" is purely academic at this point,¹¹⁰ until the

¹⁰⁷ Von der Dunk 1991 *IISL* 363-364.

¹⁰⁸ Horbach 1991 *Leiden Journal of International Law* 51 and 73-74.

¹⁰⁹ Von der Dunk 1991 *IISL* 366.

¹¹⁰ Horbach 1991 *Leiden Journal of International Law* 47-48.

distinction and/or overlap between these concepts can be internationally confirmed.¹¹¹

2.3.2.4 In Accordance with International Law

Space law does not operate within a vacuum,¹¹² but operates within the framework of international law. The *OST* states that activities in outer space must be carried out in accordance with international law, including the UN Charter.¹¹³ Judge Manfred Lachs writes that:

This obviously implies that in all their activities in regard to and within outer space and on celestial bodies States are subject to the rule of international law.¹¹⁴

Therefore, space law must be considered in the context of the general international law, including international treaty law and international customary law. The legal status of space law within the international space law framework will be discussed under 2.3 below.

2.3.3 Rescue Agreement

The *Rescue Agreement* was opened for signature in 1968 and enjoyed great success, with 100 states that have ratified the contents of the treaty as of 1 January 2025.¹¹⁵ The *Rescue Agreement* is the second most ratified and accepted space law treaty after the *OST*.¹¹⁶ The *Rescue Agreement* is based on the principles that astronauts are envoys of humankind, as stated in Article V of the *OST*.¹¹⁷

¹¹¹ Horbach 1991 *Leiden Journal of International Law* 47-48. Horbach argues that "liability" is often interpreted to mean the "consequence" of an internationally wrongful act and draws a comparison to article 139(2) of UNCLOS.

¹¹² No pun intended. The intention was to show that space law operates as a subcategory of international law.

¹¹³ Article 3 *OST*.

¹¹⁴ Lachs *The Law of Outer Space: An Experience in Contemporary Law-Making* 13.

¹¹⁵ UNOOSA 2025 <https://www.unoosa.org/res/oosadoc/data/documents/2025>.

¹¹⁶ UNOOSA 2025 <https://www.unoosa.org/res/oosadoc/data/documents/2025>.

¹¹⁷ Spaceflight is an inherently hazardous activity, with multiple accidents resulting in the loss of human life. For a discussion on significant previous accidents while performing space activities, see Kyriakopoulos 2013 *International Lawyer* 2-3.

The *Rescue Agreement* places an obligation on state parties to the treaty to immediately notify the launching authority when it receives or discovers calls of distress from spacecraft personnel.¹¹⁸ This is applicable anywhere within the jurisdiction of the state, or upon the high seas, or any other place outside the jurisdiction of the state.¹¹⁹ If the state cannot identify the launching authority, it should make a public announcement "by all appropriate means of communication at its disposal", or alternatively notify the UN Secretary-General, who should disseminate the information.¹²⁰

Article 2 furthers the obligation on states by requiring them to take all possible steps to render assistance to any spacecraft personnel. This assistance that must be given to spacecraft personnel can be due to an accident, distress, emergency or unintended landing. The state should then inform both the launching authority and the UN Secretary-General on the steps they are taking and the progress with such process.¹²¹ Any party to the Treaty may extend assistance in search-and- rescue operations if they are in a position to do so.¹²² Astronauts should also be returned to the launching authority safely and promptly.¹²³

The same principles are extended to space objects or components of a space object.¹²⁴ Should a space object return within or outside of the jurisdiction of a state or on the high seas, such state into which the object has returned, has an obligation to inform both the launching state and the UN Secretary-General.¹²⁵ States should also take practicable steps to recover the object or its component parts, when

¹¹⁸ Article 1 *Rescue Agreement*.

¹¹⁹ Article 1 *Rescue Agreement*.

¹²⁰ Article 1 *Rescue Agreement*.

¹²¹ Article 2 *Rescue Agreement*.

¹²² Article 3 *Rescue Agreement*.

¹²³ Article 4 *Rescue Agreement*. Note the wording of "astronauts" used. In the contemporary era, with space tourism becoming a reality, the question arises whether "passengers" and "astronauts" are distinct in definition- see Sundahl 2009 *JSL* 6-7. This can have an effect on the duty a state has to return the "passengers" and other private spacecraft to the launching state. For an in-depth discussion on this issue, see Sundahl 2009 *JSL* 5-28 and Lee "Emergency Assistance and Rescue Obligations for Commercial and Private Spacefarers in the Context of the History, Present, and Future of Human Spaceflight" 35-72, Ferreira-Snyman 2014 *PELJ* 2-50 and Yun 2009 *JALC* 978-979.

¹²⁴ Article 5 *Rescue Agreement*. Also see Stroud 2002 *Real Property, Probate and Trust Journal* 373.

¹²⁵ Article 5(1) *Rescue Agreement*.

requested to do so by the launching state.¹²⁶ If a state has reason to believe that a space object or component parts thereof are hazardous or deleterious, they may inform the launching state, which shall immediately take effective steps at the direction of the state under whose jurisdiction the space object or its component parts are situated.¹²⁷ The expenses incurred in fulfilling the obligations under the treaty will be for the account of the launching state.¹²⁸

During the crash of *Kosmos* 954 in the North-Western territories of Canada,¹²⁹ the US immediately offered assistance to the Canadian government, based on fears that radioactive material would contaminate the area.¹³⁰ US assistance to Canada was at a cost of three million US dollars.¹³¹ Even though compensation was not a prerequisite for assistance by the US, the Canadian government, when it claimed from the USSR, did not include the costs that the US had incurred¹³² in the cleanup operation.¹³³ The claim Canada lodged resulted in compensation of three million Canadian dollars in terms of a bilateral agreement on 2 April 1981.¹³⁴ The claim was only based on the cost of the cleanup operations.¹³⁵ While the agreement was based on a bilateral agreement, some of the provisions in Article 5 of the *Rescue Agreement* were clearly used as the background for the bilateral agreement.¹³⁶ No claim was brought under the *Liability Convention*, which will be discussed under 2.4 below.

The *Rescue Agreement* has never been invoked, with Von der Dunk speculating that all the attention for legal consequences is focused on the *Liability Convention* and the *Registration Convention*.¹³⁷ Von der Dunk appropriately refers to the *Rescue*

¹²⁶ Article 5(3) *Rescue Agreement*.

¹²⁷ Article 5(4) *Rescue Agreement*.

¹²⁸ Article 5(5) *Rescue Agreement*.

¹²⁹ Kehler 2020 *CILJ* 185-186.

¹³⁰ Uranium-235 radioactive material-Declassified reports of the CIA, NSA archive at George Washington State University.

¹³¹ Schwartz and Berlin 1982 *MLJ* 677.

¹³² Christol 2017 *AJIL* 346-347.

¹³³ Original claim documents submitted by the USSR Ambassador to the Kremlin, note number FLA-268 23 January 1979.

¹³⁴ UNOOSA 1981 <https://www.unoosa.org/oosa/en/ourwork/spacelaw>.

¹³⁵ Christol 2017 *AJIL* 347.

¹³⁶ Von der Dunk 2008 *JSL* 412.

¹³⁷ Von der Dunk 2008 *JSL* 412-413.

Agreement as the "sleeping beauty" of space law treaties. In accordance with Article 6 of the *Rescue Agreement*, international intergovernmental organizations such as the European Space Agency (ESA) and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) have lodged declarations indicating the acceptance of the rights and obligations in the *Rescue Agreement*.

2.3.4 Liability Convention

The *Liability Convention* is probably the most important instrument for the purposes of this dissertation.¹³⁸ Already during the development of the *OST* and the *Rescue Agreement*, there was an indication from participating states that they desired an elaborate liability regime.¹³⁹ The question of liability would almost certainly dominate discussion, as can be seen by Article V and VI of the *OST*. In 1962, UNCOPUOS submitted a draft proposal on liability for space vehicle accidents,¹⁴⁰ five years before the *OST* was opened for signature. Because of the importance of the *Liability Convention*, it will be discussed in greater detail below.

2.3.4.1 Definitions

The liability regime in the *Liability Convention* starts with the identification of a "launching state". In essence, a launching state is a state who (1) launches, (2) procures the launching, a state from whose (3) territory or (4) facility is launched.¹⁴¹ The application of a "launching state" is thus quite wide. Any state who launches a space object, procures a launch, or from whose territory it is launched, will be regarded as a launching state. The term "launching" includes attempted launching.¹⁴² Taking an example, if SpaceX thus launches from Cape Canaveral, Florida, in the USA, the USA will be regarded as the "launching state" and is internationally liable in terms of the *Liability Convention*. However, as will be seen later, this does not preclude the USA from concluding a separate agreement with

¹³⁸ Note that the concept of liability for damage caused by space objects was first introduced by the *OST*. Also see Von der Dunk 1991 *IISL* 363.

¹³⁹ Von der Dunk 2008 *JSL* 418.

¹⁴⁰ UNOOSA 1962 https://www.unoosa.org/pdf/limited/l/AC105_L005E.pdf.

¹⁴¹ Article I(c) *Liability Convention*. Also see Lyall and Larsen *Space Law: A Treatise* 98.

¹⁴² Article I(b) *Liability Convention*.

SpaceX for liability, should damage occur. Joint launchings may also occur, where more than one state is regarded as a launching state. A state from whose territory or facility a space object is launched, is also regarded as a party to a joint launching.¹⁴³

The definition of a "space object" in the *Liability Convention* is the component parts of a space object, as well as the launch vehicle and parts thereof.¹⁴⁴ This definition is echoed by Article I(b) of the *Registration Convention*. The definition of a space object was specifically drafted wide in order to include all possible kinds of components that form part of a space object.

"Damage" is defined as the loss of life, personal injury, impairment of health, loss or damage to property of states or of persons, natural or juridical or the property of international intergovernmental organisations.¹⁴⁵ It is interesting to note from this definition of "damage", that damages to juridical persons and not just natural persons are included.

2.3.4.2 Liability Regime

The liability regime in terms of the *Liability Convention* is twofold: launching states are absolutely liable for damage caused by a space object on the surface of the Earth or to an aircraft in flight,¹⁴⁶ while damage caused elsewhere than on the surface of the Earth or to an aircraft in flight is based on fault.¹⁴⁷ Absolute liability is thus prescribed when damage occurs on Earth (or in the atmosphere/airspace), while fault-based liability is prescribed in space.¹⁴⁸

¹⁴³ Article V(3) *Liability Convention*.

¹⁴⁴ Article I(d) *Liability Convention* and Article 1(b) *Registration Convention*. Also see Lyall and Larsen *Space law: A Treatise* 98

¹⁴⁵ Article I(a) *Liability Convention*.

¹⁴⁶ Article II *Liability Convention*. Also see footnote 8 in Hays "Spacepower Theory" 73 and Lyall and Larsen *Space Law: A Treatise* 99-100.

¹⁴⁷ Article III *Liability Convention*.

¹⁴⁸ For a further discussion on the international liability regime prescribed by the *Liability Convention*, see Schmalenbach "Convention on International Liability for Damage Caused by Space Objects" 525-535

If two states are launching states in respect of the same space object, they can be held jointly and severally liable for the damages.¹⁴⁹ Article IV(2) states that damages should be apportioned between states to the extent to which they are at fault. If the states cannot determine the extent of the fault, the damage should be equally apportioned between them. However, Article IV(2) contains a qualification to the apportionment, namely that the third state seeking compensation may not be prejudiced by the apportionment.¹⁵⁰

If it is a joint launching and a launching state decides to pay compensation for damage, such a launching state has the right to present a claim for indemnification against the other states.¹⁵¹ States can be exonerated from damage, if they can show that the damage resulted wholly or partially from gross negligence of another party, whether through an act or an omission.¹⁵² No exoneration may be granted if the damage resulted from activities undertaken by the launching state that are not in conformity with international law, with specific reference to the *OST* and the UN charter.¹⁵³ Article VII states that the *Liability Convention* does not apply to damage by a space object to nationals of the launching state, or foreign nationals involved in the launching, descent or any other process thereafter, or when they are in the vicinity for launch or descent by invitation.¹⁵⁴

While the *Liability Convention* was a step in the right direction in establishing an effective liability regime, holes have since begun to appear in the framework. As Kehrler notes, the drafters could not have foreseen a complex structure such as the International Space Station (ISS) being constructed in the near future.¹⁵⁵ While the *Liability Convention* uses the term "launching", it does not really anticipate that a series of launches could possibly contribute to one single "space object". While there

¹⁴⁹ Article V(1) *Liability Convention*.

¹⁵⁰ See Dempsey 2012 *Annals of Air and Space Law* 343 and Hertzfeld "Fault Liability for Third Party Damage in Space: Is Article IV(1)(b) of the *Liability Convention* Useful Today?" 215-223 for an exposition of the contents of Articles IV-VII of the *Liability Convention*.

¹⁵¹ Article VI(1) *Liability Convention*.

¹⁵² Article VI(2) *Liability Convention*.

¹⁵³ Article VI(2) *Liability Convention*.

¹⁵⁴ Article VII(b) *Liability Convention*. Further see Wang and Li 2021 *Space Science and Technology* 2-3.

¹⁵⁵ Kehrler 2020 *CILJ* 199.

is provision for joint and several liability, it is difficult to determine costs for space objects launched by different nations, in different years, with different costs associated and with different costs of component parts. When one looks at it from a merely financial point of view, depreciation, useful life, inflation and other factors will also play a role in an increasingly complex calculation of apportioning costs.

Additionally, taking the example of the ISS, the USA is the chief contributor to the ISS.¹⁵⁶ If the ISS, for some reason or other, crashes back onto the USA, the USA will have no claim in terms of the *Liability Convention* against other states in terms of Article VII(1) and VII(2). The USA will not, therefore, be able to claim compensation in terms of the *Liability Convention* against other states who also launched space objects that form part of the ISS. It must be noted that the *ISS Intergovernmental Agreement*¹⁵⁷ provides for a cross-waiver of liability by the partner states.¹⁵⁸ In essence, all partners to the *ISS Intergovernmental Agreement* agree to waive any claim of damages against any partner state, a related entity of the partner state and employees of such entities.¹⁵⁹ This cross-waiver includes a waiver of the rights arising out of the *Liability Convention*.¹⁶⁰ However, without such a multilateral agreement, the above argument presents a legal challenge.

When one investigates the definition of a "space object", it is defined as the component parts of a space object, as well as the launch vehicle and parts thereof.¹⁶¹ Crucially, this definition seems to not include the contents, or the "payload" of a space object.¹⁶² Therefore, should some payload fall off in space (whether through an airlock or negligence by an astronaut during a "spacewalk"), the *Liability Convention* will not apply. During the negotiations for the *Liability Convention*, Italy proposed that objects thrown or launched from space be included in the definition of a space object,¹⁶³ but this proposal was never heeded. During the *Convention on*

¹⁵⁶ Lambright 2019 *Space Policy* 85.

¹⁵⁷ *ISS Intergovernmental Agreement* (1998).

¹⁵⁸ Article 16 *ISS Intergovernmental Agreement* (1998).

¹⁵⁹ Article 16(3) *ISS Intergovernmental Agreement* (1998).

¹⁶⁰ Article 16(3)(c) *ISS Intergovernmental Agreement* (1998).

¹⁶¹ Article I(d) *Liability Convention*.

¹⁶² Christol 2017 *AJIL* 356.

¹⁶³ UNOOSA 1968 www.unoosa.org/pdf/limited/c2/AC105_C2_L040E.pdf. Italy working paper on the *Liability Convention*.

International Interests in Mobile Equipment on Matters Specific to Space Assets of 2012¹⁶⁴ and the 2018 *Cape Town Convention*,¹⁶⁵ space protocols were developed that defined the term "space asset" as "any man-made uniquely identifiable asset in space, or designed to be launched into space and comprising a spacecraft, payload or a part of a spacecraft or payload".¹⁶⁶ However, these space protocols are non-binding and only indicative that thought has been given to the dilemma in the *Liability Convention*.

2.3.4.3 Claim Procedure

No prior exhaustion of local remedies is required for a claim in terms of the *Liability Convention*. A state who suffers damage, or whose natural or juridical persons suffer damage, may institute a claim against the launching state(s).¹⁶⁷ In the case where a state of nationality of a natural or juridical person does not institute a claim, then another state may submit a claim, if the damage occurred within its territory.¹⁶⁸ Should neither the state of nationality nor the state in whose territory the damage was sustained, institute a claim, then another state may institute a claim on behalf of its permanent residents.¹⁶⁹

A claim for damage caused by a space object should be submitted through diplomatic channels.¹⁷⁰ If a state does not maintain diplomatic channels with the launching state, it may request another state to present the claim, or it can request the UN Secretary-General to submit the claim (provided that both the claimant and the launching state are members of the UN).¹⁷¹ A claim must be submitted within a year from the occurrence of damage or identification of the launching state.¹⁷² The

¹⁶⁴ *Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets* (2012). Hereafter known as the "Berlin Space Protocol".

¹⁶⁵ *Space Protocol on An International Secured Transactions Regime for Space Assets* (2018). Hereafter known as the "Space Protocol of the Cape Town Convention".

¹⁶⁶ Article 1(2)(k) Space Protocol of the Cape Town Convention.

¹⁶⁷ Article VIII(1) *Liability Convention*.

¹⁶⁸ Article VIII(2) *Liability Convention*.

¹⁶⁹ Article VIII(3) *Liability Convention*.

¹⁷⁰ Article IX *Liability Convention*.

¹⁷¹ Article IX *Liability Convention*.

¹⁷² Article X(1) *Liability Convention*. The state should exercise due diligence in ascertaining who the launching state is. It is acknowledged that ascertaining who the launching state is, is by no means an easy task. See 2.3.4.4 for an example of the recent case in 2024, where a metal ring

Liability Convention does not provide for a time period of a year to institute a claim from the date that the full extent of the damage has been ascertained, but merely from the date of the identification of the liable state or the occurrence of the damages.¹⁷³ However, a state would be allowed to amend or revise their claim once the full extent of the damages is known.¹⁷⁴ Prior exhaustion of local remedies is not a prerequisite for claiming in terms of the *Liability Convention*.¹⁷⁵

Article XII requires that the compensation should be in accordance with the principles of international law.¹⁷⁶ It further prescribes reparation, in that a person should be restored to the position they were before the damage occurred. Payment should be made in the currency of the claimant state, unless the claimant state and the launching state agree otherwise.¹⁷⁷ If a claim through diplomatic channels is not settled within a year from the date of submission of the documentation of a claim, a claims commission must be established.¹⁷⁸ The claims commission will consist of three members, of which one member will be elected by the launching state and one member by the claiming state. The third member will be jointly elected by the claimant and launching state and will act as the chairperson of the commission.¹⁷⁹ Members should be appointed within two months from the submission of the claim.

In the case that the launching state and the claimant state have not appointed a chairperson for the commission, or could not agree on a chairperson within four months from the request, either party may approach the UN Secretary-General to appoint a chairperson.¹⁸⁰ If one of the parties does not appoint a commission member within the two-month timeframe, the chairperson may constitute a one-member claims commission.¹⁸¹ Vacancies are dealt with in the same way as the

fell from space. The Kenyan Space Agency has still not determined who the "launching state" is.

¹⁷³ Article X(3) *Liability Convention*.

¹⁷⁴ Article X(3) *Liability Convention*.

¹⁷⁵ Article XI(1) *Liability Convention*.

¹⁷⁶ Ziemblicki and Oralova 2021 *Space Policy* 3.

¹⁷⁷ Article XIII *Liability Convention*. Further see Kehrler 2020 *CILJ* 186-188.

¹⁷⁸ Article XIV *Liability Convention*. Also see Trepczynski 2007 *JSL* 225.

¹⁷⁹ Article XV *Liability Convention*.

¹⁸⁰ Article XV(2) *Liability Convention*.

¹⁸¹ Article XVI(1) *Liability Convention*. Also see Kehrler 2020 *CILJ* 186-188.

original appointment.¹⁸² The commission shall determine its own procedure,¹⁸³ as well as where it shall sit and other administrative matters.¹⁸⁴ Awards are made by a majority vote, except in the case of a single-member claims commission.¹⁸⁵ No increase in the claims commission shall take place when multiple claimants or launching states are involved. The claimant/launching states should collectively appoint a member.¹⁸⁶ The decision of the commission is final and binding on the states involved if so agreed; alternatively, it is a recommendation which the parties should *bona fide* consider.¹⁸⁷ The Commission only has one year from its establishment to deliver an award and must give reasons for the award.¹⁸⁸ The decision of the Commission should be made public and a certified copy thereof should be delivered to the UN Secretary-General.¹⁸⁹ Article XXII states that any reference to "states", shall apply to international intergovernmental organisations who have declared their acceptance of the rights and duties of the convention.¹⁹⁰

Article XI(2) brings about a very important provision which states that:

Nothing in this Convention shall prevent a State, or natural or juridical persons it might represent, from **pursuing a claim in the courts or administrative tribunals or agencies of a launching state.**

A State shall not, however, be entitled to present a claim under this Convention in respect of the same damage for which a claim is being pursued in the courts or administrative tribunals or agencies of a launching state or under another international agreement which is binding on the states concerned. (Own emphasis added)

It is based on this provision that a natural or juridical person can institute a claim in the courts, administrative tribunals or agencies of a launching state.¹⁹¹ It is also

¹⁸² Article XVI(2) *Liability Convention*.

¹⁸³ Article XVI(3) *Liability Convention* and Li 2024 *UCILR* 99.

¹⁸⁴ Article XVI(4) *Liability Convention*.

¹⁸⁵ Article XVI(4) *Liability Convention*.

¹⁸⁶ Article XVII *Liability Convention*. Also see Li 2024 *UCILR* 99.

¹⁸⁷ Article XIX *Liability Convention*.

¹⁸⁸ Article XIX *Liability Convention*.

¹⁸⁹ Article XIX *Liability Convention*.

¹⁹⁰ Kovudhikulrungsri and Nakseeharach 2011 *JEAIL* 300.

¹⁹¹ See Schmalenbach "Convention on International Liability for Damage Caused by Space Objects" 532, Reinert 2020 *William & Mary Law Review* 347-349 Von der Dunk and De Rozavel 2011 *Nebraska Digital Commons* 3-4.

based on this principle that this contribution will investigate what the exact method/means of claiming is in the identified states, in order to simplify and explore alternative means to a claim in terms of the *Liability Convention*. Such a claim in the municipal law of a launching state will need to be conducted in accordance with the laws relevant to such launching state, which makes it complex. The *Liability Convention* also provides another qualification to this point, namely that a person pursuing such a claim in the jurisdiction of the launching state will not be able to submit a claim in terms of the *Liability Convention* or in terms of any other international agreement.¹⁹²

It naturally seems to follow that the time period of one year for instituting a claim in the *Liability Convention* will not apply when a claim is brought within the jurisdiction of a launching state- this will depend on the municipal law of the state involved.¹⁹³ More importantly, an investigation should be carried out on the time period granted before a civil claim prescribes in the jurisdiction of the launching state. It is also uncertain whether a claim can be brought in terms of the *Liability Convention* after a claim has failed or has been stopped in the national jurisdiction of the launching state.

The wording of the second part of Article XI(2) states that a person may not institute a claim in terms of the *Liability Convention* for the "same damage" for which a claim is being pursued under the municipal law of a state. It is submitted that a claim for different damages arising from one event can be instituted simultaneously under the *Liability Convention* and under the municipal law of a state. The example provided earlier¹⁹⁴ of the university that suffered damages can be used to aptly illustrate the issue: If the university institutes a claim in terms of the *Liability Convention* for physical damage to property caused by a space object, the same university should be able to institute a claim simultaneously under the

¹⁹² Article IX(2) *Liability Convention*. However, see footnote 192 below for a discussion on the misinterpretation of Article IX(2) and how it is possible that the "ne bis in idem" rule should be used to interpret Article IX(2).

¹⁹³ In South African law, the reference is to prescription in terms of the *Prescription Act* 68 of 1969. However, in several other jurisdictions, the time periods to institute a claim are regulated by a "statute of limitations".

¹⁹⁴ Refer to 3.2 above.

municipal law of a state for personal injury compensation. This is simply because the claim is not for the "same damage" but for different damages suffered, caused by a space object from one event. This also complies with the *ne bis in idem* rule: a claim may not be instituted twice,¹⁹⁵ which was most likely the intention of the drafters of the *Liability Convention*. A concurrent claim under the *Liability Convention* and under the municipal law of a state should thus be possible, provided that the claims are not for the "same damages".¹⁹⁶

2.3.4.4 Previous Claims in terms of the *Liability Convention*

It is indeed a very tragic point that there has never been a real claim in terms of the *Liability Convention*. There has been damage from space objects, of which none are more famous than the *Kosmos 954* incident. The *Kosmos 954* started experiencing problems, and telemetry instruments of the USA picked up strange behaviour from the satellite. On 24 January 1978, the *Kosmos 954* crashed near Great Slave Lake in an uninhabited part of Northern Canada.¹⁹⁷ As stated previously, there were fears for radioactive material being leaked by the satellite.¹⁹⁸ Canada claimed in terms of the *Liability Convention* for the cost of the cleanup operations.¹⁹⁹ However, the claim was not settled through the *Liability Convention*, but rather

¹⁹⁵ Kepa 2023 *Studia Iuridica* 81.

¹⁹⁶ In order to illustrate the possible application of this principle, the following university example can be used as mentioned in 3.2 above. Further assumptions can be made that personal injury was suffered, along with the destruction of property. Applying the *ne bis in idem* rule, the university may not institute a claim under both the *Liability Convention* and the municipal law of the launching state for damage suffered to the same physical property, because if compensation would be given under both avenues of recourse, the university will be compensated twice for damage to the same property. However, should the university institute a claim under the *Liability Convention* for the damage to its property and a claim under the municipal law of the launching state for the personal injury suffered, it would be perfectly acceptable in terms of the *Liability Convention*. It must be acknowledged that different types of damage may arise from one cause of action, i.e. the type of damage caused by a space object may differ. Schmalenbach "Convention on International Liability for Damage Caused by Space Objects" 532 seems to not agree with this interpretation of Article XI, stating that a claimant must "pursue a claim by irreversibly selecting one of two paths"- one claim under the municipal law of a state, the other in terms of the *Liability Convention*. Reinert 2020 *William & Mary Law Review* 348 at footnote 164 also seems to support the above argument of "same damages", as well as Von der Dunk and De Rozavel 2011 *Nebraska Digital Commons* 3, who also supports the concept of a simultaneous claim in terms of the *Liability Convention* and under the municipal law of a state for different damage suffered from the same cause of action.

¹⁹⁷ Weiss 1978 CIA National Archives 1.

¹⁹⁸ Uranium-235 Radioactive material in terms of CIA declassified reports on the incident.

¹⁹⁹ Cohen 1984 *YJIL* 80.

through diplomatic means.²⁰⁰ Another case in which damage was suffered that was caused by a space object, was the Skylab crash near the town of Esperance in Western Australia.²⁰¹ The town of Esperance, ironically, fined NASA \$400 (Australian) for littering under the *Western Australian Littering Act*.²⁰² Not surprisingly, the fine was never paid, nor acknowledged by NASA.²⁰³

The most recent major incident involved the Russian Cosmos 2251 and the Iridium 33, a satellite owned by a private USA-registered entity.²⁰⁴ The Cosmos 2251, which became non-operational and uncontrollable during 1995, collided with the Iridium 33 on 10 February 2009, at a height of approximately 790 kilometres above the surface of the Earth.²⁰⁵ NASA estimated that approximately 1400 pieces of space debris larger than ten centimetres resulted from this incident, with many other pieces of space debris smaller than 10 centimetres that have also been detected.²⁰⁶ Some of these pieces of debris will remain in orbit for several decades²⁰⁷ and others until the end of the century.²⁰⁸

Even though no claim in terms of the *Liability Convention* has been instituted before, the risk of damage from a space object is becoming more and more relevant. Recent examples of space objects that fell back to Earth include the Soviet spacecraft *Kosmos 482*,²⁰⁹ which fell into the Indian Ocean on 10 May 2025, west of Jakarta, Indonesia.²¹⁰ On 30 December 2024, a 500-kilogram metal ring fell in Kenya, with the inhabitants of nearby villages being stunned by the loud crash.²¹¹ No responsible

²⁰⁰ Burke 1984 *FILJ* 256. Also see Von der Dunk 2010 *Nebraska Digital Commons* 200.

²⁰¹ Ernest 1991 *CWRLRJ* 524.

²⁰² *Western Australian Littering Act* of 1979.

²⁰³ Gorman 2011 *JAS* 536.

²⁰⁴ Von der Dunk 2010 *Nebraska Digital Commons* 199.

²⁰⁵ NASA 2009 <https://www.unoosa.org/pdf/pres/copuos2009/tech-27.pdf>.

²⁰⁶ NASA 2009 <https://www.unoosa.org/pdf/pres/copuos2009/tech-27.pdf>. For an in-depth, scientific analysis of the space debris caused by the accident, see Wang 2010 *Science and Global Security* 87-115.

²⁰⁷ Wang 2010 *Science and Global Security* 87.

²⁰⁸ NASA 2009 <https://www.unoosa.org/pdf/pres/copuos2009/tech-27.pdf>.

²⁰⁹ CNN 2025 <https://edition.cnn.com/2025/05/09/science/soviet-spacecraft-crash-kosmos-482>.

²¹⁰ New York Times 2025 <https://www.nytimes.com/2025/05/10/science/kosmos-482-crash-soviet-spacecraft.html>.

²¹¹ Mail and Guardian 2025 <https://mg.co.za/the-green-guardian/2025-04-13-the-hidden-dangers-of-space-junk-debris-is-falling-on-africa/>.

party has been identified yet, with the Kenyan Space Agency conducting investigations.²¹²

2.3.5 Registration Convention

The *Registration Convention* was opened for signature in 1975 by the UN and addresses the issue of identifying space objects and establishing to whom they belong. This followed directly after the *Liability Convention* was opened for signature and provides a procedure to be followed for registering objects as they are launched. This serves a dual purpose, where it identifies launching states in the case of liability and also allows states to keep track of space objects in outer space. The preamble of the *Registration Convention* states that the purpose of the convention is to establish and maintain a publicly accessible and mandatory central register of space objects.²¹³ The principles and key points of the *Registration Convention* will be discussed below.

2.3.5.1 Overview of the *Registration Convention*

Article I starts by defining the term of a launching state as a state who launches or procures the launch of a space object, or a state from whose territory or facility a space object is launched, which is the exact same definition contained in the *Liability Convention*. The definition of a space object is unchanged from the definition thereof in the *Liability Convention*, while the term "state of registry" means a launching state on whose registry a space object is carried in terms of Article II of the convention.²¹⁴

Article II places an obligation on states to register space objects on a registry²¹⁵ that should be maintained by the state.²¹⁶ The launching state must inform the UN Secretary-General of the establishment of such a registry. In the case where there are more than two launching states, a joint determination should be made about

²¹² Iderawumi 2025 <https://spaceinafrica.com/2025/01/01/kenya-space-agency-investigates-partially-burnt-rocket-fragment-found-in-mukuku-village/>.

²¹³ Preamble of the *Registration Convention*.

²¹⁴ Article 1(c) *Registration Convention*.

²¹⁵ Soucek 2016 *German Journal of Air and Space Law* 23.

²¹⁶ Article II(1) *Registration Convention*.

whose registry the object will be carried on.²¹⁷ The content of what is registered about the space objects and how the registry is maintained, should be determined by the state of registry.²¹⁸ This thus ought to form part of the national space law of states.

Article III states that the UN Secretary-General shall maintain a register with full and open access, in which the information stated in Article IV should be recorded. This information includes the name of the launching state/states, a designator/registration number of the space object, general function thereof and the date, territory and launch of the space object. In addition to this, the basic orbital parameters should also be recorded, which include the nodal period, inclination, perigee and apogee.²¹⁹ States should, as soon as reasonably possible, inform the UN Secretary-General of space objects no longer in Earth orbit.²²⁰

Space objects launched into Earth orbit or beyond have been marked by a designator/registration number; the state of registry should notify the UN Secretary-General of this fact.²²¹ The UN Secretary-General shall then record it in the register kept by him.²²²

Article VI addresses the identification of space objects for the purposes of liability. When a space object cannot be identified in terms of the registration requirements as set out by the *Registration Convention*, other state parties are under the obligation to respond to the greatest extent feasible to a request by another state party to assist under equitable and reasonable conditions in the identification of the object. A state party who makes such a request should provide to the greatest extent feasible, information regarding the time, nature and circumstances that gave

²¹⁷ Article II(2) *Registration Convention*.

²¹⁸ Article II(3) *Registration Convention*. Further see Lee 2006 *Space Policy* 43.

²¹⁹ Article IV *Registration Convention*. Also see Soucek 2016 *German Journal of Air and Space Law* 23-28.

²²⁰ Article IV(3) *Registration Convention*.

²²¹ See UNOOSA 2023 Stakeholder Study 47-48 for the model registration form for registration with the UN Secretary-General at https://www.unoosa.org/res/oosadoc/data/documents/2023/stspace/stspace91_0_html/st_space_091E.pdf.

²²² Article V *Registration Convention*.

rise to such a request. Arrangements under which the assistance is rendered are a matter that should be decided between the state parties concerned.²²³

Similarly to Article 6 of the *Rescue Agreement* and Article XXII of the *Liability Convention*, the term "state" should be interpreted as including international intergovernmental organisations that have declared their acceptance of the rights and obligations of the *Registration Convention*.²²⁴

2.3.5.2 Implementation of the *Registration Convention*

The *Registration Convention* has been quite widely accepted, with 75 ratifications globally, and an additional 3 signatories.²²⁵ This includes major spacefaring nations such as China, the USA, France, Germany, India and Russia, to name a few.²²⁶ National registration activities take place in Australia, China, Japan, New Zealand, Russia, the United Kingdom and the United States of America. Most of the national registration takes place through a designated body in terms of the designated space legislation of that state. The UN Secretary-General also has an established registry, and many states have duly registered their space objects with the Secretary-General.²²⁷

It is interesting to investigate the standard practices of many states with regard to their provision of information to the UN Secretary-General under the *Registration Convention*. The *Registration Convention* specifically requests the registration of a space object that is launched "into Earth orbit and beyond",²²⁸ but it has been standard practice by several states to also provide information about the decay of satellites to the Secretary-General.²²⁹ Luxembourg serves as a supreme example, since they are not a party to the *Registration Convention* but have registered 116 objects.²³⁰ The information provided by Luxembourg is extremely coherent and

²²³ Article VI *Registration Convention*.

²²⁴ Article VII *Registration Convention*.

²²⁵ UNOOSA 2025 <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/status/index.html>.

²²⁶ UNOOSA 2025 <https://www.unoosa.org/res/oosadoc/data/documents/2025>.

²²⁷ UNOOSA 2024 <https://www.unoosa.org/oosa/en/spaceobjectregister/index.html>.

²²⁸ Article II *Registration Convention*.

²²⁹ Jakhu, Jasani and McDowell 2018 44 407.

²³⁰ Jakhu, Jasani and McDowell 2018 44 407.

extensive, including whether the space object is in orbit, decayed,²³¹ or in geostationary orbit (GSO).²³²

It thus seems that registering space objects is common practice in most launching states,²³³ Luxembourg being the perfect example. However, there are no guarantees that it is standard practice for states to disclose information subject to state intelligence laws, or that states will absolutely comply with their obligations under international law.²³⁴ Not only do proper disclosure and recordkeeping assist in identifying liability, but it can also be a predominantly preventative measure. If all spacefaring states are duly informed of the launch of a new space object, that would make it much easier to track and prevent collisions with other space objects.

2.3.5.3 Selected Problems of The *Registration Convention*

Space exploration has seen significant development since 1975, when the *Registration Convention* was first opened for signature. As such, several issues have started to niggle, with some scholars suggesting that the *Registration Convention* will need to be reviewed.²³⁵ This will be discussed below.

The first problem with the *Registration Convention* relates to the transfer of ownership of a space object to another state. Von der Dunk identifies two typical cases of transfer in satellites, namely that which happens with (1) a change in the nationality of the owner and (2) transfer of ownership to an owner with a different nationality.²³⁶ The *Registration Convention* places no positive obligation on either the launching state or the state acquiring the space object to register it on the national register of the state concerned or at the UN Secretary-General, nor to

²³¹ The reference to "decayed", refers to the situation where a satellite is decommissioned or reached the end of its useful life and/or it is uncontrollable. Decayed can also mean that the satellite is uncontrollable and is in the process of falling back into Earth's atmosphere.

²³² UNOOSA 2024

<http://www.unoosa.org/oosa/en/spaceobjectregister/submissions/luxembourg.html>.

²³³ Jakhu, Jasani and McDowell 2017 44 407.

²³⁴ What is meant by this statement is that states may "seem" to cooperate with keeping a national register and notifying the UN Secretary-General of the space objects they launch, but the possibility remains that they do not fully disclose their confidential information, such as when it concerns national security.

²³⁵ Zhao 2004 *AUJIL* 107.

²³⁶ Von der Dunk "Transfer of Ownership in Orbit: From Fiction to Problem" 29-32.

remove it from any national or UN register. Due to the fact that liability is only prescribed for launching states, when a space object is transferred, can liability be invoked in terms of the *Liability Convention*?²³⁷ Furthermore, if the object is transferred to an entity/state that has not launched any space objects yet, they will not qualify as a launching state, nor have the capacity to register the object in terms of Article II of the *Registration Convention*.²³⁸ Furthermore, inadequate national space legislation may complicate this matter even further (i.e. refer to 3.4.1.2 below for a similar issue in the South African national space legislation).

It is submitted that this is a glaring issue, since the commercialisation of space and the entry of several private participants will only complicate this issue even further. This issue can be contractually dealt with, if states require private parties (by virtue of national legislation) to include a provision in an acquiring contract that liability is wholly transferred with the acquisition of the space object. However, it is still an important oversight that could have potentially serious repercussions if not addressed properly.

Another issue, which can also be found in the *Liability Convention*, is in the definition of a "space object",²³⁹ since it does not include the concept of a "payload" in its definition. Again, this raises the question whether a rampant "payload" needs to be registered in terms of the *Registration Convention*. Payloads can also incur liability in terms of the *Liability Convention*, but there will be no means to identify the launching state of such a payload, due to the failure of the *Registration Convention*

²³⁷ Zhao 2004 *AUJIL* 109. On this, see Chatzipanagiotis 2007 *German Journal of Air and Space Law* 231. Chatzipanagiotis mentions a few possibilities which can be a solution to the question of transfer of ownership, among others that the "acquiring state" registers the item with UN Secretary-General and therefore becomes the "launching state", for the purposes of the international conventions.

²³⁸ Hofmann "Ownership of Satellites Ownership of Satellites: A Simple Legal Fact with Complex Consequences" 18.

²³⁹ Hertzfeld 2021 *Journal of Space Safety and Engineering* 241 argues that the definition of a space object is "circular" in nature and will become more outdated as technology progresses. A further issue, Hertzfeld highlights, is the growth in private sector participation in space activities, with an increasing strain on states to "continually supervise" the space activities of these private entities in line with the obligation placed upon states by Article VI of the *OST*. The onus here, will be on national legislation of states to govern the duties and responsibilities of private entities, in order to assist states to comply with the obligation under Article VI of the *OST*.

to specify that it needs to be registered.²⁴⁰ Even though the *Registration Convention* is not perfect, it does provide a great framework for the registration of space objects and is a building block from which further developments can be actioned.

2.3.6 Moon Agreement

The *Moon Agreement* is the last of the five major international space law treaties to be opened for signature in 1979. The *Moon Agreement* is the least successful of all the treaties and is generally regarded as a failed treaty,²⁴¹ with only 17 ratifications, most coming from non-spacefaring nations.²⁴² There are reasons why the *Moon Agreement* is severely unpopular, which will be investigated below.

2.3.6.1 Overview of the *Moon Agreement*

It is important to note that the *Moon Agreement* does not just apply to the Moon, but finds application to other celestial bodies within the solar system as well.²⁴³ Any reference to the Moon includes orbits or trajectories around the Moon.²⁴⁴ However, the *Moon Agreement* does not apply to extraterrestrial material that reached the surface of the Earth by natural means.²⁴⁵ Thus, asteroids, comets and other similar objects are consequently excluded from the scope of the *Moon Agreement*.

Activities on the Moon should be carried out in accordance with international law²⁴⁶ and all state parties shall use the Moon exclusively for peaceful purposes.²⁴⁷ Threats, use of force or hostile acts are prohibited.²⁴⁸ State parties may not place nuclear

²⁴⁰ Yun 2004 *AUJIL* 115.

²⁴¹ Mavroeidi "The Effectiveness and Applicability of the Moon Agreement in the Twenty-First Century: Will There Be a Future?" 35.

²⁴² UNOOSA Treaty Status Webpage. Neither Russia, the USA, the UK nor China ratified the treaty, with France only signing the agreement, and ratifications from Australia and India being the only major spacefaring nations to ratify the *Moon Agreement*.

²⁴³ Article 1(1) *Moon Agreement*. Also see Delgado-Lopez 2014 *Space Policy* 2, as well as Nelson and Wedenig 2023 *Annals of Air and Space Law* 3.

²⁴⁴ Article 1(2) *Moon Agreement*.

²⁴⁵ Article 1(3) *Moon Agreement*.

²⁴⁶ Article 2 *Moon Agreement*. For an in-depth discussion on the development of the Moon Agreement, see Marko 1993 *Journal of Natural Resources and Environmental Law* 293-345, Christol 1999 *JSL* 5-13 and Tronchetti 2010 *JSL* 503-508.

²⁴⁷ Article 3(1) *Moon Agreement*.

²⁴⁸ Article 3(2) *Moon Agreement*.

weapons or weapons of mass destruction in orbit or on the Moon.²⁴⁹ Weapons testing, the establishment of military bases, fortifications or installations on the Moon are prohibited, while military manoeuvres are also prohibited.²⁵⁰ However, military personnel may carry out scientific investigations or use any equipment for the peaceful exploration of the Moon.²⁵¹

Article 4 states that the Moon is "the province of all mankind", referring back to the provisions in the *OST*. The exploration and use of the Moon should be carried out to the benefit of all countries, irrespective of their economic or scientific development.²⁵²

Article 5 attempts to extend a part of the *Registration Convention* and apply it to activities on the Moon as well. The UN Secretary-General should be informed, to the greatest extent feasible and practicable, regarding their activities on the Moon. Information that should be given to the Secretary-General includes the time, purposes, locations, orbital parameters and duration in respect of each mission.²⁵³ Information on results of the mission, which include scientific results, should be included.²⁵⁴ The Secretary-General should also be informed of all phenomena discovered which could endanger human life or health, as well as any organic life that has been detected.²⁵⁵

There are several other provisions in the *Moon Agreement*, which in broad terms govern the freedom of scientific investigation,²⁵⁶ the need to avoid harmful interference with the environment of the Moon,²⁵⁷ activities on or below the surface of the Moon²⁵⁸ and the provision of shelter at Moon stations to persons in distress.²⁵⁹ State parties that learn of a crash/forced landing of a space object shall promptly

²⁴⁹ Article 3(3) *Moon Agreement*.

²⁵⁰ Article 3(4) *Moon Agreement*.

²⁵¹ Article 3(4) *Moon Agreement*.

²⁵² Article 4(1) *Moon Agreement*.

²⁵³ Article 5 *Moon Agreement*.

²⁵⁴ Article 5 *Moon Agreement*.

²⁵⁵ Article 5(3) *Moon Agreement*.

²⁵⁶ Article 6 *Moon Agreement*. Also see Bini 2010 AA 498.

²⁵⁷ Article 7 *Moon Agreement*.

²⁵⁸ Article 8 *Moon Agreement*.

²⁵⁹ Article 10(2) *Moon Agreement*.

inform the UN Secretary-General thereof.²⁶⁰ Article 14 prescribes international liability for national activities on the Moon.

2.3.6.2 Common Heritage Problem in the *Moon Agreement*

Article 11 contains provisions about the use of the resources of the Moon. Article 11(1) states that the Moon and its natural resources are the common heritage of humankind. Conversely, it confirms that the Moon is not subject to national appropriation or any claim of sovereignty. Article 11(3) states that neither the surface, nor the subsurface of the Moon shall become the property of any state. In itself, this provision has no conflict with the *OST*, since the *OST* also bans the appropriation of space.²⁶¹ Again, a distinction can be drawn between the appropriation of real property and extracted materials as discussed in 2.2.2.2 above.

Article 11(3) of the *Moon Agreement* states that no part of the Moon, nor the natural resources thereof, shall become the property of any state, international intergovernmental organisation, national organisation, non-governmental entity or natural person.²⁶² Article 11(5) then goes on to state that parties to the agreement agree to establish an international regime to govern the exploitation of the natural resources.²⁶³ This is clearly a moratorium on the use of lunar resources, except in quantities appropriate for support of their missions.²⁶⁴ Article 11(7) provides the main purposes of establishing an international liability regime which includes:

- a) The orderly and safe development of the natural resources of the Moon;
- b) The rational management of those resources;

²⁶⁰ Article 13 *Moon Agreement*.

²⁶¹ Article 2 *OST*.

²⁶² Article 11(3) *Moon Agreement*. Note that it seems that the *Moon Agreement* focuses on stating that natural resources may not be appropriated, rather than that they may not be used. Article 11(7)(d) confirms that this is the correct interpretation, since it requires an "equitable sharing" of the benefits derived from the resources, thus allowing for the interpretation that resources may be used/extracted, but not appropriated by a state party to themselves exclusively. This is in line with the idea that the Moon is the "province of all mankind".

²⁶³ Nelson and Wedenig 2023 *Annals of Air and Space Law* 3-4.

²⁶⁴ Article 6(2) *Moon Agreement*. Also see Nelson 2011 *ILSA Journal of International and Comparative Law* 401, who argues that the treaty does not place a moratorium on Lunar development as such.

- c) The expansion of opportunities in the use of those resources;
- d) An **equitable sharing** by all States Parties in the benefits derived from those resources, whereby the interests and needs of the developing countries, as well as the efforts of those countries which have contributed either directly or indirectly to the exploration of the Moon, shall be given special consideration. (Own emphasis added)

It is especially Article 11(7)(d) that resulted in a "hostile reception" to the Moon Agreement,²⁶⁵ since it introduces the "common heritage" principle.²⁶⁶ Lyall states this is a major reason why the *Moon Agreement* has not received more support.²⁶⁷ States who have the technology and expertise to undertake activities on the Moon would choose to not undertake those activities, since they will need to prescribe too an "equitable sharing" of the resources. Spacefaring nations have thus been very reluctant to sign and ratify the *Moon Agreement* due to the common heritage principle in Article 11.²⁶⁸ Doyle states that:

Paragraph 7 (d) is just bad policy, whether current or future, inconsistent with established law, and ought to be ignored rather than implemented.²⁶⁹

Inevitably, Article 11 proved to be too much of a stumbling block for states, who refused to sign or ratify the treaty based on the provisions of Article 11. It is sad that a treaty such as this is regarded as "failed", mostly (but not exclusively), due to a single Article.²⁷⁰ Article 11 also stated that the international regime will be established, but the procedure identified was by a review of the agreement.²⁷¹ However, the period before the *Moon Agreement* was scheduled to be reviewed, was determined as 10 years.²⁷² Lee notes that:

²⁶⁵ Nelson 2011 *ILSA Journal of International and Comparative Law* 398.

²⁶⁶ Gorove *The Concept of the Common Heritage of Mankind* 65-78, Nelson and Wedenig 2023 *Annals of Air and Space Law* 4 and Bini 2010 *AA* 500.

²⁶⁷ Lyall 1998 *JSL* 132. Also see Article 4(1) of the *Moon Agreement*, which states that exploration and use of the Moon should be to the "benefit of all countries".

²⁶⁸ Lyall 1998 *JSL* 133.

²⁶⁹ Doyle 1998 *JSL* 123.

²⁷⁰ Christol 1999 *JSL* 32.

²⁷¹ Article 18 *Moon Agreement*.

²⁷² Article 18 *Moon Agreement*.

They (states) nonetheless refused to take the risk of an interpretation being imposed that is adverse to their interests.²⁷³

With regard to the review of the agreement, there is almost no evidence as to any of such efforts to review the *Moon Agreement*.²⁷⁴ This of course even further confirms to a state who did not sign, that it was the correct decision and no attempt will be made to ratify it.

2.4 Legal Status of International Space Law

Theodore Roosevelt famously said: "No man is above the law and no man is below it: nor do we ask any man's permission when we ask him to obey it."²⁷⁵ International law, however, is different from national law, since it is based on consensus of states.²⁷⁶ Subsequently, it is important to determine the legal status of international space law in the international law framework. Below, the focus will be on international space law from a treaty law perspective and thereafter as international customary law.

2.4.1 Status of Space Treaty Law

2.4.1.1 The Vienna Convention

When one refers to the status of treaty law, it is impossible not to refer to the *Vienna Convention on the Law of Treaties*.²⁷⁷ According to the *Vienna Convention*, a treaty is an:

...international agreement concluded between states in written form and governed by international law, whether embodied in a single instrument or two or more related instruments and whatever its particular designation.²⁷⁸

²⁷³ Lee 1999 *IISL* 412.

²⁷⁴ Christol 1999 *JSL* 17.

²⁷⁵ Roosevelt 1903 <https://www.presidency.ucsb.edu/documents/third-annual-message-16>.

²⁷⁶ Sperduti 1976 *Italian Yearbook of International Law Online* 34-35, as well as Fernandez and Puyang 2016 *US-China Law Review* 53-59.

²⁷⁷ Vienna Convention on the Law of Treaties (1969). Hereafter the "*Vienna Convention*".

²⁷⁸ Article 2(1)(a) *Vienna Convention*.

The 1986 *Vienna Convention*²⁷⁹ extended this definition to agreements between states and international organisations, and between international organisations. Oral Agreements do not constitute valid obligations in terms of international law when tested against this definition, while memorandums of understanding are generally also not binding on the parties. Treaties should be registered with the UN Secretary-General.²⁸⁰ States are not bound by treaties of which they are not parties in terms of Article 34 of the *Vienna Convention*. However, once the provisions of a treaty become international customary law, then a treaty can create obligations which a state has not acceded to.²⁸¹ South Africa has not ratified the *Vienna Convention* as at the present time, but it could possibly be bound by some terms of the *Vienna Convention*, based on the reasoning that such terms themselves form part of international customary law.

Various scholars have argued that the *Vienna Convention* can be considered as part of international customary law.²⁸² In the *Harksen* case, Judge Goldstone J stated that the debate about whether the *Vienna Convention* forms part of international customary law is "not yet settled".²⁸³ Gardiner states that Articles 31-33 of the *Vienna Convention* form part of the rules of customary international law, but that the rest of it is still debated.²⁸⁴ The ICJ also noted in its 1997 report that:

Articles 65 to 67 of the Vienna Convention on the Law of Treaties, if not codifying customary law, at least generally reflect customary international law and contain certain procedural principles which are based on an obligation to act in good faith.²⁸⁵

While South Africa has not yet ratified the *Vienna Convention*,²⁸⁶ it will be bound by some of its provisions, if it can be argued that those provisions form part of customary international law.

²⁷⁹ Vienna Convention on the Law of Treaties Between States and International Organisations or Between International Organisations (1986). Hereafter "*1986 Vienna Convention*".

²⁸⁰ Article 80 *Vienna Convention*.

²⁸¹ Dugard et al *Dugard's International Law: A South African Perspective* 610.

²⁸² Dugard et al *Dugard's International Law: A South African Perspective* 610.

²⁸³ *Harksen v President of the Republic of South Africa* 2000 (2) SA 825 (CC) para 26.

²⁸⁴ Gardiner 1997 *International and Comparative Law Quarterly* 645.

²⁸⁵ 1997 ICJ Reports with reference to the Gabčíkovo-Nagymaros project.

²⁸⁶ Dugard *Dugard's International Law: A South African Perspective* 610.

2.4.1.2 Space Treaties from the *Vienna Convention* perspective

Naturally, treaties of space law will also ascribe to the principles in the *Vienna Convention*. States that have signed any of the *OST*, *Registration Convention*, *Liability Convention*, *Rescue Agreement* and or the *Moon Agreement* will be bound by the terms of those agreements.²⁸⁷ Positive obligations will also arise from space treaties signed by states.

An example of such an obligation can be found in the *Registration Convention*, which requires states to maintain a national register of all space objects launched into outer space and to inform the UN Secretary-General of such space objects.²⁸⁸ Parallel to this, states must also fulfil all of the substantive requirements of furnishing the information to the UN Secretary-General (such as including the name of the launching state or states, appropriate designator/registration number, date and territory of launch and the basic orbital parameters).²⁸⁹ Similarly, the *Rescue Agreement* will place a positive obligation on states to rescue spacecraft personnel, or render all necessary assistance to them when in distress, among others.²⁹⁰

Should a state party breach the obligations in terms of the treaties, Article 60 of the *Vienna Convention* provides guidance on remedies. A material breach of a multilateral treaty by a state party entitles the other parties, by unanimous agreement, to suspend the operation of the treaty in whole or in part.²⁹¹ Other parties may also, by unanimous agreement, terminate the treaty between themselves and the defaulting state, or as a whole among all of the parties.²⁹² However, the breach must be material, which includes a repudiation of a treaty that is not sanctioned by that specific treaty. It may also be a violation of an essential provision integral to the accomplishment or object of the treaty.²⁹³

²⁸⁷ Article 34 *Vienna Convention*.

²⁸⁸ Article II *Registration Convention*.

²⁸⁹ Article IV(1)(a)-(e) *Registration Convention*.

²⁹⁰ Article 2 *Rescue Agreement*.

²⁹¹ Article 60(2)(a) *Vienna Convention*.

²⁹² Article 60(2)(a)(i)-(ii) *Vienna Convention*.

²⁹³ Article 60(3)(a)-(b) *Vienna Convention*.

A "material breach" for the purposes of space law, would be the use of space not for peaceful purposes, or the national appropriation of space.²⁹⁴ These are concepts contained in the 1963 *Declaration of legal principles* and the *OST* and form the core of the subsequent treaties. Logically, a party's membership of a treaty may also be simultaneously suspended/terminated if they breached a principal obligation which is contained in more than one treaty.

2.4.2 Space Law as International Customary Law

It can be said that customary international law creates legal rights and obligations for states, independently of the existence of any treaty which a state has acceded to.²⁹⁵ There are two requirements for the formation of international customary law, namely settled practice (*usus*), which is the objective component,²⁹⁶ and the acceptance of an obligation to be bound (*opinio juris*),²⁹⁷ which is the subjective component.²⁹⁸ While space law is codified in a set of treaties, it only binds states that are signatories to such treaty.²⁹⁹ Customary international law, on the other hand, binds all states.³⁰⁰ It is therefore important to explore whether space law, or components thereof, can be seen as customary international law.

2.4.2.1 Settled Practice (usus)

In order for a rule to be considered as *usus*, the rule cannot just be the practice of a few states. It is generally accepted that a practice has to be "general and widespread" and must be applied "constant and uniform" before it can be regarded

²⁹⁴ See Vereshcetin and Danilenko *JSL* 32-33, Jakhu and Freeland "The Relationship Between the Outer Space Treaty and Customary International law" 5-9 and Cepelka and Gilmour 1970 *JALC* 46-47.

²⁹⁵ Vereshcetin and Danilenko *JSL* 24.

²⁹⁶ Jakhu and Freeland "The Relationship Between the Outer Space Treaty and Customary International law" 1-12.

²⁹⁷ Frandsen 2022 *JALC* 727.

²⁹⁸ Dugard *Dugard's International Law: A South African Perspective* 31.

²⁹⁹ Note that certain states require further steps before they are bound by a treaty, such as an affirmation by a parliament or similar body, or introduction to municipal law- refer to 2.4.3 below. Most states require some sort of ratification before they are bound by the provisions of the treaty.

³⁰⁰ Jakhu and Freeland "The Relationship Between the Outer Space Treaty and Customary International law" 2.

as *usus*. A state practice does not have to be unanimously or universally accepted, but merely "widespread".³⁰¹ Frandsen states that:

State practice (*usus*) is demonstrated by showing widespread, uniform, and repetitive acts by states over time.³⁰²

In the *North Sea Continental Shelf* case, it was stated that there must be a general settled practice, a norm-creating principle before customary international law can start to form around such practice.³⁰³ Taking a South African example, Judge Conradie J stated in *S v Petane* that customary international law is founded on practice, not on preaching.³⁰⁴ In order to determine whether *usus* exists, evidence can be sought in treaties, policy statements, findings of the international law commission, diplomatic correspondence, court decisions and resolutions between states.³⁰⁵

In the context of space law, one can look at principles that are widespread which are applied as constant and uniform, such as the registration of space objects launched with the UN Secretary-General.³⁰⁶ Another principle that is clearly state practice is the non-appropriation principle, and that space should be used for peaceful purposes. Dugard states that the 1963 *Declaration of Legal Principles* leads to the creation of a new rule of international customary law.³⁰⁷

However, as an example, Article 11 of the *Moon Agreement*, on the other hand, will not qualify as *usus*, since it is clear that it is not widely accepted by states. It must be noted that space law as a whole will not qualify as *usus*, but certain principles contained in space law may qualify as *usus* as stated above.

³⁰¹ Frandsen 2022 *JALC* 726-728.

³⁰² Frandsen 2022 *JALC* 727.

³⁰³ *North Sea Continental Shelf (Federal Republic of Germany v. Denmark and Federal Republic of Germany v The Netherlands)* ICJ (1969) page 44.

³⁰⁴ *S v Petane* 1988 (3) SA 51 (C) para 59.

³⁰⁵ Dugard *Dugard's International Law: A South African Perspective* 31.

³⁰⁶ Even though this is very much debatable as to whether it forms part of international customary law, it should just be seen as an example of what constitutes "widespread and uniform".

³⁰⁷ Dugard *Dugard's International Law: A South African Perspective* 34.

2.4.2.2 Opinio Juris

Usus in itself is insufficient in creating rules of customary international law; states must have a sense of obligation (*opinio juris*) towards the rule before it will form part of international customary law. Article 38(1)(b) of the ICJ statute states that international custom must be "accepted as law".³⁰⁸ Sachdeva states that it indicates a "conviction of its legal obligation".³⁰⁹ It is difficult to obtain evidence of *opinio juris*, due to the fact that it is subjective in nature. Evidence for *opinio juris* can be found in the same materials as those in which *usus* can be found, as well as in UNGA resolutions and multilateral conventions.³¹⁰ Von der Dunk, for example, states that the promulgation of national space laws can be proof of *opinio juris*.³¹¹ Silence can also indicate that acceptance of a rule is implied, but only if the states that were silent "were in a position to react and circumstances called for some reaction".³¹²

An important point to note is that an exception exists where customary international law will not be binding on a state, namely the "persistent objector rule".³¹³ In essence, this "rule" states that customary international law will not be binding on a party who persistently objected to the formation of the rule.³¹⁴ Even though the existence of such a theory was accepted in *S v Petane*,³¹⁵ this was mainly due to the South African apartheid government's stance that persistent objection to an international rule would exempt them from complying with such a rule. Of course, the international community did not accept this due to the human rights violations during apartheid. It is submitted that a persistent objection does not exempt a party from complying with the peremptory norms (*jus cogens*) of international law. The concept of *jus cogens* will be discussed below.

³⁰⁸ Statute of the International Court of Justice (ICJ) (1945).

³⁰⁹ Sachdeva "Select Tenets of Space law as *Jus Cogen*" 11.

³¹⁰ *Nicaragua v United States of America* ICJ 27 June 1986 paras 183-188.

³¹¹ Von der Dunk "Two New National Space Laws: Russia and South Africa" 257.

³¹² Conclusion 10 of the *Draft Conclusions on the Identification of International Customary Law* (2018).

³¹³ *United Kingdom v Norway Fisheries Case* (1951).

³¹⁴ Jakhu and Freeland 3.

³¹⁵ *S v Petane* para 64.

2.4.2.3 Jus Cogens

Jus Cogens refers to the peremptory norms of society, the so-called "higher norms". The prohibition on torture, for example, can be regarded as a peremptory norm of international law.³¹⁶ Scheuner expands upon *jus cogens* by categorising it into three separate categories, namely (1) rules protecting the foundations of the international order, (2) rules concerning the peaceful cooperation in the protection of common interests/human rights and (3) rules for the protection of civilians in times of war.³¹⁷ *Jus cogens*, as the "higher norms", are hierarchically superior to ordinary international law,³¹⁸ with an independent status.³¹⁹ Interestingly, Shaw states that a law of *jus cogens* should cross "ideological and political divides".³²⁰

Article 53 of the *Vienna Convention* states that a treaty will be void if, at the time of its conclusion, it conflicted with peremptory norms (*jus cogens*).³²¹ Article 64 of the *Vienna Convention* goes even further by stating that if a new peremptory norm develops in international law, existing treaties that are in conflict with this norm will be void.

There are several scholars who argue for the existence of *jus cogens* principles in international law. Jakhu argues that there are four principles in space law that can be regarded as *jus cogens* norms, since they represent global, rather than individual interests.³²² The four principles Jakhu argues as *jus cogens* norms are:³²³

1. Exploration and use of outer space for the benefit of all peoples (Article I *OST*)
2. Freedom of exploration and use of outer space (Article I *OST*)
3. National non-appropriation (Article II *OST*)

³¹⁶ *Belgium v Senegal* ICJ 437 (2012).

³¹⁷ Hossain 2005 *SCJIL* 84.

³¹⁸ Hossain 2005 *SCJIL* 73.

³¹⁹ Rathore and Gupta 2020 *IJSSPP* 5.

³²⁰ Shaw *International Law* 127.

³²¹ See on this Tladi 2020 *Nordic Journal of International Law* 251, 256-257.

³²² Jakhu 2006 *JSL* 37-48.

³²³ Jakhu 2006 *JSL* 37-48.

4. Respect for the rights of all other states (Article IX *OST*)

Similarly, Cepelka and Gilmour have already argued, in 1970, that there are two distinct groups of *jus cogens* in international law: One is based on free access to outer space, while the other is based on non-appropriation.³²⁴

Whether *jus cogens* exists in the provisions of space law is still debatable, but it is submitted that the most basic principles as discussed above, do form part of the *jus cogens* of international law.³²⁵ However, these principles have been codified in the *OST* and the subsequent conventions. The legal effect of these principles is that they will bind states *erga omnes*, even if states are not signatories or have not ratified the space law conventions. These *jus cogens* principles will have a higher status than the ordinary treaty law of space law and are thus integral in the status of space law as a *lex specialis* of international law.³²⁶

2.4.2.4 International Customary Law in Space Law

Many authors have expressed the opinion that certain provisions of space law also form part of international customary law, based on the fact that they fulfil the objective (*usus*) and subjective (*opinio juris*) requirements for forming part of international customary law.³²⁷ Lyall and Larsen pose Articles I, II, III, VI and VII of the *OST* as having customary value and being uncontentionous.³²⁸ Lyall and Larsen further argue that this is based on the fact that there is no objection to the *OST* and the three subsequent treaties, with only the *Moon Agreement* being an exception. The ratification of both the *OST* and the subsequent treaties, excluding the *Moon*

³²⁴ Cepelka and Gilmour 1970 *JALC* 30.

³²⁵ Christol 1994 *JSL* 43-44. Further see the *Draft Conclusions on Identification and Legal Consequences of Peremptory Norms of International Law (Jus Cogens)* (2022) for the most recent draft conclusions relating to the identification of *jus cogens*.

³²⁶ Von der Dunk 1991 *IISL* 364.

³²⁷ On this, see Wessel 2012 *International and Comparative Law Review* 298 and Lyall and Larsen *Space Law: A Treatise* 69-71.

³²⁸ Lyall and Larsen *Space Law: A Treatise* 71 and 180.

Agreement, is very high, while many UN resolutions³²⁹ have been adopted with little to no objection.³³⁰

Factoring everything into account, it can be said that certain provisions of space law form part of customary international law, while there are some principles of space law that can be seen as *jus cogens* rules of international law. Of course, the existence of international customary law and *jus cogens* affirms the status of space law in the international law framework. As the dissertation progresses, the legal status of international space law will remain relevant when interpreting or considering any other municipal law or international convention relevant to space.

2.5 Incorporating Space Law into Municipal Law

It is important to note that states themselves should decide on how to incorporate international law into their municipal law. There are two main ways in which states can incorporate international law into their municipal law.³³¹ The first is by automatically including all treaties signed by the state into the municipal law of the state (monism), while the other method is that international law must first be incorporated into the municipal law of the state before it can be applied (dualism).³³² Normally, a state will make a provision for a method of incorporation in terms of the Constitution or other document with similar legal weight.

2.6 Conclusion

During the course of this chapter, focus was placed on overviewing the relevant international space law instruments and interpreting them at the hand of various commentaries and scholarly literature. The *OST*, *Liability Convention*, *Registration Convention*, *Rescue Agreement*, and the *Moon Agreement* are codified space law instruments that play an integral role in the international space law framework. While there are issues with these instruments, as briefly discussed in this chapter,

³²⁹ Frandsen 2022 *JALC* 725. An example of some resolutions where little objection was raised in outer space law is the *OST*, *Registration Convention* and the *Liability Convention*.

³³⁰ Frandsen 2022 *JALC* 727. Further see the UNOOSA treaty status webpage at <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/status/index.html>.

³³¹ Dugard *Dugard's International Law: A South African Perspective* 57-58.

³³² Phooko 2021 *AJICL* 169-170.

they are integral in providing the basis of international space law. These instruments will come under burgeoning scrutiny in the very near future, especially with the recent private commercial expansion of entities into space.

Chapter 2.3 explored the legal status of space law in the international law framework and illustrated the inclusion of certain concepts of space law as international customary law, while also discussing space law concepts that form part of the *jus cogens* of international law. In brief, international space law occupies a special place in international law as a *lex specialis derogat legi generali* of international law. While it is clear that international space law will have to adapt to an ever-changing world, how this will be achieved will be a hot topic and may be the subject of extensive research in future.

The international liability regime in terms of the *Liability Convention* is relatively straightforward: Absolute liability for damage caused by a space object on the surface of the Earth or to an aircraft in flight and fault-based liability for damage that occurred in outer space.³³³

³³³ See on this Zhao 2004 *AUJIL* 109-110.

CHAPTER 3 SOUTH AFRICAN SPACE LAW

3.1 Introduction

South Africa has always had a very unusual relationship with international law, most likely due to its ties with Great Britain and being a state of interest for the cold-war superpowers.³³⁴ South Africa was unionised in 1910 by Great Britain and became a Republic in 1961.³³⁵ During the 20th century, South Africa became notorious for its racial discrimination in law and practices.³³⁶ In 1994, South Africa held its first truly democratic election, where Nelson Mandela was elected as the president, with the African National Congress (ANC) as the ruling party.³³⁷ Prior to the election, a new *Interim Constitution*³³⁸ was developed in 1993, but was replaced in 1996 by the final *Constitution*.³³⁹ The *Constitution* is the supreme law in the Republic of South Africa.³⁴⁰

In terms of international space law, South Africa has ratified the *OST*, *Liability Convention*, *Registration Convention* and *Rescue Agreement*, but has not ratified the *Moon Agreement*. South Africa is also a member state of UNCOPUOS, having been granted membership in 1994.³⁴¹ This chapter will focus on providing a brief overview of the South African national space legislation and institutions, after which the focus will be on determining how to institute a claim in the local jurisdiction of South Africa for damages suffered by a space object.

3.2 South Africa's participation in space activities

South Africa has been a role player in the exploration of outer space for a very long time, but is still considered to be an emerging spacefaring nation rather than a

³³⁴ See on this Martinez *German Journal of Air and Space Law* 353-355.

³³⁵ Thompson *The History of South Africa* 154.

³³⁶ See Thompson *The History of South Africa* 187-240

³³⁷ Thompson *The History of South Africa* xxiii and 264.

³³⁸ *Constitution of the Republic of South Africa* 200 of 1993. Hereafter "*Interim Constitution*".

³³⁹ *Constitution of the Republic of South Africa* 1996.

³⁴⁰ Section 2 of the *Constitution*.

³⁴¹ SA Embassy in Vienna, Austria 2024 <https://www.suedafrika-botschaft.at/en/international-relations/multilateral-relations/united-nations-office-on-outer-space-affairs-unoosa-committee-on-the-peaceful-uses-of-outer-space-copuos.html>.

medium space power.³⁴² South Africa also played a role in determining the best landing zone for the Apollo 11 flight to the Moon in 1969, while the Council for Scientific and Industrial Research (CSIR) was approached by NASA to establish a deep-space tracking station. The isolation from the international community during the apartheid period severely hampered South Africa's space capability and is most probably a reason why the state is not considered a medium space power.³⁴³

Post 1994, the University of Stellenbosch launched the SUNSAT as the first electro-optical microsatellite, weighing in at just 64 kilograms,³⁴⁴ with the first national satellite (SumBandilaSAT) launched in 2009.³⁴⁵ In 2013, the Cape Peninsula University launched the first African and South African nanosatellite, the ZACUBE-1, which was followed up by the ZACUBE-2 in 2018.³⁴⁶

South Africa is also developing as a leader in ground tracking technology, with the NASA Deep Space Station 51 at Hartbeeshoek³⁴⁷ and the Matjiesfontein Deep Space Complex playing key roles.³⁴⁸ The South African Large Telescope (SALT) is the largest optical-infrared telescope in the Southern Hemisphere, constructed in 2000-2005.³⁴⁹ The MeerKat radio telescope observatory followed up on this, and will be integrated as part of the phase 1 Square Kilometre Array (SKA),³⁵⁰ the world's largest radio telescope that will cost a whopping 1,3 billion Euros.³⁵¹ The Overberg test range is also a base from which launches could take place, possessing three launch pads, tracking antennae, a control centre, cinetheodolites (photographic

³⁴² Henrico, Henrico and Putter 2023 *African Security Review* 67. For an interesting discussion on the history and development of the South African space programmes, see Gottschalk 2010 *Astropolitics* 1-11.

³⁴³ Henrico, Henrico and Putter *African Security Review* 68.

³⁴⁴ Mamafha *South Africa's Space Odyssey: To the Moon and Beyond* 13.

³⁴⁵ Martinez *German Journal of Air and Space Law* 354-355.

³⁴⁶ South African Government 2014 <https://www.gov.za/news/media-statements/science-and-technology-south-africas-first-nano-satellite-zacube-1-03-mar>.

³⁴⁷ SANSA 2025 <https://www.sansa.org.za/2025/02/sansa-hartebeesthoek-ground-station-to-provide-critical-ttc-support-for-im-2-lunar-mission/>.

³⁴⁸ Roelf 2022 <https://www.reuters.com/lifestyle/science/south-africas-new-ground-station-help-nasa-track-space-flights-2022-11-08/>. The reference to "ground tracking technology", refers to the tracking of satellites and other objects from the surface of the Earth.

³⁴⁹ Henrico, Henrico and Putter *African Security Review* 68.

³⁵⁰ Sharpe 2023 "Economic Growth Through Investment into Space Science and Technology: The African Colocation Programme" 54-56.

³⁵¹ Henrico, Henrico and Putter *African Security Review* 68.

instruments that can track trajectory data) and radar tracking facilities.³⁵² South Africa is undoubtedly looking to develop its space capabilities in the near future and will aim to increase its participation in commercial outer space activities.³⁵³

3.3 International Law in South Africa

3.3.1 Status of International Law in South Africa

International law has occupied a very special place in the law of South Africa since the dawn of the new constitutional era and the promulgation of the 1996 *Constitution*.³⁵⁴ Section 39(1)(b) of the *Constitution* confirms that a court, tribunal or forum, when making a decision, must consider international law. The explicit use of the word "must" indicates that considering international law is mandatory³⁵⁵ and not optional.³⁵⁶ Foreign law may be considered, in terms of section 39(1)(c) of the *Constitution*. Section 37(4)(b)(i) states that, even in cases where a state of emergency is declared, legislation that derogates from the Bill of Rights must be consistent with the Republic's obligations under international law.

Section 233 of the *Constitution* further states that courts must prefer an interpretation that is consistent with international law, rather than an interpretation that is inconsistent with international law. In the case of *Glenister*,³⁵⁷ the following was said about the position of international law in South Africa:

These provisions of our *Constitution* demonstrates that international law has a special place in our law, which is carefully defined by the *Constitution*.

Due to the prominent place that international law occupies in South African law, South Africa unsurprisingly has national space legislation as well. This stems from

³⁵² Henrico, Henrico and Putter *African Security Review* 67-70.

³⁵³ *South African Space Policy* of 2008 para 4.4. Also see Henrico, Henrico and Putter *African Security Review* 69.

³⁵⁴ See on this Dugard *Dugard's International Law: A South African Perspective* 23-25 and *Glenister v President of the Republic of South Africa* 2011 (7) (CC) para 97.

³⁵⁵ Botha *Statutory Interpretation: An Introduction for Students* 194.

³⁵⁶ Botha *Statutory Interpretation: An Introduction for Students* 193-194.

³⁵⁷ *Glenister v President of the Republic of South Africa* 2011 (7) (CC) para 97.

the obligation contained in Article VI of the *OST*, requiring state parties to "continually supervise" the activities of non-governmental entities in outer space.

3.3.2 Incorporating International Law into Municipal Law

South Africa makes use of a dual approach when it comes to incorporating international law into municipal law.³⁵⁸ Customary international law automatically forms part of the South African municipal law (monism),³⁵⁹ while international agreements will only form part of South African municipal law through resolution from the National Assembly (NA)³⁶⁰ or when it is enacted into law by national legislation (dualism).³⁶¹ As an important note, all agreements that were binding on the Republic before the *Constitution* was promulgated, will bind the Republic after the *Constitution* has taken effect.³⁶² This is particularly important in the space law context, since all the international space treaties were signed before the current *Constitution* was promulgated.

3.4 South African National Space Legislation and Institutions

Article VI of the *OST* places an obligation on states to "authorise and continually supervise the activities of non-governmental organisations in space". Consequently, an obligation is placed on states to implement measures that define how the activities in outer space of non-governmental organisations will be monitored. South Africa has chosen to implement national legislation to this effect, namely the *Space Affairs Act* (SAA),³⁶³ the *South African National Space Agency Act* (SANSAA)³⁶⁴ and the *Non-Proliferation of Weapons of Mass Destruction Act*.³⁶⁵ Below, the discussion will focus on the relevant role players established by South

³⁵⁸ Dugard *Dugard's International Law: A South African Perspective* 73.

³⁵⁹ Section 232 *Constitution* and Dugard *Dugard's International Law: A South African Perspective* 62-63.

³⁶⁰ Section 231(2) *Constitution*. Also see Sekhula 2013 *African Journal of Geomatics* 146.

³⁶¹ Section 231(4) *Constitution* and Dugard *Dugard's International Law: A South African Perspective* 73.

³⁶² Section 231(5) *Constitution*.

³⁶³ *Space Affairs Act* 84 of 1993. Hereafter "SAA".

³⁶⁴ *South African National Space Agency Act* 36 of 2008. Hereafter "SANSA Act".

³⁶⁵ *Non-Proliferation of Weapons of Mass Destruction Act* 87 of 1993

African space legislation and important aspects relating to the governance of space activities in South Africa.

3.4.1 South African Council for Space Affairs (SACSA)

3.4.1.1 Object and Purpose

Section 4 of the *SAA* establishes the South African Council for Space Affairs (SACSA), with a very wide objective and purpose. The most important function of SACSA is the implementation of the space policy of the Republic.³⁶⁶ Furthermore, it is the responsibility of SACSA to take care of the interests, responsibilities and obligations of the Republic, with regard to the state's compliance with international conventions, treaties and agreements entered into or ratified by the state.³⁶⁷ In order for the council to achieve its objects, the council may advise the Minister³⁶⁸ on any matter that has an influence on space affairs.³⁶⁹ SACSA may hear representations from any person regarding the space affairs of the Republic,³⁷⁰ while also supervising the implementation matters arising from international space obligations.³⁷¹

SACSA may also issue licenses and amend, suspend or revoke such licenses.³⁷² SACSA may also designate members of government or individuals from the space industry to perform duties as members of the committees of the council³⁷³ and these persons should further the orderly and responsible participation of any person or authority in space. SACSA may undertake any other activity with the view to contributing to the effective achievement of these objects,³⁷⁴ but is also

³⁶⁶ Section 5(1) *SAA*.

³⁶⁷ Section 5(2) *SAA*. Also see Martinez 2015 *German Journal of Air and Space Law* 356.

³⁶⁸ The reference to "Minister" in the *SAA* refers to the Minister of Trade and Industry.

³⁶⁹ Section 5(3)(a) *SAA*.

³⁷⁰ Section 5(3)(b) *SAA*.

³⁷¹ Section 5(3)(c) *SAA*.

³⁷² Section 5(3)(d) *SAA*.

³⁷³ Section 5(3)(f) *SAA*.

³⁷⁴ Section 5(3)(g) *SAA*.

under an obligation to publish information concerning the council in the widest and most appropriate way possible.³⁷⁵

Section 6 deals with the composition of the Council, while section 7 governs the meetings of the Council. Section 8 states that SACSA may establish committees as it deems necessary. Up until this point, SACSA have established the policy and legal committee, as well as the scientific and technical committee.³⁷⁶ The Minister may establish a board of inquiry for adjudication or appeal in terms of the *SAA*.³⁷⁷

3.4.1.2 Licensing

Section 11 of the *SAA* provides for a broad licensing regime in order to perform space activities. No person may launch an object from the territory of the Republic, or launch from the territory of another state on behalf of a juristic person incorporated or registered in the Republic, nor operate a launch facility without being granted a license by SACSA.³⁷⁸ Further, a juristic person registered or incorporated in the Republic may not participate in space activities that can entail obligations to the state in terms of international conventions or agreements, or which may affect the national interests of the Republic.³⁷⁹ The minister may also determine any other space or space-related activity that may not be performed in terms of a license.³⁸⁰

SACSA has a discretion in terms of the *SAA* in determining whether to grant a license or not.³⁸¹ SACSA may determine the conditions upon which a license is granted, but should take into account the minimum safety standards as determined by the council, national interests of the Republic and the international obligations and responsibilities of the Republic.³⁸² Subsequently, SACSA may also refuse to issue a license. An applicant who applied for a license but was rejected, should be

³⁷⁵ Section 5(3)(h) *SAA*.

³⁷⁶ SACSA 2024 <http://www.sacsa.gov.za/index/sacsa-committees/>. Refer to 3.3.3 below for discussion of the *South African Space Policy* of 2008.

³⁷⁷ Section 9 *SAA*.

³⁷⁸ Section 11(1)(a)-(c) *SAA*.

³⁷⁹ Section 11(1)(d) *SAA*.

³⁸⁰ Section 11(1)(e) *SAA*.

³⁸¹ Section 11(2) *SAA*.

³⁸² Section 11(2)(a)-(c) *SAA*.

informed in writing thereof, along with reasons for the refusal.³⁸³ The gathering, dissemination and maintenance of information should be done according to the international conventions and agreements that the Republic is bound by.³⁸⁴

SACSA may also suspend licenses with immediate effect, if any condition of the license was violated, or if facts become known that, in the opinion of SACSA, present an unacceptable safety risk.³⁸⁵ SACSA should investigate the circumstances of the suspension. If the investigation confirms that no violation of the condition of the license occurred, then the suspension should be lifted immediately.³⁸⁶ However, if there is a violation of the conditions of the license, SACSA may grant the licensee reasonable time to comply with the conditions of the license, amend the conditions of the license, or revoke the license entirely.³⁸⁷ If the license was suspended due to an unacceptable safety risk, SACSA may order the licensee to take reasonable steps to eliminate the safety risk within a reasonable timeframe.³⁸⁸ The minister also has powers to order SACSA to suspend or revoke a license, based on the opinion of the minister that it conflicts with the interests of the state.³⁸⁹

In terms of section 14, a license issued in terms of section 11 holds certain duties and obligations for the licensee.³⁹⁰ Firstly, a license may contain a condition that relates to determining liability of the licensee for damages.³⁹¹ SACSA, with concurrence of the minister, may also ascribe liability to the licensee arising from international conventions, treaties or agreements entered into or ratified by the state.³⁹² Section 14(2) states that the condition relating to liability of the licensee may determine, limit or exclude the liability of the licensee with regard to damages.

³⁸³ Section 11(3) SAA.

³⁸⁴ Section 11(4) SAA. This refers to the obligation the state has under the *Registration Convention* to maintain a national register.

³⁸⁵ Section 13(2) SAA.

³⁸⁶ Section 13(3)(a) SAA.

³⁸⁷ Section 13(3)(b) SAA.

³⁸⁸ Section 13(4) SAA.

³⁸⁹ Section 13(7) SAA.

³⁹⁰ SACSA 2024 <http://www.sacsa.gov.za/index/application-forms/>. Application forms for launch and registration with the national registry can be found here.

³⁹¹ Section 14(1)(a) SAA.

³⁹² Section 14(1)(b) SAA.

Furthermore, the license may stipulate liability for the licensee, even if the licensee is not at fault.³⁹³

Section 14(2)(b) provides that SACSA may require the licensee to give security that they may be able to meet obligations that may be incurred in respect of international damages.³⁹⁴ Logically, this may include some sort of indemnification such as insurance for possible future damages. The reasoning is simple: South Africa will be liable as a launching state under the *Liability Convention*. However, in terms of the license, the licensee will be liable for the damage and will be able to pay for the damage caused, due to the indemnification provided as security to the state.³⁹⁵ The liability of the licensee will stay in effect, even when the license of the licensee has been revoked or suspended.³⁹⁶ Section 23 criminalises the following:

- a) performing space activities without a license;
- b) failing to comply with a condition of the license;
- c) failing to present SACSA with relevant information concerning licensing, or withholding/misrepresenting such information or giving false information.

A person who makes himself guilty of one of these offences will be guilty of an offence and liable (upon conviction) to a fine of R1 000 000 or ten years imprisonment, or both.

It is interesting to investigate the position of property rights (such as a launch vehicle), once the license for that property has been revoked. The position regarding a space object that has not been launched is clear, in that only the license is revoked and the entity/person will still have ownership of the space

³⁹³ Section 14(2)(a) S44.

³⁹⁴ Section 14(2)(b) S44.

³⁹⁵ See section 14(2)(b) of the S44.

³⁹⁶ Section 14(6) S44. The reason for this is logical: should a license be suspended, it should still be possible to ascribe liability to a particular person or entity. If a licensee, on suspension of its license, could also avoid liability, this would present a loophole that could very easily be exploited by licensees. Also see Martinez 2015 *German Journal of Air and Space Law* 355, that also echoes that the liability of the licensee remains in force.

object. However, the situation may become complicated in the case of a space object orbiting Earth at the time when the license is revoked. Should the license be revoked with immediate effect in terms of section 14 of the *SAA*, the continued operation of the space object will be a criminal offence in terms of section 23 of the *SAA*. However, it becomes complicated, especially if such a space object is responsible for revenue of an entity: will the entity still be able to generate revenue from an unlicensed space object? The entity will not be able to manage the space object, since they will incur criminal liability. If the space object's trajectory is on a collision course to crash with another space object, the entity or person will not be able to move the space object, due to that constituting a criminal act.³⁹⁷

What if the space object is scheduled to be in orbit for the next 20 years? The options are limited: The space object can stay in orbit, but then the question arises to whom the revenue generated will accrue. On the other hand, the object can be crash-landed, but it can cause severe damage if not managed properly.³⁹⁸ By no means does the *SAA* provide any guidance on this issue. Provision should be made for such a situation, as the *SAA* at present is ill equipped at handling the intricacies of such a situation.

The *SAA* further does not bestow any power on SACSA to keep a national register of space objects launched into outer space. While it is admitted that through the licensing all relevant information can be obtained, SACSA has no duty in terms of national legislation to keep a register.³⁹⁹ What is commendable, is that SACSA does have a registry that is open to the public, in accordance with the obligation placed on a state in terms of Article II of the *Registration Convention*.⁴⁰⁰

³⁹⁷ See s11(1) of the *SAA* for activities that can incur criminal liability under section 23 of the *SAA*.

³⁹⁸ An object can also be de-orbited (controlled) at the end of its useful life in space. However, such activities come with a high degree of risk that may still cause damage if the operator becomes unable to control the space object and/or its trajectory during the de-orbiting procedures.

³⁹⁹ On this point, see s5(2) of the *SAA*, which states that SACSA shall take care of the responsibilities and obligations the state has under international law. South Africa, being a signatory to the *Registration Convention*, does have an obligation and responsibility to comply with Article II of the *Registration Convention*. The *SAA*, as the national legislation, does thus instruct SACSA to comply with the obligations placed upon the state in terms of international law.

⁴⁰⁰ SACSA 2024 <http://www.sacsa.gov.za/registry/>.

3.4.2 South African National Space Agency (SANSA)

SANSA has the status of a juristic person in terms of section 2(1) of the SANSA Act. The objects of SANSA, according to the SANSA Act, are to promote the peaceful use of outer space, support the creation of a conducive environment for the industrial development of space technology and to foster research in several fields, such as space science, communications, navigation and space physics.⁴⁰¹ Additionally, SANSA should foster international cooperation in space-related activities, while also developing and advancing scientific engineering and technological competencies.⁴⁰²

SANSA has several functions. Among the most important, SANSA should implement the space policy of the Republic, implement national space science and technology strategies and advise the minister on the development of national space science and technology strategies and programs.⁴⁰³ However, for the purpose of this dissertation, SANSA is not a major role player and will not be further discussed, even though notice of its existence should be taken.

3.4.3 South African National Space Policy of 2008

The South African national space policy was established by the minister in terms of section 2 of the *SAA*.⁴⁰⁴ Several key principles are encapsulated in the national space policy. Firstly, the policy confirms that the Republic is committed to the use and exploration of outer space for peaceful purposes. Further, the space policy also promotes responsible environmental space exploration, as well as the research and development of space science and technology.⁴⁰⁵ National self-sufficiency and international competitiveness are also promoted, while South Africa also advocates

⁴⁰¹ Section 4 *SANSA Act*.

⁴⁰² Section 4 SANSA Act. Further see Hendricks South Africa's Place in Space: A Legal Commentary on South Africa's Outer Space Bill 21.

⁴⁰³ Section 5(1) *SANSA Act*.

⁴⁰⁴ Department of Industry and Trade *South African National Space Policy* of 2008.

⁴⁰⁵ *SA Space Policy* Chapter 5.

for the extension of the benefits of space to the African continent.⁴⁰⁶ Based on relevance, the South African space policy will not be discussed further here.⁴⁰⁷

3.4.4 Future Developments of South African National Space law

The parliamentary monitoring group of trade, industry and competition expressed their concern regarding the inability of the *SAA* to keep up with the development of the South African spacefaring capacity in 2017.⁴⁰⁸ The *Outer Space Draft Bill* will aim to include a much wider scope of activities, such as the operation of a space facility, the manufacturing of space objects, the launch of space objects, operation and control of space objects, re-entry of space objects and space applications.⁴⁰⁹ Another major change is the introduction of the South African Space Regulatory Council (SASREC) as a replacement for SACSA as a national regulator for space affairs.⁴¹⁰

Sections 14-20 of the *Draft Bill* will categorise the types of licenses SASREC may issue as a (1) space launch license, (2) a space facility license and (3) a re-entry license.⁴¹¹ SASREC will also be responsible for maintaining the national space register.⁴¹² Additionally, a Space Affairs Chief Directorate will be established under the DTI.⁴¹³ A compensation payment for any damage to a third party that the launch, operation or return of a space object may cause, will be introduced, along with an insurance clause to assist with such damage. SASREC will also maintain the national registry of the Republic and be responsible for informing the UN Secretary-General of any objects launched, to be added to the register.⁴¹⁴

⁴⁰⁶ *SA Space Policy* Chapter 5.

⁴⁰⁷ For a further, detailed discussion on the SA Space Policy, see Hendricks *South Africa's Place in Space: A Legal Commentary on South Africa's Outer Space Bill* 19-21.

⁴⁰⁸ Parliamentary Monitoring Group 2017 <https://pmg.org.za/committee-meeting/24641>.

⁴⁰⁹ Parliamentary Monitoring Group 2017 <https://pmg.org.za/committee-meeting/24641>.

⁴¹⁰ Section 8 *Draft Outer Space Bill*. Also see Hendricks *South Africa's Place in Space: A Legal Commentary on South Africa's Outer Space Bill* 32-36.

⁴¹¹ Hendricks *South Africa's Place in Space: A Legal Commentary on South Africa's Outer Space Bill* 46-52.

⁴¹² Section 33-34 *Draft Outer Space Bill*.

⁴¹³ Section 13 *Draft Outer Space Bill*.

⁴¹⁴ Hendricks *South Africa's Place in Space: A Legal Commentary on South Africa's Outer Space Bill* 36.

These clauses are, very briefly, what the *Outer Space Bill* would hope to achieve. The draft Bill's timeline was slated to be reviewed and updated by the drafting committee of state law advisers in February 2018, but no progress has been seen since. This should be a priority, considering the gaps that already exist in the legal framework.

3.5 Claiming under the Municipal Law of South Africa

3.5.1 Introduction

The *SAA* provides for conditions to be contained in the license issued to a participant in space activities. Section 14(1)(a)(i) of the *SAA* states that the license may contain conditions relating to the liability of the licensee for damages. Therefore, as seen above in 3.3.1.2, liability for participants in space activities will depend on the conditions of the license given to them by SACSA.⁴¹⁵ This can vary depending on the conditions set by SACSA in the license. In the case where indemnification was requested by SACSA as a prerequisite for the issuing of the license to the person, a claim against such indemnification will arise.⁴¹⁶

It is interesting to note that South African space legislation does not contain any provisions that can allow entities who are non-participants to claim for damage caused by a space object. This problem is aptly illustrated by the case where physical damage occurs from a space object to a corporate medicinal company. If it is a local company (incorporated in South Africa), a claim cannot occur in terms of the *Liability Convention*, since the medicinal company is not a party to the *Liability Convention* and further cannot claim against the state as a result of Article VII(a) of the *Liability Convention*. If it is a foreign company and the foreign state in which that company is incorporated, refuses to claim in terms of the *Liability Convention* due to political, economic or other considerations, or they simply do not institute a timeous claim,⁴¹⁷ such an entity will have remedy or recourse. Local or foreign, the

⁴¹⁵ Steenberg *Refusal by the State to Claim in Terms of the Liability Convention* 15.

⁴¹⁶ This claim for indemnification will be against the instrument SACSA has requested as a condition before they issued a license to a person in terms of section 14(1)(a)(i) of the *SAA*.

⁴¹⁷ Referring to the one-year prescription period to claim in terms of the *Liability Convention*.

company will have no method of obtaining recourse other than by claiming in the foreign jurisdiction of the launching state.⁴¹⁸ Below, a brief discussion will follow that will focus on the possibility of a claim existing in the jurisdiction of South Africa, especially in light of the fact that the national legislation of South Africa does not provide for any claim of damage caused by a space object, nor does it provide any procedure.

3.5.2 Pursuing a Delictual Claim

3.5.2.1 Basic Principles of the Law of Delict

The law of delict in South Africa is the equivalent to the law of tort in many other jurisdictions.⁴¹⁹ The South African law of delict finds its origins in a mixture of Roman-Dutch and English law and is based on common law principles, supplemented by case-law precedents.⁴²⁰ It is further separate and distinct from criminal law, even though a delict and a crime may arise from the same action.

Foreign nationals⁴²¹ do have *locus standi* in South African courts to claim for damages.⁴²² The normal elements of the law of delict (conduct, harm, causation, fault and wrongfulness) need to be proven in order for such a claim to succeed.⁴²³ The South African law of delict leans on three main pillars of delictual liability, which is the *actio legis aquiliae*, *actio iniuriarum* and the action for pain and suffering.⁴²⁴

The *actio legis aquiliae* relates to patrimonial loss suffered, e.g. loss suffered due to destruction or loss of property.⁴²⁵ It may also include a "pure economic loss". The action for pain and suffering may also be utilised in the context of damage suffered

⁴¹⁸ The *Liability Convention* of course allows such a claim in article IX(2).

⁴¹⁹ See Ahmed 2019 *Journal for Contemporary Roman-Dutch Law* 137-139.

⁴²⁰ See Loubser and Midgley *The Law of Delict in South Africa* 1-2.

⁴²¹ The term "foreign peregrinus" is used in South African law for entities who have no property or other assets in the jurisdiction of South Africa.

⁴²² Schulze 2007 *SAMLJ* 393.

⁴²³ See Neethling and Potgieter *Law of Delict* 4. Also see Loubser and Midgley *The Law of Delict in South Africa* chapters 4-9.

⁴²⁴ Neethling and Potgieter *Law of Delict* 8-16.

⁴²⁵ See Loubser and Midgley *The Law of Delict in South Africa* paragraph 4.2, where patrimonial loss is categorised as (1) loss associated with personal injury, (2) financial loss associated with damage to property and (3) pure economic loss, i.e. loss not associated with damage to property or personal injury.

caused by a space object, if applicable.⁴²⁶ The *actio iniuriarum* specifically relates to personality infringements, subdivided into infringements of *corpus*, *fama* or *dignitas*.⁴²⁷ However, this will not likely be invoked when one considers the type of damage that would ordinarily arise from a space object. Maybe in future, the *actio iniuriarum* may play a role for commercial entities suffering reputational damage from damage caused by a space object, but in this contribution that is not the focus and will thus not be discussed as a possibility.

3.5.2.2 Proving the Elements of a Delictual Claim

As mentioned above, the elements of a delictual claim in the South African common law are conduct, harm, causation, fault and wrongfulness. Each of these elements has detailed nuances, which will be reserved for a study of the law of delict, but a quick overview will be done here, focusing on the key aspects to proving the elements of a delict.

The first element in a delictual claim is conduct.⁴²⁸ The elements of conduct in South African law can be condensed into three main prerequisites. The first prerequisite is that the conduct must be human.⁴²⁹ Juristic persons also qualify for this definition.⁴³⁰ The second requirement is that an act must be voluntary.⁴³¹ Of course, the usual exclusions of duress and automatism will apply.⁴³² The third requirement is that it should be an act (positive) or an omission (negative).⁴³³ Generally, an omission will only be valid when there was a duty to act on the part of the person.⁴³⁴ Applied to space law, the conduct can range from altering the trajectory of a satellite to failing

⁴²⁶ As a compensatory tool for pain and suffering endured by the victim for damage caused by a space object.

⁴²⁷ Neethling and Potgieter *Law of Delict* 8-16.

⁴²⁸ See Loubser and Midgley *The Law of Delict in South Africa* chapter 5. Note that a natural or juristic person may be sued in terms of the law of delict.

⁴²⁹ Ahmed 2019 *PELJ* 5.

⁴³⁰ Conduct of juristic office bearers becomes the conduct of the juristic person as a whole- see Loubser and Midgley *The Law of Delict in South Africa* at para 5.2 and Neethling and Potgieter *Law of Delict* 27-28.

⁴³¹ Loubser and Midgley *The Law of Delict in South Africa* at para 5.3.

⁴³² Loubser and Midgley *The Law of Delict in South Africa* at para 5.3.

⁴³³ Neethling and Potgieter *Law of Delict* 28.

⁴³⁴ Ahmed 2019 *PELJ* 22.

to move the satellite and many other acts.⁴³⁵ Conduct is a very wide concept and should not be limited by listing possibilities which may qualify as conduct. However, whether an act qualifies as conduct in terms of the law of delict will need to be determined on a case-by-case basis.

The second element of a delictual claim is harm.⁴³⁶ A distinction is drawn between patrimonial loss (loss which can be calculated) and non-patrimonial loss (loss which cannot be financially calculated).⁴³⁷ Whether harm exists will depend on whether the plaintiff has an interest that is protected by the law of delict.⁴³⁸ If the plaintiff does have a valid interest in the law of delict and such interest was infringed upon, harm is established.⁴³⁹ Damage to property, personal injury and other consequences from damage by a space object would most likely be considered as harm in the context of the law of delict. Damage to property or personal injury will result in patrimonial losses that can be claimed under the law of delict.⁴⁴⁰ Non-patrimonial losses can be claimed in the form of pain and suffering, but it is uncertain whether non-patrimonial losses can be claimed due to psychological suffering. However, it is submitted that it could be argued in terms of South African law. In the case of *RK v Minister of Basic Education*,⁴⁴¹ it was held that a serious and recognisable psychiatric lesion should form before a claim for psychological damages can be brought. What a "psychiatric lesion" entails, is still up for debate.⁴⁴²

The third element is causation.⁴⁴³ Causation has two elements, namely factual causation and legal causation.⁴⁴⁴ For factual causation, the *conditio sine qua non* test is utilised, which asks whether the conduct materially contributed to the harm. To determine factual causation, the test is to "think away" the conduct of the

⁴³⁵ Note that this is hypothetical application of conduct to damage caused by a space object.

⁴³⁶ Ahmed 2019 *Journal for Contemporary Roman-Dutch Law* 140.

⁴³⁷ Loubser and Midgley *The Law of Delict in South Africa* at para 4.2.

⁴³⁸ Neethling 2006 *SALJ* 209.

⁴³⁹ Neethling and Potgieter *Law of Delict* chapter 3.1.

⁴⁴⁰ See Loubser and Midgley *The Law of Delict in South Africa* at para 4.2.

⁴⁴¹ *Komape and Others v Minister of Basic Education* (2018) ZALMPPHC 18 para 49.

⁴⁴² For a detailed discussion on the concept of a "psychiatric lesion" in the law of delict, see Zitzke 2012 *Stellenbosch Law Review* 255-271.

⁴⁴³ Neethling and Potgieter *Law of Delict* 215-216

⁴⁴⁴ Neethling and Potgieter *Law of Delict* 215-216 and 230-231.

person. If the harm would not have occurred but for the conduct of the person, then factual causation is established.⁴⁴⁵

Legal causation is, however, harder to prove and more abstract than factual causation. In essence, the harm should not be too remote.⁴⁴⁶ The consequences of the actions should be attributable to the wrongdoer. Additional rules that should be taken into account when one determines causation, is the *talem qualem* rule⁴⁴⁷ and the possibility of a *novus actus interveniens*.⁴⁴⁸ An in-depth discussion of these rules is beyond the scope of this contribution. However, it can be stated that factual and legal causation should not be too hard to establish, if a causal link can be established between the conduct and the harm.

The fourth element is that of fault.⁴⁴⁹ In essence, it should be possible to hold accountable, a person who is at fault, and there should be an intention to cause harm or, alternatively, negligence on the part of the person. The court may even, in the context of space law, analyse negligence in the light of professional negligence.⁴⁵⁰ It is uncertain whether a defendant will automatically be at fault when the damage occurred on the surface of the Earth or to an aircraft in flight, since the *SAA* provides no guidance for a liability regime while a claim is instituted under the municipal law of South Africa. It is submitted that a court should rebuttably presume fault when damage occurred on the surface of the Earth or to an aircraft in flight, while an analysis of fault should be done when the damage occurred in outer space. The court must consider the international law space law liability regime in accordance with section 39(1)(b) of the *Constitution*. Deviation from the liability

⁴⁴⁵ Loubser and Midgley *The Law of Delict in South Africa* at chapter 6.1-6.2.

⁴⁴⁶ See *S Mokgethi* 1990 1 All SA 320 (A) for the application of the flexible approach in determining legal causation.

⁴⁴⁷ See Landman and Ndou 2015 *Industrial Law Journal* 2470. For further research, see Neethling and Potgieter *Law of Delict* 253-254 and Midgley and Loubser *The Law of Delict in South Africa* at para 7.4.

⁴⁴⁸ See Carstens 2006 *South African Journal of Criminal Justice* 192-194.

⁴⁴⁹ Brand 2014 *Stellenbosch Law Review* 451.

⁴⁵⁰ See Loubser and Midgley *The Law of Delict in South Africa* at para 22.4, where professional liability may be attributed to engineers and architects. Also see Neethling and Potgieter *Law of Delict* 175.

regime as stipulated in the *Liability Convention*⁴⁵¹ would provide for an interpretation inconsistent with international law.⁴⁵²

The fifth and final element is that of wrongfulness. Three aspects are taken into account, namely reasonableness, the legal convictions of the community and society's *boni mores*. Wrongfulness is mostly a normative issue.⁴⁵³ It is, however, not hard to see that damage from the sky by a space object will, inevitably, fulfil the requirement of wrongfulness in South African law.

Should all of these elements be proven, a delictual claim can be proved in the jurisdiction of South Africa against either the state or a third party, with the *actio legis aquillae* and the action for pain and suffering the most viable options. However, note should be taken of the restrictions and considerations for civil claims and claims against the state in South Africa as discussed above in 3.4.4.

3.5.3 Pursuing a Claim for Constitutional Damages

Section 38 of the *Constitution* provides for the granting of "appropriate relief" for any infringement of any right as contained in the Bill of Rights. In the scholarly discourse, this has become known as "constitutional damages" and there are several case-law examples where this has been granted, most notably the *Fose* case.⁴⁵⁴ The question, for the purposes of this dissertation, is whether a claim for constitutional damages could be instituted against the state, since the national space legislation of South Africa does not provide adequate measures for claiming for damages caused by a space object.

⁴⁵¹ While it is accepted that the *Liability Convention* may not be suitable to be considered for a claim under the municipal law of a state, on the basis that it only applies to state parties, a court ought to accept that, in the absence of guiding principles on a liability regime in terms of the *SAA*, the international liability regime as stated in the *Liability Convention* should apply.

⁴⁵² Section 233 of the *Constitution* stipulates that a court of law must prefer an interpretation that is consistent with international law over any other interpretation that would render the law inconsistent with international law.

⁴⁵³ Midgley et al *The Law of Delict in South Africa* chapter 9.1.

⁴⁵⁴ *Fose v Minister of Safety and Security* 1997 (3) SA 786. Note that the judgement was delivered in terms of the *Interim Constitution*, in which section 7(4)(a) contained the provision of "appropriate relief". However, the terminology of "appropriate relief" followed into the final 1996 *Constitution* at section 38.

3.5.3.1 Human Rights Obligations of the State Towards People Within its Territory

Section 7(2) of the *Constitution* states that the state must "respect, protect, promote and fulfil the rights in the Bill of Rights". Section 8(1) stipulates that the Bill of Rights binds the legislature, the executive, and the judiciary, and applies to all laws of the Republic. Furthermore, section 39(1)(a) of the *Constitution* further states that a court, when interpreting the rights as contained in the Bill of Rights, must promote the values of the *Constitution* based on human dignity, equality and freedom.

A positive obligation thus rests on the state to realise the human rights as contained in the Bill of Rights.⁴⁵⁵ Du Plessis aptly describes this by stating that "the protection of citizens at home is the very point of the Bill of Rights".⁴⁵⁶ Some of these rights include the right to life,⁴⁵⁷ the right to bodily and psychological integrity,⁴⁵⁸ the right not to be deprived of property⁴⁵⁹ and the right to have access to adequate housing.⁴⁶⁰ Constitutional human rights protection also undoubtedly extends to foreign nationals in South Africa.⁴⁶¹

3.5.3.2 Extra-Territorial Application of Human Rights Principles

In order for a foreign national to claim constitutional damages, a case must first be made for the extra-territorial application of the *Constitution* with reference to the human rights contained therein. Generally, the *Constitution* does not have extra-territorial application. For extradition and expulsion the term "extra-territorial" is sometimes used,⁴⁶² but it seems to be somewhat of a misnomer considering that the decision to extradite occurs within the borders and jurisdiction of South Africa.⁴⁶³ In *Mohamed*, the South African government first obtained an assurance from the USA that Mohamed would not be given the death penalty, the state having a responsibility to ensure the rights that are afforded to Mohamed in terms of the

⁴⁵⁵ In the South African context, the Bill of Rights is contained in sections 7-39 of the *Constitution*.

⁴⁵⁶ Du Plessis 2003 *SALJ* 798.

⁴⁵⁷ Section 11 *Constitution*.

⁴⁵⁸ Section 12 *Constitution*.

⁴⁵⁹ Section 25 *Constitution*.

⁴⁶⁰ Section 27 *Constitution*.

⁴⁶¹ See *Mohamed v President of the Republic of South Africa* 2001 (3) SA 893 (CC) para 60-67.

⁴⁶² Dugard and van den Wyngaert 1998 *AJIL* 187-188.

⁴⁶³ Noted as a misnomer in the UK case of *Kajac v Secretary of State* (2001) INLR para 354.

Constitution will be the same rights he will have extra-territorially.⁴⁶⁴ However, the extra-territorial application of the South African *Constitution* in this context and the context of the subsequent discussion, should be interpreted as the South African government having obligations to preserve human rights outside of its jurisdiction.

Extra-territoriality is not a foreign concept when it comes to international human rights law. The *International Covenant on Civil and Political Rights*⁴⁶⁵ stipulates in Article 2(1) that:

Each State Party to the present covenant undertakes to respect and ensure to all individuals within its territory and subject to its jurisdiction the rights recognized in the present covenant.

Furthermore, Article 1 of the *European Convention on Human Rights* (ECHR)⁴⁶⁶ prescribes that everyone in the jurisdiction of the contracting parties shall have the rights and freedoms as in the Convention.

Article 2(3)(a)-(c) of the ICCPR states:

To ensure that any person whose rights or freedoms as herein recognized are violated shall have an *effective remedy*, notwithstanding that the violation has been committed by persons acting in an official capacity;

To ensure that any person claiming such a remedy shall have his right thereto determined by *competent judicial, administrative or legislative authorities*, or by any other competent authority provided for by the legal system of the State, and to *develop the possibilities of judicial remedy*;

To ensure that the competent authorities shall enforce such remedies when granted.
(Own emphasis added)

⁴⁶⁴ *Mohamed* para 74.

⁴⁶⁵ *International Covenant on Civil and Political Rights* UN Treaty Series 171 adopted 16 December by UNGA resolution 2200A XXI 1966. Hereafter "ICCPR". South Africa Ratified the treaty on 10 December 1998.

⁴⁶⁶ European Convention on Human Rights (1950).

It is submitted that South Africa, under the ICCPR, will have an obligation in terms of international law which it must consider when making judicial decisions.⁴⁶⁷ This position is further strengthened by Article 33(1) of the *Draft Articles on State Responsibility*⁴⁶⁸ which stipulate that a state may be liable to another state or to the international community as a whole, while Article 33(2) extends the rights to accrue to any person or entity other than a state. Certain human rights principles will also form part of the *jus cogens* of international law. Articles 7 and 8 of the *Draft Articles on State Responsibility* extends responsibility to where an organ of state, person or entity empowered to exercise elements of governmental authority, exceeded his authority (*ultra vires*), or if a group of people are acting on instruction, direction or control of the state.

3.5.3.3 Locus Standi in Claiming for Constitutional Damages

Section 38 of the *Constitution* is known as the "standing clause", since it states that any listed person has the right to approach a competent court, alleging that a right as contained in the Bill of Rights has been infringed. These listed persons are:

- a) anyone acting in their own interest;
- b) anyone acting on behalf of another person who cannot act in their own name;
- c) anyone acting as a member of, or in the interest of, a group or class of persons;
- d) anyone acting in the public interest; and
- e) an association acting in the interest of its members.

Depending on the type of action to be brought, a plaintiff can rely on either section 38(a)-(e) but will need to motivate their *locus standi* to the court. Paragraphs (c) and (d) can be utilised for so-called "class actions" if several people were

⁴⁶⁷ Refer above to section 39(1)(b) of the *Constitution*.

⁴⁶⁸ *Draft Articles on the Responsibility of States for Internationally Wrongful Acts* (2001).

affected,⁴⁶⁹ while paragraphs (a) and (b) cater for the individual plaintiffs. The principle of subsidiarity as discussed in 3.4.3.4 below, should also be given due consideration before a claim for constitutional damages is instituted.

3.5.3.4 The Principle of Constitutional Subsidiarity

The principle of subsidiarity means that an entity should seek remedies first in the specific rather in the general. Du Plessis encapsulates the principle of subsidiarity aptly by describing it as:

The highest authority of the *Constitution* is, in other words, not to be overused to decide issues that can be disposed of with reliance on specific, subordinate and non-constitutional precepts of law.⁴⁷⁰

To illustrate this principle, in *Mazibuko* it was held that:

where legislation has been enacted to give effect to a right, a litigant should rely on that legislation in order to give effect to the right or alternatively challenge the legislation as being inconsistent with the *Constitution*.⁴⁷¹

In *Mazibuko*, the reference was to the utilisation of the *Promotion of Administrative Justice Act*⁴⁷² as giving effect to section 33 of the *Constitution*.⁴⁷³ However, the same parallel can be drawn to common law provisions: should there exist an appropriate remedy in the common law, this should be preferred over constitutional remedies. In *S v Mhlungu*, it was held that the principle of subsidiarity avoids an over-constitutionalisation of issues, with judge Mahomed I stating that:

I would lay it down as a general principle that where it is possible to decide any case, civil or criminal, without reaching a constitutional issue, that is the course which should be followed.⁴⁷⁴

⁴⁶⁹ *Permanent Secretary Department of Welfare, Eastern Cape Provincial Government and Another v Ngxuza and Others* (2001) 4 SA 1184 (SCA) para 1 page 19.

⁴⁷⁰ Du Plessis 2006 *SLR* 207-209.

⁴⁷¹ *Mazibuko v City of Johannesburg* 2010 (4) SA1 (CC) para 74.

⁴⁷² *Promotion of Administrative Justice Act* 3 of 2000. Hereafter "*PAJA*".

⁴⁷³ See also the case of *Minister of Defence and Military Veterans v Motau* 2014 (5) SA 69 (CC) for a similar analysis of subsidiarity, albeit also in the context of *PAJA*.

⁴⁷⁴ *S v Mhlungu and others* 1995 (7) BCLR 793 (CC) para 59.

Following this reasoning, a remedy in the common law of delict as discussed in 3.4.2 should be preferred over pursuing a claim for constitutional damages in terms of section 38 of the *Constitution*. However, this does not preclude a plaintiff from claiming for constitutional damages. Indeed, in cases where human rights were directly affected, constitutional damages will be a very relevant remedy.

3.5.4 Statutory Considerations and Restrictions

There are a myriad of statutory restrictions and considerations in the national legislation of South Africa that need to be kept in consideration, specifically when one claims against the state. The *State Liability Act*⁴⁷⁵ provides in section 1 that:

Any claim against the State which would, if that claim had arisen against a person, be the ground of an action in any competent court, **shall be cognizable by such court**, whether the claim arises out of any contract lawfully entered into on behalf of the State or out of any wrong committed by any servant of the State acting in his capacity and within the scope of his authority as such servant. (own emphasis added)

Therefore, in essence, any party who has "any claim" against the state may institute a claim against the state. It is worth noting that the *State Liability Amendment Act*⁴⁷⁶ amended section 2, stipulating that the minister (executive authority of the department concerned) must be cited as a nominal defendant or respondent in any action or other proceedings. In the context of space law, the logical minister to cite would be the minister of trade and industry. When the applicant/plaintiff is a foreign national, it would be advantageous to also cite the minister of the department of international relations and cooperation (DIRCO).

It is extremely important to take note of the *Institution of Legal Proceedings against Certain Organs of State Act*.⁴⁷⁷ Section 3 stipulates that no legal proceedings for the recovery of a debt⁴⁷⁸ may be instituted against an organ of state, unless the

⁴⁷⁵ *State Liability Act* 20 of 1957.

⁴⁷⁶ *State Liability Amendment Act* 14 of 2011.

⁴⁷⁷ *Institution of Legal Proceedings Against Certain Organs of State Act* 40 of 2002.

⁴⁷⁸ In the normal reading it would seem that the wording in the Act does not apply to damages caused by space objects. However, a "debt" is defined in section 1(1)(iii) of the Act as debt arising from any cause of action- delictual, contractual or other.

creditor⁴⁷⁹ has given the state notice in writing of his/her intention to institute legal proceedings.⁴⁸⁰ Further, such a notice must be given within six months from the date on which the debt became due and should briefly set out the facts that gave rise to the debt and particulars of the debt within the knowledge of the creditor.⁴⁸¹ Should the creditor fail to serve a notice, the state may raise this as a defence to the claim.⁴⁸² The creditor may apply for condonation of the failure,⁴⁸³ which the court may grant if the debt has not been extinguished by prescription, good cause exists for the failure, and the organ of state was not unreasonably prejudiced by the failure.⁴⁸⁴

Prescription of claims in terms of the *Prescription Act*⁴⁸⁵ will play a role when a party claims in South African law, whether the claim is instituted against the state or a private person or entity. Claims need to be made within three years⁴⁸⁶ from the date when the debt is due.⁴⁸⁷ The foreign entity that will be pursuing a claim in the South African jurisdiction will be a creditor,⁴⁸⁸ therefore the extended periods referred to in section 13 of the *Prescription Act* are not applicable. A failure to claim within this three-year time period may result in the defendant/respondent raising a special plea of prescription against the claim,⁴⁸⁹ which can result in the debtor not being legally liable.⁴⁹⁰ Notice should also be taken that a simultaneous claim may not exist in terms of the *Liability Convention* and in the municipal law of the state involved.⁴⁹¹

⁴⁷⁹ A "creditor" is defined in section 1(1)(i) as a person who intends to institute legal proceedings against an organ of state for the recovery of debt. The normal definition of a creditor is thus extended here, for the purposes of the Act, to future claimants.

⁴⁸⁰ Section 3(1)(a) *Institution of Legal Proceedings Against Certain Organs of State Act*.

⁴⁸¹ Section 3(2) *Institution of Legal Proceedings Against Certain Organs of State Act*.

⁴⁸² Section 3(4)(a) *Institution of Legal Proceedings Against Certain Organs of State Act*.

⁴⁸³ Section 3(4)(a) *Institution of Legal Proceedings Against Certain Organs of State Act*.

⁴⁸⁴ Section 3(4)(b) *Institution of Legal Proceedings Against Certain Organs of State Act*.

⁴⁸⁵ *Prescription Act* 68 of 1969. Hereafter "*Prescription Act*".

⁴⁸⁶ Section 11(d) *Prescription Act*.

⁴⁸⁷ Section 12(1) *Prescription Act*.

⁴⁸⁸ See the definition of "creditor" in section 1 of the *Institution of Legal Proceedings Against Certain Organs of State Act*.

⁴⁸⁹ Pete et al *Civil Procedure: A Practical Guide* 242.

⁴⁹⁰ Derived from section 17(2) of the *Prescription Act*.

⁴⁹¹ Article XI(2) *Liability Convention*.

3.5.5 Conclusion

In terms of South African law, a plaintiff may have two distinct avenues of recourse to pursue. The first is to pursue a delictual claim in terms of the South African common law. It is submitted that such a claim can be instituted against the state, or against the party who is responsible for the damage, although causation will have to be proved when this avenue is followed. Alternatively, and with consideration of the principle of subsidiarity, a claim for constitutional damages may be instituted against either the state or the party involved. Cognisance should be taken of the restrictions and considerations when a party claims against the state and against a third party, since a failure to follow these guidelines may result in the claim not even making it past the pre-litigation stage.

3.6 Conclusion

In conclusion, South Africa has promulgated several pieces of national space legislation, of which the *Space Affairs Act* is the most important in terms of regulation of public and commercial operations of space activities. *The Space Affairs Act* is set to be replaced in future by a more comprehensive *South African Outer Space Bill*. It remains to be seen when this will be finalised, but it does not seem to be a priority to the South African state.⁴⁹²

Further, the essence of this chapter discussed the possibility of a claim under the South African law of delict and a claim for constitutional damages in terms of Section 38 of the *Constitution*. It is submitted that both these options are viable, but there are pitfalls that may make these options cumbersome. In addition, an expert in South African law who is an admitted attorney or advocate will need to represent the claimant in the courts of South Africa, if the claimant does not want to represent themselves.⁴⁹³ It would be encouraging to see the new *South African Space Bill* include comprehensive provisions for liability and a proper way in which to institute liability proceedings for guidance on these matters. From the newest developments

⁴⁹² Since the *Outer Space Bill* was proposed as long ago as 2017 and no further action has been taken on it, it seems as if it is not a priority to the South African government.

⁴⁹³ See Section 25 of the *Legal Practice Act* 28 of 2014.

with the draft *Outer Space Bill* it seems like some or other provision for damage caused by a space object will be included.⁴⁹⁴ It remains to be seen, however, if these provisions will be comprehensive enough to deal with the contemporary challenges associated with space activities. Ideally, national space legislation should guide the liability issues surrounding space activities, specifically in providing a framework or statutory basis in terms of which damage caused by a space object can be recovered.

It is, however, encouraging to see that a developing country like South Africa, that still needs to develop to their full spacefaring capacity, is already developing national space legislation along with a space policy to govern space activities. Even though these are insufficient to govern the complexities of outer space exploration, they are all steps towards better governance of space activities on a national and an international level. The hope exists that new legislation will include regulation of commercial space activities, or provide clauses authorising the executive or other authorised body to develop rules and regulations for the governance of outer space activities.

In essence, South African national legislation does not provide a concrete claim for a person who has suffered damages caused by a space object. However, a party who suffered damages could possibly institute a claim in terms of the South African law of delict against the party responsible for the damages. An important point to note here is that all the normal elements of a delict will need to be proven in a court of law in South Africa for such a claim to succeed. Another possibility for claiming damages, is seeking a remedy in terms of human rights law, by invoking the rights as contained in the *Constitution* with a claim for constitutional damages.⁴⁹⁵

⁴⁹⁴ See Alberts "South Africa" 65-70 and Hendricks *South Africa's Place in Space: A Legal Commentary on South Africa's Outer Space Bill* 53. It seems as if Section 32(1) of the draft *Outer Space Bill* will include certain provisions for liability. Refer to 3.4.4 for the status of the *Outer Space Bill* currently.

⁴⁹⁵ Section 38 of the *Constitution*.

CHAPTER 4 CLAIMING IN FOREIGN JURISDICTIONS

4.1 Introduction

In chapter three, an analysis was done of South African space law with descriptions of how a claim can be instituted for damage caused by a space object in the municipal law of the state. In chapter four, the focus will turn to (1) performing a comparative analysis of the space legislation of selected major spacefaring states and (2) identifying and investigating the possibility of claiming damages in the jurisdiction of each of these states. This is by no means an easy task, since the law fundamentally differs in each state's jurisdiction in terms of operation and application.

The aim of this research is to identify methods for entities/persons to pursue these claims in the various jurisdictions of states and therefore ensure that a claim can actually be pursued for damage suffered, in the courts, administrative tribunals or agencies of launching states.⁴⁹⁶ The main reason why the states of Australia, France and the UK were identified and chosen, was because of their active participation or potential future participation in space activities. This of course amplifies the risk of them being involved in damage caused by a space object. We also see extensive national space legislation in these states that extends to governing commercial space activities.

It is interesting to take note of the case in the USA, where damage was caused by a space object when it crashed through the roof of the Oteros' family home.⁴⁹⁷ The family is in the process of suing NASA under the US *Federal Tort Claims Act*,⁴⁹⁸ in the amount of 80 000 US Dollars.⁴⁹⁹ This is illustrative of why this research attempts to find the answer on how a claim can be pursued in the municipal law of states for damage caused by a space object.

⁴⁹⁶ Referring to article XI(2) of the *Liability Convention*.

⁴⁹⁷ BBC 2024 <https://www.bbc.com/news/articles/c9www02e49zo>.

⁴⁹⁸ *Federal Tort Claims Act* of 1946.

⁴⁹⁹ Mail and Guardian 2024 <https://www.theguardian.com/us-news/article/2024/jun/22/florida-family-sues-nasa-space-debris>

In each jurisdiction, the national space legislation will be analysed to determine whether a means for pursuing a claim is included in such legislation. After these analyses, alternative means will be explored for instituting such a claim if no statutory claim exists. Important concepts relating to a claim, such as indemnification, licensing and the quantification of damages, will be investigated in each separate jurisdiction.

4.2 Australia

4.2.1 Australia's Involvement in Outer Space Activities

In the 1950's and 1960's, Australia participated actively in space and space policy development, being one of the founding members of UNCOPUOS and participating in the development of the international space treaties.⁵⁰⁰ Australia played an active role during the Apollo missions, with specifically the Honeysuckle Creek Tracking Station and the Parkes observatory playing key roles.⁵⁰¹ However, during the 1970's and 1980's, the Australian space industry stalled and experienced a prolonged hiatus, until its resurgence in the mid 1990's.⁵⁰²

In response to its resurgence and the Australian government recognising the commercial value of space, the *Australian Space Activities Act*⁵⁰³ entered into force, making Australia only the sixth nation to promulgate national space legislation.⁵⁰⁴ Australia has also ratified all of the UN space law treaties, which includes the *OST*, *Liability Convention*, *Registration Convention*, *Rescue Agreement* and the *Moon Agreement*.⁵⁰⁵ Interestingly, Freeland, Hutchison and Sim note that, currently, the pace of development for national space law now exceeds that of international space law.⁵⁰⁶

⁵⁰⁰ Lisk and de Zwart 2019 *Federal Law Review* 446.

⁵⁰¹ Lisk and de Zwart *Federal Law Review* 446.

⁵⁰² Schneider 2022 *IISL* 433.

⁵⁰³ *Australian Space Activities Act* of 1998.

⁵⁰⁴ Lisk and de Zwart *Federal Law Review* 446-447.

⁵⁰⁵ Australian Space Agency (ASA) date unknown
<https://www.space.gov.au/Australia%E2%80%99s-space-regulations>.

⁵⁰⁶ Freeland, Hutchison and Sim 2018 *Journal of Air and Space Law* 131.

4.2.2 Australian National Space Law

Australia has extensive national legislation that governs their space activities. The *Australian Space Activities Act* of 1998 has since been amended by the *Space (Launches and Return) Act* 2018,⁵⁰⁷ which regulates civil space-related activities carried out in Australia or by Australians overseas.⁵⁰⁸ As a complement to this, the *General Rules* of 2019⁵⁰⁹ provide more specific detail and additional criteria for approvals under the *Launches and Returns Act*.⁵¹⁰ Other rules that are expanding on the 2018 Launches and Returns Act include the *High-Power Rocket Rules* of 2019⁵¹¹ and the *Insurance Rules* of 2019.⁵¹² Australia also has a *Flight Safety Code*, as well as a *Maximum Probable Loss Methodology*⁵¹³ and an *Australian Civil Space Strategy*.⁵¹⁴

The *Launches and Returns Act* aims to provide a framework of regulation for space activities carried out by Australian nationals from Australia, or from outside Australia, as well as the launch of high-power rockets.⁵¹⁵ Furthermore, the Act purports to implement Australia's obligations in terms of the UN Space Treaties.⁵¹⁶ The Act regulates space activities and high-power rockets, as well as licensing for launch facilities, launch permits, high-power rocket permits, overseas payload permits, return authorisations and insurance/financial requirements.⁵¹⁷ It further also details liability for damage by space objects in part four, as well as civil penalties, which will form a big part of the subsequent discussion.

The *General Rules* mostly focus on issues not related to liability, such as launch facility licenses, launch permits, return authorisations and others, supplementing

⁵⁰⁷ *Space (Launches and Return) Act* 123 of 2018. Hereafter in this chapter "*Launches and Return Act*".

⁵⁰⁸ Lisk 2024 *Australian Law Librarian* 63-65.

⁵⁰⁹ *Space (Launches and Returns) (General) Rules* 2019. Hereafter "*General Rules*".

⁵¹⁰ ASA <https://www.space.gov.au/Australia%E2%80%99s-space-regulations>.

⁵¹¹ *Space (Launches and Returns) (High Power Rocket) Rules* 2019. Hereafter "*High-Power Rocket Rules*".

⁵¹² *Space (Launches and Returns) (Insurance) Rules* 2019. Hereafter the "*Insurance Rules*".

⁵¹³ *Maximum Probable Loss Methodology* 2019. Hereafter "*MPLM*".

⁵¹⁴ *Advancing Space: Australian Civil Space Strategy* 2019-2028.

⁵¹⁵ Section 3 Division 1 *Launches and Returns Act*.

⁵¹⁶ Section 3 Division 1 *Launches and Returns Act*.

⁵¹⁷ Part 3 *Launches and Returns Act*.

the regulations in part four of the *Launches and Returns Act*. The *High-Power Rocket Rules* similarly complement Part 4A of the *Launches and Returns Act*, while the *Insurance Rules* expand on Part 3 Division 7 of the *Launches and Returns Act*. The *Maximum Probable Loss Methodology (MPLM)* will also play a key role in determining the minimum amount of insurance necessary, which could become extremely important in assessing a claim for damages and the quantum thereof. The Australian national space legislation will only be discussed insofar as these items of legislation relate to the pursuance of a claim under Australian municipal law below.

4.2.3 Licensing of Space Activities

The *Launches and Returns Act* creates different licenses, depending on the space activity the license is requested for. Broadly, the different types of licenses include launch facility licenses,⁵¹⁸ launch permits,⁵¹⁹ high-power rocket permits⁵²⁰ and overseas payload permits.⁵²¹ Only private companies need to acquire these licenses. The Commonwealth of Australia, or a private company acting as an agent of the Commonwealth, will not need to comply with the licensing requirements. The same applies to international intergovernmental organisations, where such an agreement between Australia and another state/states provides for the establishment of such an organisation. However, any space activity commissioned by the Commonwealth need not comply with the licensing. Licensing under Australian space law will be discussed below.

4.2.3.1 Launch Facility Licenses

Section 18 of the *Launches and Returns Act* grants licenses for the operation of a launch facility in Australia. Section 18 further relies on ministerial discretion for granting the license, with several factors such as environmental approvals, funding, and the impact on international relations, security and defence that must be taken

⁵¹⁸ Section 18 *Launches and Returns Act*.

⁵¹⁹ Section 28 *Launches and Returns Act*.

⁵²⁰ Section 39 *Launches and Returns Act*.

⁵²¹ Section 46 *Launches and Returns Act*.

into account. The license may be granted for a maximum period of 20 years.⁵²² Provision is made for the transfer of launch facility licenses, subject to the ministerial discretion in section 18,⁵²³ as well as varying, revoking⁵²⁴ and suspending such licenses.⁵²⁵ If a condition in a launch facility license is breached by the holder, a civil penalty of 1000 penalty units will be imposed on the entity/person, in terms of the *Regulatory Powers Act*.⁵²⁶ An application for a civil penalty must currently be brought by the minister⁵²⁷ in terms of section 82 of the *Regulatory Powers Act*. Lisk, however, states that currently, Australia has no capacity to launch a satellite from Australia.⁵²⁸

4.2.3.2 Launch Permits

An Australian launch permit may be granted for the launch of one or more space objects, or for a series of launches of space objects.⁵²⁹ Ministerial discretion is assigned for the decision to grant a launch Permit or not. The launch Permit may only be granted if the launch will in fact take place from an Australian launch facility, an Australian aircraft in flight or a foreign aircraft in Australian airspace.⁵³⁰ A launch permit may also authorise the return of one or more space objects in connection to the launches.⁵³¹ A returning space object does not need to be the same space object as the one launched. Section 28(2) for example states that:

A returning space object need not be the same as the space object launched. For example, a launch vehicle could carry a payload into an area beyond the distance of 100 km above mean sea level and return without it, or even collect a different payload from an area beyond the distance of 100 km above mean sea level and return that to Earth.

⁵²² Section 19(b) *Launches and Returns Act*.

⁵²³ Section 22 *Launches and Returns Act*.

⁵²⁴ Section 23 *Launches and Returns Act*.

⁵²⁵ Section 26 *Launches and Returns Act*.

⁵²⁶ Section 81 *Regulatory Powers Act* of 2014. Penalty units are the result of civil contraventions, not criminal contraventions. See the ASA *Launch Facility License Application Guidelines* of 2023 at para 2.6.

⁵²⁷ Section 81(2) *Launches and Returns Act*.

⁵²⁸ Lisk 2024 *Australian Law Librarian* 67.

⁵²⁹ Section 28(1) *Launches and Returns Act*.

⁵³⁰ Section 28(1) *Launches and Returns Act*.

⁵³¹ Referred to in Section 28(3)(a) as a "connected return".

Launch permits may also be transferred, varied or revoked.⁵³² A civil penalty of 1000 penalty units is prescribed for contravening a condition of the permit,⁵³³ while offences (such as not complying with the insurance and financial requirements), could lead to 5 500 penalty units and/or 10 years of imprisonment. Body corporates may be given a penalty of 100 000 penalty units.⁵³⁴

4.2.3.3 High-Power Rocket Permits

The *High-Power Rocket Rules* define a high-power rocket in rule 5 as a:

- (a) rocket propelled by a motor or motors with a combined total impulse greater than 889,600 Newton seconds; or
- (b) it is a rocket propelled by a motor or motors with a combined total impulse greater than 40,960 Newton seconds and is fitted with a system or systems that allow active control of its trajectory.

A high-power rocket permit must specify a day on which it comes into force and may rely on a particular event, rather than a specified time, for the termination of the permit.⁵³⁵ A high-power rocket permit may be transferred, varied, suspended or revoked at the discretion of the minister.⁵³⁶ The same civil penalties and penalties for offences that apply to launch permits, will also apply to high-power rocket permits.⁵³⁷

4.2.3.4 Overseas Payload Permits

Overseas payload permits come into play when an Australian national is a responsible party to a launch outside of the territories of Australia.⁵³⁸ Such a permit also covers the launch of one or more space objects or a series of launches from a specified facility.⁵³⁹ The Minister has discretionary powers, but can only grant such

⁵³² Section 32-33 *Launches and Returns Act*.

⁵³³ Section 31(2) *Launches and Returns Act*.

⁵³⁴ Section 31(1) *Launches and Returns Act*.

⁵³⁵ Section 39(1)-(2) *Launches and Returns Act*.

⁵³⁶ Section 42, 43 and 46 *Launches and Returns Act*.

⁵³⁷ Section 41 *Launches and Returns Act*.

⁵³⁸ Section 46B *Launches and Returns Act*.

⁵³⁹ Section 46B(1) *Launches and Returns Act*.

a permit if the Minister is satisfied the insurance/financial requirements are met, or, due to the nature and purpose of the space object, such requirements need not be met.⁵⁴⁰ Overseas payload permits may be transferred, varied, suspended or revoked.⁵⁴¹ A civil penalty is imposed on persons who breach a condition of an overseas payload permit.

4.2.3.5 Return Authorisations

The Minister has the discretion to give a person a return authorisation for a return of a space object inside or outside Australia, or a particular series of returns.⁵⁴² Certain criteria need to be met, such as the insurance and financial requirements.⁵⁴³ The offences, penalties for such offences and civil penalties for the breach of a condition of the return authorisation, are the same penalties levied for the breach of a condition of a launch permit. Return authorisations may be varied, suspended or revoked.⁵⁴⁴ It is also an offence in terms of Section 15A of the Act to return a space object without a return authorisation.

4.2.4 Scope of Liability in Australian Law

The *Launches and Returns Act* provides in Part four for liability for damage suffered by a space object. Most notably, section 62A states that:

The responsible party for the launch or return of a space object is liable to pay compensation for any damage the object causes to a third party.

The term "launching state" prescribes the meaning of a launching state in the *Liability Convention*,⁵⁴⁵ while a "launch" constitutes:⁵⁴⁶

(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

⁵⁴⁰ Section 46B(2)(a) *Launches and Returns Act*.

⁵⁴¹ Sections 46F-46J *Launches and Returns Act*.

⁵⁴² Section 46L *Launches and Returns Act*.

⁵⁴³ Section 46L(2)(b) *Launches and Returns Act*.

⁵⁴⁴ Section 46P-46S *Launches and Returns Act*.

⁵⁴⁵ Section 8 *Launches and Returns Act*.

⁵⁴⁶ Section 8 *Launches and Returns Act*.

(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.

The *Launches and Returns Act* sets out the legal position for damages that occurred by a space object. However, whether the *Launches and Returns Act* applies, is dependent on whether it falls within the scope of the definitions as set out in section 63 of the Act (Part 4). The first requirement, is that Australia must be a launching state, or the object must be launched from a launch facility in Australia, or from an Australian aircraft in flight, or from a foreign aircraft that is in the airspace above Australian territory.⁵⁴⁷ The Australian legislature did extremely well to set out when liability will arise, in particular recognising potential future launches from aircraft in flight, both foreign and domestic. From the wording, a launch will also be a launch if launched from an Australian aircraft, whether within the airspace of Australia or not.

Furthermore, as a second requirement, the damage must have occurred during the liability period of the launch or the re-entry. In terms of section 8 of the Act, the liability period for launches, including launches of high-power rockets, refers to a period of 30 days after the launch takes place. With respect to return of space objects, it refers to when re-entry manoeuvres have begun and ends when the object comes to rest on the surface of the Earth. Liability will also arise inside or outside of Australia, if the damage is caused during the liability period for the return.⁵⁴⁸ Therefore, Australian law provides that liability arises, under the following circumstances:

- a) Australia is a launching state, or the object is launched from an Australian facility, aircraft or foreign aircraft in the airspace of Australia.⁵⁴⁹
- b) Damage is caused on Earth, in the air or in space.⁵⁵⁰

⁵⁴⁷ Section 63(1)(a)(i)-(ii) *Launches and Returns Act*.

⁵⁴⁸ Section 63(2A)(b)-(c) *Launches and Returns Act*.

⁵⁴⁹ Section 63(1)(a) *Launches and Returns Act*.

⁵⁵⁰ Section 63(3)(a) *Launches and Returns Act*.

- c) Damage is caused within or outside Australia by return⁵⁵¹ or launch⁵⁵² during the liability period of the launch and the return.⁵⁵³
- d) Liability arises whether or not the launch was authorised under the *Launches and Returns Act*.⁵⁵⁴
- e) Liability arises whether or not the launch or return was covered by an authorisation certificate.⁵⁵⁵

Damages are thus recoverable by third parties from the party responsible for an Australian launch.⁵⁵⁶ However, liability will be limited in accordance with the maximum probable loss methodology (*MPLM*), which will be discussed in 4.2.5 below. The stage when liability arises in Australian law, is thus extremely wide and non-limiting, which simplifies a claim by a foreign entity under the municipal law of Australia.

4.2.5 Claiming under the Municipal law of Australia

Assuming that Australia is a launching state or prescribes to the extended definition of when they will be liable (refer to 4.2.3 above), a claim will arise under Australian municipal law for third-party damages. Third-party damages for damage caused by space objects are only payable in terms of the *Launches and Returns Act*.⁵⁵⁷ However, the *Launches and Returns Act* does in no way preclude a person who is not a third party from seeking compensation outside of the Act (e.g. the employee of a responsible party).⁵⁵⁸

Third-party liability is divided into two categories in the *Launches and Returns Act*: Part 4 division 2, subdivision A creates rules for damage caused by launches and most returns (discussed in 4.2.4.1 below), while subdivision B creates rules for

⁵⁵¹ Section 63(2) *Launches and Returns Act*.

⁵⁵² Section 63(1) *Launches and Returns Act*.

⁵⁵³ Section 63(1)(b) *Launches and Returns Act*.

⁵⁵⁴ Section 63(3)(c) *Launches and Returns Act*.

⁵⁵⁵ Section 63(3)(d) *Launches and Returns Act*.

⁵⁵⁶ Lyall and Larsen *Space Law: A Treatise* 422.

⁵⁵⁷ Section 64 *Launches and Returns Act*.

⁵⁵⁸ Section 64 *Launches and Returns Act*.

certain returns conducted by overseas nationals (discussed in 4.2.4.2 below). Division 4 details compensation claims by foreign countries (discussed in 4.2.4.3 below), while the claim procedure in division 3 will be discussed in 4.2.4.4.

4.2.5.1 Damage Caused by Launches and Most Returns

Division 2 of part 4 contains two subdivisions, namely subdivision A (sections 66-69) and subdivision B (sections 70-71). Subdivision A applies to all damage caused by launches, returns or other damage, but excludes damage from returns where the object, or any part of it, was not launched from an Australian territory, facility or airspace⁵⁵⁹ and the party responsible for the return is not an Australian national.⁵⁶⁰

The party responsible for a launch or a return will be strictly liable to pay compensation for any damage caused on Earth or as a result of damage to aircraft in flight,⁵⁶¹ bar where there is gross negligence or intentional conduct to cause damage by the third party.⁵⁶² The party responsible will also be liable if the space object causes damage to another space object, to a third party, or to the property of a third party on board the space object.⁵⁶³ However, the responsible party is not strictly liable in this case, but only to the extent of the party's fault.⁵⁶⁴ Section 75D prescribes the same approach for high-power rockets.

In broad terms, strict liability is prescribed for damage on the surface of the Earth or to an aircraft in flight, or the resultant damage from damage to an aircraft in flight, while fault-based liability applies for damage to a space object, to a third party or to the property of a third party on board a space object. This is an excellent example of how the Australian legislature sought to include the liability regime as contained in the *Liability Convention* in the municipal law of Australia.

A limitation exists on the liability of a responsible party, if such a party conducted the launch or the return with a duly authorised Australian launch permit (or overseas

⁵⁵⁹ Refer to the definition of a "launch" above.

⁵⁶⁰ Section 66 *Launches and Returns Act*.

⁵⁶¹ Section 67(1) *Launches and Returns Act*.

⁵⁶² Section 67(2) *Launches and Returns Act*.

⁵⁶³ Section 68(a)-(b) *Launches and Returns Act*.

⁵⁶⁴ Section 68 *Launches and Returns Act*.

payload permit)⁵⁶⁵ and the damage did not result due to a breach of the conditions of the permit, gross negligence or intentional conduct to cause harm.⁵⁶⁶ Again, the same approach is followed for high-power rockets.⁵⁶⁷ The limitation lies therein that the responsible party will only be liable to pay compensation for the extent of the damage that is insured in terms of the launch permit or overseas payload permit.⁵⁶⁸ Interestingly, no permit is required for payload if the launch itself is licensed.⁵⁶⁹

If, after the responsible party has paid the amount equal to the insured amount, and the third party will be liable for an excess amount, then the Commonwealth of Australia will be liable to pay the excess amount, not exceeding three billion dollars (Australian),⁵⁷⁰ from the Consolidated Revenue Fund.⁵⁷¹ However, this excess amount is only payable to Australian nationals, if they suffered the damage.⁵⁷² Therefore, foreign persons will not be able to call upon the Commonwealth of Australia to pay any excess amount.

4.2.5.2 Returns Conducted by Overseas Nationals

Subdivision B specifically deals with damage where the object or any part of the object was not launched from Australia, an aircraft or a foreign aircraft in Australian airspace and the responsible party for the return of the object was not an Australian national.⁵⁷³ In this case, the party responsible for the return will be liable to pay compensation to a third party for any damage caused by the space object. This is an extremely important provision, as it provides that liability may arise when foreign entities are the responsible parties for returns in Australia. Strict liability is envisioned for such persons.⁵⁷⁴

⁵⁶⁵ Section 69(2) *Launches and Returns Act*.

⁵⁶⁶ Section 69(1) *Launches and Returns Act*. "Conduct" can be an act or omission as stipulated in this section.

⁵⁶⁷ Section 75E *Launches and Returns Act*.

⁵⁶⁸ Section 69(3) *Launches and Returns Act*.

⁵⁶⁹ Section 50 *Launches and Returns Act*. Also see Lisk 2024 *Adelaide Law Review* 471.

⁵⁷⁰ Section 69(4) *Launches and Returns Act*.

⁵⁷¹ Section 69(5) *Launches and Returns Act*. Again, the same approach is followed for high-power rockets.

⁵⁷² Section 69(4) *Launches and Returns Act*.

⁵⁷³ Section 70 *Launches and Returns Act*.

⁵⁷⁴ Section 71 *Launches and Returns Act*.

4.2.5.3 Claim Procedure

The *Launches and Returns Act* specifically institutes an action for compensation for damages as envisaged in chapter 4 of the Act.⁵⁷⁵ Section 72 of the *Launches and Returns Act* assigns jurisdiction to the Federal Court, Federal Circuit and the Division 2 Family Court of Australia to hear actions for compensation for damages in Part 4 of the *Launches and Returns Act*. The action for compensation may only be brought within one year from the date on which the damage occurred, or a year from the day that the person became aware or would have become aware of the damage if they had exercised due diligence.⁵⁷⁶ This mirrors the timeframes and wording of Article X(1) of the *Liability Convention*.

4.2.5.4 Restrictions to a Claim

In addition to the one-year time limit for claiming in terms of the *Launches and Returns Act*, a foreign country who presents a claim or who has settled a claim in accordance with the *Liability Convention* or international law, may not commence an action for compensation against a responsible party in terms of the Act. Conversely, Article XI(2) of the *Liability Convention* prohibits a claim in terms of the *Liability Convention* if a claim is pursued in the municipal law of states. If the damage occurred without the responsible party breaching any conditions of the permit/license, liability is limited to the minimum amount of insurance taken out by the responsible party.⁵⁷⁷ However, it seems that if a party did breach a condition of the license/permit, they would be liable for such damage, without the limitation to the minimum insurance amount as seen in section 69 of the *Launches and Returns Act*.

4.2.5.5 Compensation Claims by Foreign Countries

Should Australia become liable by virtue of a claim by a foreign party under the *Liability Convention* or international law, the responsible party will be liable to the

⁵⁷⁵ Section 73(1) *Launches and Returns Act*.

⁵⁷⁶ Section 73 *Launches and Returns Act*.

⁵⁷⁷ Section 69(3) *Launches and Returns Act*.

Commonwealth of Australia.⁵⁷⁸ The responsible party will be liable to pay the Commonwealth of Australia an amount equal to the lesser of either the amount of the compensation, or the insured amount if the launch or return was authorised by a launch permit or overseas payload permit.⁵⁷⁹

Section 75 of the Act further places an obligation on the Commonwealth of Australia to establish a claims commission, should a claim be brought in terms of the *Liability Convention*.

4.2.6 Law of Tort

The Australian law of tort may come into play when a party breached a condition of the license/permit, the damage exceeds the minimum insurance amount and as a result of the breach, the section 69 limitation on liability does not apply. It may become a distinct possibility that a claim could be instituted for the excess under the Australian law of tort. An example of this can be seen in the New South Wales legislation of the *Civil Liability Act*,⁵⁸⁰ which stipulates that damages for harm such as personal injury, death, damage to property and economic loss can be recovered,⁵⁸¹ regardless of whether a claim is brought under contract, statute, or tort law.⁵⁸² In tort law specifically, liability for negligence can arise from the breach of a condition of a permit/license.

Note should also be taken of the statutes of limitations in the different states of Australia for a claim in terms of the law of tort. In New South Wales, the *Limitation Act*⁵⁸³ provides that actions for torts, contracts and recovery for a sum of money is six years from the date when the cause of action accrues.⁵⁸⁴ The Northern Territories' *Limitation Act*⁵⁸⁵ provides for a limitation period of three years for torts, contracts or money recoverable,⁵⁸⁶ of which the same approach is taken by

⁵⁷⁸ Section 74(1) *Launches and Returns Act*.

⁵⁷⁹ Section 74(2) *Launches and Returns Act*.

⁵⁸⁰ *Civil Liability Act* 22 of 2002. Hereafter "*Civil Liability Act*".

⁵⁸¹ Section 5 *Civil Liability Act*.

⁵⁸² Section 5A *Civil Liability Act*.

⁵⁸³ *Limitation Act* 31 of 1969. Hereafter "*NSW Limitation Act*".

⁵⁸⁴ Section 14 *NSW Limitation Act*.

⁵⁸⁵ *Limitation Act* of 1981. Hereafter "*NT Limitation Act*".

⁵⁸⁶ Section 12 *NT Limitation Act*.

Queensland in the *Limitation of Actions Act*.⁵⁸⁷ The state of South Australia provides for six years for torts not related to personal injury and three years for personal injury torts in section 35-36 of the *Limitation of Actions Act*.⁵⁸⁸ In the state of Tasmania, three years is provided for personal injury claims⁵⁸⁹ and six years for other tort claims.⁵⁹⁰ Western Australia limits actions to three years from the cause of action,⁵⁹¹ while Victoria generally provides for a three-year limitation on claims.⁵⁹² Exceptions and extensions do occur for various reasons (minors, people with mental disabilities etc), but these are only applicable to the state in which the damages are claimed.

4.2.7 Insurance and Financial Requirements for Launch

Ordinarily, this would fall outside the scope of the research, but since this is integral to the determination of the amount which a foreign person could claim (e.g. the launch or return was authorised by a launch/payload permit), it could be a factor to take into account before a claim will be instituted. If the cost of instituting and completing a claim exceeds the amount that can be claimed, it would not be logical to proceed with such a claim. In addition to the insurance and financial requirements, the maximum probable loss methodology (*MPLM*) will also be discussed briefly. The *MPLM* is highly mathematical in nature and will therefore only be discussed insofar as a legal practitioner or advisor would need to understand the factors and use them appropriately.

4.2.7.1 Minimum Amount of Insurance

The minimum insurance for each launch or return must be equal to the lesser of (1) an amount specified in the *Insurance Rules*, not exceeding one hundred million Australian dollars, or (2) an amount calculated using the *MPLM* methodology.⁵⁹³ The *Insurance Rules* provide for minimum of 0 Australian dollars for an overseas payload

⁵⁸⁷ *Limitation of Actions Act* of 1974. Hereafter "*Queen Limitation Act*".

⁵⁸⁸ *Limitation of Actions Act* of 1936. Hereafter "*SA Limitation Act*".

⁵⁸⁹ Section 5A *Limitation Amendment Act* of 2004. Hereafter "*TAS Limitation Amendment Act*".

⁵⁹⁰ Section 4 *Limitation Act* of 1974. Hereafter "*TAS Limitation Act*".

⁵⁹¹ Section 14 *Limitation Act* of 2005. Hereafter "*WA Limitation Act*".

⁵⁹² Section 5 *Limitation of Actions Act* of 1958. Hereafter "*VIC Limitation Act*".

⁵⁹³ Section 48(4) *Launches and Returns Act*.

permit and return authorisations (outside Australia), while a minimum of 100 million Australian dollars is required for launch permits, high-power rocket permits, and return authorisations within Australia.⁵⁹⁴ There is nothing to preclude a person from taking out additional insurance.⁵⁹⁵

4.2.7.2 Maximum Probable Loss Methodology

The *MPLM* in essence states that the *MPLM* value must be:

...sufficient to cover financial liabilities arising from injuries to third-party persons and damages to properties from all launch or return mishaps that are reasonably likely to occur.⁵⁹⁶

The *MPLM* provides for a threshold probability of impact of one in ten million.⁵⁹⁷ The *MPLM* operates in a two-phase process, with the obligation on the applicant to gather all the relevant information (phase 1) and to develop the maximum probable loss evaluation (phase 2).⁵⁹⁸ The applicant should use the mathematical procedures⁵⁹⁹ to calculate possible third-party losses during the uprange, downrange and return phases of flight.⁶⁰⁰ "Uprange" refers to the "area within the launch area and in the opposite direction to the nominal flight path of a launch vehicle", downrange refers to the "area in the direction of the nominal flight path of the launch vehicle" and return bears the same meaning as the meaning in the *Launches and Returns Act*.

The final maximum probable loss valuation will be the highest values obtained for all the phases of flight considered.⁶⁰¹ The *MPLM* further breaks down the procedure of calculation, relying heavily on factors mentioned in the *Flight Safety Code*. However, these are beyond the scope of this contribution and should just be taken

⁵⁹⁴ Rule 6 of the *Insurance Rules*.

⁵⁹⁵ Section 49 *Launches and Returns Act*.

⁵⁹⁶ Section 3.1.1 *MPLM*.

⁵⁹⁷ Section 3.2.1 *MPLM*.

⁵⁹⁸ Section 4.1.2 *MPLM*.

⁵⁹⁹ See section 4.1.5 of the *MPLM* for the broad outline/procedure of the *MPLM* evaluation.

⁶⁰⁰ Section 4.1.3 *MPLM*.

⁶⁰¹ Section 4.1.3 *MPLM*.

note of. The *MPLM* valuation will only be used when it is the lesser between the specification in the *Insurance Rules*.

4.2.8 Conclusion

In Australian space law, the action for compensation created by the *Launches and Returns Act*⁶⁰² would be the method which a foreign entity would follow to claim in the municipal law of Australia. There are several advantages for claiming under the municipal law of Australia, which include the fact that minimum insurance would most likely exist and the action for compensation could be finalised with a simple insurance payout. A government "top-up" also exists for any damage in excess of the minimum insurance provided, up to the value of three billion Australian dollars, if the damage was to Australian nationals.⁶⁰³ The clear minimum insurance framework and the *MPLM* simplify decision-making for entities, since it determines in advance the possible quantum of the claim.

Unfortunately, no claim for damage by a space object is allowed under the municipal law of Australia against the responsible party for any amount in excess of the minimum insurance amount, if the party did not breach any conditions of the permit or license.⁶⁰⁴ However, if the party did breach a condition of the permit/license, it seems as if the minimum insurance limitation in section 69 of the *Launches and Returns Act* will not apply and the responsible party will be liable for the damages caused by the space object in terms of section 68 of the same act. This could possibly be recovered under the Australian law of tort, but the elements of the tort will need to be proven in a court of law.

Australian national space law is, currently, one of the best examples of the commercial regulation of space. While it is still early days for the legislation to be tested, it provides a key step in the governance of outer space on a national and international level.

⁶⁰² Section 73 *Launches and Returns Act*.

⁶⁰³ Section 69(4) *Launches and Returns Act*.

⁶⁰⁴ Section 69(2)-(3) *Launches and Returns Act*.

4.3 French Republic

4.3.1 French Participation in Space Activities

France is generally considered to be a major launching state,⁶⁰⁵ even though they were the last state in Europe to adopt a unified space act.⁶⁰⁶ The Guyane Space Center in France is used for several commercial purposes and hosts the Ariane 5 fleet of the European Space Agency (ESA).⁶⁰⁷ The ESA headquarters are also located in Paris.⁶⁰⁸

In 1961, President Charles de Gaulle established the *Centre National d'études Spatiales* (CNES), with the goal of making France an independent space power, in the context of the cold war.⁶⁰⁹ CNES has a legal personality that is distinct from the French state. This means that CNES can sue and be sued and is not a branch of government, as in the case of NASA.⁶¹⁰ CNES has the status of an "Industrial and Commercial State Organisation", colloquially known as an "EPIC" organisation.⁶¹¹

In 1965, CNES launched the Diamond launcher, which gave them bragging rights as the third biggest world space power after the USSR and USA.⁶¹² The Toulouse Space Centre was founded in 1968 and is the largest national space centre in Europe. The very famous James Webb telescope was launched by the Ariane 5 and carried mainly French instruments. To date, the James Webb telescope has captured spectacular photographs of different galaxies, nebulae and black holes. Furthermore, the "Europe's Spaceport" is located in French Guiana, which evolved to being funded two thirds by ESA for the development of launch complexes and industrial production facilities (by Arianespace).⁶¹³ Arianespace has, to date,

⁶⁰⁵ Kleiman, Lamie and Weil *The Laws of Spaceflight: A Guidebook for New Space Lawyers* 47.

⁶⁰⁶ Carminati 2014 *HJIL* 2-3.

⁶⁰⁷ Carminati 2014 *HJIL* 2-3.

⁶⁰⁸ Carminati 2014 *HJIL* 2-3.

⁶⁰⁹ CNES 2025 <https://cnes.fr/en/history>.

⁶¹⁰ Clerc 2011 *IISL* 407.

⁶¹¹ Clerc 2011 *IISL* 407. EPIC organisations still hold the status of being a "state organisation", and is not a non-governmental entity (NGO).

⁶¹² Clerc 2011 *IISL* 407.

⁶¹³ ESA Unknown <https://cnes.fr/en/news/first-cerebral-organoids-successfully-grown-space>.

launched over 1100 satellites for more than 150 customers in 50 different countries.⁶¹⁴ French space activity is the third largest in the world.⁶¹⁵

The above information serves as a very short synopsis of some of the major examples of French participation in space, but it should be noted that it is heavily compressed to provide an overview of France's participation in space. There are countless other achievements by the French that are not mentioned in this chapter due to their being irrelevant here. *Nous allons dans l'espace, décollons!*⁶¹⁶

4.3.2 French National Space Law

The French space law is primarily unified and centralised in the *French Space Operations Act (FSOA)*,⁶¹⁷ with decrees that were passed prior to the *FSOA* also playing a role in the regulation of outer space activities. These decrees include the law establishing the National Centre for Space Studies (CNES)⁶¹⁸ and the decree concerning the creation of a space committee.⁶¹⁹ However, the primary focus will be on the *FSOA* to determine whether it contains any provisions for liability, insurance (indemnification) and the possibility of a claim for liability for damage suffered that was caused by a space object in terms of the *FSOA*.⁶²⁰

4.3.2.1 Definitions

A "space operator" is defined as "any natural or juridical person carrying out a space operation under its responsibility and independently",⁶²¹ while a space operation is defined as:

Any activity consisting in launching or attempting to launch an object into outer space, or of ensuring the commanding of a space object during its journey in outer space,

⁶¹⁴ Arianespace 2025 <https://www.arianespace.com/profil-in-short/>.

⁶¹⁵ Rapp 2011 *JSL* 313.

⁶¹⁶ Translates to "To space we go, let us take off!".

⁶¹⁷ *French Space Operations Act* No 2008-518 (2008). Hereafter "*FSOA*".

⁶¹⁸ Law No 61-1382 of 19 December 1961.

⁶¹⁹ Decree 89-508 of 19 July 1989.

⁶²⁰ Clerc and Mariez 2008 *JSL* 453-470. The version of the *FSOA* that was used, is an unofficial translation thereof that was offered to the *JSL*. Any mistakes made during the course of this analysis of the *FSOA* are my own.

⁶²¹ Article 1(2) *FSOA*.

including the Moon and other celestial bodies, and, if necessary, during its return to Earth.⁶²²

The term "damage" refers to damage to persons, property, public health or the environment that was directly caused by a space object as part of a space operation. However, damage that was caused as a consequence of transmitted signals will not qualify as "damage" as in the *FSOA*.⁶²³ This excludes so-called "space usages", such as television, satellite, remote observation and internet.⁶²⁴ The third party to a space operation is defined as any natural or juridical person other than those taking part in the space operation or in the production of space objects. The space operator, contractor, subcontractor and its customers are excluded from the definition of a third party.

It is interesting to note the distinction the *FSOA* makes between a "launching phase" and a "command phase", of which both form part of the definition of a "space operation". The launching phase is defined as "the period of time that starts when the launching operations become irreversible and ends when the object to be put into outer space is separated from its launching vehicle".⁶²⁵ On the other hand, the "command phase" starts when the object to be put into outer space is "separated from the launching vehicle and ends when the first of the following events occur: (1) the final manoeuvres for de-orbiting and passivation activities have been completed, (2) the operator loses control over the space object and (3) the return to Earth or the full disintegration of the space object".⁶²⁶

4.3.2.2 Unpacking the "Launch" and "Command" Phases

It is particularly the definition of the "launching" and the "command" phase which is unusual. Firstly, before the launching phase starts, the launching operations should first become "irreversible".⁶²⁷ The mere use of the term "irreversible"

⁶²² Article 1(3) *FSOA*.

⁶²³ Article 1(1) *FSOA*.

⁶²⁴ Rapp 2011 *JSL* 319.

⁶²⁵ Article 1(4) *FSOA*.

⁶²⁶ Article 1(5) *FSOA*. Note that this section has been paraphrased.

⁶²⁷ Article 1(4) *FSOA*.

immediately creates uncertainty: when is a launch irreversible? Taking this definition, it can be strictly interpreted that a launch that causes damage, but was reversible, falls outside the scope of the definition of the launching phase. It is logical then to draw the inference that, if the launching phase does not apply, it will not be a space operation.⁶²⁸ Article 1(3) somewhat remedies this, in that it includes "attempted launch" into the definition of a "space operation" and it can be argued that an attempted launch precedes the launching phase as defined.

The same issue exists for the command phase, since the command phase can end when the space operator loses control over the space object. This implies that the moment the operator loses control over the space object, it is no longer a space operation. Whether this could have an influence on liability in French law will be discussed below.

4.3.2.3 Authorisations

French space licensing relies heavily on authorisations granted by CNES, as seen by Article 2 of the *FSOA*. Article 2 of the *FSOA* states that if a space operator, irrespective of their nationality, launches or returns a space object from or to French national territory or a facility under French national jurisdiction, such an operator shall obtain authorization from the administrative authority. Radd comments that the law is evasive on who this "administrative authority" is precisely, but that the law leaves the door open to several possibilities, which include the Minister of Space, a central government director or an independent regulatory authority.⁶²⁹ Phillipe Clerc, head of the CNES legal department in 2011, noted that the administrative authority is the Ministry of Research, according to the 2009 Decree.⁶³⁰

Further, any French operator who intends to launch or return space objects in a foreign state or from foreign facilities will require authorisation from CNES. Furthermore, any person holding French nationality or a juridical person whose headquarters are in France that intends to procure the launching of a space object,

⁶²⁸ Refer to the interplay between Article 1(3) and -1(4) of the *FSOA*.

⁶²⁹ Rapp 2009 *JSL* 321.

⁶³⁰ Clerc 2011 *IISL* 408.

or any French operator intending to command a space object, will need to obtain authorisation from CNES. An authorisation should also be obtained for the transfer of a space object to a third party.⁶³¹

Article 4 of the *FSOA* sets out several conditions that relate to the granting of authorisations. Firstly, CNES must have checked the moral, financial and professional guarantees of the applicant and the shareholders (if applicable) and must be certain that the procedures and systems will be compliant with the technical regulations. Secondly, the safety of persons and property, as well as protection of public health and the environment, will also be taken into account. Authorisations will not be granted if the operations that they were requested for, are likely to jeopardise French national defence interests or France's international obligations.⁶³² For space operations not carried out in French territory or from French facilities, a relaxation of requirements may be shown, provided that the state from which the launch will take place has sufficient guarantees regarding the safety of persons and property, as well as the protection of public health, the environment and liability matters.⁶³³

There are, therefore, several licenses that can be issued under the *FSOA*, the first being an operator license, which determines whether the applicant has complied with the moral, financial and professional guarantees. The second type of license is a technical license, which is obtained for generic technical compliance for each operation on a case-by-case basis, while a license equivalent to authorisation is granted for determined operations within a determined period.⁶³⁴ The last type of license is a simplified authorisation,⁶³⁵ which gives authorisation for space operations to be carried out in a foreign country.⁶³⁶

⁶³¹ Article 3 *FSOA*.

⁶³² Article 4 *FSOA*.

⁶³³ Article 4(4) *FSOA*.

⁶³⁴ The term "determined operations" denote that a license needs to specify the exact activities, or range of activities, that are authorised in terms of the license.

⁶³⁵ Decree 2009-643 of 22 July 2009. Hereafter the "authorisation decree".

⁶³⁶ Angels unknown <https://spacelaws.com/articles/space-licensing-in-france/>.

The authorisation process is quite straightforward. A file containing essential information as stipulated in the authorisation decree is lodged with the Minister of Research, who transfers it to CNES. The president of CNES will then give advice within two months from the date of registration of the file.⁶³⁷ The Minister of Research will after this make a decision within four months.⁶³⁸

4.3.2.4 Insurance and Financial Requirements

In terms of Article 6 of the *FSOA*, any operator that is subject to an authorisation must have and maintain insurance or a financial guarantee. Non-compliance with this may lead to a fine of up to €200 000 (Euros).⁶³⁹ The insurance or financial guarantee must cover the government and its public bodies, ESA and its member states, the operator and the persons who took part in the production of the space object or in the space operation.⁶⁴⁰ There are two instances where the operator will be exempted from the obligation of obtaining insurance: Firstly, when the operation is aimed at maintaining a satellite in geostationary orbit and, secondly, when it is impossible to obtain guarantees due to the condition of the space insurance market. In the case of the latter, the operator will produce a document certifying its solvency.⁶⁴¹

It is interesting to note that minimum insurance is not the sole security that may be given in French space law. Alternatively, financial guarantees may be given on assets, or any other guarantee approved by a competent authority. For launches from French territory, the insurance or financial guarantee must be able to compensate for the damage that could be caused to third parties⁶⁴² up to an amount⁶⁴³ of 60 million Euros.⁶⁴⁴ If the damage to the third party exceeds this

⁶³⁷ Lazare 2012 44 210-211.

⁶³⁸ De Rozavel and von der Dunk 2011 *University of Nebraska Digital Commons* 16-17.

⁶³⁹ Article 11 *FSOA*.

⁶⁴⁰ Article 6(III)(1)-(3) *FSOA*.

⁶⁴¹ Couston "Space Contracts: The Legal and Financial Liability Regime Under the New French Space Legislation" 321.

⁶⁴² Article 6(II) *FSOA*.

⁶⁴³ *Declaration by Certain European Governments on the Launchers Exploitation phase of Ariane, Vega and Soyuz* of 2007.

⁶⁴⁴ De Rozavel and Von der Dunk *University of Nebraska Digital Commons* 18.

amount, the French government will be liable to pay the excess.⁶⁴⁵ There is no limit to the payment the government will make, unlike the three billion dollar limit in Australian law.⁶⁴⁶ In essence, a liability ceiling is prescribed for operators who have fully complied with all the conditions of the license/authorisation and who did not act with wilful misconduct.

In case of liability for operators (see 4.3.3.1 below), they can request the Minister of Space (administrative authority) to exercise its defence rights.⁶⁴⁷ If the operator is found liable, the ceiling will apply and the state will pay the excess. Couston notes that the French state's guarantee is not unconditional, and that the state's financial help can only be benefitted from under the following five cumulative criteria:

1. The operator must be found liable to pay damages to a third party. It does not matter if it is in a French or foreign jurisdiction.
2. The damage must have occurred during a space operation authorised by French law.
3. Absence of wilful misconduct on the part of the operator (intentional wrongdoing)
4. Absence of a "serious disregard" for the requirements of an authorisation.⁶⁴⁸
5. Location: operation must have been conducted or through means or installations, from a territory in France, an EU member state or a state party to the agreement on the European Economic Area.⁶⁴⁹

Failure to comply with the above criteria may result in the state not paying the excess of the liability sought against an operator.

⁶⁴⁵ De Rozavel and Von der Dunk *University of Nebraska Digital Commons* 18.

⁶⁴⁶ See section 69(4) of the *Launches and Returns Act*.

⁶⁴⁷ Article 18 *FSOA*.

⁶⁴⁸ Article 119 of the *Corrective Finance Law* No 2008-1061 of 16 October 2008.

⁶⁴⁹ Couston "Space Contracts: The Legal and Financial Liability Regime Under the New French Space Legislation" 324-325.

4.3.3 Liability in French Law

The *FSOA* prescribes liability in relation to where the damage occurred (on the ground/airspace) or in space, as well as when the damage occurred (during the launch or command phase). The relevant definitions of a "third party" and an "operator" also distinguish between participants and third parties in the *FSOA*.

4.3.3.1 Operator Liability

Article 13 ascribes liability towards the operator: strict liability on the ground and in airspace, and fault-based liability in space.⁶⁵⁰ However, both the strict liability and the fault-based liability may be set aside when fault of the victim can be proved. Liability can be incurred for the launching phase⁶⁵¹ or any phase thereafter.⁶⁵² Article 19 states that a person who took part in the space operation, or in the production of the space object, cannot be held liable, except in the case of wilful misconduct, when the financial guarantee of the operator and the governmental guarantee have been laid out to indemnify a third party.⁶⁵³ This reiterates the principle that a subcontractor is not a third party as contained in Article 1(6) of the *FSOA* and that no claim can be instituted against such a party. The exception of course is when there has been wilful misconduct on the part of such a party, if Article 19 of the *FSOA* and Article 1643 of the *French Civil Code* are read together.⁶⁵⁴ French law thus distinguishes between participants and third parties for liability.⁶⁵⁵

In the case where the operator fulfilled all the conditions in the license or the authorisation, and there has been no wilful misconduct from the operator, then the liability in Article 13 will not be applicable and any damage above the ceiling amount will transfer to the government⁶⁵⁶ in the operator's place.⁶⁵⁷ Similarly, the operator

⁶⁵⁰ Cahuzac and Louvel 2012 *IISL* 626.

⁶⁵¹ Article 16 *FSOA*.

⁶⁵² Article 17 *FSOA*.

⁶⁵³ Article 15 of the *FSOA* refers to the *Corrective Finances Law* of 2008 for containing the terms of the governmental guarantee. The ceiling is set between €50 000 000 and €70 000 000, but ministerial decrees limited it to €60 000 000.

⁶⁵⁴ Article 1643 of the *French Civil Code*, in which article 1643 was promulgated on 16 March 1804.

⁶⁵⁵ Rapp 2009 *JSL* 328.

⁶⁵⁶ Schmidt-Tedd and Arnold 2011 *ESPI* 4.

⁶⁵⁷ Article 15 *FSOA*.

is only liable for a period of one year after the conditions of the license have been fulfilled, whereafter the government will be liable for the damages.⁶⁵⁸ In essence, this governmental guarantee only comes into play when the operator has duly complied with the authorisation/license and did not act with wilful misconduct.

In the case where France is held liable internationally in terms of the *Liability Convention*, the French government may present a claim for indemnification against the operator. However, this claim for indemnification may only be instated to the extent that the government has not benefitted from the insurance or financial guarantees of the operator.⁶⁵⁹ The French government may not institute a claim for indemnification where the damage was caused by a space object "used as a part of an operation authorised according to the terms of the present act and resulting from acts targeting governmental interests".⁶⁶⁰ Military activities, as an example, will thus prevent the government from presenting a claim for indemnification.⁶⁶¹

4.3.3.2 Arianespace Program

Since ESA mainly uses the Arianespace program as a launching instrument, Arianespace is subject to several bilateral and multilateral agreements concerning liability. The Arianespace production program was originally defined by the *Ariane Intergovernmental Production Declaration*.⁶⁶² Arianespace launches from France, which of course leads to the question of who is liable in the case of damage caused by a space object, since France qualifies as a launching state. Similarly, ESA will also qualify as a launching state in terms of Article 1(C) of the *Liability Convention* as a procuring state, if it forms part of one of ESA's space launches. The *Convention between the European Space Agency and Arianespace on the Ariane Launcher Production Phase*⁶⁶³ states in Article 22 that:

⁶⁵⁸ Article 13 *FSOA*.

⁶⁵⁹ Article 14 *FSOA*.

⁶⁶⁰ Article 14 *FSOA*.

⁶⁶¹ Rapp 2009 *JSL* 319.

⁶⁶² *Ariane Intergovernmental Production Declaration* of 1980.

⁶⁶³ *Convention between the European Space Agency and Arianespace on the Ariane Launcher Production Phase* of 1992.

Arianespace shall be liable for any damage caused by itself, its employees or persons in its service, or by third parties to the property of the Agency (ESA) or of the Participants which has been made available to it.

The effect of this is that the French government will be the sole responsible state for indemnifying any person or entity for damage caused by the Ariane launch services performed under the responsibility of the Guiana Space Centre.⁶⁶⁴ The French government in article 11(3) of the *GSC Convention*,⁶⁶⁵ legally protects ESA against international liability,⁶⁶⁶ except in the case of negligence, wilful misconduct or deliberate omission for launches from Arianespace.⁶⁶⁷

However, for launches operated by ESA development programs, including the development launches, ESA will be liable, excluding negligence or wilful misconduct from France.⁶⁶⁸ Further, ESA also waives all claims of compensation against France, if the claims are the result of launch operations from the Guiana Space Centre,⁶⁶⁹ presumably if the launches were procured by ESA. However, more of the relationship between ESA and France will be discussed under Chapter 5 below.

4.3.4 Claim Procedure

The *FSOA* is silent on the claim procedure to be followed. However, it can be gathered that an action for indemnity can be instituted against the operator in terms of French law.⁶⁷⁰ The operator may then invoke the governmental guarantee (defence rights) by informing the administrative authority, but failure to inform the administrative authority will be interpreted as a waiver of the governmental guarantee.⁶⁷¹

⁶⁶⁴ Clerc 2011 *IISL* 414.

⁶⁶⁵ *Agreement between the French Government and the European Space Agency concerning the Guiana Space Centre* of 1993, hereafter "*GSC Convention*". Further, also see Rozavel and von der Dunk 2011 *University of Nebraska Digital Commons* 15.

⁶⁶⁶ De Rozavel and von der Dunk 2011 *University of Nebraska Digital Commons* 15.

⁶⁶⁷ Article 11(3) *GSC Convention*.

⁶⁶⁸ Article 11(1) *GSC Convention*.

⁶⁶⁹ Article 13 *GSC Convention*.

⁶⁷⁰ Couston "Space Contracts: The Legal and Financial Liability Regime Under the New French Space Legislation" 329.

⁶⁷¹ Article 18 *FSOA*.

For a claim in French jurisdiction, it is logical that the normal rules of civil procedure should be followed as in the French *New Code of Civil Procedure*.⁶⁷²

4.3.5 French Law of Tort

The *FSOA* does not explicitly limit a claim for damages against an operator to the claim prescribed in the *FSOA*. Consequently, a tortious claim may be possible. However, a claim under the French law of tort will need to be brought within a year as noted in article 13 of the *FSOA* (see 4.3.6 below).

Article 1382 of the *French Civil Code* states that "Any act of man, which causes damage to another, shall oblige the person by whose fault it occurred to repair it".⁶⁷³ In terms of article 1383 of the *Civil Code*, it can be derived that the necessary elements for liability to arise are damage, fault and a causal link between the two.⁶⁷⁴ The burden of proof is on the claimant to prove the elements of the tort. In French law, all rights and interests are protected and there are no *priori* limitations.⁶⁷⁵ Once all three of the elements have been established, one can claim in terms of tort law for a very wide variety of damage: Bodily injuries, material injuries, financial injuries and moral injuries. This of course includes concepts such as pain and suffering, loss of enjoyment and others.

The French law contains a concept in tort known as *reparation integrale*, which essentially means that compensation should match the harm as completely as possible. While this is a grand concept, it is sometimes difficult to determine the quantum.⁶⁷⁶ However, it should be left to the French judiciary to determine the quantum in terms of French civil law.

⁶⁷² *French Code of Civil Procedure* 1976. Replaced the 1807 *Code of Civil Procedure*.

⁶⁷³ See Bamodu, Allam and Omar 2023 *Crescent University Law Journal* 122.

⁶⁷⁴ British Institute of International and Comparative Law unknown https://www.biiicl.org/files/730_introduction_to_french_tort_law.pdf.

⁶⁷⁵ British Institute of International and Comparative Law unknown https://www.biiicl.org/files/730_introduction_to_french_tort_law.pdf.

⁶⁷⁶ The point that should be taken here, is that it is difficult to quantify aspects of harm such as personal injury and/or psychological damages, if such damages exist in the civil law of France.

4.3.6 Limitations to a Claim

Note should be taken of the limitations to a claim in terms of French Law. A claim against the state should be brought in the French administrative courts.⁶⁷⁷ For a claim in terms of article 13 of the *FSOA* against an operator, the *FSOA* explicitly provides for a period of one year before a claim against the operator will prescribe.⁶⁷⁸ This seems to supersede the normal rules of prescription/statute of limitations with regard to a claim in the *FSOA*. If any claim is brought by a third party against the operator, there will be no liability.

Interestingly, no "class actions"⁶⁷⁹ were permitted in French law,⁶⁸⁰ based on the principle of *nul ne plaide par procureur*.⁶⁸¹ Article 31 of the *Code of Civil Procedure* states that:

The right of action is available to all those who have a legitimate interest in the success or dismissal of a claim, without prejudice to those cases where the law confers the right of action solely upon persons whom it authorises to raise or oppose a claim, or to defend a particular interest.

Therefore, a single entity could not represent a broader group of people.⁶⁸² In the context of damage caused by a space object, this could present an issue for prospective litigants. However, the position has since changed slightly: Class actions are allowed for certain matters,⁶⁸³ such as matters concerning consumer law, health and cosmetics, real property leases and administrative claims.⁶⁸⁴ However, these are normally burdensome provisions, since associations should bring claims on behalf of consumers. As an example, the consumer association

⁶⁷⁷ BIICL unknown https://www.biicl.org/files/730_introduction_to_french_tort_law.pdf.

⁶⁷⁸ Article 13 *FSOA*. The one-year period commences after the fulfilment of the conditions of the authorisation or license.

⁶⁷⁹ Rosener 2006 *Journal of Corporate Accounting and Finance* 25-26.

⁶⁸⁰ Lutfalla and Magnier 2006 *Defense Counsel Journal* 301-302. Also see Tsiatlagkanou 2023 *Journal of International Business and Law* 243-250.

⁶⁸¹ "No one shall plead by proxy".

⁶⁸² Nijhoff 2022 *EJCLG* 348.

⁶⁸³ Law No. 2014-344 of 17 March 2014. Commonly known as the "*Hamon Law*".

⁶⁸⁴ Gallage-Alwis and Yahouedeou 2025 <https://www.legal500.com/guides/chapter/france-class-actions/>.

should bring a consumer-related claim on behalf of the individual consumer.⁶⁸⁵ Damage caused by a space object is not one of these exceptions and therefore a class action will not be able to be instituted.

Vulnerable people and societies will not necessarily be able to institute a claim for damage due to financial constraints, which is normally where class actions assist in the protection of such peoples. However, the provisions in the *FSOA* are adequate enough to motivate that an extension of class actions in France for damage caused by a space object, at present, is unnecessary.

4.3.7 Conclusion

In conclusion, French space legislation, while compact, is quite comprehensive. This should not be surprising, since being the state with the third most space activity comes with an incredible, inherent risk to the state. Since the focus is on instituting a claim under the municipal law of France, a short summary will follow below on possibilities for pursuing a claim in terms of the space legislation of France.

An operator can be held liable for damages in French law.⁶⁸⁶ However, several factors play a role in the determination of liability: The phase when the damage occurred (launch or command phase),⁶⁸⁷ whether the operator complied with the requirements for authorisation⁶⁸⁸ and whether it was in fact a "space operation". This is important, because damages resulting from space usages will not be claimable under the *FSOA* (refer to 4.3.2.1 above).

Note should also be taken of the governmental guarantee for an amount claimed in excess of the 60 million Euros by a third party, subject to the exception of wilful misconduct from the operator.⁶⁸⁹ If wilful misconduct on the part of the operator can be established, the operator will be wholly liable. The good news for third party

⁶⁸⁵ Lloyds 2014 <https://www.lloyds.com/news-and-insights/market-communications/regulatory-communications/news-articles/france-new-consumer-protection-law-passed#:~:text=Law%20No.,the%20cancellation%20of%20a%20contract.>

⁶⁸⁶ Article 13 *FSOA*.

⁶⁸⁷ Article 1(3)-(4) of the *FSOA*.

⁶⁸⁸ Article 5 *FSOA*.

⁶⁸⁹ Article 13 *FSOA*.

claimants, is that there is no limit to the governmental guarantee for an excess amount of the claim, if the claim exceeds the insured amount.

What makes a claim difficult under the French law is the general prohibition on class actions.⁶⁹⁰ An entity or association will not be able to merge the claims of claimants into one action, which has the result that claims will need to be separated individually. This is true for both tortious claims, or claims in terms of the *FSOA*. If the third party who suffered damage is a juristic entity with substantial financial resources, this ought not to be a problem, but in the case of natural persons with substantially less financial resources, this may present a legitimate hurdle which may be difficult to overcome. Note should also be taken of the legal relationship between ESA and France, with bilateral agreements playing a role in determining liability.

An interesting development in European space law, is the development of a 2025 European "model" space act.⁶⁹¹ This presents a great opportunity for both European Union and non-European Union states to use some aspects of this model space act to develop their own national space law. What is unfortunate about the model space act, is that no provision is made for damage caused by a space object. This is a glaring omission in the model act. It is further uncertain whether France, who already have national space legislation in the form of the *FSOA*, will attempt to integrate the model space act with their existing legislation. The *FSOA*, at least on the point of liability for damage caused by a space object, is better suited to the realities of the risks associated with space activities.

4.4 United Kingdom

4.4.1 UK Participation in Space Activities

The UK is no stranger to space activity; during WW2 it was on the receiving end of the first "rocket" weapons in the form of the V2 rockets.⁶⁹² For example, on

⁶⁹⁰ Article 1382-1383 of the *Code of Civil Procedure*.

⁶⁹¹ *Proposal for a Regulation of the European Parliament and of the Council on the Safety, Resilience and Sustainability of Space Activities in the Union* (2025)

⁶⁹² Short for *Vergeltungswaffen-2*.

5 October 1942, the Germans fired approximately 1100 V2 rockets at Great Britain,⁶⁹³ with a total of 1190 being launched up until 7 April 1945.⁶⁹⁴

During 1962, the United States launched Ariel, the first international satellite and the first to contain UK technology.⁶⁹⁵ Over the next 17 years, a further five Ariel satellites were launched.⁶⁹⁶ However, post WW2, the UK mainly focused on the military exploitations that space activity could achieve (rockets and missiles).⁶⁹⁷ On 30 October 1971, the UK became the sixth state to launch a satellite into orbit.⁶⁹⁸ However, Hill notes, the special relationship between the UK and the USA meant that much of the information that the powerhouse USA had, was shared with the UK. This, of course, led to a reduced need for an indigenous system.⁶⁹⁹ Despite a lack of government subsidy, the university of Surrey is actively involved in the development and launching of microsatellites.⁷⁰⁰

The UK is a member state of the ESA and contributed roughly 8% of the 2024 ESA budget (452,5 million Euros),⁷⁰¹ placing themselves as the fourth highest funder of the ESA, behind Germany, Italy and France. In 2010, the UK Space Agency was established (UKSA),⁷⁰² in an attempt to capitalise on and keep up with the trends of the space industry.

4.4.2 UK National Space Law

The UK national space legislation is mainly contained in the *Outer Space Act* of 1986⁷⁰³ and the *Space Industries Act* of 2018.⁷⁰⁴ While the *OSA* has governed space

⁶⁹³ Britannica 2025 <https://www.britannica.com/technology/V-2-rocket>.

⁶⁹⁴ Hunt 2021 *JSTOR* 23.

⁶⁹⁵ ESA *An Overview of United Kingdom Space Activity 1957-1987* 9.

⁶⁹⁶ ESA *An Overview of United Kingdom Space Activity 1957-1987* 9.

⁶⁹⁷ Hill *A Vertical Empire: The History of the UK Rocket and Space Programme, 1950-1971* 9.

⁶⁹⁸ Newman 2021 *Proceedings of the 2019 IISL* 273.

⁶⁹⁹ Hill *A Vertical Empire: The History of the UK Rocket and Space Programme, 1950-1971* 208.

⁷⁰⁰ Hill *A Vertical Empire: The History of the UK Rocket and Space Programme, 1950-1971* 231. See also the University of Surrey's space portfolio of launched missions <https://www.sstl.co.uk/space-portfolio/launched-missions>.

⁷⁰¹ ESA 2024 https://www.esa.int/ESA_Multimedia/Images/2024/01/ESA_budget_2024.

⁷⁰² ESA 2025 https://www.esa.int/Enabling_Support/Space_Engineering_Technology/United_Kingdom_Space_Agency_UK_Space_Agency.

⁷⁰³ *UK Outer Space Act* 1986. Hereafter known as "*OSA*".

⁷⁰⁴ *Space Industries Act* of 2018. Hereafter known as the "*SIA*".

activities for a very long time in the UK, the *SIA* has taken over some of that responsibility. However, as will be seen below, the *OSA* is still applicable in certain situations.

4.4.2.1 Outer Space Act 1986

The preamble of the *OSA* states that its purpose is to confer licensing and other powers on the Secretary of State, in order to ensure compliance with the international obligations of the UK. The *OSA* applies to activities, whether carried on in the UK or elsewhere, including the launching/procuring a launch of a space object, operating a space object and performing any activity in outer space.⁷⁰⁵ The *OSA* applies to any UK national, firms or bodies incorporated under UK Law.⁷⁰⁶ The *OSA* also regulated several aspects of licensing, which included prohibitions on unlicensed activities,⁷⁰⁷ the granting of licenses by the Secretary of State,⁷⁰⁸ the terms of licenses,⁷⁰⁹ as well as the transfer, variation, suspension or termination of licenses.⁷¹⁰ Furthermore, the *OSA* also placed an obligation on the Secretary of State to maintain a register of space objects,⁷¹¹ in compliance with the requirements of the *Registration Convention*. A wide discretion is also given to the Secretary of State to make regulations for any requirements as stipulated in the Act or for the purpose of enforcing and implementing the Act.⁷¹²

Section 10 of the *OSA* states that a person to whom the *OSA* applies, shall indemnify the government of the UK against any claims brought against the government for damage or loss arising out of the activities stipulated in section 1 of the *OSA*. This indemnification requirement does not apply to a person acting as an employee/agent of another,⁷¹³ or if it was performed under instruction of the

⁷⁰⁵ Section 1(a)-(c) *OSA*.

⁷⁰⁶ Specific reference is given in the *OSA* to the *British Nationality Act* 1981, to determine who is a national under UK law.

⁷⁰⁷ Section 3 *OSA*.

⁷⁰⁸ Section 4 *OSA*.

⁷⁰⁹ Section 5 *OSA*.

⁷¹⁰ Section 6 *OSA*.

⁷¹¹ Section 7 *OSA*.

⁷¹² Section 11 *OSA*.

⁷¹³ Section 10(2)(a) *OSA*.

Secretary of State.⁷¹⁴ There is not, however, any indication in the *OSA* of what the indemnification entails and it is presumably delegated to the Secretary of State to draft regulations concerning indemnification principles.

4.4.2.2 Space Industries Act 2018

On 20 May 2016, the UKSA issued the following in a circular:

The Government will create the regulatory conditions for any suitable location that wishes to become a spaceport to take the opportunity to develop and attract commercial space business.⁷¹⁵

From this, the *SIA* of 2018 (*SIA*) was developed. The *SIA* regulates space activities, sub-orbital activities and other associated activities carried out in the UK.⁷¹⁶ Section 1(2) states that a person "carries out" a space activity or a sub-orbital activity when the person causes it to occur or is responsible for it to continue. The definition of what exactly a space activity or a sub-orbital activity entails, is quite wide in terms of the *SIA*. Section 1(4) states that a space activity includes the launching/procurement of a launch, or the return of a space object/aircraft carrying a space object, as well as operating a space object or any activity in outer space.

Sub-orbital activity means the launching or procuring of a launch, or returning or procuring a return to Earth of a craft, or of an aircraft carrying such a craft.⁷¹⁷ A craft can be identified as a rocket or any other craft that is capable of operating above the stratosphere, including a balloon that carries crew or passengers.

Section 1(3) of the *SIA* also amends section 1 of the *OSA* by stating the following:

In section 1 of the Outer Space Act 1986 (activities to which that Act applies)-

(a) omit "whether carried on in the United Kingdom or elsewhere";

(b) at the end of the existing text (which becomes subsection (1)) insert-

⁷¹⁴ Section 10(2)(b) *OSA*.

⁷¹⁵ The Herald 2016 <https://www.heraldscotland.com/news/14506625.uk-spaceport-competition-axed-favour-licensing-model/>.

⁷¹⁶ Section 1(1) *SIA*.

⁷¹⁷ Section 1(4) *SIA*.

"(2) This Act does not apply to activities carried on in the United Kingdom (and accordingly does not apply to activities requiring authorisation under section 3(1) of the Space Industry Act 2018)."

The effect of this is that a clear framework is developed for when the *SIA* applies and when the *OSA* applies. In essence, the *OSA* applies when UK entities or nationals procure an overseas launch or operate a satellite in orbit from an overseas facility.⁷¹⁸ The *SIA* thus applies to the UK space industry specifically, where spaceflight activities take place in the UK or from the UK.

Section 2(1) of the *SIA* elaborates on the duties and functions of the "regulator", which should be appointed by the Secretary of State, if not the Secretary of State itself.⁷¹⁹ The main duty of the Regulator is to secure the public's safety. With the *SIA* having entered into force in 2021, the Civil Aviation Authority (CAA) was assigned the duties of the Regulator.⁷²⁰ Section 2(1) goes further by stating that this duty has priority in application above any other duties. The duties of the Regulator are extensive and the Regulator may do "anything that is calculated to facilitate, or is conducive or incidental to, the performance of the Regulator's functions under this Act."⁷²¹

Section 3 of the *SIA* provides a blanket prohibition on unlicensed spaceflight. A person may not carry out spaceflight activities or operate a spaceport in the UK⁷²² without an operator's license.⁷²³ Discretion is given for regulations regarding the contents and requirements for the issuing of a license.⁷²⁴ The Regulator is the party responsible for granting licenses and may do so if the granting of a license will not impair the national security of the UK, is consistent with international obligations and is not contrary to national interest.⁷²⁵ The Regulator also has the discretion to

⁷¹⁸ UKSA 2022 <https://www.gov.uk/guidance/spaceflight-legislation-and-guidance>.

⁷¹⁹ Section 16(8)(a)-(b) *SIA*.

⁷²⁰ Smit, Thompson and Beach 2021 *Journal for Air and Space Law* 727.

⁷²¹ Section 2(4) *SIA*.

⁷²² Section 3(1) *SIA*.

⁷²³ Section 3(2) *SIA*.

⁷²⁴ Section 3(5) *SIA*. Furthermore, schedule 1 to the *SIA* provides for particular conditions that may be included in the licenses.

⁷²⁵ Section 8(2) *SIA*.

determine regulations for how applications are made, considered or determined.⁷²⁶ An operator's license may specify a limit on the licensee's liability in terms of section 36 of the *SIA*, which will be discussed below.⁷²⁷

Interestingly, the *SIA* only made provision for 3 types of licenses: An operator license, a spaceport license and a range control license. However, the *CAA* (appointed as the regulatory authority in terms of the *SIA*) has since recognised the need for expanding the types of licenses granted. Currently, there are five types of licenses which applicants can apply for:⁷²⁸

1. Launch operator license: Required for the launch of a space object and for conducting suborbital activities.
2. Orbital operator license: For the operation of a satellite in orbit.
3. Spaceport license: License for the operation of a spaceport.
4. Return operator license: The return operator license is only for a return to the UK for a space object launched outside of the UK. A return operator license is not required for a space object launched from UK territory, since the return will be covered under a launch operator license.
5. Range control license: License for the provision of range control services.⁷²⁹

4.4.3 UK Liability Regime

4.4.3.1 Liability in terms of the SIA

Liability is mostly regulated by section 34-38 of the *SIA*. However, it should once again be noted that the provisions for liability in the *SIA* will not apply to activities

⁷²⁶ Section 8(5) *SIA*.

⁷²⁷ Section 12(2) *SIA*.

⁷²⁸ Chapter 4 *Civil Aviation Publications 2024 CAP2209*.

⁷²⁹ Horn *Critical Analysis from an International Law Perspective of the United Kingdom's Regulatory Framework of Space and High-Altitude Activities in the Context of Changing Technology and Evolving Geopolitical Tensions* 167.

that are not carried out in or from the UK. Liability for activities executed outside or not from the UK, will be discussed in 4.4.3.2 below.

Section 34(1) of the *SIA* states that no liability arises in the case of nuisance or trespass, if the spaceflight activities have been carried out in compliance or substantial compliance with the *SIA*. Note that, importantly, liability will not arise in terms of nuisance or trespassing, if it has taken place in terms of the *SIA*. However, section 34(2) provides that where injury or damage is caused by any craft or space object being used by a person, anything falling from such an object, or by any persons in such craft, damage will be recoverable without proof of negligence or intention. This, similar to the *Liability Convention*, prescribes absolute liability where the damage did not occur in outer space. However, there are two exclusions to this rule: parties who participate in the spaceflight activities, or if the injury or damage was sustained due to contributory negligence of the injured party.⁷³⁰ In the case where damages arise, the operator will be liable in respect of the damage.⁷³¹ However, if the operator is indemnified by another person, the party who provided the indemnification will be responsible for the damage.⁷³²

It is important to define who exactly an "operator" in terms of the *SIA* is, since liability will fall on the operator for damage caused by a space object. Interestingly, the *SIA* is silent on who an "operator" is. Regulation 1 of the *Space Industry Regulations* defines an operator as a person who holds an "operator's license". An "operator's license" is, however, defined in the section 3 of the *SIA* as "a license authorising a person to carry out spaceflight activities". Spaceflight activities include suborbital activities,⁷³³ such as a rocket or other craft operating above the stratosphere,⁷³⁴ or a balloon capable of reaching the stratosphere,⁷³⁵ as well as space activities.⁷³⁶ Space activities include launching or procuring a launch or return of an aircraft carrying a space object, operating a space object, or any other activity in

⁷³⁰ Section 34(3) *SIA*.

⁷³¹ Section 34(4)(b) *SIA*.

⁷³² Section 34(5) *SIA*.

⁷³³ Section 1(6) *SIA*.

⁷³⁴ Section 1(5)(a) *SIA*.

⁷³⁵ Section 1(5)(b) *SIA*.

⁷³⁶ Section 1(6) *SIA*.

outer space.⁷³⁷ Therefore, an operator can be defined as a person engaging in spaceflight activities, including suborbital activities.

Any person who carries out spaceflight activities is obligated to indemnify the government for damage or loss that may arise from spaceflight activities.⁷³⁸ This obligation does not arise if it was commissioned by the Regulator or if a person acts as an employee or agent of another.⁷³⁹ Regulation 220 of the *Space Industry Regulations* 2021,⁷⁴⁰ states that an operator's license must specify a limit to the operator's liability arising from section 34(2) of the *SIA*.⁷⁴¹ The limit on the amount of the operator's liability is determined by the discretion of the Regulator,⁷⁴² in terms of the license issued to the operator.⁷⁴³ It must be noted that the limit on liability in section 34(5) only applies to operator's licenses and not to spaceport licenses or other licenses. Furthermore, regulation 218 of the *Space Industry Regulations* excludes strict liability in terms of section 34(2) of the *SIA* for the persons listed in terms of the regulation. Note that these listed persons mostly represent the workforce working with the space object. However, these persons may still institute a claim in terms of the common law.⁷⁴⁴

The Secretary of State also has the responsibility to indemnify a person for any liability amount that exceeds the insurance amount, in cases where injury or damage is sustained by a person as a result of spaceflight activities carried out by a licensee.⁷⁴⁵ Section 35(3) states that the Secretary of State must indemnify the claimant in respect of the liability where the liability exceeds the maximum liability as specified in the license of the licensee. In essence, section 35(3) states that the Secretary of State is the responsible party for any damage that exceeds the maximum liability specified in the license of the licensee. Regulations may prescribe

⁷³⁷ Section 1(4) *SIA*.

⁷³⁸ Section 36(1) *SIA*.

⁷³⁹ Section 36(4) *SIA*.

⁷⁴⁰ Regulation 220 of the *Space Industry Regulations* of 2021.

⁷⁴¹ Also see section 34(6) which empowers the regulator to provide a limit to the licensee's liability, as well as section 4(4)(f) of the *SIA*.

⁷⁴² Section 34(6) and -4(4)(f) of the *SIA*.

⁷⁴³ Section 34(5) *SIA*.

⁷⁴⁴ Explanatory notes attached to the *Space Industry Regulations*.

⁷⁴⁵ Section 35(2) *SIA*.

limits to which the Secretary of State must indemnify a claimant,⁷⁴⁶ or circumstances when the duty to indemnify does not arise.⁷⁴⁷

In essence, liability in terms of the *SIA* for an operator is limited to the limit of liability as prescribed in the license of the operator.⁷⁴⁸ However, the Regulator has the obligation of indemnifying a party that suffered damage when the damage exceeds the ceiling amount in the operator's license.⁷⁴⁹ The limit imposed will not apply in circumstances where the operator acted with wilful misconduct, gross negligence or non-compliance with condition of a license or a requirement made under the regulations or the *SIA*.⁷⁵⁰ The operator will also have to fully indemnify the government under these circumstances.⁷⁵¹

However, the limit on an operator's liability is not set at a specific amount,⁷⁵² but is left to the discretion of the Regulator to determine on a case-by-case basis.⁷⁵³ This provision is most likely in place to ensure that a limit to operator's liability in terms of regulation 220(2) of the *Space Industry Regulations*, is considered on a case-by-case basis, with reference to the amount of risk associated with the space activity. This contrasts with the French and Australian law, where a blanket, one-size-fits-all maximum amount of liability is imposed by legislation.⁷⁵⁴

4.4.3.2 Liability in terms of the *OSA*

The *SIA* does not regulate activities that are not carried out in the UK and the *OSA* applies to such activities.⁷⁵⁵ In essence, section 1(3)(2) of the *SIA* states that it must be amended in the *OSA* that: "This Act (*OSA*) does not apply to activities carried on

⁷⁴⁶ Section 35(5)(a) *SIA*.

⁷⁴⁷ Section 35(5)(b) *SIA*.

⁷⁴⁸ Section 34(2) of the *SIA* and Regulation 220(2) of the *Space Industry Regulations* of 2021.

⁷⁴⁹ Section 35(6) *SIA*.

⁷⁵⁰ Regulation 220(3) of the *Space Industry Regulations* of 2021. Also see Simmonds 2021 *Coventry Law Journal* 77.

⁷⁵¹ Regulation 219 of the *Space Industry Regulations* of 2021.

⁷⁵² UK Department for Science, Innovation and Technology Space 2024 *Regulatory Review 2024-A Targeted Review for Space Regulations* 13.

⁷⁵³ Section 34(2) *SIA* and Regulation 220 of the *Space Industry Regulations* of 2021.

⁷⁵⁴ Section 48(4) *Launches and Returns Act* (Australia) and Article 13 *FSOA* (France). The French amount is determined by proclamation by the minister.

⁷⁵⁵ Section 1(3) *SIA*.

in the United Kingdom". The *OSA*, therefore, applies for activities carried on "elsewhere" than in the UK.⁷⁵⁶ These activities include launching or procuring a launch of a space object, operating a space object, or any activity in outer space.⁷⁵⁷ However, such activities need not comply with the licensing requirements in section 3(1) of the *SIA*.

It thus follows that, if the licensing in section 3(1) of the *SIA* does not apply to such activities, the licensing for activities executed outside of the UK will need to comply with the licensing requirements as contained in the *OSA*. In terms of section 5(1) of the *OSA*, a license must describe the activities for which it is issued and may be subject to conditions. These conditions may include requiring the licensee to insure himself against liability incurred in respect of damage or loss.⁷⁵⁸ This includes damage or loss to third parties.

Section 10(1) states that a person to whom the *OSA* applies, shall indemnify the state against any claims brought against the government in respect of damages or loss arising out of that person's activities. In the absence of an apt liability regime, the state is responsible for any damages caused by a space object. The licensee should, however, indemnify the state for damages caused. Thus, technically, the license holder will be responsible for damages caused, even though the state will pay the claim. The licensee may be responsible for insuring themselves against liability, dependent on the provisions of the license.⁷⁵⁹ For the state to ensure that damages can be paid, it is recommended that a minimum amount of insurance also be specified in the terms of the license, and proof of such insurance be furnished to the state, as a risk-mitigating strategy. No claim procedure is specified for a claim in terms of the *OSA*. The normal UK civil procedure will thus presumably apply, in the absence of a specific procedure stipulated in the *OSA*.

⁷⁵⁶ Section 1 *OSA*.

⁷⁵⁷ Section 1(a)-(c) *OSA*.

⁷⁵⁸ Section 4(4)(f) *OSA*.

⁷⁵⁹ See section 4(4)(f), -34(2) and -35(6) of the *SIA*, as well as regulation 220 of the *Space Industry Regulations* of 2021.

4.4.4 Conclusion

In terms of UK national space law, the *SIA* regulates claims for activities which take place in or from the UK, while the *OSA* regulates activities which take place outside of the UK, by UK nationals.

In terms of the *SIA*, a clear claim arises against an operator for damage caused by a space object, limited to the maximum amount of liability specified in the license of the operator, if such a maximum is specified.⁷⁶⁰ For any excess amount of damage, the Regulator will be responsible for indemnifying the party that suffered damages.⁷⁶¹

In terms of the *OSA*, a claim arises against the state, but the licensee will be liable for indemnifying the state for damages caused. A claim cannot be instituted against the licensee themselves in terms of the *OSA*.

4.5 Conclusion

During the course of this chapter, the liability regimes of the states of Australia, the French Republic and the UK were discussed, in order to determine whether a liability claim can be pursued under the municipal law of these states. The findings of this chapter will be discussed briefly below.

In the commonwealth of Australia, the *Launches and Returns Act* specifically institutes an action for compensation for damages as envisaged in chapter 4 of the Act.⁷⁶² Section 72 of the *Launches and Returns Act* assigns jurisdiction to hear actions for compensation for damages in Part 4 of the *Launches and Returns Act*.⁷⁶³ The action for compensation may only be brought within one year from the date on which the damage occurred, or from the day on which the person became aware or would have become aware of the damage.⁷⁶⁴ The action for compensation will claim

⁷⁶⁰ Section 34(2) of the *SIA* and Regulation 220 of the *Space Industry Regulations* of 2021.

⁷⁶¹ Section 35(6) *SIA*.

⁷⁶² Section 73(1) *Launches and Returns Act*.

⁷⁶³ The Federal Court, Federal Circuit and the Division 2 Family Court of Australia will have jurisdiction to hear actions for compensation.

⁷⁶⁴ Section 73 *Launches and Returns Act*.

for the insured amount of the operator, and a governmental top-up to a maximum of three billion dollars from the commonwealth of Australia.

In the French Republic, an operator can be held liable for damages under the *FSOA*.⁷⁶⁵ However, several factors play a role in the determination of liability: The phase when the damage occurred (launch or command phase),⁷⁶⁶ whether the operator complied with the requirements for authorisation⁷⁶⁷ and whether it was an in fact a "space operation". This is important, because damages resulting from space usages will not be claimable under the *FSOA* (refer to 4.3.2.1 above). A governmental guarantee for an amount claimed in excess of the 60 million euros by a third party, is also provided for in the *FSOA*.⁷⁶⁸ The good news for third-party claimants, is that, in contrast to Australian law, there is no limit to the governmental guarantee for an excess amount of the claim, if the claim exceeds the insured amount.

The UK was the last state to be discussed in this chapter. The UK follows a dual liability regime, where activities conducted in or from the UK are governed by the *SIA*, while activities conducted outside of the UK will be governed by the *OSA*. In terms of the *SIA*, a claim arises against an operator for damages suffered that were caused by a space object, limited to the maximum amount of liability specified in the license of the operator, if such a maximum is specified in the license.⁷⁶⁹ It is uncertain what the position is if a maximum is not specified in the license. In terms of section 35(6) of the *SIA*, in the case of any excess amount of damage above the maximum specified in the license, the Regulator will be responsible for indemnifying the party that suffered damages.

⁷⁶⁵ Article 13 *FSOA*.

⁷⁶⁶ Article 1(3)-(4) of the *FSOA*.

⁷⁶⁷ Article 5 *FSOA*.

⁷⁶⁸ Article 13 *FSOA*. Subject to the exception of wilful misconduct from the operator. If there is wilful misconduct from the operator, the operator will be fully liable.

⁷⁶⁹ Section 34(2) of the *SIA* and Regulation 220 of the *Space Industry Regulations* of 2021.

CHAPTER 5 CONCLUSION

5.1 Introduction

5.1.1 Overview of chapters

During the course of this dissertation, the focus was on establishing the avenues that could be pursued in the case where a natural or juristic person suffered damage caused by a space object. The states of South Africa, Australia, France and the United Kingdom were analysed comparatively on the basis of their national space legislation in order to see whether provision is made for the key question of liability. Where liability was not provided for in the legislation of a state, the possibility of a common/civil law claim was discussed.

Chapter two provided an overview of the international space law framework and the integration of space law, including key concepts from the *OST*,⁷⁷⁰ *Liability Convention*,⁷⁷¹ *Registration Convention*,⁷⁷² *Rescue Agreement*⁷⁷³ and *Moon Agreement*.⁷⁷⁴ It is especially the *Liability Convention* that provides an international liability regime for damage caused by a space object, along with important definitions concerning liability.⁷⁷⁵ The international liability regime prescribes absolute liability for damage caused by a space object on the surface of the Earth or to an aircraft in flight, while it provides for fault-based liability for damage caused elsewhere (i.e. in outer space).⁷⁷⁶ The *Liability Convention* also provides for a claim procedure to be followed and explicitly allows a person to institute a claim under the municipal law of a launching state in terms of Article XI(2) of the *Liability Convention*.⁷⁷⁷ The legal status of international space law was also analysed, with

⁷⁷⁰ See chapter 2.3.2 above.

⁷⁷¹ See chapter 2.3.4 above.

⁷⁷² See chapter 2.3.5 above.

⁷⁷³ See chapter 2.3.3 above.

⁷⁷⁴ See chapter 2.3.6 above.

⁷⁷⁵ See chapter 2.3.4.1 above.

⁷⁷⁶ See chapter 2.3.4.2 above and Article II *Liability Convention*.

⁷⁷⁷ See chapter 2.3.4.3 above.

specific reference to the status of space treaty law⁷⁷⁸ and certain elements of space law that could be classified as international customary law.⁷⁷⁹

Chapter three focused on pursuing a claim for damage caused by a space object under the municipal law of South Africa, by analysing South Africa's national space- and associated legislation. The conclusions from chapter three will be discussed in 5.2.1 below. Chapter four focused on whether a claim can be pursued under the municipal law of Australia,⁷⁸⁰ France⁷⁸¹ and the UK.⁷⁸² The national space legislation, rules, regulations and policies of these states formed the backbone of chapter four and are discussed below in chapter 5.2.

5.2 Findings of the Study

5.2.1 South Africa

As seen under South African law, the *SAA* is the main source of national legislation that governs space activities, with no additional regulations governing the space sector. South Africa have recognised the shortcomings of the current framework under the *SAA* and are in the process of promulgating an *Outer Space Bill*. However, progress on this legislation seems to have halted completely since 2017 and it is uncertain whether adequate provision for damage caused by a space object will be included in the *Outer Space Bill* before it is promulgated.⁷⁸³

Currently, the *SAA* does not provide any method through which a claim can be instituted for damage suffered that was caused by a space object. However, recourse may be available by instituting a claim in terms of the common law of delict in South Africa. Note should be taken of the limitations and restrictions in South African law, as discussed in Chapter 3.5.4. Furthermore, it must be noted that all the elements of a delict need to be proven, as required by the common law of delict in South Africa. It would, however, be advantageous if South African law could

⁷⁷⁸ See chapter 2.4.1 above.

⁷⁷⁹ See chapter 2.4.2 above.

⁷⁸⁰ See chapter 4.2 above.

⁷⁸¹ See chapter 4.3 above.

⁷⁸² See chapter 4.4 above.

⁷⁸³ See chapter 3.4.4 above.

evolve to include statutory and/or designated procedures which a party who suffered damage caused by a space object, could pursue.

5.2.2 Australia

Australia's national space legislation is extensive since its overhaul between 2015-2019. In addition to legislation such as the *Launches and Returns Act*, the Australian regulatory framework is bolstered by several other instruments, such as the *High-Power Rocket Rules*, *General Rules*, *Insurance Rules* and the *MPLM*.⁷⁸⁴ The result of this is that an action for compensation is prescribed in terms of the *Launches and Returns Act*, along with a minimum insurance requirement from launching entities, calculated using the *MPLM*.⁷⁸⁵ In addition to this, the *Launches and Returns Act* also provides for a government-backed top-up to the value of three billion Australian dollars, if the damage exceeds the minimum insurance and the damage was done to Australian nationals.⁷⁸⁶ While the legislation is yet untested, the Australian state has definitely embraced the responsibility of updating their regulatory framework for space activity and while it is untested, it is commendable.

5.2.3 France

France has also developed their national space law. The *FSOA* is short, compact and to the point, but deals with the issue of liability adequately. The operator can be held liable for damage caused by a space object in terms of the *FSOA*.⁷⁸⁷ However, damage caused by space usages will not be claimable under the *FSOA*⁷⁸⁸ - refer to 4.3.2.1 above. A maximum amount of 60 million Euros may be claimed from the operator,⁷⁸⁹ while there is an uncapped governmental guarantee if the amount claimed for the damage caused by a space object exceeds 60 million Euros.⁷⁹⁰ Note should be taken of the general prohibition on class actions in French law before a

⁷⁸⁴ See chapter 4.2.5.1 above.

⁷⁸⁵ See chapter 4.2.5 above.

⁷⁸⁶ Section 69(4) *Launches and Returns Act*.

⁷⁸⁷ Article 13 *FSOA*. Also see chapter 4.3.3.1 above.

⁷⁸⁸ Article 1(1) *FSOA*.

⁷⁸⁹ Article 13 *FSOA*.

⁷⁹⁰ See chapter 4.3.2.4 above.

claim for damage caused by a space object is instituted,⁷⁹¹ as well as the influence of the Arianespace programme and France's legal relationship with ESA.⁷⁹²

5.2.4 United Kingdom

In the UK, the national legislation is extremely extensive, further supplemented by rules and regulations. In essence, operator liability is also prescribed in respect of damage caused by a space object.⁷⁹³ Operator liability is limited to the maximum specified in the license,⁷⁹⁴ which is decided on a case-by-case basis by the Regulator.⁷⁹⁵

Regulation 220 of the *Space Industry Regulations 2021*,⁷⁹⁶ states that an operator's license must specify a limit to the operator's liability arising from section 34(2) of the *SIA*.⁷⁹⁷ The limit on the amount of the operator's liability is determined by the discretion of the Regulator,⁷⁹⁸ in terms of the license issued to the operator.⁷⁹⁹ The Secretary of State also has an obligation to indemnify a person for any liability amount that exceeds the prescribed maximum in the license of the operator.⁸⁰⁰ Regulations may further also instruct the Secretary of State to the maximum he may indemnify a party who suffered damage caused by a space object.⁸⁰¹

5.3 Hypothesis, Aims and Objectives

5.3.1 Hypothesis

The hypothesis was that there should be a method to institute a claim for damage caused by a space object under the municipal law of the states of South Africa,

⁷⁹¹ Article 1382-1383 of the *Code of Civil Procedure*. Also see chapter 4.3.6 above.

⁷⁹² See chapter 4.3.3.2 above.

⁷⁹³ Section 34(4)(b) *SIA*.

⁷⁹⁴ Section 34(2) *SIA* read with Regulation 220 of the *Space industry Regulations 2021*.

⁷⁹⁵ Section 34(4)-34(5) *SIA*. Also see chapter 4.4.3.1 above.

⁷⁹⁶ Regulation 220 of the *Space Industry Regulations* of 2021.

⁷⁹⁷ Also see section 34(6) *SIA* which empowers the regulator to provide a limit to the licensee's liability.

⁷⁹⁸ Section 34(6) *SIA*.

⁷⁹⁹ Section 34(5) *SIA*.

⁸⁰⁰ Section 35(3) *SIA*. Also see chapter 4.3.1 above.

⁸⁰¹ Section 35(5)(a)-(b) *SIA*.

Australia, France and the UK, either through enabling legislation or common/civil law remedies.

What was significant from this study is the fact that Australia, France and the UK, provide a method for claiming for damage caused by a space object under their national space legislation.⁸⁰² Only South African national space legislation does not contain a provision for claiming for damage caused by a space object. However, it may be possible for a person to institute a claim under the South African common law of delict for damage caused by a space object. Therefore, the initial hypothesis was correct, that there should be a method through which a claim for damage caused by a space object may be instituted in the domestic law of states. In essence, it has been determined that a claim can be brought under the national space legislation of Australia, France and the UK, while a claim can be brought under the South African common law of delict.⁸⁰³

5.3.2 Aims and Objectives

The main aim of this study was to identify an avenue that a vulnerable person, natural or juridical, could follow to claim for damage caused by a space object in the respective jurisdictions of South Africa, Australia, France and the UK.⁸⁰⁴ This was achieved in chapters three and four, where each state was separately analysed and clear avenues were identified through which a person who suffered damage caused by a space object, can claim for such damage suffered. The conclusions of these analyses are presented in 5.2 above.

A further objective was to explore the current international space liability framework for damage caused by a space object. This was achieved in chapter two, where the international space liability framework was determined in terms of the *Liability Convention*.⁸⁰⁵ Another objective was to analyse the national space legislation of South Africa, France and the UK, in order to identify an avenue of recourse that

⁸⁰² See chapter 5.2 above.

⁸⁰³ See chapter 5.2.1-5.2.4 above.

⁸⁰⁴ See chapter 1.4 above.

⁸⁰⁵ See chapter 2.3.4.2 above.

could be followed if damage that was caused by a space object was suffered. This was achieved in chapters 3 (South Africa) and 4 (Australia, France and the UK).⁸⁰⁶ South Africa did not contain an explicit avenue of recourse in its national legislation and therefore, the possibility of claiming under the South African law of delict was investigated.⁸⁰⁷

Finally, the objective of identifying any multilateral/bilateral agreements that could have an influence on liability for damage caused by a space object, was achieved in chapter 4.3.3.2, with the Arianespace programme influencing the state of France's liability for damage caused by a space object. The states of South Africa, Australia and the UK does not have any such bilateral/multilateral agreements that could influence liability. Thus, all objectives set in chapter 1.4 have been achieved throughout this dissertation.

5.4 Conclusion and Recommendations

5.4.1 Overview

What becomes clear from the research conducted and presented in this dissertation, is that space law is at the frontier of international legal development. Like never before, space law must adapt to new challenges and innovations. Artificial intelligence, private sector involvement and improved Earth observation technology are some of the drivers behind the need for the development of space law. While development is required on an international level, it is space law on a national level that drives development currently.⁸⁰⁸

5.4.2 Recommendations

From the research conducted, a few glaring issues arise. Firstly, South African space legislation contains no clear provision through which damage caused by a space object can be recovered. This is unfortunate, but it is recommended that, before

⁸⁰⁶ See chapters 4.2-4.4 above.

⁸⁰⁷ See chapter 3.5.2 above.

⁸⁰⁸ Freeland, Hutchison and Sim 2018 *Journal of Air and Space Law* 131.

the promulgation of the *Outer Space Bill*, consideration be given to this issue and that provisions concerning liability be included in the *Outer Space Bill*. It would serve a great purpose to look towards the legislation of Australia, France and the UK and base the concepts of the *Outer Space Bill* on the legislation, rules and regulations of these developed states.

Another issue is that of standardisation. Liability will always be an issue in international space law and, while the *Liability Convention* standardises the international liability regime and methods for claiming damage caused by a space object through an international convention, the same cannot be said for national space legislation. Identifying a means through which a person can institute a claim under the municipal law of a state can prove to be burdensome and expensive.

The recommendation here is that UNOOSA allocates resources into the development of a model law, similar to the United Nations Commission on International Trade Law's (UNCITRAL) on international commercial arbitration⁸⁰⁹ and other model laws by other international commissions. While it is acknowledged that not all states will follow a model law entirely, it will provide guidance to states that are still developing their own national space legislation, such as South Africa.

It may further be necessary in future, once the need becomes apparent, to motivate for the establishment of an international court for space affairs, similar to the ICC, or the International Court of Arbitration. In such a court, persons can be held accountable for damage caused by a space object with a fixed procedure and in line with international principles of space law. Such an institution will thus be the first point of contact for any space related matter and will have jurisdiction to hear such matters. This could possibly, in future, eliminate a host of uncertainties with regard to liability in outer space and for damage caused by a space object.

⁸⁰⁹ UNCITRAL *Model Law on International Commercial Arbitration* (1985).

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It is hereby certified that

Jennifer Ludwig

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