



Marine Scientific Research under UNCLOS: a Vital Global Resource?

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Abstract

This paper provides a general overview of the regime governing Marine Scientific Research (MSR) under the United Nations Law of the Sea Convention (UNCLOS). The paper focuses on apparent ambiguities resulting from the attempt to balance the interests of coastal states and researching states and it highlights the difficulties encountered in conducting MSR (including hydrographic surveying). Developing effective international criteria and guidelines under UNCLOS to ensure a more effective regime for marine research in the future is proving to be a long drawn-out process, in which States Parties seem only to be taking intermittent interest.



Résumé

Cet article fournit un aperçu général des règles qui régissent la recherche marine scientifique (RMS) dans le cadre de la Convention des Nations Unies sur le droit de la mer (UNCLOS). Le document qui suit se concentre essentiellement sur les ambiguïtés apparentes qui résultent de la tentative d'équilibrer les intérêts des Etats côtiers et des Etats qui effectuent des recherches, tout en mettant en relief les difficultés rencontrées dans le cadre de la MSR (y compris des levés hydrographiques). Le développement de directives et de critères internationaux et de directives efficaces, dans le cadre de la Convention UNCLOS, visant à appliquer des règles plus efficaces pour la recherche marine, dans le futur, s'avère être un processus de longue haleine auquel les Etats parties semblent uniquement s'intéresser par intermittence.



Resumen

Este artículo proporciona una visión de conjunto del régimen que gobierna la Investigación Científica Marina (MSR) bajo la Convención de las Naciones Unidas sobre la Ley del Mar (UNCLOS). El artículo se centra en ambigüedades aparentes que resultan del intento de equilibrar los intereses de los estados costeros y de aquellos estados que están investigando y destaca las dificultades encontradas al dirigir MSR (incluyendo los levantamientos hidrográficos). El desarrollo de criterios y directivas internacionales efectivos en el marco de UNCLOS para asegurar un régimen más eficaz para la investigación marina en el futuro está resultando un proceso interminable, en el que los Estados Partes de dicha Convención parecen estar interesándose sólo de forma intermitente.

Introduction

This paper seeks to provide a general overview of the extensive provisions contained in Part XIII of the United Nations Convention on the Law of the Sea (UNCLOS or the Convention) in relation to Marine Scientific Research (MSR). It will address the issue of how the general principles in UNCLOS, as interpreted by states, are still far from achieving effective and evenly administered enforcement. This in turn has considerable possible implications for the development and Transfer of Marine Technology (TMT), the subject matter of Part XIV of UNCLOS. The paper looks at some of the key provisions in UNCLOS, and discusses both the regime governing MSR/TMT and the applicability of the MSR provisions to marine survey activity. It will question whether the balance UNCLOS seeks to achieve between the interests of coastal states and researching states is being realised, and whether, in this age of climate change and the growing realisation that fish and oil are not the only riches the oceans contain, the UNCLOS regime is able to contribute effectively to coherent marine policies worldwide.

The provisions regulating MSR are to be found mainly in Articles 238 to 265¹, under Part XIII of the Convention, but there are also provisions contained in Part XI, dealing with MSR in the Area²; see, in particular, Article 143. MSR is a freedom of the high seas under Article 87, and all states may conduct research there³, but it must be exclusively for peaceful purposes and for the benefit of mankind as a whole⁴. All states, irrespective of their geographical location, and competent international organisations, have the right to conduct MSR⁵, subject to the rights and duties of other states under the Convention. 'All states' includes land-locked states⁶.

Part XIII attempted to balance the rights of coastal states and researching states by establishing a regime which operated on a zonal basis. Thus, a coastal state acquires more rights in the zones

nearest to its shores: within its territorial sea, the coastal state has the exclusive right to authorise, impose terms on, or refuse research activities⁷. Legal issues in relation to MSR are most prevalent in the Exclusive Economic Zone (EEZ) of coastal states. Coastal states have the right to regulate, authorise and conduct marine scientific research in their EEZ and on their continental shelf⁸. They will normally be expected to grant consent to other states and competent international organisations to conduct MSR, unless a limited range of exceptions apply, such as where research would be of direct significance to exploration for or exploitation of natural resources. Where consent is not forthcoming, an implied consent regime operates. This is dealt with in more detail below.

The consent regime has been interpreted unevenly by states, with some coastal states refusing to grant consent where it might reasonably have been expected⁹, and some others imposing conditions¹⁰. In 2003, the Intergovernmental Oceanographic Commission of UNESCO (the IOC), together with the Advisory Board of Experts on the Law of the Sea (ABE-LOS), at the behest of the UN and its Department of Ocean Affairs and Law of the Sea (DOALOS), conducted a survey of practice amongst not only States Parties to the Convention, but also non-States Parties (notably, the USA). A questionnaire on practice under Part XIII was sent out in an endeavour to ascertain as precisely as possible how states are implementing Parts XIII and XIV. Under Article 251 states are enjoined to 'seek to promote through competent international organisations the establishment of general criteria and guidelines to assist States in ascertaining the nature and implications of marine scientific research'.

The questionnaire was presented in very straightforward terms, and sought to obtain only the most basic of information. Such information would provide a building block in achieving the objectives set out in Article 251. There were thus questions relating to the frequency of MSR requests made to and

¹ References to Articles herein are to Articles in UNCLOS unless otherwise stated.

² Defined in Art 1 of the Convention as sea-bed beyond the limits of national jurisdiction.

³ Article 257

⁴ Article 143

⁵ Article 238

⁶ See Article 254 for the rights of neighbouring land-locked and

geographically disadvantaged states.

⁷ Article 245

⁸ Article 246

⁹ See examples given in Ashley Roach, J (1996) *Marine Scientific Research and the New Law of the Sea*, Ocean Development International Law, Vol 27, p 59-72.

¹⁰ See examples given in Galdorisi and Vienna (1997), *Beyond the Law of the Sea*, Praeger Publishers, p164.

by states, and the results of those requests. There were also questions relating to the actual mechanics of making and dealing with requests, in terms of dedicated national legislation and bodies designated to process the requests. Participation by nationals of the requested states in research being conducted by applicant third party states was also covered¹¹. The response to the exercise by States Parties was disappointingly low - only 31 states responded and they did not all respond to all the questions¹². This meant that in a number of areas the responses obtained were incapable of giving a statistically significant picture capable of meeting the objectives aimed at in Art 251. Without basic information of the kind sought by the IOC/ABE-LOS survey the difficulties of balancing the interests of coastal states in protecting their rights in the EEZ and the interests of researching States in having the freedom to advance MSR without undue restriction from coastal states will continue. These difficulties had been identified when drafting the Convention, and will continue to cause problems until the introduction of generally acceptable 'criteria and guidelines' as envisaged in Article 251.

International cooperation is at the heart of MSR. States are under a reciprocal obligation to promote actively the flow of information and scientific data and the transfer of knowledge resulting from research¹³. The results may be disseminated through the International Seabed Authority (ISBA) or other international channels as appropriate. Particular emphasis is placed on dissemination of results to developing states to facilitate their MSR capabilities independently of other states¹⁴. This process should be further advanced by the requirement that, unless otherwise agreed, communications concerning proposed projects are to be made through appropriate international organisations¹⁵.

In addition to the problems that can arise if the

consent regime is not being evenly implemented, it is striking that the Convention does not anywhere attempt to differentiate between types of activity that may be carried out: the failure to define such key terms as 'survey activities', 'hydrographic surveys', 'operational oceanography', 'military survey' or even 'marine scientific research' itself must inevitably lead to uncertainty as to what activities actually do fall within the MSR framework¹⁶. This lack of definition has led some commentators to conclude, for example, that MSR can be distinguished from survey activities. If this is right, surveying activity would not require prior authorisation from coastal states¹⁷. There is, therefore, scope for disagreement as to whether coastal states have jurisdiction over hydrographic or indeed military survey activities by a foreign state in their EEZ. This is discussed further below.

Developments in technology are another area which introduces uncertainty into the operation of the MSR regime. Automatic Floating Stations (AFS's), Ocean Data Acquisition Systems (ODAS), Remotely Operated Vehicles (ROV's) and Autonomous Underwater Vehicles (AUV's) were all making their appearance either shortly before or during the period when the Convention was being drafted, enabling MSR to be carried out more or less remotely, without the need for vessels to enter EEZ's, except, possibly, for recovery purposes. The Convention took these developments into account in the sense that it subjects such installations and equipment to the overall MSR regime¹⁸, but work which had been commenced by the IOC and the IMO on a separate Convention dealing with ODAS continued after UNCLOS was completed¹⁹. Matters such as the recovery and return of ODAS, liability for unlawful interference with ODAS, their registration and safety rules, are all likely to be the subject of the further Convention. Another development which could not have been foreseen when the Convention was being drafted was the amount of surveying and research

¹¹ Details of the exercise, the Questionnaire, and the results obtained are to be found on the IOC website at <http://ioc.unesco.org/unclos/ABE-LOS-III-eng/IOC-ABE-LOSIII-9-%20fin.doc>.

¹² Report on the IOC Secretariat on the Results of the IOC Questionnaire 3 on the Practice of States in the Field of MSR and TMT, in relation with Article 251 of UNCLOS, *ibid*, page 2.

¹³ Article 143

¹⁴ Article 244 Paragraph 1

¹⁵ Article 250

¹⁶ See, for example, Churchill R.R. and Lowe A.V. (1988) *The*

Law of the Sea; Manchester University Press, Manchester 3rd edn, 1999 p 405; Roach J.A. and Smith R.W., *United States Responses to Excessive Maritime Claims* (The Hague, Nijhoff), 2nd edn, 1996, pages 425-7, 446-8.

¹⁷ Soons, A (1986) *Marine Scientific Research and the Law of the Sea*; Kluwer Law and Taxation Publishers, Boston p157.

¹⁸ Arts 258-262

¹⁹ Intergovernmental Oceanographic Commission (1972) 'Draft Convention on the legal status of ODAS', Intergovernmental Oceanographic Commission (2004) 4th meeting of the Advisory Body of Experts on law of the sea.

which could one day be conducted by satellite. The question of whether it is necessary or even practicable for coastal states to require consent for such surveying is as yet unanswered.

The Importance of Marine Scientific Research

The safe and economic use of the oceans and the preservation of its stocks and resources is dependent on accurate, appropriate and sufficient scientific research. Knowledge gained from the oceans has increasingly important implications for applied sciences and technology. As technological advances are made, the greater the need for protection of the oceans for all mankind becomes. The heavy demands on the marine environment in recent years have led inevitably to a pressing need to protect and preserve the seas from pollution, depletion, and exhaustion of marine stocks and mineral resources as well as uncontrolled military activity. It follows that there is a necessity for a comprehensive mechanism for the regulation of MSR not only to assist in the formulation of global policies, but also to prevent the use of 'research' operations for military or exploitative purposes.

The importance of MSR is not underestimated in the European Union. The Commissioner for Fisheries and Maritime Affairs, Joe Borg, is constantly stating the case for excellence in MSR. As he says, the Community's own 'Thematic Strategy on the Protection and Conservation of the Marine Environment' requires 'solid facts and empirical evidence'²⁰. MSR is relied on primarily for exploration and control over fish stocks and mineral resources as well as environmental factors such as pollution and climate change: it has the potential greatly to affect the economic development of states.

Borg is widening Europe's consultation on MSR to include dialogue with the USA, Canada and Australia in particular, in an effort to establish guidelines to best practice in the marine environment. At

the same time, however, he recognises that, even within Europe - one of the most highly developed communities on the planet, there needs to be still greater emphasis on co-operation. He refers to fragmentation and a lack of cohesion and common vision as being weaknesses currently faced by European marine researchers and states that the EU could help the global effort by taking a clear position internationally as regards freedom of fundamental research in the high seas and in the EEZ's of Europe's partners. He also identifies the need to ensure dissemination of research output in a way that is easy to understand and capable of use by policy makers and industry alike²¹. The drafting of the Convention was completed in 1982; it is not encouraging to hear what the European Commissioner is saying 23 years on regarding progress in achieving its goals.

The Concept of Marine Scientific Research

Marine Scientific Research in its ordinary natural meaning could be interpreted as any form of scientific investigation, fundamental or applied, concerned with the marine environment. MSR would, according to this broad definition, include all kinds of data collection conducted at sea such as oceanography, marine biology, scientific ocean drilling and hydrography. As noted above, however, nowhere in its provisions does UNCLOS actually define the term 'marine scientific research' referred to in its articles. An attempt to include a broad definition of MSR was actually rejected during negotiations of UNCLOS²².

The terms 'MSR', 'research', 'survey activities (including hydrographic and oceanographic)' and 'military activities', as commonly understood, are not mutually exclusive. It has been suggested that as these terms remain undefined under UNCLOS, the economic use of the data, its intent and purpose of collection²³ should all be examined to determine into which category the specified activity falls. There follows below a brief consideration of various terms and their implications:

²⁰ Speech to the European Parliament Conference on the Future of European Maritime Scientific Research' delivered on 17 Oct 2005-at http://europa.eu.int/comm/fisheries/news_corner/discours/speech83_en.htm.

²¹ 17 Oct 2005 speech, *ibid*.

²² 'any study or investigation of the marine environment and experiments related thereto'(draft Article 1(1)); Sixth session of the conference of the Third Committee (1977).

²³ Soons, A (1986) *Marine Scientific Research and the Law of the Sea*; Kluwer Law and Taxation Publishers, Boston.

'Research'

Alfred Soons, amongst others, points out that it is necessary to distinguish between different types of research for MSR purposes²⁴. It would normally be expected that consent for the conduct of 'pure' marine scientific research will be forthcoming from coastal states whilst 'applied' scientific research, being those forms of research such as the exploration or exploitation of resources, drilling or use of explosives on the continental shelf and the construction of installations and structures, all provide grounds for consent from coastal states to be withheld²⁵.

Once 'research' moves on to become 'prospecting' or 'exploring', it is no longer unrestricted, and may, if it is within the Area, become subject to the provisions contained within Annex III of the Convention, but, again, there are no specific guidelines on how to distinguish between 'research', 'prospecting' and 'exploring'. As technology advances and drilling for hydrocarbons at ever greater depths becomes feasible, these distinctions will assume greater importance, particularly for those charged with the administration of the International Seabed Authority.

'Hydrographic and Oceanographic Activities'

As far as hydrographic and oceanographic surveying activity are concerned, many commentators distinguish this from MSR²⁶. Hydrographic surveying generally connotes observations made to ensure safety of navigation, it has considerable potential commercial importance, but is in general limited to the production of accurate and detailed nautical charts. It is usually conducted for peaceful purposes, but nautical charts will inevitably also be of vital importance for military purposes. In practical terms, as has been pointed out by Sam Bateman in his various papers on hydrographic activities within the EEZ, hydrographic survey activity will generally be conducted on a moving vessel, following a specific course. A ship undertaking oceanographic research or military surveys will typically be more random in its movements, stopping to take

samples or conduct experiments²⁷. This difference in operation may however become less distinct if a vessel is engaged in hydrocarbon survey activity. In order to avoid misunderstandings and arousing suspicions unnecessarily, it will probably always be advisable to obtain clearance from coastal state authorities for chart-making hydrographic activity, even if it is not MSR.

The Convention is silent on hydrographic activities in EEZ's. As they can be regarded as embracing the safety of navigation, they can arguably be viewed as an internationally lawful use of the sea relating specifically to the freedom of navigation permissible for all states under Article 58²⁸. In practice, there has been an uneven application by states of the consent regime, with some coastal states, such as China, requiring consent for hydrographic surveying while others, such as the US and the UK, claim that such surveying relates to the freedom of navigation available to all states in the EEZ²⁹.

The position is different in the territorial sea, straits, and archipelagic waters. Article 19(2)(j) of the Convention relating to innocent passage in the territorial sea, provides that 'research or survey activities' conducted by a foreign vessel in territorial seas are to be considered 'prejudicial to the peace, good order or security of the coastal state'. Article 21(1)(g) does however permit coastal states to draw up regulations for certain purposes relating to innocent passage through the territorial sea, including 'marine scientific research and hydrographic surveys'. Article 40 provides that 'foreign ships, including marine scientific research and hydrographic survey ships' exercising the right of transit passage through an international strait may not carry out 'any research or survey activities' without the prior authorisation of the states bordering the strait: the same regime applies in archipelagic waters (Article 54).

'Military Surveying'

There is no provision in UNCLOS for military surveying. Military surveys are activities undertaken in

²⁴ Soons, *ibid*

²⁵ See Art 246.

²⁶ See, for example, Churchill R.R. and Lowe A.V., *op cit*; Roach J.A. and Smith R.W., *op cit*.

²⁷ See, in particular, 'Hydrographic surveying in Exclusive Economic Zones: Jurisdictional Issues', *International Hydrographic Review*, Vol. 5 No. 1 (New Series), April 2004, pp24-33; and 'Hydrographic surveying in the EEZ: differ-

ences and overlaps with marine scientific research', *Marine Policy*, Vol 29, 2005, pp. 163-174.

²⁸ See Soons, *op. cit.*, p 157, and Roach J.A. and Smith R.W., *United States Responses to Excessive Maritime Claims* (The Hague, Nijhoff), 2nd edn, 1996, pp 425-7, 446-8; Sixth session of the Third Committee Conference (1977).

²⁹ See Roach J.A. and Smith R.W *op cit* p247.

the ocean and coastal waters involving marine data collection for use by the military. This can include both military surveys, (involving the gathering of oceanographic, chemical, biological and acoustic data) and collection of intelligence. Some states, including the United States and UK, regard military surveying as a fundamental freedom of navigation available in the EEZ and take the view that military surveys are therefore permissible³⁰. Other States, such as China, assert that military surveys fall within UNCLOS and must be conducted with due regard to the rights and duties of the coastal state³¹ and in accordance with 'peaceful purposes'. Given the current broad interpretation of 'peaceful purposes' by powerful maritime nations, most military surveying will be regarded as UNCLOS-compliant on this basis.

However, the need for clear guidance was apparent even before the implementation of UNCLOS, as demonstrated by the *Pueblo* incident in 1968. MSR and hydrographic survey operations were used as a 'cover' in relation to espionage and intelligence missions. The *Pueblo* was a US naval intelligence-gathering vessel posing as a research ship inside North Korea's twelve mile limit. Later, the mission of the *Glomar Explorer* in the 1970s was an attempt by the United States to undertake a secret intelligence operation under the cover of a 'Deep Ocean Mining Project': in this case a purported search for manganese nodules on the sea bed which was used as cover for the raising of a soviet nuclear submarine that had sunk to the sea floor in 1968³².

UNCLOS, in its current form, has failed to provide an adequate regime which would halt this kind of behaviour. China took military action over certain 'hydrographic surveying' activities conducted by the USNS *Bowditch* in 2002, while India lodged protests over the 'oceanographic surveys' undertaken by HMS *Scott* in 2001 on the basis that the surveys were required for military purposes. The data did, indeed, prove to have been collected in

support of submarine operations and thus for military purposes³³.

Competing Interests

The grey areas and ambiguities which exist in both the drafting and interpretation of UNCLOS Part XIII, and other parts of the Convention, came about largely as a result of the competing interests between the developed and developing states which participated in negotiating UNCLOS. There was also the issue of participation by land-locked states. Those tensions resulted in compromises which it was hoped might result in greater cooperation as states developed practice under the Convention. The results of the IOC/ABE-LOS survey and the comments of Joe Borg referred to above rather indicate that this is a process which is going to take longer than might have been hoped.

The idea of having a supra-national regulatory authority over MSR both in terms of the extent of coverage, its scope and content, provoked considerable debate between those researching states which preferred few restrictions on MSR and those which wished for a more paternalistic approach. The interests of coastal states, who commonly wished to retain or expand rights in their EEZ and continental shelf, had to be balanced with the interests of land-locked states for whom meaningful ways of participation in MSR had to be found. There is no supra-national authority, rather, it is left to 'states and competent international organisations to promote and facilitate the development and conduct of marine scientific research in accordance with the Convention'³⁴: as indicated, it looks like being a slow process.

The scientific and technological capabilities required to conduct MSR lay for the most part with the industrialised nations, which had sophisticated scientific and technological capabilities, and generally held a broad view on MSR. Their approach was

³⁰ See Roach and Smith, *op. cit.* pp 448-9, and Churchill R.R. and Lowe A.V., *The Law of the Sea*; Manchester University Press, 3rd edn, 1999, pp 404-5.

³¹ Memorandum No.6 issued by the Council for Security Cooperation in the Asia Pacific (CSCAP) on the Practice of the Law of the Sea in the Asia Pacific p3; Ocean Policy Research Foundation (2005), 'Guidelines for Navigation and Overflight in the Exclusive Economic Zone' www.sof.or.jp/topics/2005_e/051205_01.html.

³² Federation of American Scientists website; www.fas.org/irp/program/collect/jennifer.htm; KGB website; w3.the-kgb.com/dante/military/mission.html.

³³ Oliva M, 'Before EP-3, China turned away US research ship in international waters', ww2.pstripes.osd.mil/01/may01/ed052001d.html; SAND-NET weekly update www.nautilus.org/archives/sand/Updates2001/V2N7.html.

³⁴ Art 239

that regulation should mean that there would, in effect, be no restriction on research conducted in the 'high seas', such a term to be widely defined. This approach has, to a large extent, been borne out by the practice of the major maritime powers: the IOC/ABE-LOS survey records that the US claimed to have approved every MSR application made in the years 1998-2002, whilst the UK claimed only to have refused 2 requests out of the 80 or 90 made each year. Russia permitted about 80%, and China about 72%. Japan, however, only permitted 10 out of 52 requests³⁵.

The developing states, suspicious of the developed nations' claim that they should have unlimited freedom to conduct research in the vast areas of the oceans that fell within the scope of the high seas³⁶, feared the exploitation of marine resources and the commercial exploration of the sea would be to their economic disadvantage and were also concerned that stricter regulation of sources of marine pollution would inhibit the speed of their own industrialisation programmes. Consequently, developing states sought to extend their jurisdiction and control over large areas of what had formerly been the high seas. They wished to include within the scope of regulation the right to regulate the conduct of marine scientific research, through a narrow definition of MSR, and incorporate complex provisos, including the right to refuse permission for MSR to take place at all. The results of the IOC/ABE-LOS survey confirm to some extent that these attitudes still persist, in that the majority of developed states completing the questionnaire, including Australia and the UK, have not implemented any national legislation in relation to MSR. Eighteen other states which took part in the survey have established specific national legislation and/or administrative procedures to regulate the conduct of MSR, these being mainly what might be termed the richer nations of the developing world, such as Oman, China, Indonesia, Malaysia and Russia³⁷.

Article 248 sets out in detail the requirements for a state to provide information to the coastal state in whose waters it wishes to carry out MSR. It

requires six months' notice to be given. The opportunity to participate in the research must be given to the coastal state. This is often done by allowing nationals of the coastal state aboard the research vessel for the duration of the research voyage: every effort should be made to ensure that these nationals get to participate in what is being done. There is no obligation to remunerate them. The coastal state has four months in which to object to the research being undertaken, and if no response has been received the applicant state can proceed. These provisions are part of the practical manifestation of the commitment sought by less developed nations to ensure that they, too, benefit from the research carried out by developed states. The results of the IOC Survey indicate that the majority of developed states do permit foreign observers on their research vessels, 96% of whom are trained and participate in the research, whilst 90% are provided with the necessary equipment³⁸.

As has been seen above, states have varied considerably in their approach to permitting MSR, largely due to these underlying tensions. It is interesting to note that Churchill and Lowe³⁹, writing in 1999, recorded that between 1983 and 1995 the US State Department processed over 1,600 requests by US vessels to conduct MSR in the territorial seas and EEZs of 140 states of which 43 were denied and 148 cancelled because of non-compliance by researchers with the Convention's requirements. Many of the problems encountered by states wishing to carry out MSR in other states' coastal waters relate to the bureaucratic hurdles that have to be cleared. Developing countries in particular very often do not have in place adequate infrastructure or procedures to process applications: there may also be problems of corruption—permission being withheld against payment of bribes, and requirements may be imposed regarding the holding of acquired data in confidence.

The positive aspect of UNCLOS however is that the nations negotiating the Convention did largely agree on the underlying approach to be taken to regulate MSR. The key principles which emerged

³⁵ IOC/ABE-LOS Survey, Responses to Questionnaire Number 3 Data Compilation and Analysis Sheet, section one Question II Parts B and C, IOC website, *op cit*.

³⁶ Churchill R.R. and Lowe A.V. (1988) *The Law of the Sea*; Manchester University Press, Manchester 3rd edn, 1999.

³⁷ Report on the IOC Secretariat on the Results of the IOC Questionnaire 3 on the Practice of States in the Field of MSR

and TMT, in relation with Article 251 of UNCLOS, *ibid*, pages 3-5.

³⁸ IOC/ABE-LOS Survey, Responses to Questionnaire Number 3 Data Compilation and Analysis Sheet, section one Question IV Parts B ii, iv, v, IOC website, *op cit*.

³⁹ *Op. cit.*, p 410 and the authorities there cited.

from the negotiations preceding the Convention, which can be seen within the Part XIII provisions, including the protection of the oceans for the benefit of all mankind, concentrating on control over the exploitation of resources, the necessity to protect the oceans for future generations through incorporation of controls over pollution and in generally taking a cautious approach to control over the natural resources of the ocean, provide a laudably principled framework within which to take matters forward.

The remainder of this paper will focus on the following four areas which are key to regulation of MSR but which were the subject of considerable debate and have continued to cause controversy in implementation:

- the meaning of peaceful purposes
- preservation of the marine environment
- exploitation of living and non living resources
- access to data issues.

Peaceful Purposes

The concept of peaceful purposes is a cornerstone in the philosophy underlying the Convention, particularly in relation to MSR. Nonetheless, this key principle has never been comprehensively defined. It is to be found in Articles 240/246(3) of Part XIII, but owing to the reluctance of maritime nations to control their armament and nuclear capabilities, a comprehensive formula was never settled upon.

The concept was introduced in relation to MSR to appease territorialists, keen to control military manoeuvres, exercises and testing in EEZ's. Its scope was, however, never determined due to the view of maritime nations who advocated an approach that stated that peaceful military activities were not, *prima facie*, banned by international law.

The interpretation of 'any peaceful purposes' in the Convention has led to inconsistencies in interpretation. Vukas argues that the prohibition of all mili-

tary activity could not have been envisaged by those drafting UNCLOS since coastal states regularly conduct military activities in their EEZ and 'many of them count on the sea as an area of warfare'⁴⁰. He suggests that the drafters envisaged that restrictions should only apply to aggressive actions at sea. However, in practice, some states (including China) claim that while military surveying may be freely conducted in the high seas, Coastal state consent must be obtained in order to carry out military activities in or over their EEZ's and have sought to apply restrictions on navigation in their EEZ's. Article 58 of the Convention provides for freedom of navigation and 'other internationally lawful uses of the sea related to' this freedom compatible with the other provisions of the Convention. As far as MSR is concerned, however, there is, as has been seen, the requirement under Article 246 (2) to obtain the consent of the coastal state in any event before such research is carried out.

Preservation of the Marine Environment

Marine environmental issues are these days of paramount importance. Expanding human coastal populations and increasing industrialisation of nations such as India and China mean that the oceans are receiving a growing amount of waste. The Convention attempts to preserve the marine environment for the benefit of future generations by devising a procedure which monitors and records the marine environment in order to combat the issue of pollution, both within and outside areas of national jurisdiction⁴¹. Since waste is often introduced to coastal waters, where it mixes with other pollutants, this is the zone where regulation is most specifically provided by imposing the obligation on coastal states to protect the marine environment⁴². The problem, in MSR terms, is that it will be virtually impossible for any other state or international organisation to carry out research in the territorial sea if the coastal state refuses co-operation in order to check pollution levels.

⁴⁰ B. Vukas: Peaceful uses of the sea, denuclearization and disarmament, in Vignes D. and Dupruy R.J. A Handbook on the New Law of the Sea, Volume 2; (1992); Martinus Nijhoff Publishers, Boston.

⁴¹ Articles 192 – 265, in particular see Articles 202-212.

⁴² See for example Verlaan, P 'MSR and the marine environmen-

tal protection provisions of UNCLOS: implications for experimental activities that intentionally perturb the marine environment' Paper for ABLOS Conference, Monaco, 10-12 October 2005. (http://www.gmat.unsw.edu.au/ablos/ABLOS05Folder/ablos05_papers.htm).

As has been noted above, a coastal state is entitled to withhold its consent in respect of a marine research project to be conducted within its EEZ or on its continental shelf, for activity which 'involves drilling into the continental shelf, the use of explosives, or the introduction of harmful substances into the marine environment' (Article 246(5)). However, in view of a lack of definition as to what constitutes a harmful substance, a coastal state has a wide discretion as to whether to grant consent. Andrainov and Danilenko have suggested that 'drilling' could be widely defined to cover selection of samples from surface deposits for purposes not linked with research for resources⁴³. Again, however, as far as research into protection of the marine environment is concerned, a state which is, for example, engaged in fishing practices which contravene international conventions on endangered species, or in failing to take adequate steps to minimise oil pollution, may well be extremely reluctant to grant permission for MSR in its EEZ which is designed to gather evidence of such contraventions.

Exploitation of Living and Non-living Resources

The oceans of the world have historically been a crucial source of living and non-living resources and those negotiating the Convention envisaged that regulation should protect the natural resources of the oceans as well as regulate their exploitation. Under the Convention, the extent of permissible exploitation by states of resources in the oceans depends upon the area in which that exploitation takes place. MSR is crucial to determining areas of potential exploitation of both living and non-living resources. As has been noted above however, a coastal state has a discretion to withhold its consent in relation to maritime research projects to be conducted in its EEZ or on its continental shelf which are of direct significance for the exploration and exploitation of natural resources, whether living or non-living (Article 246(5)). As far as the continental shelf is concerned, Alfred Soons

notes that it is not clear whether consent is required only for research involving natural resources which have physical contact with the sea-bed or subsoil, or for all research involving the continental shelf, irrespective of the nature of the natural resource⁴⁴. This comment arises from the restricted definition of natural resources given in Article 77 (4) which deals with the rights of the coastal state over its continental shelf: pelagic fish species are not included. The acquisition of such rights in turn depends upon whether the coastal state has succeeded in having a submission to extend its continental shelf area beyond the limits of its EEZ under Article 76 approved by the UN Commission on the Limits of the Continental Shelf.

The huge importance of MSR in relation to the exploitation of fish stocks was explicitly recognised in another speech made in 2005 by Joe Borg⁴⁵, the European Commissioner, in July, when he had stated:

"Science and research is the basis for policy making in most areas. In the common fisheries policy there is a legal obligation that the decision-making process shall be 'based on sound scientific advice'. Thus, every year, we turn to scientists, in particular those based at the International Council for the Exploration of the Sea, for scientific advice on the state of the stocks and their advice on what the total annual catch in the different fisheries should be. Without scientific advice our common policy could not work."

Freedom of scientific research is key in identifying and monitoring movements of fish stocks and their exploitation, both on the high seas and within the EEZ and continental shelf of coastal states. Under Article 119 states and their scientists are enjoined to co-operate in undertaking the research necessary in the high seas in order to 'maintain and restore population of harvested species at levels which can produce the maximum sustainable yield'. In the case of the EEZ and the continental shelf coastal states are bestowed exclusive rights

⁴³ Andrainov V.A. and Danilenko G.M. Legal Regime of MSR according to UNCLOS: Prospects; Sept 13-17; 2004 Yalta, Crimea, Ukraine (invited lecture) (www.donphti.ac.donetska.ua).

⁴⁴ Soons, A (1986) *Marine Scientific Research and the Law of the Sea*; Kluwer Law and Taxation Publishers, Boston.

⁴⁵ SPEECH/05/450, 'The role of Marine Research in a Maritime Policy for the Union'-Statement at the Conference '25 Years Alfred-Wegener Institute for Polar and Sea Research', http://europa.eu.int/comm/fisheries/news_corner/discours/speech73_en.htm.

by UNCLOS to explore and exploit, conserve and manage the natural resources, living and non-living, of its waters, sea bed and subsoil (Article 56(1)(a)). The corollary of this right is the obligation to determine the allowable catch of living resources' (Article 61) in accordance with the 'best scientific advice available to [the coastal state]': further, the coastal state is once again enjoined to co-operate with competent international organisations, whether subregional, regional or global, in achieving this end.

MSR is thus crucial to determine such thresholds through collection of data and interpretation of the results. However, the work done by the scientists then enters the political arena as states attempt to balance their economic goals with environmental concerns regarding over-exploitation of increasingly scarce fish stocks. The annual setting of fishing quotas for EU member states provides dramatic evidence of this process. It is certainly an example of co-operation between states in the sense that results of MSR into fishing stocks is made available, but it is also clear from the remarks made by Joe Borg to the European Parliament in December 2005 (see above), that the process is far from perfect. It is apparent that the setting of quotas seems far too often to be the result of concentrated political lobbying by national groups of fishermen than a measured response to the objective evidence supplied by MSR. Once again, the high ideals promoted by UNCLOS are seen to be compromised by political and economic factors.

The need for a tight regime in relation to MSR is further evidenced by the actions of some states amounting to a direct abuse of MSR principles set out in UNCLOS. In the late 1990's, Japan attempted to circumvent the restrictions on commercial harvesting of the critically endangered migratory southern bluefin tuna by attempting to use MSR as an excuse for the activities of its vessels. The catch limits, regulated by the Commission for the Conservation of Southern Bluefin Tuna, were exceeded by over a quarter, in pursuit of what Japan claimed was an 'experimental fishing program'. This resulted in a dispute between New Zealand, Australia and Japan, which led to New

Zealand and Australia banning such Japanese vessels from their ports and the initiation of proceedings at the International Tribunal for the Law of the Sea in Hamburg. The Tribunal granted an injunction against such exploitation, which was later lifted, but which contributed to an eventual agreement by Japan to abandon its program⁴⁶.

Access to Data

In order to advance MSR, a fundamental aim of the Convention was to facilitate exchange of information in terms of both the collection of raw data and its interpretation. Those negotiating UNCLOS were of the view that access to data would be required over the entire ocean, particularly regarding the migration of stocks of living resources and the spread of pollution. This was to include access to the information collected by coastal states, third party states and international institutions in EEZ and continental shelf areas, as well as the high seas.

The obligation to provide information to coastal states concerning proposed research projects is expressed as a duty in Article 248. Where the research is carried out by institutions and nationals from one state in the coastal waters of another state, the researching state is to provide, on request by the coastal state, access to results of research and data, as well as assistance in its interpretation (Article 249 (1) (d)). There is also a requirement to make the results of the research available internationally, through appropriate national or international channels, as soon as practically possible after it has been carried out (Article 249 (1) (e)). Results from the IOC/ABE-LOS survey indicate that states have, in general, complied with these requirements, with 90% of states providing copies of data and samples, 71% assisting in their interpretation and 85% publishing and disseminating at national, regional and international levels the results of research in accordance with Article 249⁴⁷.

An extremely interesting question arises however in relation to the protection of data which may give

⁴⁶ Southern Bluefin Tuna Cases (New Zealand v Japan; Australia v Japan); (1999) International Tribunal of the Sea (cases 3 & 4) (www.itlos.org/start2_en.htm).

⁴⁷ IOC/ABE-LOS Survey, Responses to Questionnaire Number 3 Data Compilation and Analysis Sheet, section one Question IV Parts C, D, E, IOC website, op cit.

rise to substantial potential commercial exploitation. Montserrat Gorina Ysern has noted that the current international regime for MSR under UNCLOS does not deal with proprietary title over MSR data results⁴⁸. Results made available to the public often lead to developments in terms of marine products and processes which require protection as an intellectual property right. Such rights are regulated by private agreements rather than under international regulation. Article 241 states that MSR 'shall not constitute the legal basis for any claim to any part of the marine environment or its resources'. Gorina Ysern has argued that claims regarding intellectual property rights in these developments would in fact constitute a 'claim' under Article 241.

The issue arises in its most acute form in the realm of bioprospecting. The organisms which cluster around deep seabed volcanic vents have been found to have unique biochemical properties which may include the potential to make significant advances in the treatment of cancer. In Antarctic waters scientists are discovering and developing novel organisms which have unique characteristics for survival evolved in the extreme conditions found only in that area. In a paper jointly presented by the UK and Norway at the 2003 Antarctic Treaty Consultative Meeting (ATCM), it was noted that there were (at the time) 62 European patents and some 300 US patents which rely on Antarctic biodiversity. This issue is not fully addressed by the terms of the 1959 Antarctic Treaty, and is the subject of numerous papers, both in the context of Antarctica⁴⁹ and, more generally, the Law of the Sea⁵⁰. The Environmental Law Centre of the International Union for the Conservation of Nature is currently undertaking an examination of the legal issues surrounding the concept of Access and Benefit sharing, particularly in relation to bioprospecting, to include consideration of ways to protect the intellectual property rights of users and suppliers⁵¹. Likewise, the United Nations University Institute of Advanced Studies (UNU-IAS) has recently issued a

lengthy report, one of the aims of which is to address the treatment of information and research results in the context of bioprospecting in the deep sea-bed, including the conflicts between the provisions of UNCLOS addressing treatment of research results from marine scientific research, and those of Intellectual Property Rights (IPR) instruments⁵².

Conclusions – the Future of MSR and its Economic Importance

The attempt to balance the interests of coastal states and researching states, developing and developed nations resulted in ambiguity in certain key areas of UNCLOS. It is clear that those tensions still exist and, arguably, become greater as developing states become more aware of what is potentially at stake. There is room to doubt, however, that more detailed rules are necessarily required to create a more universally applicable regulatory process to MSR and TMT. The determining factors regarding the success or failure of the MSR/TMT regime as far as a global marine policy is concerned will always be political and economic.

It is possible that greater clarity could be achieved by the elaboration of certain key MSR concepts such as 'marine scientific research' and that greater regulation of hydrographic and oceanographic surveying could prevent 'incidents' involving 'hydrographic surveying' in a coastal states' EEZ conducted without prior consent. These matters are currently of particular concern in the South China Sea as states try to assess the likely economic potential of the seas around the Spratlys. It is also true that the extent of 'military surveying' remains unclear in the absence of a strict definition of one of the underlying principles of UNCLOS, that of 'peaceful purposes'. Once again, however, the question has to be asked whether clearer definitions are of themselves necessarily going to lead to a more effective implementation of the UNCLOS regime. Rather, what is now needed is a greater

⁴⁸ Ysern, M; (2003) Legal issues raised by profitable biotechnology development through MSR; American Society of International Law (www.asil.org/insights) p2.

⁴⁹ Smith, G Antarctica as a last frontier for bioprospectors--and their intellectual property(2004) Scientific American, www.sciam.com/article.cfm?articleID=0007671B-A73E-1084-A73E83414B7F0000&chanID=sa008; UNU / IAS Report on The International Regime for Bioprospecting, Existing Policies and Emerging Issues for Antarctica, Toyko, 2003.

⁵⁰ Scivazzi, T(2004) Mining, Protection of the Environment, scientific research and bioprospecting, some considerations on the role of ISA, International Journal of Marine and Coastal Law, Vol19 no4 p383.

⁵¹ Report of XXVI ATCM 2003, www.asoc.org/Documents/ATCMXXVI/atcmxxvi_front.htm.

⁵² UNU-IAS report 'Bioprospecting in the Deep Seabed', May 2005; see in particular, pages 55, para 7.1.4.2, www.ias.unu.edu/publications/details.cfm/articleID/671.

number of agreements, negotiated at regional and international level, which deal with specific issues. Examples are the work being done on ODAS and IPR's and the Guidelines for Navigation and Overflight in the EEZ which are being developed by a group of senior officials and analysts in the Asia-Pacific region to try to avoid further incidents of the 'Bowditch' type in that region⁵³.

It can be argued that greater predictability is required in respect of the consent regime for research in EEZ's. Some Coastal states have withheld their consent where it might have been expected to have been granted or have imposed additional conditions on the conduct of MSR. Where consent is withheld, the implied consent regime has not always been utilised by researching states⁵⁴. However, it is difficult to see how improvements can be made when the majority of States Parties are not willing, or sufficiently interested, or organised, to provide even the fairly basic data of the kind requested in the IOC/ABE-LOS questionnaire.

It is arguable that a universally applicable regulatory process for MSR is highly desirable in order to promote peaceful protection of the marine environment, and in this regard some of the statements made by Joe Borg give grounds for considerable hope that initiatives which are being put in train by the EU may lead to just such a consolidation and overall international direction being given to MSR. He refers in particular to the Commission preparing a Green Paper on 'an all embracing Maritime Policy' which is due to be published early in 2006. This Green Paper which is the 'Thematic Strategy on the Protection and Conservation of the Marine Environment' referred to above, will seek to address the economic, environmental, social and governance challenges relating to the oceans and the seas in a holistic manner. An important theme will be the protection of the marine environment, both in relation to EU waters and internationally.

The Green Paper will also explore such questions as:

- How can data and observation systems in the seas and oceans be improved in order better to

serve the needs of science and policy making?

- Is there sufficient European cooperation, transparency and comparability in relation to data produced and how it is exploited?
- Do we need to improve access to data on the seas and oceans held by private parties, and, if so, how?

The EU has contributed substantial funds to marine research projects in the past and continues to do so. Apart from the enormous energy potential of resources such as gas hydrates, the marine biotechnology and bio-prospecting sector is seen as having very significant economic implications. Borg refers to a turnover of the commercialised results of such research being valued today at up to 100 billion dollars⁵⁵. This is, by any standards, a huge sum: no-one should be in any doubt about the importance and value of MSR.

Possibly even more significant, however, are the results of MSR which are fed into the Intergovernmental Panel on Climate Change. Recent news coverage has been given to the effect which the melting polar and Greenland ice caps will have on the Gulf Stream, which may lose much of its heat, resulting in a far harsher winter climate for the United Kingdom. The increased effects of flooding and resultant destabilisation of buildings, roads and pipelines have profound implications for the insurance industry, not to say upon our daily lives. The importance of well-funded, cohesive, and co-ordinated MSR has never been greater.

Biography of the author

Tim Daniel founded the Public International Law Group at Kendall Freeman and has acted for the Nigerian government in resolving maritime boundary issues in the Gulf of Guinea both at the International Court of Justice and by negotiation of treaties.

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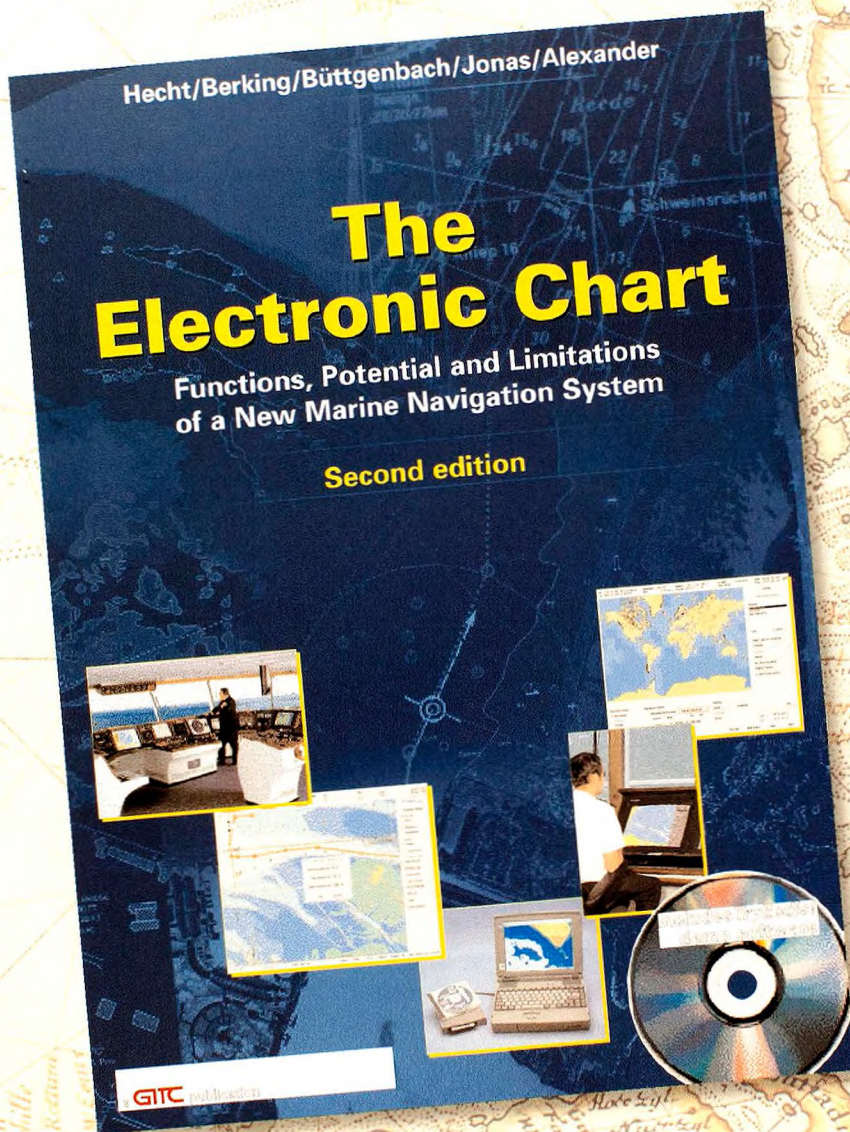
⁵³ Ocean Policy Research Foundation (2005) 'Guidelines for Navigation and Overflight in the Exclusive Economic Zone' www.sof.or.jp/topics/2005_e/051205_01.html.

⁵⁴ J. Ashley Roach, *Marine Scientific Research and the New Law of the Sea*, Ocean Development and International Law, Vol.27 1996, p59-72.

⁵⁵ SPEECH/05/450, 'The role of Marine Research in a Maritime Policy for the Union'-Statement at the Conference '25 Years Alfred-Wegener Institute for Polar and Sea Research', http://europa.eu.int/comm/fisheries/news_corner/discours/speech73_en.htm.

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