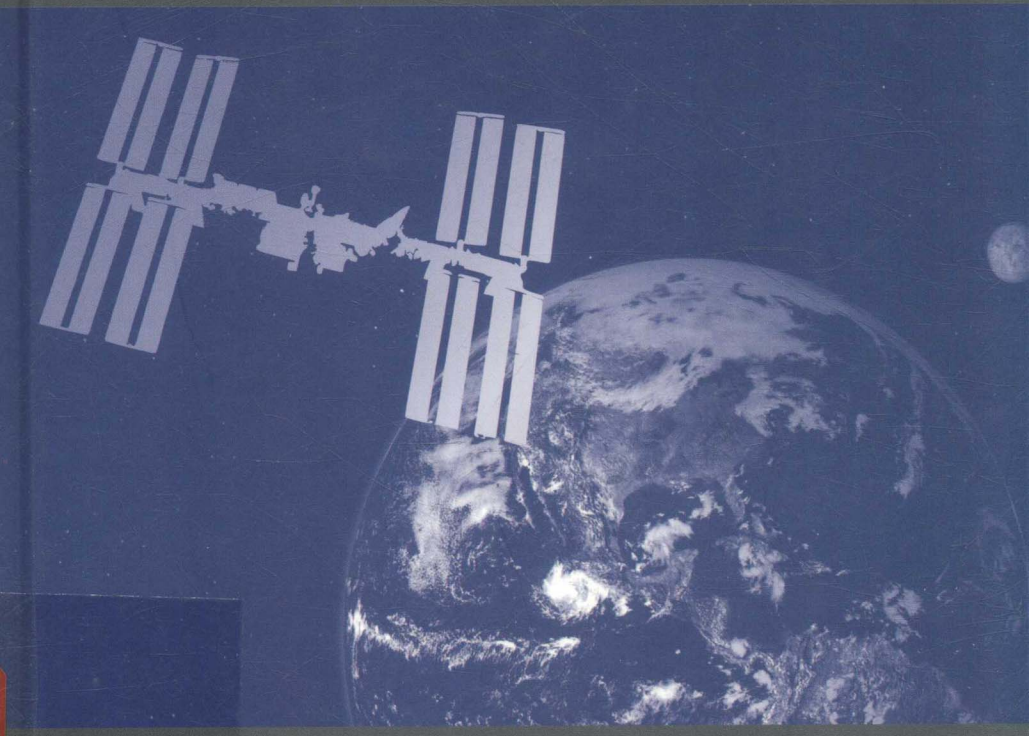
AEROSPACE LAW AND POLICY SERIES

Space Insurance: International Legal Aspects

KATARZYNA MALINOWSKA



Wolters Kluwer

Space Insurance

International Legal Aspects

Katarzyna Malinowska

'...is it not true that we face here fascinating issues of law, a new world or worlds far beyond anything man has ever reached for?'

Manfred Lachs

Wolters Kluwer

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Preface

> *As mankind ventures forth from the home planet, great hazards known and as yet unknown, will confront us. Now, and perhaps for as long as the human race seeks to go where it has not gone before, there shall be missions which cannot be safe as this term is used in the context of terrestrial activities. Those who seek to explore, and to exploit, outer space must do so charged with acceptance of the unknown, and perhaps unknowable ....*[1]

The outer space has an ability to unify and change the nature of universal human values, making them vibrant and lively. The everlasting desire to explore the unknown shows an incredible human potential to overcome dualisms, parallelism and divisions. One of the best commonly known examples of the above is the international, peaceful exploration of outer space, free from appropriation, achieved with the help of the space treaties concluded in the times of blossoming cold war between the enemies, coming from opposing military, social and legal cultures. Though this tradition seems not to be followed when we observe the national achievements in the area of space law at the level of rules, it is seemingly still worth searching for the common principles and universalism in the human outer space endeavours.

This book is devoted to problems and issues connected with space insurance contracts in the context of space law and practice. The author's objective is to present how insurance contracts operate in the innovative environment of the activities related to the exploration of outer space, the risks inherently tied with such activities, as well as the relevant regulatory framework and contractual practice. The questions that have emerged during the research, as reflected in the book, concern the insurability of the risks related to outer space activities and possibility of applying the principles governing insurance contracts to the needs linked to insuring sophisticated space risks. In relation to the above, it is necessary to consider whether insurance principles are sufficiently universal to also serve the exploration of the space or whether they need to be amended, or adjusted, to the specifics of the space industry. In this respect, the

1. *Martin Marietta Corp v. Intelsat*, 763 F. Sup. At 1334. In Bostwick P. D., *Liability of Aerospace Manufacturers:* MacPherson v. Buick *Sputters into the Space Age*, 22 J. Space L. 75, 87, 1994.

analysis was led not only at the level of the rules, but also the principles of insurance in search for universal values, capable of ensuring the operability of new types of hazards and risks. Finally, an opposite issue has also evolved, i.e. whether the space risks and technology, due to their innovative nature, may contribute in any way to the development of the legal and insurance sciences, in particular with respect to the methods of risk management and allocation, and fundamentals of insurance.

In order to answer the above questions, it is necessary to analyse, at first, the space activities within the framework given by international, European and national law so as to provide a proper regulatory and contractual context of the nature and scope of the activity related to the exploration of the outer space, given that the space operations are conducted by entities of diversified legal nature, both public and private, as well as deriving from different legal cultures. The above factors result in a situation where legal regulations concerning outer space activities are multilayered and multi-dimensional, and that the public and private law relations concerning space activities operate in co-existence. In addition, a strong standardisation of the industrial practices raises questions about the emergence of a new *Lex Mercatoria* of space law. The analysis of all the above issues is necessary to identify and then to analyse the risk in space activities as the main object of an insurance contract and the role of insurance in managing the risks related to the exploration of outer space. This in turn is inherently tied with the foundations and principles of insurance, such as the duty of utmost good faith, the principle of indemnity, the principle of reasonableness, as well as the basics of all contracts, namely, the principle of a party's autonomy. The basic rules of space law and contracts in the space industry will be presented in the context which will facilitate the identification of space risks and show the influence of space contracts on the shape of space insurance coverage. This analysis must also take into account constant development of outer space science. The sophisticated nature of space technology and risks related to outer space may also raise a question whether the operation of insurance as a risk management tool does not entail such a substantial change in the insurance inherent features, which causes its transformation into a financial instrument of another nature. The above question is derived from the fact that insurance is a highly regulated legal instrument, not leaving much space for significant changes, or deviation, from its main principles. Thus, the question to be answered is whether those principles find their place in insuring space risks or, if not, whether insurance is still able to maintain its legal nature.

Watching any science-fiction film, whose action takes place in outer space, makes us realize that the exploration of outer space is a very risky endeavour in all of its aspects. All the possibly imaginable perils can occur, resulting in severe risk to property and persons. Are they all necessarily mirrored in insurance coverage? To answer this question, a reference to the history of the insurance may be made. Insurance has been born as a commercial practice of spreading the risk borne by few to numerous entities. At the beginning, it was first related to commercial activity, while personal risks and liability risks constituted a subsequent stage of its development. This phenomenon is currently experienced by space insurance, where the assets and

then potential liability already evolved some time ago with the personal risks insurance still awaiting its chance. This is, of course, inherently related to the stage of development of manned space flights, still constituting a significant minority. Manned missions were substantially limited after the Challenger disaster in 1986 and seemingly contributed to the fact that the number of space tourists to date is still lower than ten, the only space tourist destination is the International Space Station, and the only space 'tour operator' enjoying its undisturbed market position for many years, seems to be the Russian space agency.[2] By the same token, space personal insurance is in its *statu nascendi* too, and – quoting Carl Sagan – it is still 'waiting to be known'. Even if space tourists arranged their personal life and accident policies as a requirement for their space trip, it cannot be said that any space personal insurance market has emerged. Consequently, no personal space insurance contract rules have been developed either.

As one of the issues dealt with in the book is the analysis of the commercial contractual practice with the aim of searching for a new *lex mercatoria,* personal insurance has not been included in these considerations. It does not mean, however, that personal risks are ignored in the analysis pursued in the book. On the contrary, risks related to human life and health constitute a significant part of the liability regime and are the roots of regulating space activities. In this context, they are subject to the considerations contained in Chapter 3. The issue which has been excluded from any in-depth analysis is the insurance of personal risks in the context of the 'first party risks', or 'second party risks'. This domain is, however, a subject matter of many excellent juridical academic writings, searching for the future place of space tourism in law and insurance. The insurance of personal risks will certainly be worth further considerations, once the space tourism finally kicks off.

It should also be noted that space activities, extensively regulated on many levels, are analysed substantially in the context necessary for the identification of the risks related to such activities for the purposes of its insurance. In this respect, the author assumed that the subject matter, the basic notions and the scope of space activities, such as launching, satellite operations, outer space, and space objects and other issues should be identified in such a way that would subsequently be useful for the risk identification, to which space activities are exposed, as well as insurable interest in space insurance.

The scope of the considerations does not concern the regulatory background of insurance activity, with the exception of such aspects as were necessary for the identification of space risks in terms of the content of an insurance contract. In this context, mostly European law has been taken into account, due to its coherent normative approach, affecting the insurance activity in the territory of all the Member States of the European Union (EU).

An important fact for the shape of the book was the decision made by the EU, performed in collaboration with the European Space Agency (ESA) to ensure insurance protection for the satellites being launched within the scope of the Galileo – GNSS

2. It should be noted that Virgin Galactic obtained the authorization for human space flight in August 2016, but to date no tourist has yet been launched into outer space under such regulations.

project owned by the EU, where many of the tasks are performed by ESA, also including the arrangement of the insurance coverage for Galileo satellites. The circumstances and the scope of the insurance terms being subject to public procurement proceedings constitute interesting and valuable contribution to the analysis included in the book with respect to the insurable interest, risk allocation regime and, finally, the insurance terms included in the public invitation to tender. The public procurement proceedings were completed in October 2015 by the award of the contract(s) to several insurers and one coordinator of insurance services, so that the insurance of Galileo satellites would finally become a fact. This was followed by the decision to insure the satellites as part of the Copernicus programme. This particular fact, in the opinion of the author, has undeniable significance for shaping the space insurance contract practice.

Bearing all of the above in mind, writing this book required the use of diversified sources due to a wide scope of issues to be analysed in order to meet its objective, i.e. first, the analysis of international public law in terms of authorizing space activity and bearing the liability for damages, followed by international private law in terms of the jurisdiction and choice of law in space and insurance contracting, through the EU law in terms of the position of the EU and ESA in space activity and insuring space risks in the European legal environment, as well as contract law – international, European and national laws in terms of distinguishing the principles of contracting in space, and their influence on the subject of space activities and risk related thereto. Finally, the subject matter of the analysis has been the insurance contract law which, being an inherent part of general contract law, has its own distinguishing features and is strongly correlated with regulatory issues and mathematics, determining its basic features. As regards the sources used in the analysis, the author has taken into account national (including Polish) and international literature, documents, colloquia and seminars, works of UNOOSA, IISL, ESPI, ESA, ITU, UNIDROIT and others. In addition to the above-mentioned sources, international jurisprudence and court verdicts have also been analysed. Though the Polish law is not considered in the book (space law being in drafting stage), contribution of the Polish academics to the development of the space law cannot be denied, giving only one example – Professor Manfred Lachs.

In the course of the consideration of insurance contract law, practice and jurisprudence in comparative perspective, the author has chosen to compare selected legal systems within the civil law and common law traditions. Among the common law countries, the legal systems of England and of the State of New York of the US have been chosen. The reason for the above is a long tradition of insurance law and jurisprudence in the English legal system, recognized as a cradle of modern commercial insurance, which differs sometimes, in spite of the common legal cultures, from the law of the State of New York. The latter is interesting as a representative example of insurance law of the US, due to statutory regulation of insurance contracts, as well as highly developed jurisprudence and practical importance for space insurance, due to the choice of the parties frequently choosing the law of the State of New York as the law governing given space insurance contracts. From among civil law systems, the insurance laws of France and Belgium have been chosen. As regards France, the reason for such choice is a coherent and developed space and insurance laws, which also

facilitate the analysis of the interface of these two areas. In addition, Belgian law has been chosen for the reason of being indicated as the law governing the insurance contracts for Galileo satellites.

This book consists of a table of contents, a list of abbreviations, four chapters and a summary of the analysis including the findings made, as well as, bibliography, an index, a table of cases and a table of legal acts. Each chapter has its own short outline and conclusions.

Chapter 1 is devoted to the regulatory and contractual background of space activities. First, the main facts of space activities, satellite operation and application, today's challenges, and the risk and insurance perspective have been outlined in order to provide a proper context of further considerations and show proper dimensions of space activities in the context of the subject of insurance. Subsequently, space activities are presented from international, European and national law perspectives, each level of which presenting the regulatory and contractual framework. As mentioned above, the author's objective has not been a presentation of a general overview of space law, but focusing on those issues which may be important from insurance perspective. That is why space activities are analysed as the subject of national, European and international law, including space activities as a subject of authorization and, in the same context, the notions relevant to space activities. The above approach has been dictated by one of the main goals of this book, namely identifying the subject and scope of the risks related to the exploration of outer space and an insurable interest in space insurance. Identifying the subject of regulated space activity, requiring a relevant authorisation, seems to be indispensable in this context, also due to potential obligation to conclude insurance contracts, closely related to the authorized activity. By the same token, in order to properly identify the space risks and distinguish them from other, alleged space risks, the author has deemed it necessary to analyse the main notions related to space activities in the most precise way, as it is indispensable for the shape of insurance terms. The example of such a notion may be the launch (operation), whose ordinary meaning is known to everybody, but whose precise scope and definition is important for the identification of the risk period and a compulsory liability insurance, but which clearly is not coherent at the regulatory, contractual and technology levels. The same concerns the notion of a space object, outer space and other notions, as present in space law.

Chapter 2 has been devoted to the 'Formation of a space insurance contract', so the main issues analysed concerned the insurable interest and the subject matter of space insurance, the obligation to conclude an insurance contract, as resulting from legal regulations, third parties rights', as well as the transparency and role of the information in space insurance. Finally, the context of the conflict of laws has been considered, where the author explains the importance of the choice of the substantive law to the insurance contract even in a situation of standardized insurance terms. All the above matters are crucial for the formation stage of an insurance contract as they may affect the validity of an insurance contract as such, or at least the enforceability of insurance protection by the persons involved in it. This context seems to be of great significance in space industry due to the nature of space projects involving a variety of entities, both public and private. In the course of the analysis, the main principles of

insurance contract have been considered, i.e. the principle of good faith, insurable interest, indemnity and contract privity.

Chapter 3 concerns the 'Content of a space insurance contract', where the main role is played by risk. Consequently, the risk in space activities and insurance has been analysed in various aspects. At first, distinguished sources of hazards, followed by the hazards (perils) deriving from identified sources, and finally, the risk understood as a combination of hazards and their consequences have been analysed. The above has been subsequently put in the context of insurability of space risks, the types of risks that are covered by space insurance and those risks that are typically excluded. An indispensable factor of the space insurance contract is also the period of insurance cover, which has been analysed in the context of the risk period related to space activities. Finally, the legal aspects of risk measurements for the purpose of insurance have been presented, such as the insurable value, the sum insured and the maximum probable loss.

Chapter 4 concerns the core issues of the insurance contract performance. These include such obligations of the insured as the payment of the premium, or a duty to fulfil any warranties and conditions. Finally, an important part of the considerations in respect of the insurance contract performance is the notion of loss, including the types of loss identified in an insurance contract, methods of its calculation, and the adjustment of losses process in space insurance. At the end of the considerations, the author has also distinguished a part concerning the recoveries available to the insurer by the operation of law, or contract, such as subrogation, salvage and abandonment. All the above issues are analysed in the perspective of the principles of the insurance contract, but based on the rules applicable to space insurance and, only when necessary, by way of a reference to other types of insurance (if they are deemed to be applicable to space insurance as well).

The analysis carried out in the book concerns the law in its interaction with the culture, traditions and the industry. It has been made in accordance with three main methods of legal research, i.e. dogmatic, comparative and historical. *First, the dogmatic method* is one of the most important for the analysis of legal texts of space treaties and national space laws, as well as insurance contracts laws. The dogmatic method has been applied in order to analyse the legislation and case law developed in the space and insurance law on the basis of the logics, analysis, argumentation and hermeneutics.[3] The second method applied is a *comparative method*, by way of which the main legal cultures have been analysed with respect to the principles and rules shaping an insurance contract. The author has taken into account both the traditional tools of the comparative approach consisting of the comparison of legal systems, emphasising, at the same time, the modern approach [4] according to which the comparison concerned the structure of the legal systems within the scope of space law, its complexity, analysis of the content of legal relations within space insurance law and practice, as well as a

3. Stelmach J., Brożek B., *Methods of Legal Reasoning*, Springer 2006, p. 12.
4. Brodecki Z., Przedmiot sztuki porównań, in: Komparatystyka kultur prawnych, 2010, Warszawa, pp. 16-18. W. Tokarczyk, Komparatystyka prawnicza, Warszawa 2008; Glenn, H. P., *Legal Traditions of the World: Sustainable Diversity in Law*, Oxford, 2007.

comparative analysis of the tendencies in the development of law as a reflection of its mission and function, as well as the pragmatism of the space and insurance relations.[5] The third method, i.e. the *historical method* has been applied to the analysis of the development and tendencies in the national space activities, as well as in order to look for the changes in a modern insurance contract. In the opinion of the author, it is important to show the evolution of the law and jurisprudence affecting the shape of modern space activities, risks and insurance and look for converging tendencies not only at the level of principles but also at the level of the rules,[6] allowing for their co-existence and co-functioning in the efficient management of space risks. The legal traditions as developed over the years may constitute a fundament of common supranational and universal principles in the area of space and insurance..[7]

To sum up the above introduction to the analysis carried out in the book, there can be distinguished three main objectives of the study:

The first objective is to analyse the risks present in the activities related to the exploration of outer space in order to distinguish the space risks in their strict meaning from the other types of risks that are only indirectly related to the exploration of outer space. Distinguishing the space risks, the author believes, is necessary in the context of their insurability, the subject matter of insurance, the insurable interest and the type of the insurance coverage that may concern the space risk.

The second objective is to analyse the insurance contract principles in the context of the innovative nature of space risks and space law, and in order to state whether it is possible to apply the traditional principles of insurance to space risks, whether the deviations are still within the frames of basic insurance principles and whether the differences (if any) are only at the level of the rules, or they affect the nature of the insurance contract.

The third objective of this book is to analyse the influence of the specific nature of space risks, as well as the established practice present in space insurance, to the shape of the modern insurance contract law, and to search for a correlation between the international tendencies in the insurance contract law and space insurance contractual practice.

With this in mind, the author proposes the following hypothesis:

First, space risks in their strict meaning concern only a limited scope of the activity related to the exploration of the outer space, i.e. launching and operating satellites. The other types of risks, consisting of the ground activities, as well as the application of the satellite services, do not meet the legal and factual criteria thereof,

5. As Savigny stressed, 'the law does not have any self-existence reasons, on the contrary, its nature is to reflect human life itself', Wang L., Zhou Y., *China Civil Law in Progress: Keep Going Alongside the Reform and Opening*, in: Between Complexity of Law and Lack of Order (B. Wojciechowski, M. Zirk – Sadowski, M. J. Golecki, eds), Toruń – Beijing, 2009, pp. 384–387 after Savigny F., *Treatise on Possession and Its Contribution to Jurisprudence, Legislation and the Method*, China Legal Publishing House, 2001.
6. See the concept of principles, rules and politics by Dworkin R., *Taking Rights Seriously*, 1978; the concept of rules and principles is mentioned also by Smit J., *What is the Legal Doctrine ? On the Aims and Methods of Legal – Dogmatic Research*, Maastricht European Private Law Institute Working Paper No. 2015/06, www.ssrn.com, accessed on 24 August 2016.
7. Stelmach J., Brożek B., *Methods of Legal Reasoning*, Springer 2006, p. 12.

and are consequently not included in the context of space law and space insurance. Instead, they are subject to the general principles of risk assessment and insurance. The specific nature of space activities determines the subject matter and insurable interest in space insurance.

Second, space risks are related to the ultra-hazardous nature of the exploration of the outer space, together with its volume and limited numbers, and therefore the insurance risk assessment needs a separate and individual approach as the general principles of insurability of the risks are simply not suitable.

Third, an individual approach to the assessment of space risks affects the application of the general rules of insurance. However, the differences visible at the level of rules applicable to the space industry and other types of risk do not necessarily affect the basic principles of insurance contract law, such as utmost good faith and the principle of indemnity.

Fourth, the specific nature of space risks and the substantial role of insurance in the risk management of space ventures mean that the insurance of space risks remains heavily influenced by space law. In particular, the criteria for risk assessment in space endeavours result not from insurance law, but from space law. In this perspective, the role of space law in shaping space insurance contracts may be dominant over the rules (but not principles) of insurance law.

Fifth, the development of the space industry and space law has led to the evolution of a specific *lex mercatoria* in the field of space contracts. A similar idea is present in space insurance contracts and, as long as it does not infringe the nature of the insurance contract, it should enjoy the contractual freedom.

Sixth, the established insurance practice in the field of space risks may serve as an example for other new technology-oriented and ultra-hazardous activities in the context of risk management, risk assessment methods and shaping insurance contracts on the grounds of basic insurance principles. This is possible regardless of the coherency of national laws, as long as the contract observes the universal principles of insurance.

List of Abbreviations

ACC	Available Communication Capacity
AKM	Apogee Kick Motor
B2B	Business-to-Business
B2C	Business-to-Consumer
BSS	Broadcasting Satellite Services
CALT	China Academy of Launch Vehicle Technology
CISG	Convention on Contracts for the International Sale of Goods
CLTC	China Satellite Launch, Tracking and Control General
CME	Coronal Mass Ejections
CSLA	Commercial Space Launch Act
DSB	Direct Satellite Broadcasting
ECC	Effective Communication Capacity
EGNOS	European Geostationary Navigation Overlay Service
ELV	Expendable Launch Vehicle
ESA	European Space Agency
ESPI	European Space Policy Institute
EU	European Union
FAA US	Federal Aviation Administration
FSOA	French Space Operations Act
FSS	Fixed Satellites Services
GATS	The General Agreement on Trade in Services
GCC	General Contract Conditions
GEO	Geostationary Orbit
GMES	Global Monitoring for Environment and Security
GNSS	Global Navigation Satellite System

IADC	Inter-Agency Space Debris Coordination Committee
ICAO	International Civil Aviation Organization
ICJ	International Court of Justice
IDD	Insurance Distribution Directive
IGA	Intergovernmental Agreement
IGO	Intergovernmental Organisation
IIL	Institute of International Law
IISL	International Institute of Space Law
ILC	International Law Commission of the United Nations
INO	In-Orbit
IOD	In Orbit Delivery
ISS	International Space Station
ITAR	International Traffic in Arms Regulations
ITU	International Telecommunication Union
LC	Liability Convention
LEO	Low Earth Orbit
LSA	Launch Services Agreements
LV	Launch Vehicle
M&O	Maintenance and Operations
MEO	Medium Earth Orbit
MIA	Marine Insurance Act
MoU	Memorandum of Understanding
MSS	Mobile Satellite Services
NASA	National Aeronautics and Space Administration
NEO	Near-Earth Objects
OECD	Organization for Economic Co-operation and Development
OJ	Official Journal of the European Union
OOS	On-orbit Servicing
OST	Outer Space Treaty
PECL	Principles of European Contract Law
PEICL	Principles of European Insurance Contract Law
PICC	The Principles of International Commercial Contracts
QRA	Quantitative Risk Analysis
Rev. dr. unif.	Revue de droit uniforme
RC	Registration Convention
RLG	Relaunch Guarantee
SAST	Shanghai Academy of Spaceflight Technology

TCL	Total Constructive Loss
TEU	Treaty on the European Union
TFEU	Treaty on the Functioning of the European Union
TPL	Third-Party Liability
TT&C	Telemetry, Tracking and Command
UKSA	United Kingdom Space Agency
UN	United Nations
UNCOPUOS	United Nations Committee on the Peaceful Uses of Outer Space
UNIDROIT	International Institute for the Unification of Private Law
UNOOSA	The United Nations Office for Outer Space Affairs
US	United States
USD	United States Dollars
WTO	World Trade Organization

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Finally, I would like to underline that I wrote this work in my private capacity and take full responsibility for the views expressed therein, as well as for any errors, omissions or inaccuracies that may be in these pages.

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