ARTIFICIAL ISLANDS
In The Law of the Sea

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ABSTRACT

This thesis presents the study of *Artificial Islands in The Law of the Sea* with the evolution of the topic dating from The 1930 Hague Codification Conference, to the 1982 United Nations Conference on The Law of the Sea. The study follows with an examination of the status of 'natural islands,' as well as that of 'ships and vessels' in relation to artificial islands. This is of importance in order to discern those elements which are common to the particular nature of artificial islands. The process of assimilation, however, leaves much to be desired and an attempt is made to take advantage of this investigation as well as the study of the 1982 Law of the Sea Convention so as to recommend the creation of a separate legal category for artificial islands.

After presenting the reader with an interpretation of what constitutes an artificial island, a technical examination of the physical diversity in form and operation of artificial islands is given. This extends to those artificial structures which are under construction and will be deployed in the coming years. The jurisdiction relevant to artificial islands is studied in the light of the different maritime zones found in the 1982 Law of the Sea Convention. Special focus is given to the high seas, which raises concern with respect to the regulation of artificial islands.

The discussion of the high seas proceeds with a description of the conflicting uses of the high seas in relation to artificial islands. Distinction is made between those freedoms of the high seas which are 'traditional' in nature as opposed to those of a more recent origin. The author of this study touched upon the different freedoms of the high seas by giving consideration to the various interests involved. It is noted that the practical legal implications of artificial islands which are not provided for by legal provision are likely to develop a practice by States which finds significance in customary international law.

To much loved and missed
Uncle Charlie

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Abbreviations

AJIL	American Journal of International Law
AYBIL	Australia Year Book of International Law
CIL	Customary International Law
CLR	California Law Review
CNG	Compressed Natural Gas
CWILJ	California Western International Law Journal
CYIL	Canadian Yearbook of International Law
EEZ	Exclusive Economic Zone
EFZ	Exclusive Fishing Zone
ESV	Elevating Support Vessel
FNPP	Floating Nuclear Power Plant
FPSO	Floating Production Storage and Off-loading Unit
FSU	Floating Storage Unit
ICLQ	International & Comparative Law Quarterly
IJMCL	International Journal of Marine and Coastal Law
IL	International Lawyer
ILC	International Law Commission
ILR	International Law Review
ILQ	International Law Quarterly
J. Mar. L. & Com.	Journal of Maritime Law and Commerce
JOT	The Journal of Offshore Technology

LNG	Liquefied Natural Gas
LOSC	Law of the Sea Convention, 1982
MSP	Marine Spatial Planning
NJIL	Nordic Journal of International Law
NYBIL	Netherlands Year Book of International Law
ODIL	Ocean Development and International Law
OFEP	Ocean Floating Energy Platform
OTEC	Ocean Thermal Energy Conversion
San Diego LR	San Diego Law Review
TILJ	Texas International Law Journal
UN	United Nations
UNCLOS I	United Nations Conference on the Law of the Sea 1958
UNCLOS II	United Nations Conference on the Law of the Sea 1960
UNCLOS III	United Nations Conference on the Law of the Sea 1982
VJIL	Virginia Journal of International Law
YBEIL	Year Book of Environmental International Law

INTRODUCTION

I - The General Scope of the Thesis

"Traditional International Law did not anticipate the creation of an island by means of engineering but confined itself to the title derived from effective occupation of uninhabited land masses. The fate of such activities will be determined by two factors: the number of sites available for such constructions and the objectives.

Costal States will be provoked to reaction only if they consider national interest to be threatened. When as seems probable in the near future, artificial islands are created for scientific or commercial purposes, the reaction may well be different. When there is respect for the systemic international order that prevails even on the high seas, where safety of navigation is guaranteed, where rules of navigation and the right of innocent passage are protected, and where there is no interference with established allocations of communications frequencies, these new land masses in the ocean may well be welcomed in the international community."[1]

This thesis finds its inspiration in the words of Young Elizabeth, who had the capacity not only to foresee the possibility of future distinct uses of our seas, but to establish the challenges to be respected and faced by future generations. Nearly four decades after her speech at the *Pacem in Maribus* Conference, the reality of these 'new land masses' is closer than ever before. Although the notion of new land created on the sea or from reclaimed land is not novel, it is only recently that many proposed artificial structures are closer to implementation. The objective of this thesis is to explore the divergent implications artificial islands are most likely to have in the near future.

[1] Young Elizabeth, *Pacem In Maribus*, Vol. IV, June 28- July 3 1970, Published by the Royal University of Malta Press 1971, 74-75.

This thesis recognises that the challenge of international legal intervention rests on the fact that many of the projects discussed have not as yet been materialised, but will become a reality in the coming years. Precisely, this study is one of discussion on the current position of the law of the sea when faced with the prospect of new frontiers brought about by recent technological advancement.

This thesis is thus structured on the premise that notwithstanding the fact that most types of artificial islands have not as yet come into existence; this actuality should not impede the provision of a legal framework since the required technology is available. Moreover, some of the envisaged projects are already under construction and will be in operation as from the year 2010 and in consecutive years.[2] In this respect, it is important to note that oil platforms, which are today's most common installations on the seas across the world, also require appropriate legislation.[3]

It is the object of this thesis to highlight the growing importance of installations and recognise the need for an international legal framework to give clarity to the subject matter in its entirety. It specifically seeks to address those issues which, with reference to artificial islands, are not clearly presented in international law.
These include:

1. The formulation of a legal definition for artificial islands;
2. The jurisdiction of artificial islands on the high seas;
3. The conflicting uses of the high seas in relation to the freedom to construct artificial islands;
4. The development of artificial islands through customary international law.

Issues which have been settled by international agreement are thus not investigated in detail. This study deals with the subject matter of artificial islands solely on an international context.

[2] Refer to Chapter 3: Floating Nuclear Power Plant (FNPP); Solar Islands; Energy Islands; Wind Farms.
[3] Esmaeli Hossein, *The Legal Regime of Offshore Installations in International Law*, Dartmouth Publications 2001.

However, in the light of recent developments at a national level in the sector of wind energy, the author of this study recognises that this issue is a subject which warrants further study. Furthermore, the treatment of environmental protection has been left out of the scope of this thesis since it is a topic which in its vastness requires specific consideration.

The term ‘artificial island’ is not defined by the LOSC. However, for the purpose of this study ‘artificial island’ is interpreted to include a man-made structure which may be permanently or transitionally fixed to the sea floor which determines its geographic location and may include any structure of a mobile nature in its normal mode of operation.

Although this thesis has given an outline of the various purposes and types of ‘artificial islands’, in the light of upcoming developments the legal discussion is at many times developed over the concept of artificial islands utilised as ‘energy platforms’.

II – Considerations

The 1982 Law of the Sea Convention (LOSC) lays down a comprehensive regime of law and order of the world's oceans and seas establishing rules governing all uses of the oceans and their resources. It enshrines the notion that all problems of ocean space are closely interrelated and need to be addressed as a whole.

The LOSC was adopted by the Third United Nations Conference on the Law of the Sea (UNCLOS III) at New York on 30 April 1982, and concluded at Montego Bay on 10 December 1982. On 9 December 1984, the date of closure of signatures, the 1982 Convention had been signed by 155 States. It was not until the 16 November 1993 that sixty States had deposited their instruments of ratification or accession. The requirements for entry into force of the 1982 Convention were thus met by the 16 November 1994.

Some key features which help to understand better the operation of the LOSC and how it relates to the subject matter of this thesis are outlined hereunder. The LOSC is based on different maritime zones which pertain to divergent legal implications.

These maritime zones include the internal sea and territorial sea, the contiguous zone, the exclusive economic zone (EEZ), the continental shelf and the high seas. The sea-bed of the high seas is known as the ‘Area’ and ‘The International Sea-Bed Authority’ is the body governing the ‘Area’.

The coastal State exercises sovereignty over the territorial sea. It has the right to establish its breadth up to a limit which does not exceed twelve nautical miles. The contiguous zone is that area which extends to twenty four nautical miles from the baselines from which the territorial sea is measured. In the contiguous zone States may exercise the necessary control to prevent infringement of customs, fiscal, immigration or sanitary laws and regulations.

In a 200-nautical mile EEZ, coastal States have sovereign rights with respect to natural resources and economic activities. The exercise of jurisdiction over marine scientific research and environmental protection also pertain to the coastal State in the EEZ. All other States have the freedom of navigation and over flight in the EEZ, as well as the freedom to lay submarine cables and pipelines. Land-locked and geographically disadvantaged States have the right to participate on an equitable basis in the exploitation of an appropriate part of the surplus of the living resources of the EEZ's of coastal States of the same region or sub-region. In this area of the sea, highly migratory species of fish and marine mammals are accorded special protection.

Coastal States have sovereign rights over the continental shelf, the national area of the sea-bed, for exploring and exploiting it. The continental shelf can extend at least 200 nautical miles from the shore, and more under specified circumstances.

All marine scientific research in the EEZ and on the continental shelf is subject to the consent of the coastal State, but in most cases, States are obliged to grant consent to other States when the research is to be conducted for peaceful purposes and fulfils specified criteria. Furthermore, States are bound to promote the development and transfer of marine technology "on fair and reasonable terms and conditions", with proper regard for all legitimate interests.

On the high seas, all States enjoy the freedoms of navigation, over flight, scientific research, fishing, laying of submarine cables and pipelines and the establishment of artificial islands and installations. States are obliged to adopt, or cooperate with other States in adopting measures to manage and conserve the living resources on the high seas. The obligation is also put on States to prevent and control marine pollution. They are liable for damage caused by violation of their international obligations to combat such pollution.

States are obliged to settle by peaceful means their disputes concerning the interpretation or application of the Convention. Disputes can be submitted to the International Tribunal for the Law of the Sea established under the Convention, to the International Court of Justice, or to arbitration. Conciliation is also available and, in certain circumstances, submission to it would be compulsory. The Tribunal has exclusive jurisdiction over deep sea-bed mining disputes.

Although the LOSC is a material source of law of which the creation of obligation binds only the contracting parties, it has been generally accepted and ratified, in a way that it has become customary international law (CIL), binding even on States who are non-party to the Convention. CIL is the formal source of law in international law, it is the law-making source which forms rules binding on all States, unless there are factors which exclude particular States. This thesis dedicates a part of its study to that ‘practice’ of States as relevant to the subject of artificial islands. This practice allows States in general to adapt to the short-comings of the LOSC, and in such way safeguard their interests.

III - Reference to Findings and Propositions

The LOSC comprises a variety of areas concerning the seas in general which may present the problem of rendering it insufficient in the provision of certain aspects concerning artificial islands. Moreover, over recent years, a number of significant technological innovations have reached fruition, and the LOSC is generally regarded as being inadequate in the light of these innovations which did not exist at the time of formulation of this Convention. The author has noticed this shortcoming in a number of instances while tracing the legal steps which have taken place with respect to the development of artificial islands in international law.

Traditionally, discussions on artificial islands only seemed relevant in relation to the limitation of the extension of state sovereignty over the seas. While this issue has been settled by the LOSC, the legal status of artificial islands has remained ambiguous.

This study presents an awareness of the significance behind legal classification. Although the LOSC clearly distinguishes artificial islands from ships, it does not make a clear distinction in the use of terminology of: 'artificial islands'; 'installations'; 'structures' and 'devices'. Since artificial islands have been expressly ruled out from the definition of 'natural islands' in the LOSC, their status is one which is neither a ship nor as an island in international law.

Most writers who have sought to distinguish artificial islands from installations have categorised artificial islands as constructions forming part of the sea-bed which are by their very nature immobile. Installations, on the other hand have been widely associated with oil rigs, which are generally towed and placed on steel legs bored into the sea-bed.

There are, however, many other forms of artificial constructions which are also mobile in nature and which do not seem to fit in the definition of artificial islands or installations and of which purpose also differs.

Jurisdiction in the LOSC is based on the distinct maritime zones established by the same Convention. However, the nature of the different types of artificial islands also brings about questions of jurisdiction with respect to the applicable law specifically where the rights of the coastal State are limited. The issue of the freedom of the high seas is an embracing provision which is a source of conflict between the divergent uses of the seas. No clear instructions are given by the LOSC as to which freedoms should prevail and the use of the high seas is based on vague statements such as the 'consideration of interests'. Since the freedom of the high seas presents an inexhaustive list of rights pertinent to States to apply, there is difficulty in the comprehension of how a practical balance of interests as suggested by law, can be achieved.

This work is forward-looking in giving consideration to issues pertinent to artificial islands which are most likely to cause disputes in the near future. These disputes are likely to arise due to the absence of a defined legal status and jurisdictional basis of an *ad hoc* form which needs to be modelled to accommodate artificial islands.

CHAPTER I

THE HISTORICAL LEGAL DEVELOPMENT OF ARTIFICIAL ISLANDS IN THE LAW OF THE SEA

The focus of this chapter is the international legal documentation which has shaped the present position of the LOSC. Before tracing the origins of artificial islands in legal history, a general background of the international law in the relevant context is given. This chapter attempts to demonstrate how international law has never been static in nature. Whilst focus shifts progressively to the present LOSC, one can appreciate that the principles of international law retain a form of derivative significance, even in the most recent and topical issues such as that of artificial islands.

1.1 Background

Towards the end of the fifteenth century, Spain and Portugal were the two most powerful nations in Europe since they excelled in navigation technology and had slowly begun to conquer lands and build their own empires. Efforts to achieve absolute power inevitably led to conflict between these two nations over the dominion of the high seas. Freedom of navigation was crucial at the time, not only to acquire and conquer, but also to maintain power. In the face of this rivalry, Pope Alexander VI divided the Atlantic Ocean into distinct zones between the two imperialist powers. In 1493, changes in the relationship among nations sharing the world's oceans brought about the need for the first edict to govern the use of international ocean space. The delimitation of the maritime zones as we know it today was greatly determined by these first steps towards regulating the seas. [4]

[4] Adam Starchild, *The Ocean Frontier*, University Press of the Pacific, Hawaii 2002, 106.

At the beginning of the sixteenth century, with further advancement in technology, the power shifted from Spain and Portugal to the navies of the Netherlands and Great Britain. Artillery gun fire replaced the methods of boarding by force as used by the Spanish and Portuguese navies. Great Britain's naval power on the high seas was firmly established in 1588, after the defeat of the Spanish Armada in the English Channel. Their authority to navigate the high seas continued unchecked without threat from any other nation. In time, the legislation imposed by Pope Alexander VI was no longer applicable.[5]

It was then that the era of the 'freedom of the seas' as advocated by Grotius brought with it a general idea of the sea as being inexhaustible in nature and open to the usage of all States.[6] The ocean by its very nature was proclaimed beyond the legitimate jurisdiction of any nation. A corollary concept that developed alongside the freedom of the seas was the concept that a coastal State could exert special jurisdiction in the waters contiguous to its shores.

This is the principle which has developed into the modern concept of the territorial sea. Once more, it was Grotius who first enunciated what for several centuries was to be regarded as the definition regulating the territorial sea. Grotius wrote that the sea under the jurisdiction of the coastal State should be controllable by guns placed on the shore.

Another Dutchman, Cornelius Van Bynkershoek, turned this into what became known as the 'cannon shot rule'; that a coastal State held under its sovereignty all water that it could control by cannon on the shore.[7] Thomas Jefferson later established this to be three miles which became the width of the territorial sea claimed by many nations.

[5] Ibid. 107-108.
[6] John Selden, *Of the dominion, or ownership of the sea*, ARNO Press reprinted 1972.
[7] Cornelius Van Bynkershoek, De *Dominio Maris* (1721).

For over three centuries, the law of the sea was divided into two zones: the territorial sea limited to three nautical miles and the high seas, which was the zone beyond the territorial sea where the freedom of the seas applied. Although modern international law has indeed surpassed the theoretical writings of these early jurists, the constantly evolving international law of the sea retains its significance based on these foundations.

1.2 The Hague Codification Conference 1930

The early twentieth century brought about an expansion in the use of ocean space and this projected a general interest in the advancement of an international agreement on the jurisdiction of States on the seas. This interest occurred particularly with regard to the breadth of the territorial sea and a special-purpose contiguous zone. The implications of this was that the coastal State would be able to exercise the necessary control throughout a zone on the high seas contiguous to the territorial sea so as to prevent the infringement of its customs or sanitary regulations or interference with its security, by foreign vessels. Such control could not be exercised for more than twelve nautical miles from the coast.[8]

The anticipated problem with regard to artificial islands was mainly concerned with whether the waters surrounding an artificial structure on the high seas would or would not have the juridical status of territorial waters. Installations were also included as part of this categorical question.

Under the auspices of the League of Nations, a Conference for the Codification of International Law took place at The Hague in 1930.

[8] American Society of International Law, Supplement to the American journal of International Law, Vol. 24 (1930): 235.

At The Hague Codification Conference, the rules adopted by Sub-Committee No. II of the Second Committee were as follows:

(i) "Every island has its own territorial sea. An island is an area of land, surrounded by water, which is permanently above high water-mark."[9]

(ii) "Elevations of the seabed situated within the territorial sea, though only above water at low tide, are taken into consideration for the determination of the base-line of the territorial sea."[10]

At The Hague Conference, there was disagreement as to whether the occupation and use or even "capability of effective occupation and use" were required in order to give a high tide elevation of the sea-bed the juridical status of an island. Finally, the definition determined by Sub-Committee No. II did not insist on these requirements. The following observation was added to the definition of an island presented by Sub-Committee No. II: the definition of the term 'island' does not exclude artificial islands provided that these are true portions of the territory and not merely floating works, anchored buoys, etc. The case of an artificial island erected near to the line of demarcation between the territorial waters of two countries is not included.

At the 1930 Conference, the position of many Government representatives was that for an island to have territorial waters, it must be capable of occupation and of use. The Conference did not succeed in adopting a Convention since agreement on the crucial question of the breadth of the territorial sea could not be reached. Firm opposition of the three-mile rule came from the representatives of Norway, Sweden, and Finland who were resolute that a wider territorial belt was essential to their national interests.[11]

[9] Acts of the Hague Conference, 1930, Vol. III, 212. Article 1 of the Draft Convention prepared by the Second Committee.
[10] Ibid, 213 Article 2.
[11] Sweden (1779), Norway (1812), and Finland (1920) laid claims to territorial belts of four miles.

Although the three mile limit was accepted by the majority of States attending The Hague Codification Conference, there was a firm opposition to this limit being recognised as the maximum limit of the territorial sea.[12] Yet the Conference did reach some agreement on the legal status of the territorial sea and the determination of the baseline from which the territorial sea is to be measured.

A second factor which was an obstacle to the determination of a Convention based on the discussions of the Conference was that representatives of certain States, notably Great Britain and France, were uncompromising with regard to the contiguous zone.

A number of jurists wrote their opinions and formulations on the subject matter, as a result of the fact that the nature of an island was not given enough elaboration at The Hague Codification Conference. Among these, the famous jurist Gidel did not accept the Committee's definition which made no distinction between natural and artificial islands and he proposed his own definition.

After the Conference, Gidel wrote that an island is a natural elevation of the earth's sea-bed, which is surrounded by water and which is placed permanently above the sea, where natural conditions allow for the permanent establishment of a human population. Natural islands, according to Gidel, can be assimilated to artificial islands so long as the latter satisfy the same conditions. These conditions include those instances where the formation of islands has occurred through the action of natural phenomena or has been accelerated by means of works.[13] Gidel, however, specified that the interchangeable status of artificial islands to natural islands only applies to those islands which are found at least partially in the territorial sea of a State.

[12] J.S. Reeves, *The Codification of the Law of Territorial Waters*, 24 AJIL (1930): 846,494.
[13] Gidel, *Le Droit International Public de la Mer*, Vol. III, Paris, 1934.

Another jurist, Oppenheim, in his report to the Institute of International Law made reference to the *Fur Seal Arbitration* (1893) whereby the Attorney-General, Sir Charles Russell, presented the view that lighthouses, wherever they are built, are an extension of the State's sovereignty and territoriality and in such respect should be given the right to a territorial sea.[14] This was the first time that the question of artificial islands was raised. Oppenheim opposed and criticised this view. He stated that if Sir Charles Russell's view were to be adopted, it would be necessary to give all States a right of sovereignty on the territorial sea surrounding a lighthouse. According to Oppenheim, such action could no longer be justified.

Oppenheim believed that the comparison of lighthouses to islands is in its nature giving an erroneous treatment and that it would be better if lighthouses were placed on the same footing as that of anchored vessels.[15] In this way, a State would not have the right to claim sovereignty on the territorial sea surrounding a lighthouse.[16] On the same fact, Gidel pointed out that the juridical status of a lighthouse does not depend on the existence of the same lighthouse but on the natural elevation on which it is built.

Oppenheim was supported by Jessup who writes that: "It would be a dangerous doctrine in many parts of the world to allow States to appropriate new areas of waters by means of structures on hidden shoals."[17] Gidel strongly advocated the principle that semi-submerged rocks on the high seas have no territorial waters. He adhered to such a position strongly even in the case where installations could be built on rocks.[18]

In the deliberations by these eminent jurists following The Hague Conference, of primary importance was whether any object exposing a surface above the level of the sea at high tide qualifies or does not qualify for the juridical status of an 'island'.

[14] Moore, International Arbitration, Vol. I, 900-1.
[15] D.H.N Johnson, *Artificial Islands*, ILQ, Vol. 4 1951, 207-208.
[16] Ibid. 208-209.
[17] Jessup P.C., *The Law of Territorial Waters and Maritime Jurisdiction*, New York, 1927, 69.
[18] Gidel, *Le Droit International Public de la Mer*, Vol. III, Paris, 1934, 696.

Even though no codification resulted from The Hague Codification Conference of 1930, the value of the preparatory work served as a strong basis for future discussions. If, at this stage, it was an accepted principle that artificial islands could have territorial waters, there remained to be unravelled which type of artificial islands would qualify as constructions and which did not. If an artificial island is to be an island in the same sense that a natural island is an island it must be "surrounded by water'", be "permanently above high-water mark" and show "an appropriate surface above the sea visible in normal weather conditions". Another qualification set at the time was that it must be "of the nature of territory". This nature is that which is associated strongly with the permanence of artificial islands. On the other hand, installations were considered to be temporary in nature.[19]

Significant political occurrences took place after The Hague Conference which shaped the evolution of the law of the sea. In October 1939 and particularly due to the occurrence of World War II, the Foreign Ministers of the American Republics issued the Declaration of Panama creating a security zone ranging from 300 to 500 nautical miles from its coast. This was designed to insulate the western hemisphere from foreign aggression.[20] This was the first dramatic extension to the concept of the contiguous zone as discussed at The Hague Conference.

It was followed by another significant extension in the Truman Proclamation of 28 September, 1945. The United States proceeded unilaterally to lay claims to the offshore natural resources of the sea-bed and subsoil of the continental shelf beneath the high seas but contiguous to its coasts. This undoubtedly encouraged the Governments of Mexico, Argentina, Chile, Peru, Ecuador, Costa Rica and El Salvador to believe that their offshore claims, similar to that made by the United States, were not inconsistent with the developing international practice. Not only was the freedom of the high seas being challenged but importance was being placed on other zones of the sea which required regulation.

[19] Ibid.
[20] F.A. Garcia – Amador, *The Exploitation and Conservation of the Resources of the Sea*, Leyden 1959, 59-65.

In 1945, the League of Nations was replaced by the United Nations (UN) and the International Law Commission (ILC) was thereby established. At this time, the UN ensured that the necessary directions were undertaken to avoid further unilateral actions in favour of international negotiation.[21] The draft articles prepared by the ILC to convene subsequent Conferences were greatly influenced by The Hague Codification Conference articles on the issues of the territorial sea and high seas.

In 1956, the ILC produced a report which covered all aspects of significance with regard to the law of the sea. This was the official source for the United Nations Conference on the Law of the Sea held in Geneva in 1958 (UNCLOS I).

1.3 UNCLOS I & II

The tasks confronting the negotiations in 1958 were far simpler than the task previously faced by the international community. The resulting Geneva Convention on the Law of the Sea covers four Conventions of international law, namely: The Convention on the Territorial Sea and Contiguous Zone; The Convention on the Continental Shelf; The Convention on the High Seas; and The Convention on Fishing and the Conservation of Living Resources of the High Seas. These four Conventions formalised existing customary law which previously governed the use of the seas.

The Convention on the Territorial Sea and Contiguous zone defines an 'island' in Article 10 as "a naturally formed area of land, surrounded by water, which is above water at high tide". Furthermore, "where a low-tide elevation is wholly situated at a distance exceeding the breath of the territorial sea from the mainland or an island, it has no territorial sea of its own."[22]

[21] Adeoye Akinsanya, *The Law of the Sea Unilateralism or Multilateralism?,* Lagos University Press 1980, 12.
[22] The 1958 Geneva Convention on the Territorial Sea and Contiguous Zone, Art. 10.

This differs from the definition presented by the Committee at The Hague Codification Conference. An 'island' under the Geneva Convention was attributed with the feature of being 'natural,' thus categorically excluding artificial islands. Furthermore, low-tide elevations which could be aided in their formation by works were not considered as islands and were excluded a territorial sea of their own.

At UNCLOS I, the issue of artificial islands, installations and structures was addressed in the context of the continental shelf. The coastal State was entitled to construct, maintain and operate on the continental shelf, installations and other devices necessary for the exploration and exploitation of its natural resources.[23]

The approach previously advocated by President Truman was applied when allocating sovereign rights for the purpose of exploring and exploiting the continental shelf resources. However, the water above the continental shelf remained part of the regime of the high seas.

Interference with navigation, fishing or conservation of living resources, oceanographic or scientific research was forbidden.[24] The entitlement of the coastal State to control artificial islands was made, subject to the establishment of safety zones around such 'islands' which are necessary for their protection.[25] The safety zones surrounding artificial islands and installations could extend to a distance of 500 metres. It was made clear that installations do not possess the status of islands, they have no territorial sea of their own and their presence does not affect the delimitation of the territorial sea of the coastal State.[26] It was established that due notice must be given with regard to the construction of any installations and necessary permanent means of giving warning of their presence must be established.

[23] The Geneva Convention on the Continental Shelf, 1958, Art. 5. Para. 2.
[24] Ibid. Art. 5. Para. 1.
[25] Ibid. Art. 5. Para. 2.
[26] Ibid. Art. 5. Para. 4.

These mentioned requisites must be maintained properly. Installations which are abandoned or disused must be entirely removed.[27] Furthermore, neither the installations, nor the safety zones around them could cause interference with international navigation.

Article 2 of the 1958 Convention on the High Seas reads as follows:

> *The high seas being open to all nations no State may validly purport to subject any part of them to its sovereignty. Freedom of the high seas is exercised under the conditions laid down by these articles and by other rules of international law. It comprises inter alia both for Coastal and non-Coastal State:*
> *(1) Freedom of navigation*
> *(2) Freedom of fishing*
> *(3) Freedom to lay submarine cables and pipelines*
> *(4) Freedom to fly over the high seas*
> *These freedoms and others which are recognised by the general principles of international law shall be exercised by all States in their exercise of the freedom of the high seas.*

The text emphasises that the exercise by a State with regard to the freedom of the high seas carries with it certain obligations. The 1958 Convention used the words '*inter alia'* to show that its list of freedoms on the high seas is not exhaustive.[28] It was generally accepted that artificial islands were another freedom of the high seas. Although the Commission had specified four main freedoms – excluding artificial islands - in its Commentary it is held that other freedoms are acknowledged, such as the freedom to undertake scientific research, as well as the freedom to explore and exploit the high seas.[29] This had not been included for the purpose that such exploitation had not assumed "sufficient practical importance to justify special regulation".[30]

[27] Ibid. Art. 5. Para. 5.
[28] The Geneva Convention on the High Seas, 1958, Art. 2.
[29] Year Book of the International Law Commission, 8th session of the International Law Commission 1956, Volume II, Articles concerning the Law of the Sea with Commentaries 1956.
[30] Ibid.

Additionally, it was held that the Commission did not intend to limit the exploitation of the subsoil of the high seas. In fact, it was explicitly held that the exploitation of the subsoil of the high seas was not subject to legal limitations.

UNCLOS I, however, still did not reach a conclusion with regard to the establishment of the breadth of the territorial sea, an issue which had long required settlement. It was specifically for this purpose that The United Nations Conference on The Law of the Sea 1960 (UNCLOS II) was convened. Nonetheless, final agreement of the breadth of the territorial sea had to await the preparation of the Convention drawn up by the United Nations Conference on The Law of the Sea 1982 (UNCLOS III).

1.4 UNCLOS III

In 1971, discussions leading to the formation of the LOSC commenced. At the first session of the Sea-Bed Committee, suggestions were made to include discussions on the "jurisdiction over artificial islands, or artificial installations on the high seas", "stationary or mobile installations", "construction maintenance and operation of artificial islands, floating harbours and other installations". Proposals were made by a majority of States to eliminate State interests in the high seas.

Additionally, at the 1971 session of the Sea-Bed Committee, Article 5 of Malta's Draft Ocean Space Treaty provided for a basic right for all States to utilise 'ocean space' and also specified that such a right was to be exercised with "reasonable regard" to the interests of the "international community". That proposal replaced the freedom of fishing with the freedom of scientific research on the high seas.[31]

During the 1973 session of the Sea-Bed Committee, Belgium presented a text relating to artificial islands on the continental shelf. A proposal was made "for purposes other than exploitation or exploration" on the continental shelf.

[31] Draft Ocean Space Treaty: Working Paper submitted by Malta, U.N. Doc. A/AC 138/53 (Aug. 23 1971).

The following main points emerged: A coastal State may authorise the construction of an artificial island on the continental shelf for all purposes except exploration and exploitation of natural resources; structures should be under the jurisdiction of the coastal State or State which constructs them; all artificial islands have to be surrounded by safety zones of not more than 500 metres and artificial islands or installations have no territorial sea of their own.

Latin American States made proposals concerning artificial islands in the territorial sea during the same session. The United States of America proposal on "off-shore installations in the coastal sea-bed economic area" was based on the statement that safety zones were relevant, so long as they relate solely to the nature of the installation.

During the second session in 1974, concern was expressed by El Salvador with regard to the broad interpretation of the freedom of the high seas. It was suggested that an exhaustive list of freedoms should be created.

At this same session, the representative of Belgium, Mr. Van Der Essan, held that the question of artificial islands raised two separate problems. Mainly the jurisdiction to which they were to be subject and, secondly, the right of States to construct artificial islands and installations, as well as, the conditions which they must observe when doing so.[32]

The first aspect of jurisdiction did not seem to raise many problems from the stand point of the development of the law of the sea. The draft did not cover floating islands which, due to their mobile nature were in fact treated as vessels. This is an interesting point since the LOSC as formulated today distinguishes ships from other structures at sea, this is not done by express definition of the law but comes out clearly from the general provisions of the Convention.

[32] Third United Nations Conference on the Law of the Sea – Official Records Vol. II Summary Records of meetings, Second Session; Caracas 20 June – 29 August 1974, Agenda item 18, 278.

While artificial islands in the territorial sea are regulated by the jurisdiction of the coastal State, it was proposed that islands located beyond those limits would be subject to the jurisdiction of the proposed International Seabed Authority, which would have to decide what penal code to apply and which courts would be competent.[33] However, this was not implemented, as results from the present LOSC.

It was suggested that artificial islands connected to the continental shelf of a State would be subject to that State's civil and criminal jurisdiction unless it delegated its powers to another State.

The second problem raised by the Belgian representative on the issue of the construction of artificial islands was more delicate. This was due to the fact that prejudice to the various uses of the sea might result from such construction. With regard to the continental shelf, Belgium suggested a right of appeal against any project which a State considered detrimental to its legitimate interests.

During the third session in 1975, no further proposals were made and the principle that the high seas were open to all States, whether coastal or landlocked was included in Article 87 of the LOSC. This replaced Article 2 of the 1958 Geneva Convention and reads as follows:

1. The high seas are open to all States, whether coastal or landlocked. Freedom of the high seas is exercised under the conditions laid down by this Convention and by other rules of international law. It comprises, inter alia, both for coastal and landlocked States:
(a) freedom of navigation;
(b) freedom of overflight;
(c) freedom to lay submarine cables and pipelines, subject to Part VI;
(d) freedom to construct artificial islands and other installations permitted under international law, subject to Part VI;
(e) freedom of fishing, subject to the conditions laid down in Section 2;
(f) freedom of scientific research, subject to Parts VI and XIII.

[33] Ibid.

2. These freedoms shall be exercised by all States with due regard for the interests of other States in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area.

A further emphasis on the universal character of the freedom of the high seas and the recognised principle that landlocked States enjoy the same rights on the high seas as coastal States was made by the inclusion of "whether coastal or landlocked".

In the context of the Convention alone, the freedom of the high seas is no longer a freedom *simpliciter* as it was in 1958. As a result, each of the freedoms co-exists with obligations set out in other provisions of the Convention which govern the activities covered by these freedoms.

Under Paragraph 1(d) of Article 87 of the LOSC, the freedom to construct artificial islands and other installations on the high seas is subject to Part VI. This recognises that the continental shelf may extend beyond 200 nautical miles from the coast (i.e. beyond the exclusive economic zone).

Article 80 of the LOSC was made to incorporate Article 60 *mutatis mutandis*. Certain conditions from Article 60 under the regime of the EEZ can thus be applied to artificial islands and other installations on the high seas.

These include:

(i) *Due notice to the construction of such facilities and maintaining permanent means of giving warning of their presence;*

(ii) *Removal of abandoned and disused artificial islands and installations;*

(iii) *Where necessary the establishment of safety zones around such facilities;*

(iv) *Non-interference with recognised sea lanes used for international navigation.*

This Article accordingly applies where the coastal State has not established an EEZ and where the continental shelf extends beyond the outer limits of the EEZ. Both Article 60 and Article 80 of LOSC find their basis in Article 5 Paragraph 2-6 of 1958 Geneva Convention on the Continental Shelf.

In addition, Article 147 Paragraph 2 contains provisions governing the use of installations used for carrying out activities in the Area. The conditions are similar to those applicable to installations in the EEZ. Article 147 Paragraph 2(b) introduces an additional condition in requiring non-interference "in areas of intense fishing activity."

The words *inter alia* in the context of Article 87 of the LOSC indicate once more that the list of specific freedoms is not exhaustive and that the freedom of the high seas may entail more than the enumerated activities. For example, this would include activities in outer space which are conducted from the high seas, such as the launching of satellites. [34] Freedoms are not only exercised in accordance with the Convention but also in accordance with other rules of international law. The language of Article 87 Paragraph 2 must be considered as referring to freedoms of the high seas in a general sense, encompassing all recognised freedoms at any given time.

In its 1956 Commentary, the ILC noted other freedoms such as scientific research, the freedom to explore and exploit the subsoil of the high seas and freedom to undertake nuclear weapons testing. All these are now regulated or prohibited by law. The freedom to undertake nuclear weapons testing is now prohibited under the Treaty of the Prohibition of Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Seabed and Ocean Floor and Subsoil Thereof (1971). Although restricted in other maritime zones, the use of the high seas for military purposes falls under the scope of the freedom of the high seas.

[34] Ibid.

During the Conference, questions and concerns regarding the military use of the high seas were raised. Any such activity would be conditioned by the principle set out in Article 88 of LOSC that the high seas shall at all times be reserved for peaceful purposes. Furthermore, the Preamble to the Convention notes that one of the goals is "to promote the peaceful uses of the seas and oceans". Any such freedom would therefore be conducted on the general obligation of States regarding the peaceful uses of the sea.

Exploitation of the resources of the 'Area,' is not a high seas freedom, since by Article 136 of the LOSC those resources are the "common heritage of mankind". This is a novel concept which runs counter to the Geneva Convention which allowed the exploitation of the subsoil of the high seas. Furthermore through Article 137 of the LOSC, no State may claim or exercise sovereignty over any part of the Area or its resources.

In their exercise of the freedom of the high seas, the LOSC requires that all States exercise their rights with due regard to the interests of other States. No State has a pre-eminent right to exercise any of the freedoms of the high seas, those freedoms being exercised on the basis of equality of States. Freedoms are also to be exercised with due regard to all the activities of exploration and exploitation of the Area.

As a whole, the proposals of the Sea-Bed Committee regarding artificial islands reflected fundamental principles of the Geneva Convention on the Continental Shelf but as applicable to the new concept of the EEZ. Since it is true that Article 60 of LOSC is very much based on the Continental Shelf Convention, the rights and jurisdiction of the coastal State are better defined. Artificial islands are subject to the coastal State's jurisdiction in the EEZ. This applies to all artificial islands irrespective of their size and purpose.

Changes were made to the effect that only installations which serve an economic purpose and which directly interfere with the coastal State's right are included in the provision of Article 60. The 1958 Geneva Convention on the Law of the Sea proposed that in case of abandonment and disuse, installations must be entirely removed. Article 60 of LOSC does not pose such obligation as an absolute requirement and suggests only general criteria for determining the extent of removal in specific instances. In any case, if an installation is not removed the coastal State must give publicity as to its depth, position and dimensions.

1.5 Observations

The historical legal development of artificial islands in the law of the sea is a significant introduction to this study as it sheds light on the fact that the primary concern of States has always been that of limiting the extension of appropriation over broader offshore areas.

The discussions which formally commenced at The Hague Codification Conference revolved mainly around a territorial sea and a contiguous zone, beyond the territorial sea. There was no initial objection to artificial islands having territorial waters of their own, so long as such islands were assimilated to natural islands. In fact, the very fact that they were assimilated to natural islands made them eligible to a territorial sea.

The Geneva Codifications were more significant with regard to the means of expanding coastal State jurisdiction through the use of straight base-lines from which offshore zones would be measured. Although no agreement was reached regarding the six-mile territorial sea and additional six-mile contiguous zone for fiscal, sanitation and customs enforcement, the 1958 Convention on the Continental Self continued to progress on the quest of national appropriation by granting the State "sovereign rights" to sea-bed resources out to the depths of 200 meters or beyond.

Finally, the LOSC strengthened the idea of appropriation even further by settling issues with regard to the territorial sea which was set at twelve miles and a further twelve miles for the contiguous zone. The LOSC also established the 200 mile EEZ, as well as coastal State rights to areas of the continental margin which extend beyond 200 miles.

Throughout this historical study, it can be emphasised that at most instances of drafting of what is today the present LOSC issues arose which were not given full attention. This fact resulted in priority being given to certain topical issues over others which were of less relevance at the time of discussion.

At a later stage of the development of the LOSC, particularly UNCLOS III, many relevant proposals made by Belgium and other States were left out from the scope of the Convention. This results in the present inadequate regulation of the legal status of artificial islands and their jurisdiction on the high seas.

Furthermore, the legal regime of artificial islands has not developed as an independent regime in the rules governing the LOSC, but rather as an issue to be included in the structure of the LOSC. It is in the writer's opinion this fact that has given rise to questions on the true legal nature of artificial islands in international law.

CHAPTER 2

THE LEGAL STATUS OF ARTIFICIAL ISLANDS

This Chapter will investigate the present status of artificial islands as reflected in the LOSC. Since the LOSC gives no formal definition of artificial islands, the examination of discovering the legal nature of artificial islands will be based on an evaluation of other 'non-conventional' law, as well as the assessment of the subject by eminent jurists. This study will, additionally, touch upon the practice taken by States in the treatment of artificial islands. The issue thus explored in this Chapter is to determine when international law recognises a structure or installation as an 'artificial island.'

2.1 Artificial Islands in the LOSC

The LOSC uses various seemingly interchangeable terms associated with artificial islands in different contexts. Attention to cases where certain terms are used rather than others can implicitly assist in developing an initial understanding of what constitutes an artificial island in international law. Generally, the relevant terms used by the LOSC include: "artificial islands"; "installations"; "structures"; "devices"; "equipment" and "machinery".

The first general provision which seeks to encompass all the above terms for the purpose of defining "pollution of the marine environment" is precisely Article 1 of the LOSC. This provision makes a distinction between "vessels", "aircraft", "platforms" or other "man-made structures at sea".[35]

[35] LOSC Art. 1. (5) (i), (ii).

While the latter term seeks to encompass all structures which do not constitute the nature of a platform, the word 'platform' can include drilling platforms, as well as floating platforms. However, the law seems to use the general form of the word 'platform' to include everything that can resemble that feature. It is important to note that the LOSC makes a clear distinction between vessels and other structures found at sea. This is significant since different types of installations have, for purposes of accommodating their nature been assimilated to 'vessels'. This will be considered in further detail at a later stage.

In Article 11 of the LOSC it is stated that for the purposes of delimiting the territorial sea, the outermost permanent harbour works which form an integral part of the harbour system are regarded as forming part of the coast. Offshore installations and artificial islands are not considered as permanent harbour works. The law at this instance makes no distinction between installations and artificial islands but treats them both equally as distinct structures from permanent harbour works. The use of the word 'permanent' is significant as it implies a distinction between the nature of a temporary structure and permanent works.

Article 56 of the LOSC establishes the rights, jurisdiction and duties of the coastal State in the EEZ. Sovereign rights pertain to the coastal State with regard to other activities for the economic exploration and exploitation of the zone such as "the production of energy from the water, currents and winds."[36] It is significant that the law recognises activities used for the production of energy from the sea. However, the legal designation of "structures" or "devices" through which activities of exploration and exploitation can take place for the production of energy is not described. The law thus limits its description to "activities" without linking the structured forms which provide the function of the described "activities". The projects which are soon to start operating at sea which include energy islands, solar islands, and wind farms- as will be explored in Chapter 3 - are thus not adequately catered for by the LOSC, except by this vague provision of the law.

[36] Ibid. Art. 56. (a).

The first inferred distinction the LOSC makes in outlining the nature of distinct terms used is between "artificial islands" as diverse from "installations and structures".[37]

While artificial islands and installations may be of different characteristics, "structures" is a term which seems once again to include anything which pertains to a diverse nature other than that of an artificial island or installation. The distinction made in the provision is only in terms of enlisting artificial islands as separate from installations and structures, in effect, the rest of the provision applies to all the different terms equally.

Hossein points out that it can be understood from these articles that the category of 'artificial islands' is theoretically larger than that of 'offshore installations.'[38] This is due to the fact that while artificial islands can be constructed for any purpose, installations are constructed only for the purpose of exploring and exploiting, conserving and managing natural resources, whether living or non-living, of the sea and the sea-bed and its subsoil and for other economic purposes.

In the accommodation of activities in the 'Area,' reference is only made to the conditions to which installations are subject.[39] This provision of the law distinguishes installations from artificial islands in that only the former are regulated by the 'Authority' in the 'Area'. As compared with the previous provision of the law where installations and structures have been treated equally, at this instance only installations are subject to the Authority.

A term which is not used frequently in the LOSC is that of "devices". This is used additionally with the term "installations" in matters relating to the protection and preservation of the marine environment.[40]

[37] Ibid. Art. 60.
[38] Esmaeli Hossein, *The Legal Regime of Offshore Oil rigs in International Law*, Dartmouth Publishers 2001, 43.
[39] LOSC. Art. 147.
[40] Ibid. Art. 145. (a), Art. 194. (c), (d).

The LOSC makes a distinction between installations and devices used in the exploration and exploitation of the natural resources of the sea-bed and subsoil and 'other' devices operating in the marine environment. The word 'device' as defined in the Oxford Dictionary denotes a thing made for a particular purpose, especially a mechanical or electronic contrivance.[41]

'Device' is thus a term which can include objects having a mechanical purpose of exploration and exploitation for different purposes, as well as mechanical devices used for other purpose. In addition, the word 'device' is synonymous with invention and can comprise all such new inventions used at sea which do not fall under either of the mentioned categories.[42] Since it differs from the other expressions used in the LOSC which seem to refer to a fixed physical nature, a 'device' gives the possibility of inclusion of structures which pertain to a mobile form.

In cases of pollution from activities in the 'Area' the LOSC empowers States to adopt laws and regulations to prevent, reduce and control pollution of the marine environment as undertaken by vessels, installations, structures and other devices.[43] With regard to scientific research carried out in the marine environment, the LOSC regards the structures from which such scientific research is carried out as installations or equipment.[44]

Under the lists of objectives pertinent to the Authority in the 'Area', responsibility is placed on the Authority to ensure that technical documentation on the relevant 'equipment', 'machinery', 'devices' and processes is made available to all States.[45] It is interesting to note that the words used, all hold similar or connected mechanical purposes.

[41] Oxford Dictionary of Current English, Third Edition, 23 June 2005.
[42] Ibid.
[43] LOSC Art. 209. (2).
[44] Ibid. Art. 258, 262.
[45] Ibid. Art. 274 (b).

An outline of the various terms used by the LOSC and the context within which they are used was enlisted in order to clarify the nature of artificial islands in international law. From this understanding of the law, it can be deduced that the LOSC primarily distinguishes artificial islands from installations.

At a second instance, the LOSC makes use of other terms including "structures" and "devices" which are vague in their nature, but with the comprehensible scope of providing a wide inclusion of the various types of platforms which can be deployed at sea. Moreover, no distinction is made between structures which are mobile or immobile. Consequently, although a form of wide interpretation has been obtained by the utilisation of different and additional terms by the LOSC, it is desirable that such terms be given further importance by formulating a proper interpretation in the light of present and future technological innovations.

It is for this reason that in 1980, the Drafting Committee suggested that a provision of the law should be included which would specify that installations include artificial islands and structures. However, this was never formulated.[46] This omission has brought about the present difficulty in defining the legal nature of artificial islands.

Although one recognises the importance of a definition, there is also a difficulty in the formulation of a definition. As held by Meyer: "water tight definitions do not exist even for ships."[47] In fact, the definitions given for ships, when given, are all relative to the particular scope of the legislation. Yet, one finds no universal definition of a ship that can be applied to all circumstances.[48]

In order to determine the nature of artificial islands, it is important to refer to the status of 'natural islands' as well as 'ships and vessels', since both have been assimilated to artificial islands.

[46] A/CONF.62/L.57/Rev1 (1980), Section VIII, XIV Off. Rec. 114, 119 (Chairman, Drafting Committee).
[47] H. Meyer, *The Nationality of Ships*, The University of Chicago Press 1967, 15.
[48] Esmaeli Hossein, *The Legal Regime of Offshore Oil Rigs in International Law*, Dartmouth Publications 2001, 21.

2.2 'Natural Islands'

The importance of an island is that wherever it may be situated and whatever and however minimal its area, it has its own territorial sea, just as any other area of land. Marine formations which are not islands do not generate any territorial sea.[49] It is, therefore, important to know what constitutes an island. An island is defined as "a naturally formed area of land, surrounded by water, which is above water at high tide."[50] The law presents three requisites that purport to the nature of an island: that the formation must be natural and not artificial; above sea-level and visible in all states of the tide.

The distinction between 'natural' and 'artificial' islands has originated in order to ensure that States are prohibited from appropriating areas of the sea by installing artificial constructions. In fact, it was for this reason that it was acceptable to assimilate artificial islands to anchored lightships and guard ships instead of 'natural islands', thus limiting the possibility to acquire title over ocean space.[51]

Both the Geneva and the LOSC defined an island as a "naturally formed area of land." In the past, the expression "naturally formed" was considered as being ambiguous and may refer either to the materials of construction or to the process of reclamation. If the processes of nature can change an area from being sea-bed to becoming an island by reclamation, even if it can be called 'artificial', is not altogether an 'unnatural formation.'[52] Not much reflection is required to realise that this view is not well-founded.

[49] LOSC, Art. 121(3) - Rocks which cannot sustain human habitation or have an economic life of their own shall have no exclusive economic zone or continental shelf.
[50] Ibid, Art. 121 (1).
[51] C. John Colombus, *The International Law of the Sea*, 1959, 4th Revised Edition, 109.
[52] *The Law of the Sea*, ICLQ, Vol. 8 1959, 85.

For anything on an island whether incorporated to it or not, to be part of the island, as thus described, it surely must be not only naturally formed but naturally formed with the island. This means that any installation or structure of any kind built on an island, while it may be deemed as an accessory to the feature surely does not form part of it.[53]

The definition of a 'natural island' may from the points stated above seem straightforward. However, problems may arise, and have arisen in the case where a "naturally formed area of land" loses the requirement of "being above water at high tide". A possible shift in this respect from the status of an island to that of a 'non-island' may be the result of climate change which is an ever increasing subject of global concern.[54] "With global warming on the increase and the resultant sea-level rise throughout the world, it is possible or even probable that an island can be submerged below high tide to lose its legal status as an island."[55]

Artificial works have the potential not only of producing land which is similar in nature to a 'natural island' but can also be a means by which a natural formation does not lose its status. The law does not cater for this occurrence and controversy over the legal status of an island which is lost may arise. It is suggested that a supplement on the legal status of natural islands be provided in order to clarify this unforeseen circumstance.

2.3 'Ships' and 'Vessels'

The assimilation of a ship to territory has in the past led to an erroneous interpretation of the law. A ship is not a person, nor a territory; it is to borrow a word used by Lord Finlay in 1927 in the *Lotus* case "a movable chattel" of a "very special nature".[56]

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[53] Roberto Lavalle, *Not Quite a sure Thing: The Maritime Areas of Rocks and Low-Tide Elevations Under the UN Law of the Sea Convention*, I JMC L, Vol. 19 No 1 March 2004, 58.
[54] David D. Caron & Henry N. Scheiber, *Bringing New Law to Ocean Waters*, Publications on Ocean Development 2004, 84.
[55] Ibid.
[56] *Lotus Case* (France v. Turkey) 1927 PCIJ, Ser. A No. 10.

The International Law Commission (ILC) in 1955 unanimously agreed to delete a draft definition of ship which read: "A ship is a device capable of traversing the sea, but not the air space, with the equipment and crew appropriate for the purpose for which it is used".[57] It was felt that the task of limiting 'ships' to this particular definition would be subject to conflicts. In the light of this the LOSC today does not provide a general definition of a 'ship' or 'vessel'.

A 'ship' is generally described as "a large sea going vessel with engines or sails". A vessel is defined simply as "a ship or large boat".[58] The definition of a ship contains two elements - a reference to the physical object itself, in that it is described as a "vessel"; and a description of the purpose for which it is used, i.e. that it should be "sea going." The definition of a vessel also involves a reference to its use. It is therefore possible to determine that a ship is defined as a vessel, subject to certain qualifications, as to nature and purpose of the vessel; and that a vessel too is defined with some reference to its usage.

As discerned from the definition above, a universal quality pertaining to ships is that of movement.[59] Navigation is of principal importance for a ship. It is the primary function of the object but it is not the primary function of an installation or artificial platform. Oil rigs, for example, are in a large number of national cases considered as ships[60] even though they are only incidental and not principally engaged in navigation. National legislation has widely took the steps of more conveniently relating oil rigs to ships rather than creating a new category which would present novel issues.[61]

[57] I.L.C. Yearbook 1950 II, 38.
[58] Collins Dictionary, Harper Collins Publisher 1999.
[59] Esmaeli Hossein, *The Legal Regime of Offshore Oil Rigs in International Law*, Dartmouth Publications 2001, 22.
[60] Ibid, 23.
[61] Ibid.

Among the list of the various structures which have been held not to be capable of navigation and therefore not regarded as a ship, one finds: floating gas beacons, moored pontoons carrying a crane with limited mobility and a floating landing stage.[62] Where a watercraft does its work while being engaged in navigation whether self propelled or otherwise, the tendency is that it is termed as a 'ship.' [63] Where a platform, installation or structure has a hybrid use, the predominant function of such is questioned. It is significant to note that what should be made applicable is the function for which the structure is being used, not any former use or that originally intended by its builders.[64]

Hossein considers this at length in his book which examines the various definitions of ships found in International Conventions. His study has shown that the definitions of ships were given according to the separate aims of the different Conventions.[65]

The International Convention for the Prevention of Pollution from Ships (MARPOL) defines a ship as "a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms".[66] This definition is very similar in nature to that which has been previously adopted by the Convention on the Prevention of Marine Pollution and Dumping of Wastes and Other Matter, known as 'The London Dumping Convention' of 1972, which included a definition of "vessels and aircraft" as being "waterborne or airborne craft of any type whatsoever. This expression includes air cushion craft and floating craft, whether self propelled or not."[67]

[62] *Wells v The Gas Float Whitton* No. 2 (1897) AC337, *Merchants' Marine Insurance Co Ltd v North of England Protection and Indemnity Association* (1926) 25 LR 446. Cf *R v St John Shipbuilding & Dry Dock* (1981) 126 DLR (3d) 353, *The Craighall* (1910).
[63] *Marine Craft Constructors Ltd. v Erland Blomqvist (Engineers) Ltd.* (1953) 1 Lloyd's Rep 514.
[64] *European & Australian Royal Mail Co Ltd v Peninsular & Oriental Steam Navigation Co* (1866).
[65] Esmaeli Hossein, *The Legal Regime of Offshore Oil Rigs in International Law*, Dartmouth Publications 2001, 41.
[66] The International Convention for the Prevention of Pollution from Ships (MARPOL), 1973, Art. 2 (4).
[67] Convention on the Prevention of Marine Pollution and Dumping of Wastes and Other Matter, 1972.

The MARPOL Convention is one of the most important environmental conventions which has 161 countries party to it. There are a number of other Conventions which have adopted a definition very similar in nature to that of MARPOL.[68] The definition of 'ship' although specific to the question of pollution, can be said to have wide application since it has been adhered to by many States. A ship as is defined in the Convention is not confined but is far ranging to encompass 'any type whatsoever'. The definition is one which includes all types of platforms whether fixed or floating as ships, but which does not include artificial islands.

Among the conventions which make use of special terms included in the definition of 'ship' are the International Convention on the Control of Harmful Anti-Fouling Systems on Ships, and The Convention for the Control and Management of Ship Ballast Water and Sediments, which respectively include the terms "Floating Storage Units" (FSUs) as well as "Floating Production Storage and Off-Loading Units" (FPSOs) in the definition of 'ship'.

A Convention of significant importance relating to maritime safety is the International Convention for the Safety of Life at Sea (SOLAS) which does not formulate a general definition of ship but rather enlists ships used for different purposes. These include: passenger ship; cargo ship; tanker; fishing vessel and nuclear ship.

Since the LOSC makes no qualification of the general terms 'ship' and 'vessel', it is left to the particular State to regulate details pertinent to what qualifies as a ship under national legislation.[69] The mention of structure and design relevant to ships in the LOSC though lacking in detail, reflects that a ship requires specific characteristics to be qualified with the status of a 'ship'.

[68] The Convention on the International Maritime Satellite Organization, 1976, The International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990, The International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001.
[69] LOSC, Art. 91(1).

Wegelein[70] takes the task of examining the different 'types' of vessels mentioned under the LOSC and how they differ according to function. Among the different categories one finds 'research vessels', 'warships', 'fishing vessels', 'merchant ships' and 'Government vessels'. A relevant point is made that a particular vessel having a particular function can be called a 'research vessel' only if it pertains to 'research' but simultaneously even if it does not undertake the task of research it is always a vessel. Of course, the qualification of function of the vessel has no significance unless the function is carried out.[71]

In the LOSC both 'warships' and 'fishing vessels' are significant in the light of what they were designed to operate. Furthermore, they should be allowed to operate only in their relative use and thus regulated accordingly. The position relevant to 'research vessels' in the LOSC also reserves specific conditions relevant to marine scientific research.[72] . Although the capability of navigation is common to all these vessels, specific significance should be given in the light of their main activity of operation.

It has been analysed that a ship must not only be capable of navigation, but the use for which it is structured also forms the status of a ship. It can be held that a ship is a general term which admits of qualifications of specific use. This point is significant when focusing on the legal status which should be determined in relation to the different artificial structures.

[70] Florian H. Th. Wegelein, *Marine Scientific Research: The operation and status of Research Vessels and other Platforms in International Law*, Publications on Ocean Development, 2005, 121-135.
[71] Ibid, 126.
[72] LOSC, Art. 248 (b), (d), Art. 249 (1) (a).

In the *Merchants' Marine Insurance Co. Ltd. v. North of England Protecting & Indemnity Association* Scrutton L.J referring to the judgment under appeal held:

> *"One might possibly take the position of the gentleman who dealt with the elephant by saying that he could not define an elephant but he knew what it was when he saw one, and that it may be that this is the foundation of the learned judge's decision, that he cannot define 'ship or vessel' but he knows that this thing is not a ship or vessel."*[73]

Meyers seems to be quite right in his discussion on ships when he holds that it would be "too optimistic to expect to avoid all possibilities of confusion" and that there does not in fact exist an "unambiguous international use of the term under consideration"[74].

2.4 'Artificial Islands' and 'Installations'

An artificial island or offshore installation refers to a man-made structure in the territorial sea, in the EEZ or on the continental shelf which is usually used to explore or exploit marine resources. These may also be built for other purposes, such as marine scientific research and tide observations.

Artificial islands or other offshore installations are defined as being subject to all jurisdictional and other limitations and requirements as stated in the LOSC. For example, artificial islands do not possess any territorial sea, artificial islands or offshore installations, cannot be considered as permanent harbour works[75] and coastal States are responsible under the Convention for environmental protection in relation to artificial islands.[76] This is the broad definition given of what artificial islands are according to the general legal framework of the LOSC.

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[73] *Merchant Marine Insurance Co. Ltd. v. North of England Protecting and Indemnity Association* (1926) 26 L1.L.R. 201 (C.A.) 203.
[74] H. Meyers, *The Nationality of Ships*, Nihoff 1967, 9.
[75] LOSC, Art. 11.
[76] George K. Walker, John E. Noyes, Definitions *for the 1982 Law of the Sea Convention – Part II*, CWILJ Volume 33 2002-03.

However, there is more that requires consideration in order to determine the status of artificial islands in international law. Artificial islands and installations have two characteristics which distinguish them from natural islands: they are usually man-made, and they are permanently or transitionally fixed to the sea floor which determines their geographic location.

The term 'island' as utilised with respect to these novel structures can be misleading. It is for this reason primarily important to state that an 'artificial island' though called an 'island' is not in effect an 'island' in the natural sense of the word. To refer to a floating structure, as a floating 'island' presents an abuse of terminology for the simple reason that since it is not a natural island it does not constitute the nature of 'land' even if it could be anchored to the sea-bed.

Installations designed for the purpose of exploiting the seabed have no possibility whatsoever to be considered as islands, since they are not 'naturally formed' and they do not constitute a 'true portion of territory'. In 1951, Johnson, as cited by Symmons, asserted that "an installation that is here today and gone tomorrow" does not satisfy the test of permanence.[77] The term 'installations' has been described as referring collectively to man-made structures constructed from such materials as concrete and steel, for example drilling platforms, which do not possess the same degree of permanence as artificial islands.[78]

Article 1 (1) of the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) provides the following definition for offshore installations: "Offshore Installations means any man-made structure, plant or vessel or parts thereof, whether floating or fixed to the sea-bed, placed within the maritime area for the purpose of offshore activities."[79]

[77] Clive R. Symmons, *The Maritime Zones of Islands in International Law*, Martinus Nijhoff Publishers 1979, 25.
[78] Nikos Papadakis, *The International Legal Regime of Artificial Islands*, Leyden 1977, 6.
[79] Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), adopted 22 September 1992, entry into force 25 March 1998.

No differentiation seems to have been made between a platform and a vessel even for the scope of the Helsinki Convention – Article 2(3): "Ship means a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms."

Several other Conventions have also treated certain kinds of artificial islands and fixed oil rigs as the same for specific legal purposes. For instance, the 1988 Protocol for the Suppression of Unlawful Acts against the safety of fixed Platforms located on the Continental Shelf states that for the purpose of this Protocol 'fixed platforms' means an artificial island, installation or structure permanently attached to the seabed for the purpose of exploration or exploitation of resources or for other economic purposes.

The Protocol considers both an artificial island and an oil rig attached to the sea-bed for the purpose of exploration and exploitation of the natural resources of the sea as a 'fixed platform' and treats them in the same manner for the purpose of the suppression of unlawful acts against their safety."[80]

Soons gives four categories of structures:[81]

1. Floating structure kept in the same position by anchors or other means;
2. Fixed structures resting on sea-bed by means of piles or tubes;
3. Concrete Structures;
4. Structures created by the dumping of natural substances such as sand, rocks and gravel.

[80] Esmaeli Hossein, *The Legal Regime of Offshore Oil Rigs in International Law*, Dartmouth Publishing Company 2001, 43.
[81] Alfred H.A. Soons, *Artificial Islands and Installations in International Law*, Occasional Paper 22, July 1974.

Fitzpatrick defines artificial islands and installations as man-made, surrounded by water from all sides, above water at high tide, supposed to stay at a specific geographical location for a certain span of time, and which are stationary in their normal mode of operation at sea.[82]

Both Soons and Fitzpatrick's definition of artificial islands and installations however, excludes floating structures which may not necessarily be stationary in their mode of operation and may not be kept at the same position by anchors or other means. The status of floating islands is of growing importance in the industry, and will be a widely used practice of the future. It is thus important to give due consideration to the legal status of an artificial floating island.

Despite its mobile capabilities, a floating structure does not have the characteristics of a ship as *res certa*, and its crew and labour conditions are basically different to those of a ship. Such served as a basis in the *REM case* where it was held that artificial structures erected on the sea-bed were in a different legal position than that of ships.

Artificial islands are normally associated with fixed structures of a permanent nature. On the other hand, floating platforms can be anchored to the seabed as can fixed installations whose nature is considered of a more temporary nature. However, a more modern version of artificial constructions includes floating platforms having their own propulsion which may operate while navigating the seas. This may include ocean thermal energy conversion (OTEC) plant ships as well as solar islands.

Of the significant 'artificial islands' which will be illustrated in Chapter 3 are those which will come into operation in the coming years. These fall under the heading of Ocean Floating Energy Platforms (OFEP) and include all the concepts of different forms of energy resources exploitable at sea. These generally comprise: solar islands, energy islands, floating nuclear power plants (FNPP), wind farms and OTEC devices.

[82] Cordula Fitzpatrick, Legal Issues of Ocean Cities: http://2100.org/w_oceancitieslegal.html.

Although for practical purposes definitions of vessels, ships, structures and artificial islands which are recognised under international law could be made to fit to OFEP – it could be that an OFEP fits into more than one of these traditional categories at the same time, or could change categories from time to time resulting from change in position or function.[83]

An OFEP can be propelled and thus be a capable sea going platform. An OFEP is likely to be recognised as a structure for the purposes of the LOSC, but if States widely categorise OFEPs as vessels, such characterisation may achieve international recognition. If an OFEP falls within the definition of a vessel it will seek registration as a ship flying its own flag, but this has to be enforced through State practice. Status would be thus obtained without subjection to a major regulation. As a new kind of ship with unique problems and capabilities, an OFEP may seek special registration terms which reflect the nature of its operation.[84]

It is, however, significant to note that although registration and flag jurisdiction are a means of providing effective jurisdiction by the State concerned, certain rights given to the flag state by law, such as that of innocent passage, may be of no significance whatsoever to OFEPs which do not require such rights. Pertaining to their distinct functions, there will always be something which 'traditional' law does not cater for, it is therefore important to give proper importance to OFEPs as structures with their own mode of operation.

In relation to this a significant point was made in 1887, in the case, *Cope v Vallette Dry-Dock Co.* the US Supreme Court agreed that the terms 'ships' and 'vessels' are used in a very broad sense, but observed that the fact that something floats on water does not make it a ship or vessel.[85]

[83] John King Gamble, Jr., *Law of the Sea: Neglected Issues*, Law of the Sea Institute 1978, 277.
[84] Ibid. 282.
[85] *Cope v Vallette Dry-Dock Co.*, 119 U.S. 625, 30 L. Ed. 501, 7s, Ct. 336 (1887).

In another case a 'pirate ship' was concerned and it was held that the character of a ship is lost once it no longer functions as one, even though it remained seaworthy and had been towed.[86]

Furthermore, as has been clearly explained by Gamble:

> *"It is typical of both the law and human nature that new developments are met by an attempt to place them in old categories. Automobiles were merely 'horseless carriages' until they began to transform urban society; submarines were 'U-boats' until they transformed naval warfare. Similarly, OFEP will probably be structures, ships or new states until they transform the use of ocean space and are placed in a category distinctly their own. In the transitional period, a functional analysis may evolve which relies upon but is not bound by traditional definitions."*[87]

Finally, one view, which can be termed as the residual approach, is that artificial islands are man-made structures which are, *prima facie*, neither islands nor ships in international law. Another approach is that an artificial island should be regarded as *sui generis*, a separate legal category being established for it. [88]

2.5 Evaluation

In this Chapter an alternative to determining a new title of classification given to artificial islands was considered. The intention was to attempt to incorporate artificial islands into the existing formulations given to ships, vessels or islands. This would be done even on the strength of certain national and international legislation which has taken such an approach. Although this situation could be well viewed as a temporary solution to the complex problem of categorisation of a novel concept, it is not an ideal position since the different nature and characteristics of these structures may give rise to distinct legal problems.

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[86] *Hayford v Doussony*, 32 F. 2nd 605 (1929).
[87] John King Gamble, Jr., *Law of the Sea: Neglected Issues*, Law of the Sea Institute 1978, 293.
[88] Gidel, *Le Droit Public de la Mer*, (1934), Vol.ii.

Since it is clear that according to international law, artificial islands are neither islands nor ships, a hybrid position has been at times adopted since for some purposes, artificial islands may still be incorporated into the law regulating ships.

The situation as it stands in international law is more regulated in terms of exploration and exploitation than to the actual status of artificial islands. This is due to the fact that since most of the different structures are yet to start operating, there is no status of precedent on which regulations can be based, while drilling platforms and other means of exploration and exploitation in use have found a more favourable position at law.

It is interesting to note that in 1973, Malta addressed the issue of anchored or floating installations in the light of the use of such structures. In its Draft Treaty on Ocean Space, Malta noted particularly that the purpose of these structures and implications of use in international order should be determined before suggesting detailed regulations.[89]

It is clearly demonstrated that the absence of a formal pronouncement on the status of artificial islands creates a state of confusion leading to possible deceptive assimilations to other sources which are not truly of the same nature. Furthermore, in this examination it is found to be desirable to create a framework which distinguishes all the interchangeable terms used by the LOSC, as well as to separate the very nature of structures as being fixed or floating. Further distinction can then be made with regard to function. Only then can a proper legal frame work be formulated.

[89] A/AC.138/SC.11/L.28 Chp XVI, reproduced in III SBC Report 1973, at 35, 69 (Malta)

CHAPTER 3

DIFFERENT TYPES OF ARTIFICIAL ISLANDS

The purpose of distinguishing between the different types of artificial islands is significant especially when attempting to classify their legal status in international law. The existing diversity of artificial constructions brings about the need for a clear definition which is adaptable to accommodate technological advancements in their construction and use.

This presentation of the different types of artificial islands is not intended to be an exhaustive list but rather to be illustrative in nature. An attempt is made to restrict the description to present developments, as well as to projects which are likely to be completed in the near future. With regard to such projects, the author was faced with a significant obstacle due to the fact that many of the proposed projects involving the building of artificial islands have not as yet materialised.

This discussion is relevant in order to determine the significance of whether the question of artificial islands needs to be given greater legal value at an international level. It has been stated that since international law is constantly evolving, it cannot cater for all the different types of artificial islands which are subject to innovation through technological developments.[90] This discussion will seek to demonstrate that it is imperative that international law deals with this challenge by addressing present technical needs while foreseeing flexible future changes.

[90] Nikos Papadakis, *The International Legal Regime of Artificial Islands*, Leyden 1977, 4.

3.1 Energy Platforms

Among the different types of artificial islands one finds those which are used as a source of energy. The concept of energy in relation to artificial islands will be discussed hereunder in the context of oil rigs, liquefied natural gas (LNG), FNPP and renewable energy sources exploitable at sea.

The continuous need for oil in all parts of the world has motivated the development of new ways to discover and obtain it. Since large quantities of oil are found offshore, oil companies and engineers have developed adequate technology to adapt to the different types of seabed formations.

An offshore oil platform is a large structure used to house workers and machinery needed to drill wells in the ocean bed, extract oil, process the fluids which are produced and ship them to shore. The oil platform can be of a fixed or floating nature. Many types of oil rigs have been developed in order to be able to best exploit the energy available in a specific location.

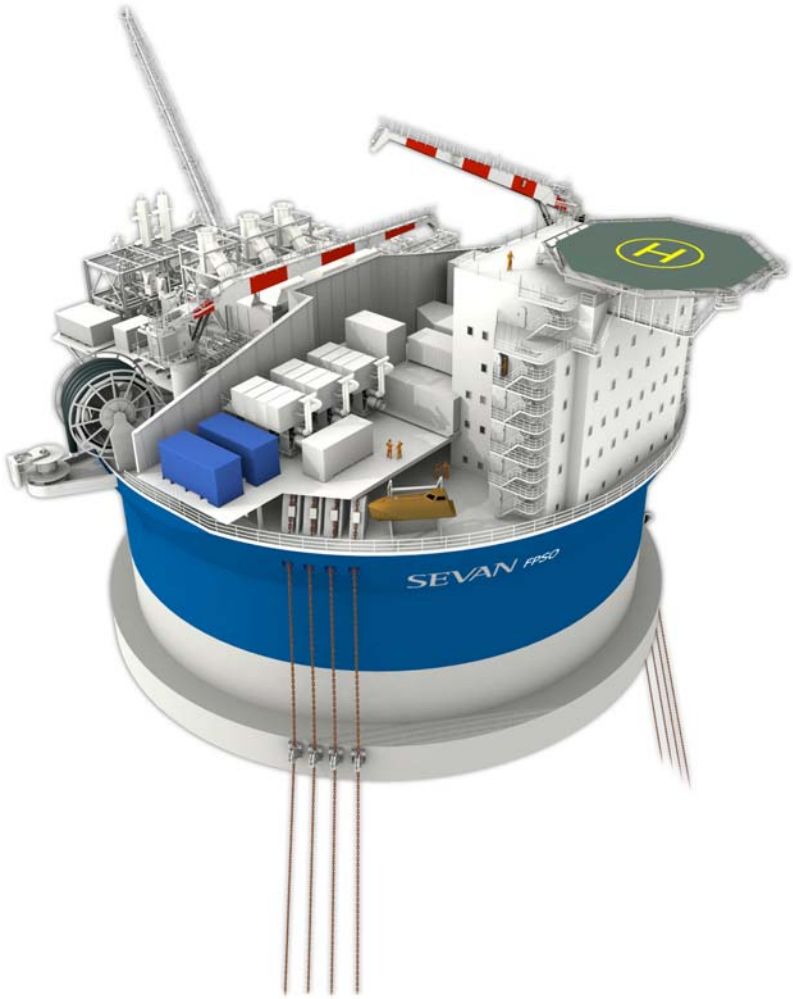
Offshore platforms form part of three principal categories:

- concrete platforms made on land towed to the sea and connected to the sea-bed;
- jade-up platforms - which are fixed to concrete placed on the sea-bed on top of which are metal legs which rise above the water;
- floating platforms which are restricted or fixed to a place by anchorage to the sea-bed.[91]

Recently semi-submersible drilling units are being utilised as new 'vessels' with the ability to drill wells up to 12,000 metres deep at water depths of 3,000 metres, whilst having the storage capacity of 150,000 barrels.[92]

[91] Energy Synopsis: http://dieoff.org/synopsis.htm .
[92] *DNV enjoying Far East Success*, JOT, January/February 2008, 25.

Floating platforms are generally structures of the 'semi-submersible' type. This term is used to indicate that there is a significant part of the structure located beneath the surface of the sea. The bulk of the structure's mass, which provides the platform's buoyant properties and inert stabilisation, are located well below the zone of turbulence and wave action characteristic of the air-ocean interface.[93] The resulting structure is remarkably stable.



Source: The Journal of Offshore Technology January/February 2008 © DNV

New semi-submersible drilling unit based on the Sevan 650 design

[93] Adam Starchild, *The Ocean Frontier*, University Press of the Pacific, Hawaii 2002, 11.

It is possible to design a semi-submersible platform which, even though unmoored in the high seas, will never experience an acceleration of .02g or greater. This figure represents the limit of human ability to detect motion. It is also well below the level of acceleration that many urban codes require in structures so as to ensure safety during an earthquake or land tremor.[94]

In relation to the subject matter of artificial islands and installations, oil rigs have a potential importance due to the fact that they are the most common type of installation in the world. Recent research on the technical aspects of engineering and technology shows that the decommissioning of offshore structures will be on the increase and that over the next twenty years some 4400 structures are planned to be removed worldwide.[95] The necessity for legal acknowledgement with respect to the utilisation of new operational technology relative to the removal of redundant oil and gas installations as opposed to the conventional systems should be enforced. Legal recognition would ensure environmental protection of the seabed since the operation of this new equipment prevents damage to the seabed and has been specifically designed to reduce the volume of the material used by dredging.[96]

Another source of energy which is extracted in very much the same way as oil is LNG. Despite the fact that sources of natural gas are abundant, and experts have placed a predictive value on this of more than 3000 trillion feet, more than one-third of the global gas reserves are without commercially viable access to world markets due to their location and field size.[97] There has been resurgence in interest in floating solutions for the transportation of natural gas aimed at taking advantage of these reserves which are scattered around the globe. A number of concepts which focus on compressed natural gas (CNG) carriers, as well as floating liquefied natural gas are about to become commercial realities in various parts of the world.[98]

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[94] Ibid.
[95] *New Technology ready for deep cuts*, JOT, January/February 2008, 15.
[96] Ibid.
[97] *New gas transport concepts gaining ground*, JOT, January/February 2008, 24.
[98] Ibid.

Although these new developments still require verification with regard to technical aspects, the necessary regulation has to be in place for such developments to materialise.

Source: The Journal of Offshore Technology January/February 2008

Floating LNG design concept aimed at capturing gas reserves

Artist Impression of an SBM/Linde LNG FPSO

While oil rigs and gas extraction have become established industries, the presence of new types of structures brings about uncertainties with regard to legal classification. One such structure is the Floating Nuclear Power Plant (FNPP).

The completion of the world's first FNPP is projected to take place in the year 2010. This FNPP will be in the form of a non-self-propelled vessel.

It is being developed by a Russian nuclear energy company in order to reach northern territories near the White Sea where harsh weather makes regular coal and oil fuel deliveries unreliable and expensive. The plant is expected to store waste and spent fuel in an onboard facility. The normal life span of a nuclear power plant is forty years after which it will be towed away and replaced with a new one.

When, in the 1970s, questions were raised as to whether the deployment of FNPP would be a 'reasonable' use of the high seas, there were doubts on the exact adverse impact such power plants could have on the surrounding environment. Distrust was expressed with regard to the potential disturbance of marine life due to differences in sea temperature and other considerations. Concerns in relation to the FNPP have also been expressed due to the fact that nuclear energy, although an important source of energy in many countries, has developed a bad reputation especially after the Chernobyl accident.

Furthermore, since the venture will operate in a new form, the risks are regarded as being high. These may include the spillage of waste into the White Sea, as well as a radioactive steam explosion.[99] Environmental groups and nuclear experts are concerned that floating plants will be more vulnerable to accidents and terrorism than land-based stations.[100] It is important to mention at this stage that, apart from the Arctic area which is to receive the first nuclear power plant, the Russian authorities have plans for eleven other possible sites for such reactors.

A cause of frequent conflict today, due to non-conformity between geographical availability and demand, is in the exploitation of fossil fuels. Recognising the finite nature of fossil and nuclear energy sources it is generally predicted that at some stage, it will be necessary for renewable energy sources to replace these types of fuel. The debate is more about how soon this will occur.

[99] Chris Jablonski *A Russian floating nuclear power plant? Emerging Technology Trends*, October 15th 2006: http://blogs.zdnet.com.
[100] Ibid.

Source: Urban Neighbourhood Press

Concept drawing of - The Academician Lomonsov –

FNPP designed by Russia to start operating in 2010

In his book, '*The International Legal Regime of Artificial Islands*' published more than thirty years ago, Papadakis predicted that giant nuclear power stations on floating platforms would be the future prospect of reshaping the world.[101] This idea has only recently become a realistic possibility. Today, it is generally believed that a more environmental and convenient alternative to fossil fuels will be in the exploitation of renewable sources of energy.

[101] Nikos Papadakis, *The International Legal Regime of Artificial Islands*, Leyden 1977, 24.

At the time when UNCLOS III was being drafted, the fact that renewable energy could become a solution to many of today's problems was regarded by many technical experts in the field as being unrealistic.[102]

This perception has changed and the demand for renewable energy is expected to double by the year 2030. Additionally, by the year 2030, solar islands are estimated to contribute about one fourth of the estimated global energy demand.[103] While these islands will be referred to hereunder, it is noted that the need to generate clean electricity has never been more urgent.

Studies have shown that renewable energy can be utilised in quantities exceeding present technological capability, without environmental harm or general climatic disturbances.[104] This is reassuring since a challenge of greater concern than that of energy demand is the threatening alteration in climate change. It has been foreseen that with rising sea levels, low-lying lands will be menaced by initial flooding and later disappearance.[105] This is all the more problematic since world population is increasing. Erosion and desertification are also predicted to reduce the land available for habitation.

It is therefore suggested that artificial islands in the form of renewable sources of energy are likely to become necessary to ensure the survival of mankind.[106] However, in order to commence operations in the sector, the industry needs to be aware of the legal implications beforehand. Without this security, the industry would be less willing to invest in innovations which would contribute to the production of clean sources of energy. As a consequence of this delay, investment is likely to be utilised in other areas rather than the exploration and exploitation of renewable energy sources at sea.

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[102] Bent Sorensen, *Renewable Energy Its physics, engineering, environmental impacts & planning*, Third Edition, Elsevier Academic Press 2004, 24.
[103] CSEM Scientific and Technical Report 2007: http://www.solar-islands.com.
[104] Ibid.
[105] Dominic Michaelis, Energy Island Concept: www.energyisland.org.
[106] Ibid.

In order to appreciate the important future implications of the use of renewable energy the author shall delve into the discussion of the various natural sources of energy which can be explored and exploited at sea.

Of all the renewable sources, solar energy is by far the most abundant. This has been certified by the World Energy Council which prescribes solar energy as being a source on which other sources of energy depend in order to provide for ever-increasing demands.

Large floating islands will be deployed in the near future for the exploitation of solar energy.[107] In areas near the equator where solar radiation is very intense, solar islands can be utilised to their full potential. The advantages of solar islands on the sea combined with water desalinisation include the abundant availability of the water needed to generate hydrogen and cooling.

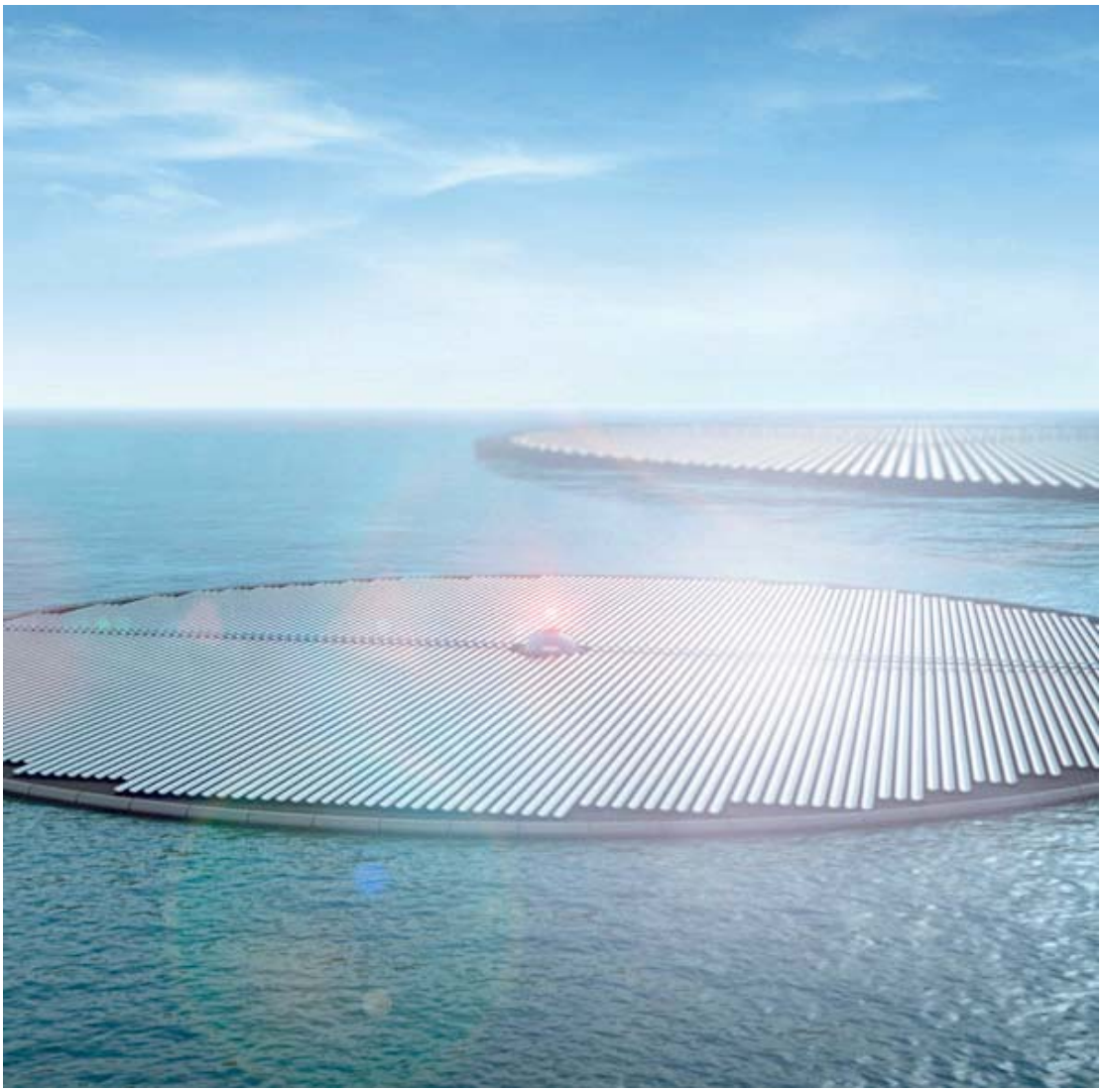
A significant advantage of these solar platforms is that they mechanically adjust to face the sun so as to exploit the maximum potential of energy at all times.[108] These platforms will be propelled using electric hydrodynamic motors which are fixed every ten metres along the circumference.[109] This means that these platforms are self-sufficient through their own propulsion and therefore do not need to be towed to different locations.

Furthermore, in the eventuality of deployment, their ability to sustain movement independently can allow the full exploitation of the specific use for which they were designed. However, the movement of such platforms to different locations has also to be viewed in the light of the effect they will have on other uses of the seas. While this issue will be examined in further detail in Chapter 5, it is sufficient to state at this point that the high seas are free to all States to use in the way accorded by law.

[107] These islands will come into operation by the year 2011: http://www.solar-islands.com.
[108] Solar Islands: http://www.solar-islands.com.
[109] Ibid.

This comprises other uses of the seas which though not considered explicitly by law, may be regarded of ‘reasonable’ use by the international community.

With regard to the question of the status of solar islands which are capable of traversing the seas, further studies are required to determine whether the ‘quality’ of navigation is required to be the principal operation of a ‘vessel’ or whether it can be ‘secondary’ to the principal use of exploitation of solar energy.



Source: Solar Islands http://www.solar-islands.com © CSEM

Concept developed by a Swiss Company to start operating in the UAE in 2011

Another source of energy exploitable at sea is wind energy. Notwithstanding the fact that wind as a source of renewable energy can and is being garnered as an onshore activity, offshore wind farms are regarded as being more advantageous.

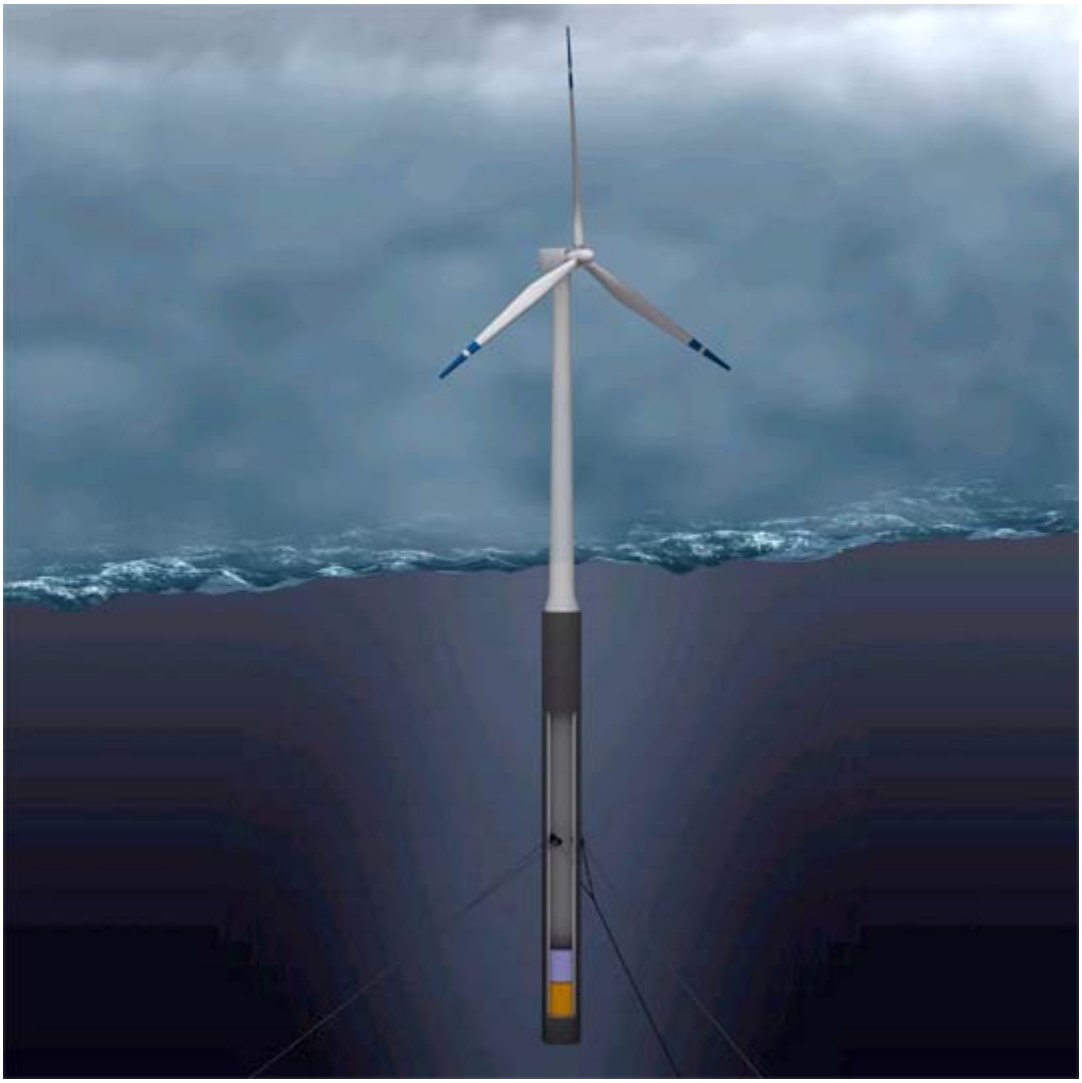
Offshore wind farms have less environmental impact than onshore wind farms, mainly due to the fact that the noise of onshore wind farms allegedly disturbs wildlife in the vicinity. Moreover, the wind's potential is greater at sea since it is stronger due to less friction over the water which slows the winds down. There are no hills or mountains which disturb the wind's path.[110]

When considering the potential of accumulating as much energy as possible, the ideal location for such wind farms is where the wind blows continuously at high speeds. Specialised maps have been formulated to assist the shipping industry in its navigational routes. This is done by highlighting areas of the oceans where high winds can be dangerous to navigation. While these areas of high winds are not recommended as safe sea routes, their potential can be utilised by wind energy farms. By using such areas, companies operating wind farms would avoid problems of interfering with navigational sea lanes and utilise the potential that an area represents in this respect.[111]

Since wind farm structures present new obstacles at sea and create a series of hazards to safe navigation, wind turbines would be ideally located in places where they do not obstruct navigation and the possibility of collision is avoided. Those places which are thus best avoided for the best interests of safe navigation due to high currents generated by powerful winds, would be ideal for wind farms.

It is important to note at this point that wind energy has the potential of providing 10 to 15 per cent of future world energy requirements. If ocean areas with high winds are used, they could potentially generate 500 to 800 watts of energy per square metre.

[110] Wind Energy from Ocean Surface: http://www.alternative-energy-new.info/wind-energy-ocean-surface/
[111] This position will be highlighted further when tackling the legal framework in the following Chapter.



Source: Floating Wind turbines © Jorge Chapa

Largest Offshore wind turbine farm in operation in the North Sea 2009/2010

Besides wind turbines placed above the water, one may find attached to the same device an underwater mechanism to capture energy from ocean currents. As pioneers in modern wind technology, floating wind turbines account for twenty per cent of the total electricity generated in Denmark.[112]

[112] Bent Sorensen, *Renewable Energy Its physics, engineering, environmental impacts & planning* Third Edition, Elsevier Academic Press 2004,250.

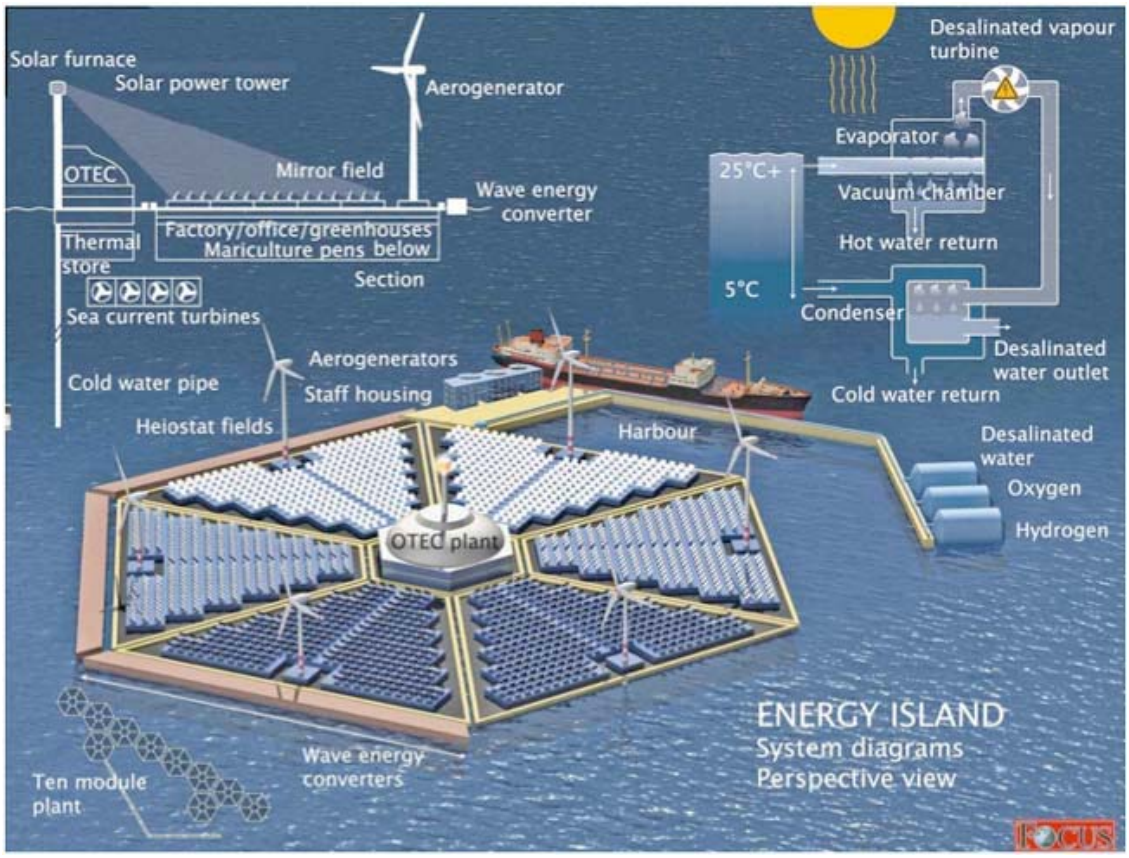
Underwater ocean turbines operate through water flowing through roller blades which turn the generators and produce electricity transmitted via anchor line to collection boxes which are in turn transmitted to shore via underwater electrical conducting cables.[113]

Through wave farming, energy can be harnessed from the ocean swells generated by large storms, hundreds of kilometres offshore. The World Energy Council estimates that approximately two terawatts of electricity could be produced from the ocean via wave power. Wave availability makes the resource easily exploitable through devices anchored to the seabed. Since waves are predicted days in advance, this makes it easy to match supply and demand. This mechanism can be set to produce electricity through the movement of buoyant blades as waves pass in a swaying motion or using tidal power which can generate electricity using spinning turbines. Such a project has been recently announced by Britain and will operate in south-west England.[114]

OTEC plants anchored to the bottom of the tropical ocean in suitable locations can produce electricity by using large temperature differences between cold deep waters and sun-warmed surface waters. The tropical oceans cover the requirement of large harvesting areas, as well as large storage capacities.[115] This is an advantage since tropical waters have the greatest world population densities. Furthermore, since OTEC's use of electrical output can be transformed into hydrogen, OTEC can provide energy to areas that have no OTEC capacity. OTEC is also a desalinisation system. A 250MW OTEC plant will produce 300M Litres of desalinated water per day, enough to fill one super tanker. This can be taken to faraway destinations where water is required.[116]

[113] Ibid.
[114] Aussie firm sees buoyant future in wave power, THE TIMES, *Saturday*, February 7, 2009, 33.
[115] G. Tyler Miller Jr., Living *in the Environment*, Twelfth Edition, Thomas Learning 2002, 379.
[116] Dominic Michaelis, Energy Island Concept: www.energyisland.org.

The 'Energy Island' is a fascinating concept as it collects all the aforementioned types of energy in one structure, using OTEC as its principal source of energy.[117] Heat is engaged from the sea and the energy which is omitted provides a cooling system of the sea. This system of cooling the oceans is presented to be very beneficial as opposed to nuclear and fossil fuel stations which reject the energy generated into the sea and air. The electricity generated by an 'Energy Island' can be cabled to land or electrolysed to produce hydrogen for transport to faraway destinations. 'Energy Island' as a model goes beyond that of an energy provider to that of a safe haven for populations threatened by future rising sea levels – 'climate refugees'.[118]



Source: www.energyisalnd.org

Energy Island-© *Dominic Michaelis*

[117] Ibid.
[118] Ibid.

3.2 Industries at Sea

Activities which have previously been taking place on land can be advantageously projected at sea for various reasons. Under the sub-title of 'Industries at Sea' particular attention will be placed by the author on the following distinct types of industries: floating factories; floating data centres; ports and airports and rocket platforms.

In recent years and particularly in Japan, the shipbuilding industry, has been addressing the issue of seaworthy factories. As a result, some international competition for lucrative contracts has taken place.[119] The move offshore by large-scale industry is sparked by several concerns. It is argued that if the supply of goods and services needed to maintain a high standard of living is to be delivered together with the continuous need to preserve the environment, more energy will be needed not less. At any stage, a more sophisticated technology will be needed. High seas industrial factories will be appropriate for facilities which can operate well away from land and which may demand isolation from residential locations.[120] On the other hand, fears concerning risks of catastrophic accidents or terrorist attacks are closely linked with the idea of these new ventures.

Another form of industry which is at the proposal stage is that of floating Data Centres which can use water for cooling and can be used out at sea as well as in coastal cities where land is an issue. This idea was utilised by *Google* which is set to expand its dominance of the internet on the high seas, filing a patent application for an armada of floating computer farms. The internet search giant proposes to create floating data centres by situating thousands of computers on sea freighters and tethering them off coastlines around the world. Electricity generated from waves would power these computers, while seawater pumped around the ship would keep the data centre cool.[121]

[119] Adam Starchild, *The Ocean Frontier*, University Press of the Pacific, Hawaii, 2002, 5-6.
[120] Ibid.
[121] Google plans floating computer navy: http://news.ninemsn.com.au/

The floating behemoths would be moored up to twelve kilometres offshore in 50-70m of water. This means that the company would no longer have to pay property taxes on its data centre. *Google* proposes to create electricity using Pelamis wave energy converter technology, which consists of a series of massive, jointed tubes which trail out from the ship. When waves move the tubes, resistance in the joints pump high pressure oil through hydraulic motors, driving electrical generators and powering the data centre.[122]

Many modern cities near the ocean and their suburbs are overpopulated. In these areas, it is difficult to find land suitable and convenient for building airports. The increasing volume of air traffic produces noise pollution and this has additionally moved airports to be built away from the cities to artificially formed or reclaimed land.[123]

With the developments made in the area of land reclamation in Japan, projects such as the Kansai International Airport was built. This Airport was built on an artificial island, two miles off the Coast of Osaka, providing a clear flight path and decreasing the engine noise over communities. In the 1990s in Hong Kong, the construction of a new Chek Lap Kok Airport was seen as a solution to capacity as well as environmental problems of Kai Tak Airport.

The Chek Lap Kok Airport was constructed in the sea on a platform artificially created by joining two separate islands, Lantau Island and the original Chek Lap Kok Island. The project went to the extent of developing numerous container terminals and setting new schemes of development for existing areas. Similar but distinct needs have prompted the building of deep draft port facilities. The increased size of tankers and other vessels has made these constructions necessary.

[122] Ibid.
[123] Future See More: http://oceansatlas.org

In addition to airports, floating islands can be used as marine ports which ensure the safe mooring of large-tonnage vessels. Cargo vessels and tankers can deliver minerals and petroleum extracted from the sea floor in such port facilities. Among many designs developed for the completion of such projects is that of a large horse shoe design for this type of floating facility, with protected spaces inside, serving as a port of call for these vessels. There are already artificial ports with well- arranged terminals for cargo handling situated at significant distances from shore.[124]

A floating platform in the Pacific Ocean has been used to launch satellites. The *Sea Launch* is the world's first ever commercial international project to develop and operate a sea-based space launch system.[125] The advantages of using a sea based platform include: the ability to launch directly from the equator and thus reducing unit costs of their diversity to the target orbit; the compactness of the structure alleviates the need of having well-developed ground infrastructure and its associated social support (roads, power, hotels, schools, hospitals, etc.), which radically reduces the numbers of personnel participating in the work, and, therefore, the cost of operation.

[124] Ibid.
[125] From Ship to Space – Rocket Platforms at Sea, July 11th 2008: http://gcaptain.com/maritime/blog/from-ship-to-space-rocket-platforms-at-sea/

Source: © S.P.Korolev RSC Energia

Launch Platform with the Integrated Launch Vehicle erected on the launch pad

3.3 Residential & Recreational Basis

While industrial platforms are already becoming a reality, the development of platforms for residential purposes has lagged behind.[126] Since the building by the Japanese of what is often considered to be the prototype of the floating city – 18,000 ton *Aquapolis* – not much development has been made. Visionaries of the ocean envisage entire sea-based communities encompassing housing, recreational facilities, governmental buildings, shops and industry.

[126] Adam Starchild, *The Ocean Frontier*, University Press of the Pacific, Hawaii, 16.

Although the technology for floating residential cities is in existence, this idea has somewhat been obscured by other uses of artificial islands which are considered of greater value. It has been suggested that the creation of a sea city goes beyond the understanding of social and economic benefits. A sea-based community must be ultimately described by the multiple industrial purposes by which all modern communities are known.[127]

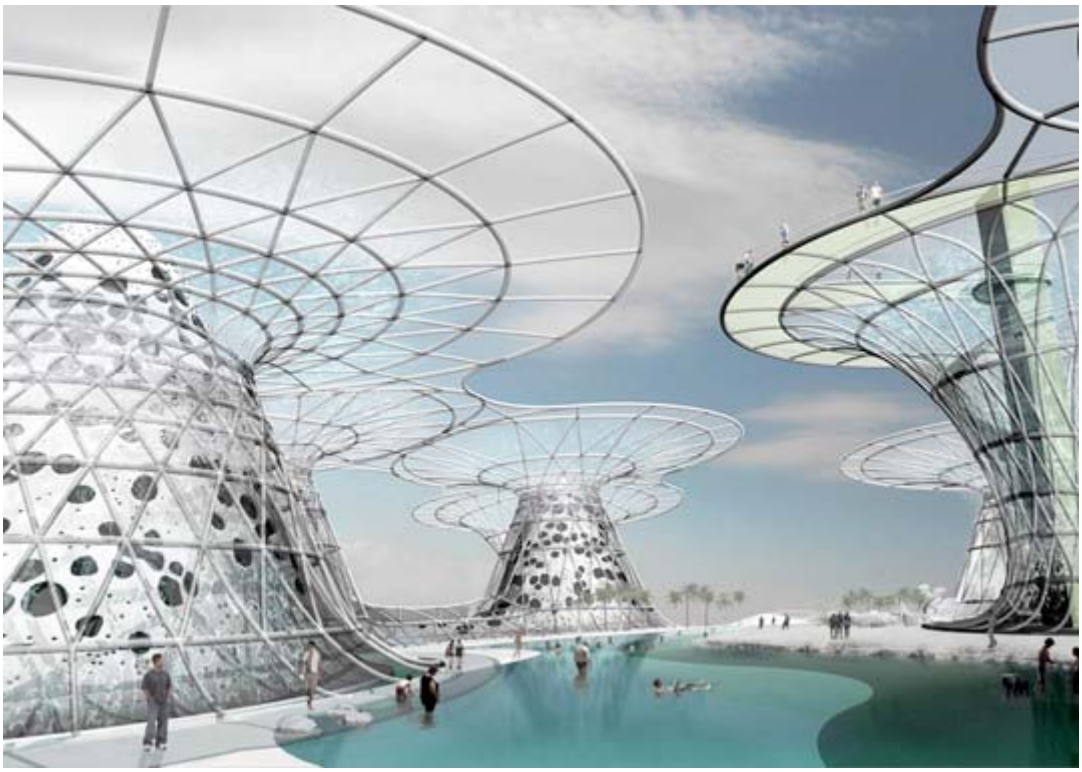
There exists a community of advocates of homesteading or "seasteading" of the high seas, which promote living on ocean space, particularly on the high seas. A 'seastead' is accordingly defined as a structure designed specifically for permanent living on the ocean's surface. These advocates declare that the primary motivations for living on these structures are a desire for political and/or religious freedom, a more environmentally sound way of life and the sheer adventure of it all.[128]

Recreational activities in coastal areas are increasing in many countries and have become a major source of tourism. The demand for water-oriented recreation is expanding rapidly. Therefore, States are now showing an interest in establishing marine parks and protecting their coastal marine areas. An example of a marine park is the Great Barrier Reef off the coastline of Queensland in Australia. The Great Barrier Reef covers approximately 345,000 square kilometres, includes 2900 reefs, and 300 coral cays and 600 continental islands, and includes tourism and fishing as its most significant industries.

The Dead Sea, a body of water that sits at the nexus of several political hot spots in the Middle East, has been a source of contention for decades. Recently, a New York City architecture firm has proposed a way to turn the sea into a thriving centre for tourism and eco-research. The firm proposed the creation of artificial islands called '*No Man's Land*' that would house hotels, create energy and harvest clean water from the atmosphere.

[127] Ibid.
[128] Wayne Gramlich, Patri Friedman and Andrew Houser, *Seasteading: A Practical Guide to Homesteading the High Seas*, 2002: http://seasteading.org/seastead.org/commented/paper/title.html.

Salinity gradient solar ponds, water purification tanks and water filtering processes will all be integrated into the designated water islands of the chain. The other two island designs will be for tourists and solar energy production, providing self-sufficient power, as well as creating revenue. [129]



Source: http://www.phuhoang.com/

'No Man's Land' © PHU Hoang Office

Since land is a scarce commodity in Holland, Dutch companies have developed unique expertise for the construction of artificial structures on the water. Dutch dredging companies are involved in the realisation of bold plans to create a series of artificial islands along the coast of Dubai, such as *'Palm Islands'* and *'The World'* and participate in land reclamation and other large-scale marine or riverine infrastructure projects all over the world.

[129] Geo-engineering: Artificial Islands of the Dead Sea: http://io9.com/5016862/artificial-islands-of-the-dead-sea

Others are using their state-of–the-art floating houses, residential complexes, hotels, boulevards and even a floating mosque in Holland and around the world.[130] The '*Palm Islands'* in Dubai are the three largest artificial islands in the world. They are constructed from sand dredged from the bottom of the Persian Gulf. The sand is sprayed using dredging ships onto the required area, in a process known as 'rainbowing' due to the way the sand arcs when sprayed.[131]

3.4 Law Evasive Purposes

Whilst it is of considerable importance to illustrate the different physical forms of artificial islands, it is also significant to delve into past occurrences in relation with the establishment of artificial islands. The problem of the erection or use of artificial islands on the high seas by private individuals has caused serious jurisdictional difficulties for international law in the past. This is because it has been generally recognised that such constructions do not constitute 'islands'. The way artificial islands have previously been treated is significant as it gives a practical approach to what might result in the future.

In the 1960's a new form of offshore activity arose, mainly that of 'pirate radio vessels/platforms'. This was at a time when commercial radio, as known in the United States, did not exist in Europe. With few exceptions, only State stations were heard. Then a ship named *Veronica* anchored off the Dutch coast with a transmitter beaming programming, filled with the latest popular music. These were then labelled as 'pirates' by the governments of Europe. At this stage, international agreements were entered into, in order to ban broadcasting from ships.

[130] The Slovenia Times – A Slovenian Island with Dutch Support?: http://www.sloveniatimes.com/en/inside
[131] Ibid.

In this light, it is significant that when another "pirate" broadcasting station, Radio and T.V. Nordsee, was set up by a Dutch private company in 1964 on a structure built on the seabed just outside Dutch territorial waters, it was claimed to be an 'island'. This is the case known as the '*REM Island*' located six miles off Noordwijk. It was then that, to deal with this situation, the Netherlands passed the North Sea Installation Act, 1964. This extended Dutch criminal law to installations constructed on that part of the North Sea which falls outside territorial waters and within the boundaries of that part of the continental shelf appertaining to the Netherlands. Both stations were dismantled by the armed forces of the Netherlands. Pertinent to this situation is the fact that although the REM platform was outside the territorial waters, Dutch law still prohibited such broadcasting activities by legislative means.

Another noteworthy case is that of '*Sealand*', where in 1967, a pirate radio operator moved into an abandoned Second World War anti-aircraft platform. The platform was located eight miles off the British coast, which was at the time considered to be in international waters. The principality of Sealand claimed independence through several claims. Sealand fired warning shots at a nearby repair boat, who took the founder to Court on the matter. The Court ruled that the tower was outside its jurisdiction. Furthermore, Britain continued to claim that the tower of Sealand was beyond its jurisdiction when some German men seized the platform and were captured in a helicopter raid.

In a case where one of the 106 persons who had been granted citizenship of the Duchy of Sealand requested a declaration by the Federal Republic of Germany that he had lost his German citizenship, the Court dealt in detail with the issue of Statehood. It was held by the Administrative Court of Cologne on 3 May 1978, that international law required three essential attributes for Statehood. This requires that a State has a territory, a people and a government.[132]

[132] In this respect it is to note that the Montevideo Convention of 1933 which has become widely accepted CIL makes provision for an additional attribute: the capacity to entre into international relations.

The Court held that at least two of these attributes were missing in the case of the Duchy of Sealand.[133] Primarily, a territory must consist of a natural segment of the earth's surface. Consequently, an artificial island, although connected to the earth's surface, did not satisfy this criterion. The conclusion made was that only those parts of the surface of the earth which have come into existence in a natural way can be recognised as constituting state territory. It was therefore held that the Duchy of Sealand did not constitute a State within the meaning of international law.[134] Sealand is still in existence to this very day.

The case of the '*Isle of Rose'* is similar in nature to that of Sealand but met with a very different ending. The 'Isles of Rose' was a tower built in the 1960's in the Adriatic Sea, in waters less than 20 feet deep about eight miles off the Italian city of Rimini. Initially, the Italian authorities took no notice of the 'Isle of Rose' since they claimed only three miles from the shore as their territorial waters. Then on May 1, 1968 the platform was declared to be an independent republic, whose official language was the artificial one of 'Esperanto'. The Italian army invaded fifty-five days later due to "national security, illegality, tax avoidance, maritime obstruction and pornography." In the spring of 1969, the structure was destroyed using dynamite.

More recently, in 1972, an attempt was made to set up an insular State in the Pacific area when an American Company proclaimed the so-called '*Republic of Minerva'* based on two coral reefs south of the Fiji for purposes of tax havens concerning flags of convenience. This proclamation was, however, strongly contested by Fiji. In effect on the 21st June 1972, the atoll was abducted and from then on formed part of the Kingdom of Tonga.

Various offshore artificial constructions have shown that States are likely to take action and limit the occurrence of activities when it is within their power to do so.

[133] *In re DUCY OF SEALAND*, Federal Republic of Germany, Administrative court of Cologne, Case No. 9 K 2565/77.
[134] Ibid.

In the REM case Government went to the extent of separating the North Sea into continental sections. The sea-bed under the REM Island, to which the structure was attached, was then declared as Dutch territory. Creating separate entities might signify a threat to States. However, there may be other States which do not take action since the activities do not fall within their recognised waters.

Such was the case of 'Sealand', when Britain, on more than one occasion, declared to be incompetent to deal with questions falling outside its territory. Reference to the way in which States perceive and act in such occurrences will be tackled in further detail at a later stage.

Due to incidents which have arisen in the past, such as the case of *Radio Veronica,* the LOSC made provision for such occurrences. The law takes cognisance of the fact that since the high seas are open and free to all, many recognise it as being free of restraints. The LOSC places special emphasis on the limiting of illegal practices on the high seas. Reference is made to pirate ships and aircraft[135] on the high seas as well as illicit traffic in narcotic drugs and psychotropic substances.[136]

Of significance to the subject of artificial islands and installations is the provision of the law dealing with unauthorised broadcasting from the high seas.[137] 'Unauthorised broadcasting' is defined by the Convention as "the transmission of sound radio or television broadcasts from a ship or installation on the high seas intended for reception by the general public contrary to international regulations but excluding the transmission of distress calls."[138] The law provides that prosecution of unauthorised broadcasting is to be dealt with by the State of registry of an installation as differs from the flag state of a ship.[139] This is significant since the law makes a difference between installations registered by registry and the ships owing their jurisdiction to the flag state**.**

[135] LOSC, Art. 101, 103.
[136] Ibid, Art. 108.
[137] Ibid, Art. 109.
[138] Ibid, Art. 109, Para. 2.
[139] Ibid, Art. 109, Para 7 (b).

3.5 Conclusion

Changes in technology highlight the need not only to keep pace with but to anticipate future developments. It is found that various issues of not only new innovative structures, but of new technological devices to replace older ones find no recognition at law. These advancements should be promoted by the law since their use is designed to prevent harm to the environment. This improvement is clear in relation to renewable forms of energy platforms as well as the innovative procedures utilised in the decommissioning of offshore oil rigs.

CHAPTER 4

THE LEGAL REGIME OF ARTIFICIAL ISLANDS

The jurisdiction over artificial islands finds no *ad hoc* origin in the LOSC. In view of this fact, the determination of the relevant jurisdiction over artificial islands is established depending on the different maritime zones found in the LOSC. Artificial islands are not given any further distinct rights other than those determined by their placement in the maritime zones.

In this respect Churchill and Lowe note: "Increasingly, however, the law of the sea is being developed along functional, rather than zonal, lines."[140] By way of example, they compare UNCLOS I to many of the more recent international agreements. They point out that while UNCLOS I focused on the rights of States in the territorial sea, continental shelf and high seas, the more recent international agreements have been concerned not with the particular zones but with the particular uses of the seas, such as fishing, pollution and navigation. The functional approach is of relevance to the different types and purposes for which artificial islands are utilised.

In this Chapter, the legal status of artificial islands is thus determined according to location and whether this is within the boundaries of the territorial sea, contiguous zone, EEZ, continental shelf or on the high seas. The main issue under consideration is that of the jurisdiction of those artificial islands located on the high seas. This study examines different theories of jurisdiction which can be applied in order to formulate a solution to the regulation of artificial structures on the high seas.

[140] R.R. Churchill & A.V. Lowe, *The Law of the Sea*, Manchester University Press 1999, 1.

4.1 The Territorial Sea and The Contiguous Zone

The sovereignty of a coastal State over its territorial sea is almost as extensive as its sovereignty over its land territory.[141] It has complete, virtual and exclusive authority over siting. This is subject to a duty not to restrict innocent passage of non-coastal State's ships and submarines by the blocking of established sea lanes through the placement of artificial islands and installations.

Furthermore, it has to be ascertained that even though structures are built in the territorial sea, they do not by their presence affect the sea pertaining to the jurisdiction of another State. Moreover, in the case where artificial islands are built in the outer limit of the territorial sea, their impact on other States is likely to be greater. [142]

A foreign State may not build or operate any artificial structure within internal waters without express permission from the particular State. In the event of disagreement, an interested State which deems itself injured, may appeal to the International Maritime Organisation (IMO), which, though not empowered to prohibit the construction, may prescribe such changes and adjustments as it considers essential to safeguard the lawful interests of other States.[143]

With respect to artificial islands and installations, it is significant to note that Article 11 of the LOSC seeks to limit the extension of the maritime zone of the territorial sea by stating that: "offshore installations and artificial islands shall not be considered as permanent harbour works".

With reference to the rules of innocent passage in the territorial sea, if certain ocean energy platforms were to be regarded as falling under the definition of a 'ship' they would certainly benefit from the purposes of these rules.

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[141] LOSC, Art. 2.
[142] Alfred H. A. Soons, Artificial *Islands and Installations in International Law*, Occasional Paper # 22, 1974, 4-5.
[143] Erik Jaap Molenarr, *Airports at Sea: International Legal Implications*, the International Journal of Marine and Coastal Law, Vol. 14. No.3.

By way of example, an OTEC plant 'ship', at least when not exploring or exploiting the thermal resource, would fall into this category.

The meaning of 'passage' is defined by the Convention as "navigating through the territorial sea either for the purpose of traversing that sea without entering the internal waters, proceeding to internal waters, or of making for the high seas from the internal waters." [144] If a structure can be categorised as a 'ship', the question arises as to whether it would be navigating for the purpose of traversing the territorial sea while it simultaneously exploits energy resources. Conversely could the right of innocent passage be made applicable to such structures in their normal mode of operation?

The Convention fails to clearly distinguish between primary and secondary purposes.[145] Problems are likely to arise in the case of floating devices or platforms which are expressly not considered as 'ships' or 'vessels' under national legislation and are thus not granted the right of innocent passage which is exclusively granted to ships.

The contiguous zone is a zone adjacent to the territorial sea where the State may exercise control necessary to:

(a) Prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea.

(b) Punish infringement of the above laws and regulations committed within its territory or territorial sea.[146]

The contiguous zone may not extend beyond twenty four nautical miles from the baseline from which the territorial sea is measured.[147]

[144] Stephen L. Joseph, *Legal Issues Confronting The Exploitation Of Renewable Sources Of Energy from the Oceans*, CW I L J, Vol. 11 1981,393.
[145] Ibid, 394.
[146] LOSC, Art. 33, Para. 1.
[147] Ibid. Para. 2.

It is therefore clear that in the contiguous zone, the coastal State has no right to control the construction of artificial islands by virtue of its status. The contiguous zone is, in effect, a zone of the high seas, in which the coastal State retains rights of prevention of infringement. It is important to note that the rules outlined in LOSC only apply to a particular State if adopted at a national level. If the EEZ is not claimed by a State, the waters of the contiguous zone form part of the high seas. Thus, other States would enjoy freedoms in that area of the sea.

4.2 The Exclusive Economic Zone (EEZ)

The EEZ is a maritime zone seaward of the territorial sea with an outer boundary that may be up to 200 miles from the territorial sea's baselines. The EEZ is the first place at which real autonomy of the seas can be seen.

Within the EEZ, a coastal State may regulate: non-living resources; including the sea-bed; subsoil and superjacent waters; living resources including fish, crustaceans, and plants; other energy resources such as the production of energy from the water, currents, and winds; artificial islands, installations and structures; marine scientific research and pollution control.[148]

The LOSC refers to "the production of energy from the waters, currents and winds". These may also include the production of solar energy, exploitation of icebergs as fresh water reservoirs or desalination of marine water. The LOSC formulates no specific principles or rules related to these activities due to the fact that at the time when it was drafted, they were still at an early stage of development.[149]

[148] LOSC, Art. 56(a).
[149] Barbara Kwiatkowska, *The 200 Mile Exclusive Economic Zone in the New Law of the Sea*, Publications on Ocean Development, Martinus Nijhoff 1989, 105.

Although the coastal State does have jurisdiction over resources in the EEZ, it does not have total sovereignty over these waters. Other States whether coastal or land-locked enjoy the freedoms referred to in Article 87 of the LOSC. This includes the freedom to construct artificial islands and installations permitted under international law, which is subject to the relevant provisions of the Convention as well as being compatible with the part of the law on the EEZ.

In the case of conflicts between the rights of the coastal State and other States these should be resolved "on the basis of equity and in the light of all relevant circumstances, taking into account the respective importance of the interests involved, to the parties as well as to the international community as a whole",[150]

Article 60 of the LOSC in relation to artificial islands, installations and structures in the EEZ holds that:

1. In the EEZ the coastal State shall have the exclusive right to construct and to authorise and regulate the construction, operation and use of:

(a) Artificial islands;
(b) Installations and structures for the purpose provided in Article 56 and other economic purposes;
(c) Installations and structures which may interfere with the exercise of the rights of the coastal State in the zone.

2. The coastal State shall have exclusive jurisdiction over such artificial islands, installations, structures, including jurisdiction with regard to customs, fiscal, health, safety and immigration laws and regulations.

3. Due notice must be given to the construction of artificial islands, installations, structures, and permanent means for giving warning of their presence must be maintained. Any installations or structures which are abandoned or disused shall be removed to ensure safety navigation, taking into account any generally accepted international standards established in this regard by the competent international organization. Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States. Appropriate publicity shall be given to the depth position and dimensions of any installations or structures not entirely removed.

[150] LOSC, Art. 59.

4. All ships must respect these safety zones and shall comply with generally accepted international standards regarding navigation in the vicinity of the artificial islands, installations, structures and safety zones.

5. Artificial islands, installations and structures and safety zones around them may not be established where interference may be caused to the use of recognised sea lanes essential to international navigation.

6. Artificial islands, installations and structures do not possess the status of islands. They have no territorial sea of their own, and their presence does not affect the delimitation of the territorial sea, EEZ or continental shelf.

The coastal State has exclusive authority and control over the construction, operation and use of all artificial islands and all economic installations within the EEZ. Non-economic installations and structures would also appear to be subject to coastal authorisation and control. As has been held by Soons: "if the exclusive right to authorise the construction and operation of artificial islands and installations in the Economic Zone will be conferred on the coastal State, it is only logical to provide that the structures fall under the exclusive jurisdiction of the coastal State."[151]

4.3 The Continental Shelf

Article 76 of the LOSC determines that:

The Continental Shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.[152]

[151] A.H.A Soons, *Artificial Islands and Installations in International Law*, July 1974, Law of the Sea Institute, University of Rhode Island, Occasional Paper No 22, 23.
[152] LOSC, Art. 76.

Article 77 of the LOSC establishes the following rights of the coastal State on the continental shelf:

> *1. The Coastal State exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources.*
>
> *2. The rights referred to in Paragraph 1 are exclusive in the sense that if the coastal State does not explore the continental shelf or exploit its natural resources no one may undertake these activities without the express consent of the coastal State.*
>
> *3. The rights of the Coastal State over the continental shelf do not depend on occupation, effective, or notional, or on any express proclamation.*
>
> *4. The natural resources referred to in this part, consist of the mineral and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species, that is to say organisms which at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil.*[153]

Article 79 of the LOSC which deals with the laying of submarine cables and pipelines on the continental shelf refers to artificial islands, installations and structures noting that nothing in that part of the law shall affect the construction of the latter. Article 80 of the LOSC refers to artificial islands, installations and structures on the continental shelf and applies *mutatis mutandis* Article 60 of the LOSC.

It is beyond any doubt that reference to the construction of artificial islands/installations is only connected with the exploration and exploitation of the natural resources of the continental shelf. The coastal State is not entitled to construct or operate artificial islands for any other use on the continental shelf. This formulation however has a derivative meaning since as Rashkow clearly notes: “It is important to note once again that at the then present state of technology, it was not easy to contemplate all the uses of the shelf, which have subsequently become feasible.

[153] Ibid, Art. 77.

Consequently the legal issues to which these uses might give rise were not in the forefront of the minds of the people involved in formulating the Convention."[154]

The exclusiveness of the coastal State over the continental shelf prohibits other States from constructing or operating on the continental shelf for the purposes of exploration and exploitation of resources. However, except in the area of those resources, the area is still regarded as a *res nullius* and the overlying waters still constitute the high seas. This shows that artificial islands can be constructed by all States, subject to the requirements of reasonable regard to the interests of the other legitimate uses of the seas, no damage to the marine environment and no unreasonable interference with the exclusive rights of the coastal State over its continental shelf. [155]

The author of this study queries whether the concept of interference between continental shelf resources and the high seas above such resources could be interpreted as to include possible future interference. If an installation does not interfere with present exploitation in a proposed area on the continental shelf, it is still possible that it would interfere with future exploitation activities. Such an interpretation would, in fact, enable the coastal State to consider the construction of any artificial island or installation an interference with its exclusive rights.[156] But even without such an interpretation, it would be clear that the coastal State has a large degree of discretion in determining whether or not a structure will interfere unreasonably.

An issue due of consideration is the fact that the regime that governs the continental shelf in the LOSC differs from the regime which governs the waters above the continental shelf. If an artificial island is constructed over the continental shelf and does not utilise resources from the sea-bed, which regime should take precedence, the law of the high seas or that of the continental shelf as regulated by the LOSC?

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[154] Bruce Charles Rashkow, *Non- natural Resource Structures under the Continental Shelf doctrine*, Trinity College, Oxford 1969, 41.
[155] Barbara Kwitatkowska, *The 200 Mile Exclusive Economic Zone in the New Law of the Sea*, Publications on Ocean Development, Martinus Nijhoff 1989, 406.
[156] Ibid.

The specific formulation of sovereign rights instead of sovereignty as explained by the ILC Commentary to its draft articles prepared for UNCLOS I was designed in order to safeguard the full freedoms of the high seas above the continental shelf.

In this respect, Rashkow is of the opinion that the extent of the coastal State's rights on and in the shelf itself, as opposed to the rights in the superjacent waters and airspace, could therefore still correctly be described as sovereignty. The rationale for the use of the term "rights" was not intended as a limitation on the rights of the shelf itself, as it only referred to the rights in the waters and airspace above.[157]

The situation as seen by the writer seems to be one where no regime prevails over the other but where both regimes are treated equally by the law. It seems that the doctrine of reasonable regard and balance of interests is made applicable in determining which activities should be carried out in the case of conflict.

4.4 The High Seas

In 1970, the UN General Assembly Resolution expressed concerns on claims of territorial sovereignty over the seabed of the high seas. It was held: "The establishment of installations on the deep seabed and in its subsoil creates a marginal problem of territorial sovereignty over the respective area of the deep seabed and subsoil. The concept of such territorial acquisition is based upon the *terra firma* nature of the deep seabed and subsoil. The establishment of installations on that *terra firma* may enable States to exercise effective control over a certain part of the deep seabed and subsoil."[158]

[157] Bruce Charles Rashkow, *Non- natural Resource Structures under the Continental Shelf doctrine*, Trinity College, Oxford 1969, 396.
[158] UN General Assembly Resolution No. 2749 (XXV), Article 14; 17 December 1970.

According to the present LOSC, under no circumstances can any State ever claim territorial sovereignty over the seabed of the high seas. Article 89 of the LOSC confirms that: "The high seas being open to all nations, no State may validly purport to subject any part of them to its sovereignty."[159]

The international status of the high seas consists of the absence of territorial sovereignty – *res nullius* – as well as the prohibition of territorial sovereignty over the high seas, thus giving every State rights in the forms of freedoms – *res communis omnium.*[160]

The rule of prohibition of territorial sovereignty over the high seas is recognised in international jurisprudence as well as in customary law. The author of this thesis recognises that there is a conflict between the '*right*' to the freedoms of the high seas and the '*jurisdictional operation'* of the freedoms of the high seas. This will be analysed more clearly hereunder.

Due to the absence as well as prohibition of territorial sovereignty on the high seas[161] it is important to determine what territorial sovereignty is. Territorial sovereignty includes two factors: the power of a State over its land; air and water areas, as well as the *ability of a State to exclude all other States from those areas*.[162]

Attention has first to be paid to the question as to whether or not the principle of absence of territorial sovereignty of the high seas *a priori* prohibits 'exclusive' uses of ocean areas, since the law provides that no State may subject an area of the high seas to its sovereignty. The law develops the clear specification that no State can expressly exclude other States from an area of the high seas.

[159] LOSC, Art. 89.
[160] John Kisk, *The Law of International Spaces*, Sijthoff 1973, 52-53.
[161] Emperor Antonius: Digest 14.2 de lege Rhodia 9 (Oppenheim: International Law, 1955, 583).
[162] John Kisk, *The Law of International Spaces*, Sijthoff 1973, 52-53.

The author of this thesis thus queries the situation where a State constructs an artificial island on the high seas and expressly excludes other States from the operation of this artificial island, since such construction belongs to the constructing State - can it be justified? This is an issue due to be considered since the freedom of the high seas justifies of no exclusive use by any State.

In this respect Haanappel holds that : "There is no national sovereignty on such islands, but States building these islands or other installations on the high seas have exclusive jurisdiction there over, a sort of '*quasi –sovereignty*'". Haanapel continues by asking the following question: "If an airport is constructed fully outside territorial waters, on the high seas, do all States have the rights to use that airport without bilateral air services agreement with the State which has constructed the island?"[163]

Although the answer to this question is disputed, Haanappel submits that the answer is no, since the constructing State has exclusive jurisdiction over the artificial island and its airport, giving it the right to determine - for instance, through bilateral air services agreement – which air lines of which nations may use the airports.[164]

His assessment is one which attributes a form of 'constructed sovereignty', where the construction of a structure on the high seas of whatever nature becomes declarative of the sovereignty of a State. The writer of this study however recognises that in principle the ability of a State to exclude all other States from the use of the high seas is expressly prohibited by the LOSC.

In this respect the LOSC seems to be deficient in the form of regulation applicable to artificial islands on the high seas. While the LOSC prescribes prohibition of sovereignty by any State on the high seas, the Convention also established the freedom to construct artificial islands which constitutes a form of operational 'exclusivity' of the high seas.

[163] Peter P.C. Haanappel, *The Law & Policy of Air Space and Outer Space*, Kluwer Law International, 23.
[164] Ibid.

It is important to note that in the present shortcoming of the LOSC States will be forced to act unilaterally to achieve their goals. Forming a CIL based on unilateral action may be dangerous and contrary to the interests of the international community by subjecting large areas of what were formerly the high seas to the jurisdiction of particular States. Furthermore, the practice of nations will inevitably lead to the recognition of new uses of the high seas compatible with general principles of international law.

The mere fact that other nations have refrained from challenging a supported practice, is not sufficient for the purpose of establishing that practice as forming CIL. The continuation of a practice, over a considerable period of time, accompanied by similar practices by other nations, is necessary in order to establish a principle as consistent with prevailing norms of international law.[165]

There are several instances of how modern developments demand a constant reappraisal of the structure of international law and its rules.[166] In this respect it is of significance to point out that when, as early as 1954, the question of artificial islands was discussed, the problem of appropriation of large stretches of the high seas was raised. It was then said that such an act would be contrary to international law, but ultimately it was still thought of as a matter of recognition by other States.[167] This statement emphasises the true nature of international law. International law therefore really exists in a customary form because States feel "obliged to obey the rules of international law" otherwise it would not exist, since it is not a legal order equivalent to the municipal legal order.[168]

[165] Malcolm Shaw, *International Law*, Fifth Edition, Cambridge University Press 2003, 5.
[166] Nikos Papadakis, *The International Legal Regime of Artificial Islands*, Leyden 1977, 42.
[167] Ibid, 59.
[168] Malcolm Shaw, *International Law*, Fifth Edition, Cambridge University Press 2003, 5

Since international law lacks enforcement power, it maintains good operation through community expectations. If one State persists in pushing its individual purposes beyond those of the community, then it must expect that other nations will do the same. Such a situation would undermine the world's ability to equitably share in the resources or securities that are made available by common consent. While it is likely that the majority of States would express the judgement that they have possessive rights over constructions on the high seas, they may entre into bilateral agreements so as to justify their ownership rights on the high seas.

If a declaration is made by a State with regard to construction of structures on the high seas and this finds no protest among other nations, the activity would be on its way to international acceptance. Ultimately, the practice might ripen into a rule of CIL. The likelihood of objection by other States would seem to be minimal, if the appropriate rules are followed.

Whenever in the past the necessity of a new use of the seas has arisen, States have had recourse to such uses without seeking the consent of other States and without protestation from the States concerned. Therefore, it is generally understood that States would not interfere with what other States do. The underlying common interest of all States in such activities is what makes it unlikely that they will protest to such new engagements by other States. In case of doubt, acquiescence and express or implied recognition legitimise these acts in international law.[169]

In the light of upcoming developments the question "Can sovereignty be constructed?" has been posed in relation to *seasteading* of the high seas. The concept of constructed sovereignty can be one which finds operation by acceptance of the international community so as to form a rule of CIL.

[169] Nikos Papadakis, *The International Legal Regime of Artificial Islands*, Leyden 1977, 61.

This means that if a general practice is formed on the basis of bilateral or multilateral agreements with various States, a point may be reached where "architecture becomes declarative".[170]

Once the issues of territorial sovereignty in relation to the concepts of freedom and 'exclusivity' of the high seas have been determined, in relation to the LOSC and State practice, it is important to determine what existing current legal framework can be made applicable to the regulation of artificial islands on the high seas. In relation to jurisdiction of structures on the high seas it is of significance to distinguish the jurisdiction regulating artificial islands on the high seas to that of installations.

Although no State has exclusive jurisdiction over installations erected in the 'Area' of the high seas, the 'Authority' is capable of concluding rules and regulations for administrative, procedural and financial matters relating to the erection and operation of oil rigs/installations in the 'Area'. The 'Authority' however only applies to establishing control over installations for the purpose of exploring and exploiting the 'Area'. Artificial structures deployed for any other use other than exploration and exploitation of the 'Area' are not under the competence of the 'Authority'. Furthermore the 'Authority' lacks a judicial system or code of civil or criminal law.

The jurisdictional mechanism that regulates artificial islands on the high seas is one which alters between the possibility of flag state jurisdiction and the extension of the principles of jurisdiction.

The framework of jurisdiction presented by international law which can be utilised in order to determine the jurisdiction of artificial islands on the high seas include the:

1. Territoriality principle where jurisdiction is determined by place where action takes place.

[170] Seasteading: Constructed Sovereignty? http://opiniojuris.org/2008/07/18/seasteading-constructed-sovereignty/

2. Protective principle where jurisdiction is determined by nationality of the actor.
3. Another form of Protective principle is that which is determined by reference to national interests affected by the act or omission.
4. Passive Personality Principle is jurisdiction determined by reference to the nationality of the victim.
5. Universality Principle where all States have jurisdiction over persons in their custody who are alleged to have committed acts considered particularly heinous and harmful to humanity (piracy).[171]

Situations of concurrent jurisdiction frequently arise in practice though in certain contexts, international law allocates exclusive jurisdiction over certain matters of the State. Of most relevance in this context are the first three principles, the latter two are more in the context of criminal jurisdiction.[172]

A State has jurisdiction to deal with offences committed by anyone within its territory, without regard to nationality, as well as jurisdiction over its citizens wherever they may be. Under the territorial theory, State jurisdiction is limited to territory and citizens. However, there is also a theory which holds that a State has jurisdiction with regard to any crime committed outside its territory by an alien which is against the security, territorial integrity or political independence of a State.

Jurisdiction based on nationality is unsatisfactory as a basis for regulating activities of artificial structures on the high seas. This is due to the likelihood of a multiplicity of nationalities being involved, each with conflicting rules. As with ships, the author of this study believes that there is a need for a single legal system applicable to "non-ship-like" structures operating on the high seas since there is no basis in international law to determine which State should have jurisdiction.

[171] Andrei Vella, *The Use of Energy for Sustainable Development: A Legal Perspective*, LL.D Thesis University of Malta May 2008.
[172] Ibid.

The LOSC clearly distinguishes ships from installations and artificial islands. However, due to lack of clarity in the status of the law, States may opt to register mobile structures as 'ships'. These structures will then be regarded as having 'flag status' and each State will be in a position to exercise control over mobile structures.
On this point, it is sufficient to note that those involved in the construction and operation of solar islands have made due consultations to the effect of registering their 'islands' as ships, utilising the flag of their country of registration.[173]

The basis of maritime law is that vessels are considered to be under the jurisdiction of the flag state to which they pertain, the vessel would presumably be flying such a flag legitimately. The fact that flag state jurisdiction is exclusive as differs from other theories of jurisdiction provides certainty of applicable jurisdiction. The authority of the flag state governs personal jurisdiction, and accordingly the flag state applies to persons on stations and safety zones. Personal jurisdiction of the flag state is not limited to its nationals.[174]

According to Bowett, jurisdiction with respect to artificial islands is best made with reference to the State which has exclusive power to authorise construction or, if no such exclusive power exists because construction takes place beyond the limits of national jurisdiction, then by reference to the State undertaking the construction.
The accepted idea on the high seas is that a State constructing or authorising construction should exercise jurisdiction because of its responsibility.[175]

The shift from 'exclusivity' to 'responsibility' made by Bowett is indeed one which adequately creates a balance between the freedoms and obligations of a State. Therefore it can be held that a form of 'constructed sovereignty' is relevant to the operation of artificial islands on the high seas, but this is all left to CIL to develop.

[173] Markus Wannemacher, Solar Islands.
[174] John Kisk, The Law of International Spaces, Sijthoff 1976, 104-105.
[175] Derek W. Bowett, *The Legal Regime of Islands in International Law*, 1979, 132-133.

The author of this study recognises that since there is no recognition of the jurisdiction of artificial islands in the LOSC States may prescribe and enforce laws for State nationals, wherever they are located. State practice also recognises the existence of limited passive nationality or "protective" jurisdiction. That is to say, the competence to prescribe and enforce laws against non-nationals to protect State interests of nationals. In the absence of the selection of a flag state, or where there were two or more appropriate flags, the structure would be treated as stateless and subject to the principles of nationality jurisdiction.

The Seasteading Institute, recognises that the more daring *seasteads* established on the high seas may choose to go flagless and qualify as artificial islands or installations. It is held that they may in this respect also try to carve a new niche in maritime law.[176]

It has already been seen that the application of national jurisdiction in the case of a structure which holds an amalgamation of nationalities is not an adequate position of the law, it is thus recommended that a proper juridical system relative to artificial constructions on the high seas be developed.

4.5 Conclusion

The extent to which the sea is likely to become subject to a technologically inspired international law of cooperation can be examined in the light of the present discussion. An emerging worldwide technological order which will tend to favour inclusive authority over the uses of the seas is one which is hoped for.

As maritime activities multiply, a system of authority will develop which is neither wholly inclusive, such as the classical freedom of the high seas nor wholly exclusive such as the classical restraint of the territorial sea.

[176] Wayne Gramlich, Patri Friedman and Andrew Houser, *Seasteading: A Practical Guide to Homesteading the High Seas*, Work in progress 2002-2004, http://seasteading.org/seastead.org/commented/paper/title.html.

In the sea, as in other unoccupied spaces, the logic of emerging technology requires a fresh approach to the uses of law in providing solutions and concepts of order. The old status zones and the resulting status law have seemed much too rigid to serve as a proper legal framework for new and expanding uses of the sea. As various types of institutions develop throughout the world to accommodate exclusive and inclusive interests, it becomes increasingly more difficult to justify the notion of territoriality in the sea.[177]

[177] Douglas M. Johnston, *Law, Technology and the Sea*, CLR Vol. 65 1967.

CHAPTER 5

THE CONFLICTING USES OF THE HIGH SEAS

The legal regime of the high seas has been present in State practice for many years. It should be noted that the right to use the high seas is expressed as a 'freedom'. An analysis of the concept of 'freedom of the seas' reveals a study of conflicts and compromises. The relationship between the lack of sovereignty of a State on the high seas and the freedom of the high seas creates a complex legal position which does not cater for specific situations of conflict. The construction of artificial islands on the high seas is justified since it constitutes a use of the high seas not inconsistent with other uses and is recognised as being a freedom of the high seas.

The freedom of the high seas concept conveys rights of establishment which are not absolute in nature, but which were set up with the intention of being qualitatively equal. In Mouton's words: "We maintain that building constructions in the high seas is using the freedom of the seas just as much as navigating on the seas, or fishing in these seas or laying telegraph cables and oils derricks". However, through the provision of CIL, some freedoms have been given more recognition than others. In this respect, one is to distinguish the so-called 'traditional' freedoms of the high seas as including navigation and fishing as opposed to uses of the high seas which are of a more recent origin, such as the establishment of 'artificial islands'.

At the 1951 ILC session, discussions have been made to favour the traditional freedoms over the new industrial freedoms although it was recognised that "it would be impossible always to give the former preference."[178]

[178] Robert B. Krueger, Myron H. NordQuist, and Robert P. Wessely, *New Technology and International Law: The Case of Deepwater Ports*, VJIL; Vol. 17 No. 4, 1977, 607.

Furthermore, it is to be noted that the list of freedoms is not exhaustive in nature and may seem to include any other use of the high seas which is not inconsistent with international law.

Although conflicting uses of the seas are present in areas of the EEZ, as well as the continental shelf, in these respective areas, the coastal State exercises some form of control. This signifies that the conflict is one which is to be resolved exclusively by the coastal State. The area of the high seas is common to all States and thus governed solely by the provision of international law. The international legal mechanism deals with concepts which are wide-reaching and provide no clear specific form of possibility to solve future conflicts.

Due to this, it is controversial that the coastal State is left in a position to decide to make whichever use it may deem best of the high seas since no specific limitations are provided by legal provision. How is one to solve a conflict of which freedom is to prevail in an area where all freedoms are said to possess equal rights? Even though the high seas may be said to have been reduced in nature due to the extension of State control through the EEZ, the remaining part of what actually constitutes the high seas still present many questions which remain unresolved.

In this Chapter, the various freedoms listed in Article 87 of the LOSC will be examined vis-à-vis the freedom to construct artificial islands and installations on the high seas. Furthermore, conflicts concerning the diverse uses of artificial islands and installations are studied in their own light. Account is taken of present as well as future projects of artificial structures destined for use on the high seas.

5.1 Reasonable Considerations and Balance of Interests

The 1958 Geneva Convention on the High Seas states that the freedoms of the high seas are subject to being exercised with "reasonable regard"[179] to the interests of other States.

The LOSC uses the words with "due consideration"[180] for the interests of other States. Since the terms used essentially hold the same meaning, it is relevant to determine what reasonable considerations should be made in order to be able to solve how one can subject the rules of the high seas in relation to all its uses.

In the absence of specific rules of international law on the use of the high seas, some authors claim that in such situations a balancing of interests test has to be made. This has been applied in cases where a local dispute occurs between neighbouring countries due to one nation's lawful use of its own territory to the detriment of its neighbour.

An example of this is the *Lake Lanoux Arbitration*[181] where Spain made a claim against France for violation of its legal rights to an equal use of Lake Lanoux which flowed into Spain. France made a unilateral decision to divert waters of Lake Lanoux for the purpose of developing a hydro-electric plant. Spain argued that this was in breach of several articles of the Treaties between them including Article 12 which provided:

> *"The downstream lands are obliged to receive from the higher lands of the neighbouring country the waters which flow naturally there from together with what they carry without the hand of man having contributed thereto. There may be constructed neither a dam, nor any obstacle capable of harming the upper riparian owners, to whom it is likewise forbidden to do anything which might increase the burdens attached to the servitudes of the downstream lands."*

[179] The Geneva Convention on the High Seas 1958, Art. 2
[180] The LOSC, Art. 87.
[181] *Spain v. France* 24 ILR 101 (Arb. Trib. 1957).

The Tribunal found that Spain's true interpretation of Article 12 was included in its counter memorial which stated:

> *"A State has a right to utilise unilaterally that part of a river which runs through it so far as such utilization is of a nature which will affect the territory of another State only a limited amount of damage, a minimum of inconvenience, such as falls within what is implied by good neighbourliness."*[182]

The ILC repeatedly emphasised that exercise of the freedom of the high seas involved a balancing of interests.[183]

Another test which is advocated to solve the conflicting uses of the high seas is that of examining reasonableness in relation to harm. This means that if a State suffers purely material or economic harm, the cause of the harm requires the balancing of the gravity of the harm with the utility of the harmful activity of the injuring State.[184]

The normative test was applied in the *Corfu Channel Case*[185] where British naval units engaged in a mine-sweeping operation in Albanian waters, were destroyed by mines. Albania was found to have breached the duty to warn ships of impending danger. The Court also found the United Kingdom to be in breach of its international obligation not to violate a State's territorial waters.

In relation to future artificial islands and particularly the deployment of ocean energy platforms or other innovative structures, whether such would be a reasonable freedom would be dependant on a balancing of the affected interests in each case. Fixed ocean energy platforms would by their very presence exclude other high seas freedoms in the space they occupy. However, other States must also take into account the interests of the State in exploiting the energy resources.

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[182] Ibid.
[183] Year Book of the International Law Commission. 25 U.N. 1956.
[184] Marlowe J. Blake, *Floating Nuclear Power Plants – A "Reasonable use" of the High Seas?,* CWI LJ, Vol. 8 1978, 200.
[185] *United Kingdom v. Albania* 1949 I.C.J. 4.

In this way, a balance of interests is created. In the light of the cases referred to above, the author of this study believes that since the oceans are so vast, the deployment of almost all energy platforms on the high seas could be regarded as 'reasonable'. A State could be granted site exclusivity of a temporary nature on the high seas as a freedom. Additionally, it would be generally unreasonable for another State to hamper any other State's exercise of the freedom to exploit energy resources. [186]

In effect, McDougal & Burke's test for deciding what use to make of the high seas is one of reasonableness, i.e. of balancing exclusive and inclusive claims.[187] They emphasize on the flexibility of the law of the sea, especially with regard to the contiguous zone and its ability to accommodate changing conditions. Balancing should be made according to the new exclusive needs of the State and the inclusive needs of the international community.

With regard to any innovation taking place with respect to artificial structures at sea, any new structure can operate on the basis that although constituting a new use of the high seas, it is not inconsistent with other uses of the high seas. Furthermore, the unilateral action initiating a use would not likely meet protest. Additionally although these innovative constructions have no precedents, they seem to be permitted under the general terms formulated by existing international law.

Due consideration of the uses of the high seas is essentially that which is in line with the behaviour of the international community which gives it due application. The idea essentially is that if something is of benefit to the interests of the international community at large, it would be considered a reasonable and accepted use of the high seas.

[186] Marlowe J. Blake, *Floating Nuclear Power Plants – A "Reasonable use" of the High Seas?,* C WI L J, Vol. 8 1978, 399.
[187] M. McDougal & W. Burke, *The Public Order of the Oceans* 1962, 64.

5.2 Freedom of Navigation

The significance of navigation as a freedom of the high seas finds its roots in the historical dominion over the seas through navigation. Artificial islands and installations can prove to be obstacles to navigation as well as being likely to give rise to collisions at sea. The LOSC gives priority to navigation through the non-interference of recognised sea lanes essential to international navigation.[188]

Safety zones established around artificial islands and installations must also not result in becoming obstacles to the lawful access of shipping as well as to navigation along international sea lanes.[189] The LOSC gives priority to shipping on major routes and to navigation in general in the 'Area'.

The conflict between the construction and use of artificial islands and installations on the high seas does not seem to provide as much conflict as in the case of the continental shelf and the EEZ, for the reason that these structures are not as yet a common use of the high seas.

Yet the problems that are present now in the areas of the continental shelf and the EEZ can take place on the high seas and may have to be dealt with through international dispute settlement, since the law does not yet provide for a specific regime to regulate the conflicting uses of the seas.

Under CIL, minor navigational detours can be mandated if there is no alternative site available for a given offshore installation and if the benefits from the offshore installation outweigh the inconveniences to navigation. In most circumstances, however, navigation is generally given priority.[190]

[188] LOSC, Art. 147.
[189] Ibid. Art. 147(2) (c).
[190] M. Mouton, *The Continental Shelf*, 1952, 229.

Judge Oda believes that: "The common world interest in free navigation must be balanced against the exclusive right of the coastal State to the Continental shelf resources."[191] This is a strong statement made by Oda since in the LOSC navigation is given precedence over any other use of the seas. Judge Oda recognises that for the purposes of limiting conflicts, navigation must not be considered as being superior to other uses, but has to be balanced equally with other uses of the sea. This statement is meaningful due to technological changes taking place which might even surpass this strong traditional importance pertaining to navigation.

Although there is no doubt that navigation will remain one of the persistent uses of the seas in time, the approach taken by Oda shows one of acknowledgment to changing circumstances.

5.3 Freedom to Lay Submarine Cables and Pipelines

Artificial islands and installations may not only impede the laying of cables and pipelines but where such cables and pipelines have been placed on the seabed they may have to be removed in order to establish fixed installations.[192] Cables already *in situ* may not be able to cope with the pressure of the landmass above them or the altered water currents in the area, or lead to problems of maintenance, or other unexpected difficulties.[193] On the other hand, in the case of ocean energy devices, these may be connected to shore by electrical transmission cables or pipelines.

In terms of physical impacts, while installing an offshore device, it would become necessary for example to bury the underwater cables to be used in the operation of the device in order to avoid damage/accidents if struck by equipment or anchors.

[191] Shrigeu Oda, *Fifty Years of the Law of the Sea*, Kluwer Law International 2003, 276-277.
[192] Esmaeli Hossein, *The Legal Regime of Offshore Oil Rigs in International Law*, Dartmouth Publishing Company 2001, 241.
[193] Erik Jaap Molenarr, *Airports at Sea: International Legal Implications*, IJMCL, Vol. 14. No.3, 382.

Cables may be jetted into the sea-bed using high-pressure water jets if sea-bed conditions permit, otherwise they must be dug or ploughed in. Rocky sea-bed conditions may prevent cable burial within the sea-bed and cables may need to be buried by covering them with rocks. There is extensive experience in laying submarines cables and pipelines on the sea-bed as well as ensuring minimal environmental impact in such practice.[194]

The UN Convention permits the laying of submarine cables and pipelines in the EEZ and on the continental shelf.

Article 79 Paragraph 2 of the LOSC states that all States are entitled to lay submarine cables and pipelines on the continental shelf, subject to its right to take reasonable measures for the exploration of the continental shelf, the exploitation of it's natural resources and the prevention, reduction and control of pollution from pipelines. The coastal State may not impede the laying or maintenance of cables or pipelines.

Furthermore, the same Article of the law holds that the delineation of the course for the laying of pipelines on the continental shelf is subject to the consent of the coastal State.[195] The LOSC does not prohibit or limit the coastal State from establishing conditions for cables or pipelines entering its territory or territorial sea, or its jurisdiction over cables and pipelines constructed or used in connection with the exploration of the continental shelf or exploitation of its resources or the operations of artificial islands, installations and structures under its jurisdiction.

Under the LOSC, cables and pipelines are treated only under the continental shelf regime. This is taken to apply to the high seas and it is regarded as being permissible to lay submarine cables on the seabed, since this is listed as a high seas freedom.[196]

[194] Carl Scerri, *Marine Spatial Planning within SIDS as applied to offshore Renewable Energy*, MA (islands and small studies) thesis, August 2008, 47.
[195] LOSC, Art. 79.
[196] Ibid.

When the laying of submarine cables or pipelines takes place, States must have due regard of cables and pipelines already present at the site. In particular, possibilities of repairing existing cables or pipelines shall not be prejudiced.[197] In the 1956 Commentary as a preparation for the 1958 Geneva Convention on the Law of the Sea, it was held that "cables and pipelines must not be laid in such a way as to hamper navigation".[198] The freedom of navigation can be viewed as one which surpasses other freedoms.

5.4 Freedom of Fishing

It is to be noted that although fishing is considered to be a freedom of the high seas, due to over-fishing and known facts of diminishing fish resources, this activity is more restricted than it was previously.

Section 2 of Part VII of the LOSC which is entitled 'Conservation and Management of the Living Resources of the high seas' recognises the freedom of fishing in the light of the new reality of limiting the fishing activity for the purposes of conservation of the resources of the high seas.

In fact, the coastal State is given the duty to safeguard fishing conservation for the world community. According to international law, the burden of sharing such conservation efforts is the responsibility of all States equally. The LOSC requires cooperation between States in the management of fishing in the 'Area'. It is understood that the safeguarding of living resources in the 'Area' is a duty pertaining to all States.[199] The abstention of States from fishing on the high seas for the purposes of conservation is tied with the expectation that benefits will flow from such conservation measures.

[197] Ibid.
[198] Report of the International Law Commission relating to the work of its 8th session (A-3159), Art. 61 and Commentary, and Art. 70 and Commentary, II Year Book ILC1956, at 253, 293 and 299.
[199] LOSC, Art. 117, 118.

The constructions of artificial islands or installations in locations where fishing activities take place are likely to restrain such activities. Together with the artificial structures themselves, the safety zones which form a necessary part of the structure present a further limitation to the use of the seas for fishing. Furthermore, offshore operations may by their very mode of operation harm the fishing environment and can result in a change in the natural living resources of the area.[200]

The issue of the conflict of fishing with other uses of the high seas is not provided for in other Conventions which specifically regulate the fishing activity.[201] This could be as a result of the fact that since this incidence has not as yet occurred in common practice; there resulted no need for consideration. The approach taken seems to be one that unless conflict arises, no review is made as a means of prevention. Once there is conflict, it would have to be dealt with by the sections providing for dispute settlement under the LOSC.

Furthermore, fishing may not present so much of a conflict when confronted with other uses since 93% of the world's catch takes place in the territorial sea and EEZ within coastal State jurisdiction.[202]

"The existing provisions of the LOSC relating to the preservation of living resources of the high seas are largely related to the problem of over-fishing and are not concerned with the conflict between fishing and other uses of the sea."[203]

[200] Esmaeli Hossein, *The Legal Regime of Offshore Oil Rigs in International Law*, Dartmouth Publishing Company 2001,223.
[201] Ibid, 224.
[202] Ibid, 236.
[203] Ibid, 248.

5.5 Freedom of Scientific Research

Future development will always need the establishment of marine scientific research on the high seas. Article 5(1) of the 1958 Geneva Convention on the Continental Shelf holds that the exploration of the continental shelf and its natural resources must not result in any interference with fundamental oceanographic and scientific research carried out with the intention of open publication. The qualification of scientific research as being 'fundamental' shows that priority is given to research on the continental shelf subject to it being of a fundamental nature.

LOSC states that marine scientific research within the territorial sea should only be carried out with the express consent of the coastal State. If any conflict takes place within this area, the coastal State may, within such limits, impose any conditions it deems appropriate in order to deal with the problem.

Through the provision of Article 246 of the LOSC, the coastal State has the right to authorise and conduct marine scientific research in the EEZ.

Since there are no specific rules laid down *ab initio* to avoid conflict, any conflict which may arise should be regulated according to the rules of the settlement of disputes as delineated in the Part XV of the LOSC.

5.6 Freedom to construct Artificial Islands and other Installations permitted under International Law

The freedom to construct artificial islands and other installations is made subject to that which is "permitted under international law". At this point, it is significant to ask *which* constructions are "permitted under international law." Is this a way of referring to those islands or installations which are built for the purpose and intention to evade international law?

The phrase "permitted under international law" is, of course vague. The specific designation of such construction as a permissible use of the high seas, however, lends considerable support to a flexible interpretation of the doctrine of reasonable use.

Having established the right of artificial islands and installations as a freedom of the high seas and the significance of the words "permitted under international law", the real issues with respect to such constructions include the following concerns:

1. When and in what circumstances is it best to safeguard this activity in relation to other freedoms of the sea?
2. How is a practical balance created between the various uses of the ocean?[204]

Since both questions are interrelated in nature they will be dealt with simultaneously. If the benefits resulting from the activity of constructing an artificial island in a 'preferred location' outweigh the other uses then both issues would be safeguarded.

Due to the fact that the law gives no categorisation on their use and purpose, artificial islands in any form including that of an island based on renewable sources of energy generation is most likely to be one of the legitimate uses of the sea. Mc Dougal and Burke hold that any use of the seas for peaceful purposes is permissible under international law.[205]

Prof. Riphagen, in relation to different uses of artificial islands, sets up a scheme of priority. Thus, according to this view artificial islands constructed on the high seas to serve for activities which are already land-based, such as sea-cities must not be prohibited but simply have a lower priority than recognised sea-based activities.[206] The issue of priorities is a significant way of solving disputes, however a proper scheme must be formulated.

[204] Nikos Papadakis, *The International Legal Regime of Artificial Islands*, Leyden 1977, 61
[205] McDougal & Burke, *The Public Order of the Oceans*, Yale University Press 1962.
[206] Nikos Papadakis, *The International Legal Regime of Artificial Islands*, Leyden 1977, 61.

A study of the distinct new structures which will prevail in use and importance on the high seas shows that each structure may limit the use of the seas, as well as result in an obstacle. By way of example, wind farm structures present new obstacles in the sea and create serious hazards to the safe navigation of shipping.

Vessels that lose power may drift into wind farms causing 'drifting collision' and there is also the risk of 'powered collision' as the result of human error or machinery failure.[207] Navigational risk assessment is crucial to maritime safety. Ship routes may change due to the establishment of wind farms perhaps resulting in denser traffic in certain areas and a greater probability of ship-to-ship collisions. Any collision can result in environmental consequences, human dangers and economic losses.[208]

This having been said, studies have shown that in the field of offshore renewable energy, wind renewable energy is mostly used in larger States, when compared to other types of renewable energy. This is because wind energy results to be the most advantageous in terms of cost, energy generation as well as environmental friendliness.[209]

As has been suggested earlier in this study, areas where winds blow continuously at high speeds are to be recognised as ideal locations for wind farms. These areas, apart from allowing the full potential use of wind farms' energy, are usually regarded as being dangerous to navigate due to the high winds. In such cases, problems of conflict between the two activities would be avoided.

Another form of artificial structure which may give rise to questions of conflicts in its operation is that of a FNPP.

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[207] *Navigating Offshore Wind Farms*, JOT, July/August 2008.
[208] Ibid.
[209] Carl Scerri, *Marine Spatial Planning within SIDS as applied to offshore Renewable Energy*, MA (islands and small studies) thesis, August 2008, 44.

Environmental hazards associated with FNPP can occur from accidents, plant construction and operation, terrorism, and war, as well as natural phenomena, collisions, fire breakouts, deterioration of important plant elements and deterioration from flying debris caused by wave action and salt spray; power cable breakages caused by dragging anchors, or vessel groundings; sabotage or reactor meltdowns.[210] More environmental concerns, such as changes in water temperatures, would harm the living resources of the area. FNPP and other similar projects must be studied in accordance with international expectations which are continuously seeking to prevent damage to ocean space.

Of significance in relation to the different forms of artificial structures is the question of permanence. If the use of an artificial structure is not of a permanent nature, its limitation of the various high seas freedoms is reduced.

Although operations such as FNNP and wind farms have a limited time frame of operation, they may be generally considered as being permanent in nature since they operate at a particular location for a considerable period of time. Furthermore, the issue of permanence could be extended to the effects endured by the environment after the lapse of such time frame. It is for this reason that the issue of permanence is a relative one and must be considered distinctly in each factual situation.

The author of this study recognises that by its very nature, an artificial island or installation constitutes an exclusive use of a part of the ocean. The word ‘exclusive’ is used here to indicate that the same ocean area cannot be used anymore by others for any purpose. The duration of this exclusive use can vary greatly. Artificial islands for example, are intended to last for a very long period. They can be considered a permanent use.

[210] Marlowe J. Blake, *Floating Nuclear Power Plants – A “Reasonable use” of the High Seas?*, CWILJ, Vol. 8 1978, 194.

It should be kept in mind, however, that the concept of permanency is a relative one. It refers to a "long time" varying from years to centuries. It is not possible to indicate exactly where the boundary lies between a temporary and a permanent use. The factual situation of artificial islands and permanent installations is identical in that they constitute a permanent and exclusive use of part of the ocean.[211]

Another issue which is intrinsically tied and forms part of the construction of artificial islands and installations is that of safety zones surrounding such constructions. The legal nature of safety zones is however not defined in the LOSC.

Judge Oda comments on the lack of clarity of the legal status of safety zones.[212] He states that the only specification made at the Geneva Conference with respect to safety zones was in so far as stating that "The coastal State is entitled… to establish safety zones around such installations and devices and to take in those zones measures necessary for their protection." Apart from the fact that the distance may extend up to 500 metres, it is held that ships of all nations must respect safety zones. Furthermore, the position was left unchanged and was not developed further in the LOSC.[213]

"Dr. Mouton, a well-known specialist on the continental shelf, advanced the argument, in his capacity as the delegate of the Netherlands, that safety zones should be a "protective no-fire" area extending for fifty metres around installations. His view was supported by reliable data obtained from oil companies."[214]

This proposal was however rejected and that of 500 metres adopted. It is significant to note that the safety zone required by the technical experts was not respected but an extended area was established with no proven basis whatsoever.

[211] John Kisk, *The Law of International Spaces*, Sijthoff, 1973, 7.
[212] Shrigeu Oda, *Fifty Years of the Law of the Sea*, Kluwer Law International 2003, 276-277.
[213] Ibid.
[214] Ibid.

Judge Oda further comments that something of a more significant nature must have been the reason for adopting 500 metres in lieu of fifty metres.[215] By allowing 500 metres instead of 50 metres, States have further limited other uses of the seas. It is thus important to note that when an installation is erected, one should take into consideration that safety zones which form an intrinsic part of the installation also have an effect on the limiting of other uses of the sea.

The approach adopted by the UK on the 25th April 1964, with reference to the Continental Shelf Act, is that ships are impeded from entering such defined areas and fines are imposed on those that enter such areas. This Act seems to demonstrate that the status of the safety zone would be regarded as being equal to that of the installation itself, i.e. it forms part of the installation.

With reference to Judge Oda, Prof. Attard also poses similar concerns about the issue of safety zones. "Could they exclude foreign vessels from entering the zone or anchoring in the zone? Does the designation of navigation routes and the limitation of the kind and size of vessels passing through the safety zone fall within the purview of these measures? In the event that a foreign State vessel violates these measures, does the coastal State have a right to seize the vessel?"[216]

Vague concepts such as 'reasonable safety zones', 'applicable international standards', and 'recognised sea lanes essential to international navigation' may lead to problems.[217] Clarity in definition and wording in order to avoid future conflict is recommended.

[215] Ibid.
[216] Attard J.David, *The Exclusive Economic Zone in International Law*, Oxford 1987, 90.
[217] Ibid. 91

5.7 The Concept of 'Freedom' in Relation to Future Uses of the Seas

The traditional *res communis* concept underlying customary law of the sea is that of 'freedom' as being a concept of unrestricted access to the high seas. Since the concept of 'freedom' does not make reference to a property right, once a freedom has been exercised; property rights do not arise from the result or produce of the use, since it is considered to be a *res nullius*. An example might be drawn with respect to the exploitation of energy resources on the high seas. There would initially be a freedom to exploit them, not a property right in them. There would be no question of property rights in them until appropriation has occurred.

The concept of freedom should be redefined in the light of this new era of technological innovation. The construction of artificial islands on the high seas, is not an unrestricted freedom of the high seas, but one which should be regulated and thus pertain to all nations.[218]

The principle of freedom of the high seas cannot be viewed as a rigid unchanging principle, but as one capable of adaptation to changing circumstances towards a form of international management and regulation. It is important that the nature of the high seas is redefined since to recognise artificial islands on the high seas as a "freedom of the seas" in such a way would be to accept the full domination of the few States with the resources and most advanced technology upon the riches of the seas. It is for this reason that it is not only important to redefine the concept of 'freedom' in international law but this new concept of freedom should be linked to the future uses of the high seas.

The LOSC, by its nature, does not envisage ever-evolving technological development. The author of this study queries whether such future developments are likely to cause conflict due to the present freedoms of the seas. Should regard be given to the future uses of the seas and if so how are they to be safeguarded?

[218] Nikos Papadakis, *The International Legal Regime of Artificial Islands*, Leyden 1977, 67.

It must be recognised that something which is constructed at present may result in an impediment not only to other possible uses of the high seas, but also to distinct future uses. The task of solving such conflicts is difficult in nature and State practice shows that most legislative enactments try to minimise the conflict between other uses of the seas indirectly without giving any priority to any specific use of the sea.

5.8 Considerations

The law of the high seas represents the accumulation of practice and principles over the centuries. Whether this accumulation is wholly adequate to modern needs may be questioned, but it cannot be disregarded. In line with the ILC Commentary the function of the sea as the world's highway must be safeguarded and interference with the traditional uses of the seas should in so far as possible be kept to a reasonable minimum. What constitutes "interference" or a "reasonable minimum" however, may not always be easy to resolve.

The traditional enormous value of the ocean as a source of food and navigation has given rise to other innovative uses of the seas not simply by coincidence. As the rights of nations to use the ocean space is about to undergo radical changes, this gives rise to responsibility towards the international community.

The various new uses of the high seas which are likely to have a direct effect on the world community are as yet undefined as to the matter of their lawful establishment and use. It is thus recommended that international law recognises that through modern technology, the benefits to be derived from the sea have increased in number and variety.

Insistence of the freedom of the seas without compromise or discussion should therefore not be permitted to force the prevention of the construction of artificial islands merely because it is claimed to be an interference with traditional uses.

In any particular region, the interests at stake should be balanced against each other in order to determine which is to be preferred.[219] In this respect Papadakis believes that the construction of artificial islands on the high seas is a desirable and necessary interest, potentially serving the general interests of mankind.[220]

A practical and effective way to solve the conflicting uses of the seas is through marine spatial planning (MSP).

MSP is the study of "strategic forward-looking planning for regulating, managing and protecting the marine environment through the allocation of space which addresses the multiple, cumulative and potentially conflicting uses of the sea."[221] MSP is thus an effective planning tool which can identify conflicts among different uses of marine space; however it is not well regulated.

International law should go hand in hand with practical aspects in order to function in a way of preventing the occurrence of disputes. MSP seeks to regulate patterns of spatial use and concerns for the benefit of users, the environment and society as a whole. It is important that one keeps in mind the other uses currently accommodated within the same space. Not only physical but also future demands need to be considered. In this way, one finds the best option and location for each sector and activity in consideration of the interactions of other uses, conflicts and synergies.[222]

The study of the conflicting uses on the high seas revolves mainly around the concept that technology has now gone beyond the traditional uses of the seas, presenting a potential to unlock vast offshore resources that exist around the world.

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[219] Young Richard, *The Legal Status of Submarine Areas Beneath the High Seas*, Harvard University Law School, A J IL, Vol. 45 1951, 239.
[220] Nikos Papadakis, *The International Legal Regime of Artificial Islands in International Law*, Leyden 1977.
[221] Carl Scerri, *Marine Spatial Planning within SIDS as applied to offshore Renewable Energy*, MA (islands and small studies) thesis, August 2008, 44.
[222] Ibid, 51.

There results to be the need for a system of management of human activities according to their impact on space as well as on imposing time constraints so as to minimise negative effects on valuable areas.

MSP is an ideal concept to solve conflicts since it recognises an effective study in cases of conflicting spatial demands as well as high spatial impacts. Significant concepts include degree of permanence of uses and developing an understanding that uses are not always spatially compatible. Conflicts in most cases arise when uses demand of large marine areas as well as being linked to a high degree of permanence which makes them exclude a large number of other activities. MSP does not only take into account incompatibilities, but tries to maximise the idea of co-uses of the seas as well as compatibilities with other uses.

Finally, it would appear that the best way to tackle the problem of conflicting uses of the high seas would be a multilateral approach resulting in a regime where the ambiguities and general guidelines of international customary law would be transformed into more precise and definite rules concerning the legal regime of artificial islands and the accommodation of the conflicting uses of the sea. The creation of an international body responsible for the question of artificial islands and the solution of resulting conflicts is indeed recommended.

CONCLUSION

I. FINDINGS

The author of this study has attempted to analyse the salient legal issues which are likely to be the cause for concern and uncertainty in the future resulting from the current legal structure. She has drawn up findings which she considers as necessary to be addressed in order to overcome the various shortfalls in the current legal framework of the LOSC with reference to artificial islands.

It has been observed that the initial pronouncements leading to the formulation of the law of the sea have not distinguished artificial islands from natural islands. The need to make this distinction was not felt due to the fact that the construction of artificial structures was until recently not a realistic proposition and recent innovations were not envisaged.

Although the issue of artificial islands was given greater importance in the agenda of UNCLOS III, many suggestions relating to their legal status and jurisdiction were not implemented. The issue of artificial islands was covered by one general provision as made applicable in the context on the Convention, and was thus not given specific importance by the endorsement of a separate legal regime. The inadequacy of the present legal mechanism governing artificial islands is reflected in these past decisions.

With regard to the definition of ‘ships and vessels’ it was recognised through the study made that ships pertain of a universal quality, which makes them different in nature. It was found that what distinguishes an artificial island from a ship is an essential physical characteristic and a recognised universal quality i.e. their hollow structure and their attribute of navigating the seas.

On the other hand, the construction of artificial islands may include different features and their universal characteristic may be held to be that they are used for all uses other than those which are ‘traditional’ in nature.

Although it has been widely understood that a ‘movable chattel’ which is not capable of navigation is not a sea-going vessel, of greater importance is that it is necessary to determine whether anything which can be navigated can be called a vessel. It would be too vague to allow anything of whatever nature which is capable of navigation to be treated equally. On the same grounds, however, if a State wishes to consider a particular ‘floating platform’ as a ship with its own flag it would be difficult unless there is an obvious abuse to reject such a grant. This accentuates the need of international law to establish clarity on the subject matter.

Furthermore, when taken as a whole, International Conventions under study have shown that in certain instances the law is not specific so as to permit inclusion, while in others it is stricter, yet in still others it is not clear. The application of old and tested categories to new concepts has always caused difficulty, but it is an essential part of the development of language. The assimilation of artificial islands to ships takes the nature of being one based on the need to be regulated rather than formed on effective rules which are relevant to the use of the platform.

Prima facie many of these floating structures, if not all of them, would appear to qualify for the juridical status of a ship in international law. Their similarity to ships is however deceptive and is limited to the capability of floating and navigating. While the LOSC clearly distinguishes ships from other structures, it is further noted that the purpose for which they are used, as well as the dimensions and other considerations clearly differ.

In the light of present technological advancements, it is found that various issues of innovative structures as well as novel technological devices to replace older ones find no recognition at law.

These advancements should be promoted by the law since their use is at many instances designed to prevent harm to the environment. This improvement is clear in relation to the previous procedures utilised in the decommissioning of offshore oil rigs.

It has been noticed that when referring to innovative structures at sea professionals from the technical sector often use the term ‘vessel’. While it is noted that the use of the word ‘vessel’ has a broader meaning than the word ‘ship’, the lack of clarity in classification leaves much to be desired. While some professionals involved in the constructions of new structures at sea have been found to be interested in knowing the freedoms and limitations in mooring their artificial islands, others have not felt this necessity and are ready to register their floating islands as ships, and thus apply flag state jurisdiction.

The study of artificial islands as a means to evade the law shows that various States have taken different approaches when dealing with various similar occurrences. The author concluded that States would not generally act unless they recognise the presence of a threat to the integrity of their country. Other States have however regularly refused to take action since they feel uncertain on how to deal with new situations.

The issue of jurisdiction of artificial islands in the different maritime zones features the right of the coastal State to construct artificial islands and installations within its territorial sea. It is noted that this should not obstruct the innocent passage of foreign ships through the territorial sea. Furthermore, the coastal State must certainly refrain from any activities which are to the detriment of neighbouring States.

While the law is categorically clear when referring to most maritime zones, the situation is quite different when dealing with the high seas.

The author has found that the area of the high seas lacks effective regulation and any attempt to determine the jurisdiction which regulates artificial islands on the high seas is met with uncertainty, since no definitive jurisdiction is established.

It seems that a situation of granting declarative jurisdiction to artificial islands on the high seas was intentionally avoided in order to limit the threat over appropriation of offshore areas. This has resulted in no proper jurisdiction to regulate artificial islands in international waters.

The major finding in relation to the conflicting uses of the high seas relates that the LOSC does not offer a comprehensive solution for the conflict of artificial islands with other uses of the seas.

The author considers that the use of terms such as ‘due regard’ and ‘balance of interests’ with regard to the area of the high seas, are ambiguous and lack distinctive clarity. This is a dangerous occurrence in a vulnerable area of the sea, where all uses are said to be equal in nature. The author believes that it is controversial that the limitations imposed on the coastal State in the use of the high seas are based on general considerations which are found in the whole framework of the LOSC rather than specific resolutions of conflict.

Through CIL the four freedoms of the high seas initially recognised by the 1958 Geneva Convention of The High Seas are given more legal force. This is particularly true with regard to the predominant importance given to the freedom of navigation and fishing when confronted with other uses. It is, however, found that, in practice, other freedoms such as that of artificial islands have recently been given more recognition in the light of innovative advancements. Pronouncements have also been made to the effect that the freedom of navigation should be treated equally to the freedom to construct artificial islands and installations on the high seas.

This is significant since the freedom of navigation has always been given precedence, even through the provision of CIL. Though no freedom is absolute, it is recognised that the freedom of navigation is still generally of great importance to the interests of all States.

This study gives prominence to the fact that ultimately international law is a law which is based on State recognition. This is because it is the States themselves which formulate rules of international law. In certain instances, where international treaty law does not provide a position relevant to a practical occurrence, acts of State are taken to form a practice which is equivalent to law.

This practice demands a general recognition and a sense of obligation by other States that it is law, in order for it to become relevant. States are likely to act in ways which may well be accepted by the international community and form a basis for CIL pertinent to artificial islands. On the other hand the UN may feel the need to codify State practice into law so as to avoid unilateral actions by States resulting in conflicting interests.

The author of this study has tried to determine the *opinio juris* of the subject through opinions and standings of State entities of a new era of development of artificial islands particularly with regard to OFEP. The issue was put forward, by the author, to various State representatives. Assessment was received by the following State representatives: the British High Commission, the Libyan People's Bureau, the Italian Embassy, the Embassy of Spain, and the Embassy of the Kingdom of Netherlands and the Ministry of Foreign Affairs of the Hellenic Republic. The majority of opinions received demonstrated uncertainty with regard to the legal status of artificial structures.[223]

[223] The British High Commission – Ms. Hancock, Libyan People's Bureau- Mr. Alsktewi, Italian Embassy – Ambassador Paulo Andrea Trablaza, Embassy of Spain - Cacho Lopez De La Calzada Luis, Embassy of the Kingdom of Netherlands – Beereboom Margot, Ministry of Foreign Affairs of the Hellenic Republic – Anna Voziou.

Dr. Thomas Loidl of the Austrian Federal Ministry for European and International Affairs held that: "Austria has no specific position on artificial islands and on the Articles regarding artificial islands in the LOSC other than to find a balance between the rights of the coastal States to create and maintain artificial islands and the rights of third States to enjoy the freedom of the high seas."

This is quite understandable due to the innovative nature of these structures and due to the fact that many are either not yet fully operational or are in the early stages of operation. Furthermore, the existing artificial islands are for the most part in maritime zones pertaining to the control of the coastal State. However, in the light of innovative realities which will face the international community in the coming years, the reaction of States remains one of uncertainty on the issue.

It is recognised that over time, States may build a common practice according to their interests in the treatment of artificial structures. However, even if international law would not require formal approval at an international level, it is not just advisable, but frequently simply mandatory to commence consultation. This is done in order to ensure that the interests of other States are duly taken into account in the consideration and use of artificial islands.[224]

It was also found that many of those operating in the technical sector and developing advanced technology to be utilised at sea adopt an approach of certainty that what they create is automatically legally acceptable. This consideration is based on the specific belief that something of a revolutionary nature will be needed for use by the international community and is thus rendered acceptable.[225] However, it is to be noted that the law fails to give specific lawful recognition to such innovative projects.

[224] Erik Jaap Molenarr, *Airports at Sea: International Legal Implications*, IJC L, Vol. 14. No.3, 386.
[225] *New gas transport concepts gaining ground*, JOT, January/February 2008, 24.

In line with the technical realities which appertain to the industry of particular States, States may act unilaterally to promote innovations. In this respect it was found that Russia has made claims to the extent that no one else in the world has the necessary expertise in the sector of nuclear energy and that it is in a position where it feels 'obliged' to utilise the skill in the field. The claims made by Russia in relation to its position on FNPP are significant of a formation of the *opinio juris* of the country on the basis of CIL.

As has happened in the past with The Truman Proclamation, this first step taken by Russia may well result in subsequent claims presented by other countries declaring expertise in different constructions. Could this be when the international community will intervene so as to limit unilateral action by countries in favour of a multilateral agreement?

While States may not necessarily impede countries from developing their potential, it is understood, that it is more likely that States would want to act in similar ways and similarly develop their own potential without opposition from others.

The author has found that one of the major problems in international law is to determine when and how to incorporate new standards of behaviour and new realities of life into the already existing framework, so that, on the one hand, the law remains relevant and, on the other, the system itself is not too vigorously disrupted.

II RECOMMENDATIONS

In an attempt to determine the significant legal issues resulting from the LOSC, emphasis has been placed on those aspects of the law which are considered by the author to be vague and where, resulting from her findings, there is likely to be difficulty in their interpretation and possibly even ambiguity.

An in-depth study of the relevant international treaties, State practice, as well as reference to legal literature was undertaken for a clearer understanding of the topic at hand.

Reference was also made to literature of a more technical matter so as to ensure that remarkable information from this aspect was also included in this study. The author requested the professional advice of experts in the field of technical research who are involved in the construction of artificial islands and similar projects. This approach ensured that new legal facts in relation to artificial islands were considered in the context of the present state of development in this sector.

The objective of this study was to determine whether the legal framework provided by the LOSC is sufficiently comprehensive in the light of recent innovations relating to artificial islands. The results have outlined certain serious inadequacies in the current legal framework and this has been recognised from the need of a definition for artificial islands to that of the conflicts with other uses of the seas.

The author has presented a number of recommendations, in an attempt to attribute a proper legal standing for artificial islands and thus reduce existing concerns.

The recommendations are formulated on three main issues:

1. The Legal Status of Artificial Islands;
2. The Jurisdiction of Artificial Islands on the High Seas;
3. The Conflicting uses of the High Seas.

1. The Legal Status of Artificial Islands

Legal clarification as to the classification of artificial islands needs to be in place before widespread developments occur. The legal status of artificial islands is in itself confusing due to the wide variety of designs, locations and uses.

While it is recognised that an all inclusive definition for ‘artificial islands’ is a task which may in itself provide further legal problems if not adequately formulated, a new regime which, at least, takes into account the variety of artificial islands in the light of their function on a practical level is surely recommended.

Even though having a universal definition may seem close to impossible, treating mobile platforms as ships for some purposes and not for others may also result in confusion. A decision then has to be made as to whether the definition should be extended because a new form of ship has emerged, or whether the new object is simply not a ship. The adoption of the first approach may involve a decision either that the earlier definition was inadequate, or that it was adequate but should now be replaced. An alternative approach would abandon the attempt to apply a label and would recognise artificial islands as being *sui generis*, a category of their own.

While traditional definitions assume a single function which does not change, artificial islands should be evaluated in the light of a functional approach which is that which changes according to purpose. Initially, it is recommended that a law based on the application of the traditional definitions of ship, vessel, structures and installations is formulated. However, once these structures are established, their distinct character of artificial structures will emerge over time according to their function. Although many of the constructions which have been referred to should become operational within the next few years, it will take time before they become a ‘common need’ and recognised by all.

The author considers it necessary to first separate the very nature of the structure as whether it is mobile or fixed in nature. Design and construction, as well as the functional purpose of each structure have to be accounted for legally. This is since each function will require distinct legal standards. Only then can a proper definition be formulated.

The author recognises the importance of having a proper legal definition for artificial islands and recommends the use of the terms ‘mobile platforms’ and ‘immovable platforms’. It is recommended that:

Mobile Platforms *include structures which are capable of traversing the seas through their own power or by tow and of which normal mode of operation takes place when in motion.*

Immovable Platforms *include structures which may be permanently or transitionally fixed to the seabed, in their normal mode of operation.*

The list of interchangeable terms utilised by the LOSC relevant to artificial islands should be substituted by the encompassing terms of ‘mobile platforms’ and ‘immovable platforms’ so as to avoid confusion.

Once the general qualifications of movable and immovable platforms are established, further distinctions are recommended with regard to the specific operation of the platforms. These could be varied according to the categories used in this study, which include: Energy Platforms; Residential and Recreational Platforms; and Industrial Platforms.

It is also recommended that a law is formulated with respect to each separate category, keeping in mind the activities which are pertinent to each category separately. These include issues of safety, environmental protection and the general permitted mode of operation.

For this to be done effectively, it is recommended that consultation take place with technical professionals to determine a classification upon which the law can regulate practical relevant facts. A functional analysis of the various types of OFEP would be useful to ensure that all considerations are included. Once the technical operation is recognised, the law can then be structured on the strength of technical requirements.

In relation to the definition of 'natural islands' its is recommended that the definition be qualified by the words: *Islands which have lost the quality of being above water at high tide retain the status of islands even in those instances where they are aided by artificial works to the extent of re- establishing their natural status of islands.*

2. The Jurisdiction of Artificial Islands on the High Seas

The consideration of artificial constructions of a mobile nature as 'ships' is likely to result in a way of effectively allowing the possibility of regulation of such structures. Moreover, if artificial islands, at least those of a mobile nature are treated as ships they are among other rights, entitled to innocent passage and exclusive flag state jurisdiction. Rules relating to ship deployment, registration, markings and signals should be set according to purpose and could be made applicable to artificial islands/installations. It seems that this process of assimilation has been taken by States on different levels for practical purposes.

However, if floating platforms were to be treated as vessels they would be regulated only in their course of navigation but would have to be otherwise regulated according to that which is their designed mode of operation. Furthermore, problems emerge with regard to installations and other floating devices not qualifying as ships under international law.

Although a legal order is secured on the high seas by the extension of the personal jurisdiction of each State over nationals and property, it is the author's conclusion that this is highly inadequate to be applied in practice and is likely to be the source of confusion if so applied.

A situation exists whereby the choice of the individual State is the determining factor. If the situation is left unregulated, different States will handle similar incidents in different ways.

For example, a floating platform may be registered as a ship by a particular State, while another State may consider the operation of a similar platform to be subject to the application of international law principles of jurisdiction. Another issue arises when a self-sufficient installation is registered as a ship. A degree of 'exclusivity' is granted to the installation and the benefits granted to a ship apply. In such a case, a State which has taken action on the high seas against persons or property with no legal link of nationality is regarded as having violated international law.

It is for this reason that a treaty which clearly determines the applicable criminal and civil law in relation to the different forms of installations and artificial islands is recommended. An all inclusive legal system for artificial islands should regulate those issues which fall within their separate functions. This needs to be addressed in the light of the fact that various States may be involved in the operation and use of artificial islands and offshore installations.

The issue of permanence provides another distinct issue relevant to artificial islands. While a ship is only likely to be in a particular area of the high seas for a temporary amount of time, while in transit, this is not the case with artificial islands which are installed in a particular location for a relatively long period, usually calculated in decades.

The degree of exclusivity in the operation of artificial islands on the high seas should be limited to time and purpose, so as to present a direct safe guard against the limitation of the use of the high seas by other States. This is of relevance especially when considering the protection of the future uses of the seas.

3. The Conflicting uses of the High Seas

The principle of freedom of the high seas cannot exist as a rigid unchanging principle, but as one capable of adaptation to changing circumstances towards a form of international management and regulation. It is essential that the nature of the high seas is redefined clearly and presents limits in its own rights. Furthermore, as mentioned earlier, the concept of 'freedom' in international law should be linked to the future uses of the high seas.

The system offered by MSP is ideal for use in relation to the high seas since it is able to protect the interests of the seas which are common to all. It would be of further relevance if all States carried out such a programme in their own territorial waters. In line with the principles of MSP, artificial islands should not be prohibited in areas which are of no importance to shipping. On the same level, obstruction by artificial islands of recognised international sea lanes should be first considered in its totality. Other freedoms should be regarded equally on their own merits.

This system is one which knows of no rigidity and needs to be shaped by flexible legal standards in order to function well. It is only then that compromise and in-depth consideration is reached which will help the function of all the uses of the sea.

Vague concepts such as 'due consideration' and 'balance of interests' should be totally removed from the scope of the LOSC, and be thus substituted by the operational mechanism of MSP. The scope of MSP is effectively that of solving conflicts while taking into consideration different interests involved.

The creation of an international body, responsible for artificial islands and the solution of resulting conflicts, is indeed recommended since the Authority in the 'Area' only regulates installations, relative to their operation in terms of the sea-bed of the high seas.

Since it is still unclear whether ‘installations’ include such concepts as the FNPP, as well as solar islands and energy islands it is deemed best to create an international body which deals with all issues inclusively. A distinct Authority which regulates the high seas and all the activities pertaining to its uses is thus recommended. It is recommended that this international Authority is founded on the principle of a practical resolution of conflicts through the system of MSP.

The author of this study recommends that the definition of ‘resources’ should be extended to include potential renewable sources of energy exploited at the surface of the high sea. Through this, the principle of common heritage of mankind could be extended to those resources exploitable at the surface of the high seas, which could thus be employed for the benefits of all States through renewable forms of energy. If the use of the high seas is recognised as belonging to a group of States in any particular area of the high seas, there would be no question of appropriation or exclusivity by one particular State.

The author believes that environmental concerns regarding the placement of artificial structures should be primarily taken into consideration when considering conflicting uses of the seas. Furthermore it is recommended that when energy platforms will be deployed, their location of operation should be one where they can benefit from their full energy exploitation potential. By way of example, solar islands are to be deployed near the equator where solar radiation is very intense, and exploitation of such resource assumes full potential. This allocation of space is adequately provided for by the mechanism of MSP.

It is the author’s opinion that the best way to tackle the problem of conflicting uses of the high seas would be a multilateral approach resulting in a regime where the ambiguities and general guidelines of international customary law would be transformed into more precise and definite rules concerning the legal regime of artificial islands and the accommodation of the conflicting uses of the sea.

Artificial islands and installations in international law present an issue which requires the attention of the international community. The author recommends that all the legal aspects studied above should be addressed comprehensively and incorporated into an international framework. The formulation of such a framework is favourable, especially since the LOSC was last modified in 1994. Furthermore, suggestions have already been made to change the existing legal regime of ocean energy and the resources of the high seas.

The author recommends that the treaty should be based on the legal status, jurisdiction of structures according to their specific type of operation, as well as an adequate framework for the regulation of the conflicting uses of the seas. It is recognised that the jurisdiction over structures at sea should be inclusive of rules relating to the decommissioning of offshore structures and pollution, which are beyond the scope of this study.

This study generally seems to advance an attitude towards pre-emption and possible prevention of conflicts. It is recognised that the legal order is usually structured on the solution of practical problems. It is to be expected that only once innovative issues, become ‘common practice’ will they be addressed in a formal legislative framework. However, the study of oil platforms at sea is demonstrative of the fact that even cases which result to be of ‘common practice’ are not sufficiently recognised by law. Due to this fact, as well as in the light of further innovations, legal recognition should be made applicable to the subject of all structures at sea inclusively. This is required in order to provide for the present situation of uncertainty on the subject matter as well as to solve legal conflicts which are likely to arise at a later stage.

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