

# **Bioprospecting in the High Seas:**

## **Existing Rights and Obligations in View of a New Legal Regime for Marine Areas beyond National Jurisdiction**

### **Abstract**

This article examines the law governing bioprospecting in the high seas and subsequent use of biological material. Seen in relation to the on-going debate on a new legal regime for marine areas beyond national jurisdiction, the authors explore the degree to which existing rights and obligations under the law of the sea and patent law could coincide with one of the objectives of the Convention on Biological Diversity, namely that of promoting benefit sharing. The activity of bioprospecting is examined in light of the different freedoms of the high seas, making the point that different interpretations give different indications of existing provisions on benefit sharing. In particular, the regime for marine scientific research under the law of the sea exemplifies different ways for sharing benefits, all of which run up against implementation challenges when seen in relation to rights awarded by patents to inventions resulting from bioprospecting.

**Keywords:** High seas; Areas beyond national jurisdiction; Bioprospecting; Marine genetic resources; Access and benefit sharing.

## Introduction

The main international treaty governing activities in the marine areas beyond national jurisdiction is the United Nations Convention on the Law of the Sea (UNCLOS).<sup>1</sup> Since its adoption in 1982, the repertoire of activities has grown. One such activity is bioprospecting, which according to the United Nations General Secretary, can be described as “the search for biological compounds of actual or potential value to various applications, in particular commercial applications”.<sup>2</sup> At the same time, UNCLOS and other conventions have far from eliminated threats to the marine environment in areas beyond national jurisdiction, leading some to the conclusion that additional legal commitments are necessary to fill the gaps of UNCLOS. This debate has *inter alia* been held in the Ad-Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of the marine biodiversity beyond areas of national jurisdiction.<sup>3</sup> One of the many difficult questions addressed in the discussions is whether or not to include provisions on benefit sharing in a potential future framework, drawing inspiration from the Convention on Biological Diversity (CBD),<sup>4</sup> in which one of three objectives is “the fair and equitable sharing of benefits arising

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<sup>1</sup> United Nations Convention on the Law of the Sea (Montego Bay, 10 December 1982, in force 16 November 1994) 1833 *UNTS* 3.

<sup>2</sup> United Nations Secretary-General, ‘Oceans and the Law of the Sea: Report of the Secretary-General’ (A/62/66, United Nations, 2007) para. 105.

<sup>3</sup> See United Nations General Assembly, ‘Oceans and the Law of the Sea’ (A/RES/59/24, United Nations, 2005) para. 73.

<sup>4</sup> Convention on Biological Diversity, (Rio de Janeiro, 5 June 1992, in force 29 December 1993) 1760 *UNTS* 79.

from the utilization of genetic resources”.<sup>5</sup> Although the term benefit sharing is not used, redistributive elements or provisions aimed at promoting fairness and equity of activities in areas beyond national jurisdiction [ABNJ] are apparent in UNCLOS, such as in the preambular declarations to promote the “equitable and efficient utilization” of the resources of the seas and oceans,<sup>6</sup> and in the principles relating to the Area,<sup>7</sup> as the common heritage of mankind.<sup>8</sup>

The legal paradoxes of UNCLOS are most apparent when it comes to bioprospecting in and around the Area, as Part XI carefully regulates prospecting for mineral resources in the Area, but not biological resources.<sup>9</sup> The many questions that are left unanswered have given rise to a substantial body of literature on the legal status of the marine genetic resources [MGR] of the Area.<sup>10</sup> This timely and important debate<sup>11</sup> may nevertheless have somewhat

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<sup>5</sup> *Ibid.*, Article 1.

<sup>6</sup> UNCLOS, preamble, para. 5.

<sup>7</sup> In *ibid.*, Article 1(1), the Area is defined as “the sea-bed and ocean floor and the subsoil thereof, beyond the limits of national jurisdiction”.

<sup>8</sup> See *ibid.*, preamble, para. 7 and Part XI.

<sup>9</sup> See *ibid.*, Article 133 on the definition of “resources”.

<sup>10</sup> See e.g. L. Glowka, ‘The Deepest of Ironies: Genetic Resources, Marine Scientific Research, and the Area’ in E.M. Borgese, N. Ginsburg and J.R. Morgan (eds), *Ocean Yearbook*, vol 12 (University of Chicago Press, Chicago, 1996) 154-178; A.G. Oude Elferink, ‘The Regime of the Area: Delineating the Scope of Application of the Common Heritage Principle and Freedom of the High Seas’ (2007) 22(1) *The International Journal of Marine and Coastal Law (IJMCL)*143-176; D.K. Leary, *International Law and the Genetic Resources of the Deep Sea* (Martinus Nijhoff, Leiden, 2007); N. Matz-Lück, ‘The Concept of the Common Heritage of Mankind’ in E.J. Molenaar and A.G. Oude Elferink (eds), *The International Legal Regime of Areas Beyond National Jurisdiction: Current and Future Developments* (Martinus Nijhoff, Leiden, 2010) 61-75; T. Scovazzi, ‘The Seabed Beyond the Limits of National Jurisdiction: General and Institutional Aspects’ in A.G. Oude Elferink and E.J. Molenaar (eds), *The International Legal Regime of Areas Beyond National*

occluded the question of the legal status of MGR in the high seas.<sup>12</sup> While few, if any commentators, would claim that bioprospecting is an unlawful use of the high seas,<sup>13</sup> less work has been done on the terms under which bioprospecting in the high seas actually proceeds. In this article, we therefore explore various legal grounds for considering bioprospecting as a lawful activity in the high seas, in order to identify current benefit sharing obligations and how these relate to intellectual property rights [IPR] when they lead to patented inventions. Hopefully, these findings may contribute to the on-going debate on marine genetic resources in ABNJ, and suggest how benefit sharing in the future could be conceived as similar or different from what UNCLOS stipulates today.

In order to do this, we will first briefly discuss the methodological question of whether the emphasis in the legal interpretation should be placed on a resource or an activity. Subsequently, we will discuss how the activity of bioprospecting can be viewed from the vantage point of two regulated freedoms of the high seas, namely fishing and marine scientific research, having regard to the fact that bioprospecting may lead to patented inventions. Finally, for the event that neither of these existing regimes can be applied, we will discuss the legal implications of considering bioprospecting as a currently unregulated activity.

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*Jurisdiction: Current and Future Developments* (Martinus Nijhoff, Leiden, 2010) 43-60.

<sup>11</sup> Sedentary species in general are thought to have great potential for bioprospecting. See S. Arico and C. Salpin, *Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects* (UNU- IAS Report, United Nations University, Yokohama, 2005) at p. 30.

<sup>12</sup> UNCLOS, Article 86 provides that Part VII on the high seas applies to “all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or the internal waters of a State or in the archipelagic waters of an archipelagic State.”

<sup>13</sup> See A. Broggiato, ‘Marine Genetic Resources Beyond National Jurisdiction – Coordination and Harmonisation of Governance Regimes’ (2011) 41(1) *Environmental Policy and Law* 35-42, at p. 36.

## Alternative approaches to considering the law as it stands

When we seek to establish the law that applies to bioprospecting in the high seas, we can choose to emphasise the resources used or the activity itself.<sup>14</sup> The former is similar in approach to what is often done in the debate on MGR in the Area and the continental shelf, and how the CBD regulates access and benefit sharing [ABS] and “genetic resources”.<sup>15</sup> UNCLOS uses the term “living resources” which, as pointed out by Lawson, appears to “probably include anything that is living and might be taxonomically classified.”<sup>16</sup> The Convention is silent regarding the legal status of the living resources in the ABNJ, unlike its stance on mineral resources as “common heritage of mankind”.<sup>17</sup> Today, biological resources of the ocean are usually considered common pool resources,<sup>18</sup> and entitlement to this material may follow from harvest. The legislative emphasis is essentially on the protection of living resources, albeit primarily as obligations following from undertaking an activity. Applicable environmental standards are found in both Part XII and Section 2 of Part VII. The collection of MGR in the high seas is subject *inter alia* to the general obligations on states to “protect

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<sup>14</sup> Admittedly, the law of the sea does not distinguish activity from resource: just as provisions on fishing cannot be completely separated from the regulation of fish as a natural resource and vice versa, the law applicable to bioprospecting as an activity must also be seen in relation to the law applicable to the resources used.

<sup>15</sup> Under CBD, Article 2, genetic resources are defined as “genetic material of actual or potential value”, and genetic material is in turn defined as “any material of plant, microbial or other origin containing functional units of heredity.”

<sup>16</sup> C. Lawson, *Regulating Genetic Resources: Access and Benefit Sharing in International Law* (Edward Elgar, Cheltenham (UK), 2012), at p. 93.

<sup>17</sup> UNCLOS, Articles 136 and 137.

<sup>18</sup> R. Barnes, ‘Entitlement to Marine Living Resources’ in E.J. Molenaar and A.G. Oude Elferink (eds), *The International Legal Regime of Areas Beyond National Jurisdiction: Current and Future Developments* (Martinus Nijhoff, Leiden, 2010) 83-141, at p. 86.

and preserve” the marine environment,<sup>19</sup> to prevent “pollution of the marine environment”,<sup>20</sup> and to take “such measures for their respective nationals as may be necessary for the conservation of living resources in the high seas.”<sup>21</sup> While knowledge of the environmental impact of bioprospecting is still incomplete,<sup>22</sup> bioprospecting is generally referred to as an activity of limited or minimal environmental impact, especially compared to other threats facing the marine environment.<sup>23</sup>

Given the limited emphasis on resource regulation of the high seas in UNCLOS, other than in relation to fishing, it would arguably be more fruitful to examine the question of the law applicable to bioprospecting from an activity perspective. The approach harmonises better with how high seas governance is structured in UNCLOS, with the freedoms of the high seas set out in Article 87 and different rights and obligations deriving from these.

In the following, we discuss different freedoms of the high seas explicitly recognised in UNCLOS, and ask first whether bioprospecting can be subsumed under fishing.

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<sup>19</sup> UNCLOS, Article 192.

<sup>20</sup> *Ibid.*, Article 194(1).

<sup>21</sup> *Ibid.*, Article 117.

<sup>22</sup> Concern has been voiced regarding repeated expeditions in particularly sensitive ecosystems, see Leary (n 10), at p. 189. See also D. Farrier and L. Tucker, ‘Access to Marine Bioresources: Hitching the Conservation Cart to the Bioprospecting Horse’ (2001) 32(3) *Ocean Development and International Law* 213-239, at p. 218; B. Hunt and A.C.J. Vincent, ‘Scale and Sustainability of Marine Bioprospecting for Pharmaceuticals’ (2006) 35(2) *Ambio* 57-64, at p. 58-59.

<sup>23</sup> E. Ramirez-Llodra *et al.*, ‘Man and the Last Great Wilderness: Human Impact on the Deep Sea’ (2011) 6(7) *PLoS One* 1-25. Available at [www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0022588](http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0022588); accessed 12 March 2012.

## Freedom of the high seas: Bioprospecting as fishing

According to UNCLOS Article 87, the “high seas are open to all States, whether coastal or land-locked.” UNCLOS provides a non-exhaustive list of freedoms belonging to the freedoms of the high seas, including the “freedom of fishing”.<sup>24</sup>

Fishing is not defined in UNCLOS, but one possible understanding could be that of “harvesting fish for commercial uses”.<sup>25</sup> Compared to fishing, the scope of the harvested objects is not identical as bioprospectors clearly harvest a wider range of marine species than fish. On the other hand, there are examples in international law of quite broad definitions of what counts as fish. For instance, non-sedentary molluscs and crustaceans are considered as fish in the UN Straddling Fish Stocks Agreement.<sup>26</sup> It is not customary, however, to speak of “fishing for microorganisms”. Bacteria in deep waters are collected in a way that is not generally regarded as “harvesting”,<sup>27</sup> suggesting that the ordinary meaning of the terms “fishing” and “bioprospecting” differ.

That said, the objectives pursued by both activities share common traits, chief among them being the use of living resources for predominately commercial purposes. As pointed out by Scovazzi, the aim of fishing is to catch “large quantities of a given living resource to

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<sup>24</sup> UNCLOS, Article 87(1)(e).

<sup>25</sup> ‘fishing’, *World Encyclopedia* (Oxford Reference Online edition, Oxford University Press, 2008) Available at [www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t142.e4127](http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t142.e4127); accessed 7 June 2013. The harvest can also be for leisurely uses, but this is less practical in the high seas.

<sup>26</sup> Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, 4 August 1995, in force 11 December 2001) 2167 *UNTS* 3, Article 1(a).

<sup>27</sup> D.K. Leary, ‘Bioprospecting and the Genetic Resources of Hydrothermal Vents on the High Seas: What is the Existing Legal Position, Where Are We Headed and What Are Our Options?’ (2004) 1(1) *Macquarie Journal of International and Comparative Environmental Law* 137-178, at p. 150.

produce the maximum yield from those species”<sup>28</sup> or to catch and sell the fish for food, animal feed or related products.<sup>29</sup> Using different methods from those of fishing, bioprospecting does not aim at harvesting large quantities for subsequent sale of the raw material, but at identifying material with scientifically or commercially interesting properties that will initiate a subsequent process of development.

The freedom of fishing in the high seas as set out in UNCLOS Article 87 is subject to the conditions of Section 2 of Part VII<sup>30</sup> entitled “Conservation and management of the living resources of the high seas”. The section comprises Articles 116 to 120. Articles 117 to 120, concerning the conservation of living resources in the high seas, apply generally to activities in the high seas and are not restricted to fishing. Hence, bioprospecting is subject to these conditions. The overlap of the conditions applicable to the activities could in itself be an argument for considering bioprospecting as a form of fishing. Article 116 concerns fishing and stipulates that the right to engage in high seas fishing is subject to the “treaty obligations” of the states whose nationals engage in such fishing. These treaty obligations will evidently vary from one flag state to another. There may also be regional or species-specific agreements that address conservation or attempt to prevent the over-exploitation of fish stocks.<sup>31</sup> We are not aware of any fisheries agreement that addresses the question of bioprospecting, which might suggest that the usually quite different ecological impact of the

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<sup>28</sup> T. Scovazzi, ‘Is the UN Convention on the Law of the Sea the Legal Framework for All Activities in the Sea? The Case of Bioprospecting’ in D. Vidas (ed), *Law, Technology and Science for Oceans in Globalisation: IUU fishing, Oil Pollution, Bioprospecting, Outer Continental Shelf* (Martinus Nijhoff, Leiden, 2010) 309-317, at p. 312.

<sup>29</sup> See R. Churchill and A.V. Lowe, *The Law of the Sea* (Manchester University Press, Manchester, 1999), at p. 281.

<sup>30</sup> UNCLOS, Article 87(1)(e).

<sup>31</sup> On some of these agreements, see Churchill and Lowe (n 29), at 296-323.

two activities call for different regulatory approaches.

These variations with regard to objective, method and impact would appear to preclude any transposition of the freedom of fishing to bioprospecting without straining the concepts beyond their usual limits. And while it is impossible to say with any certainty whether analogies from fishing could be marshalled to establish bioprospecting as a freedom of the high seas, the reasons for not doing so would appear to be the most compelling. In the following, we ask whether bioprospecting has more in common with scientific research than with fishing.

### **Freedom of the high seas: Marine scientific research**

#### *Scientific research, marine scientific research and bioprospecting*

“Scientific research” is also designated a freedom of the high seas under Article 87.<sup>32</sup> It is not defined in UNCLOS, which is also the case for a closely related term, namely marine scientific research [MSR].<sup>33</sup> An ordinary understanding of the term research could be that of a “systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions”.<sup>34</sup> Moreover, research could be said to be scientific when it is “based on or characterized by methods and principles of science”.<sup>35</sup> Although the Convention

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<sup>32</sup> UNCLOS, Article 87(1)(f).

<sup>33</sup> On a related term, “hydrographic survey”, see *ibid.*, Article 21(1)(g) and F.H.T. Wegelein, *Marine Scientific Research: The Operation and Status of Research Vessels and Other Platforms in International Law* (Martinus Nijhoff Publishers, Leiden, 2005), at p. 80-82.

<sup>34</sup> ‘research’, *Oxford Dictionary of English* (Oxford Reference Online edition, Oxford University Press, 2010). Available at [www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t140.e0703100](http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t140.e0703100); accessed 7 June 2013.

<sup>35</sup> ‘scientific’, *Oxford Dictionary of English* (Oxford Reference Online edition, Oxford University Press, 2010). Available at [www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t140.e0741120](http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t140.e0741120); accessed

scarcely refers to “scientific research”<sup>36</sup> without the adjective “marine”, MSR is quite extensively regulated in Part XIII entitled “Marine Scientific Research”. The enjoyment of the freedom of scientific research as set forth in Article 87 is “subject to Parts VI and XIII”, attesting to the close relationship between scientific research and MSR.<sup>37</sup> As noted by Wegelein, scientific research can generally be regarded as “marine” when directly concerned with the marine environment.<sup>38</sup>

As the term is generally understood, MSR comprises research in a wide range of disciplines.<sup>39</sup> The question is whether MSR also includes bioprospecting. This requires a brief look of the legislative history.

A strong contributing factor to the lack of definition of MSR was the disagreement among parties as to the necessity of distinguishing between fundamental, pure or basic scientific research, on the one side, and commercially oriented or applied research, on the other.<sup>40</sup> This disagreement persists today among parties.<sup>41</sup> Marine scientific research was not included in the non-exhaustive list of freedoms in the 1958 Convention on the High Seas,<sup>42</sup> but has been considered as such in virtue of customary law for several decades prior to the

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<sup>36</sup> See UNCLOS, Articles 123, 200, 249 258, 260 and 261.

<sup>37</sup> *Ibid.*, Article 87(1)(f).

<sup>38</sup> Wegelein (n 33), at p. 78.

<sup>39</sup> M. Pavliha and N.A.M. Gutiérrez, ‘Marine Scientific Research and the 1982 United Nations Convention on the Law of the Sea’ (2010) 16(1) *Ocean and Coastal Law Journal* 115-134, at p. 115.

<sup>40</sup> M. Nordquist, *United Nations Convention on the Law of the Sea, 1982: A Commentary. Articles 192 to 278*, vol IV (Martinus Nijhoff, Dordrecht, 1991), at p. 434-450.

<sup>41</sup> S. Beslier, ‘The Protection and Sustainable Exploitation of Genetic Resources of the High Seas from the European Union's Perspective’ (2009) 24 *The International Journal of Marine and Coastal Law(IJCML)* 333-341, at p. 339.

<sup>42</sup> Convention on the High Seas (Geneva, 29 April 1958, in force 30 September 1962) 450 *UNTS* 11, Article 2.

adoption of UNCLOS.<sup>43</sup> In the 1958 Convention on the Continental Shelf, a distinction between pure and applied scientific research was introduced relating to research on the continental shelf: a coastal state should not normally withhold consent for research conducted with “a view to pure scientific research into the physical or biological characteristics of the continental shelf”.<sup>44</sup> The question of a possible distinction between fundamental and applied sciences arose again in the lead up to and during the Third Conference on the Law of the Sea. Perceptions of MSR were greatly affected by expanding coastal state jurisdiction, increased awareness of the value of marine science and the new notion of the seabed beyond national jurisdiction as the “common heritage of mankind”.<sup>45</sup> The difficulties parties to had in agreeing upon a definition illustrate that the understanding of the term can vary both according to the perceptions of the different states and to the jurisdictional zones.

Two main positions can be discerned. The first is that MSR includes commercially oriented research such as bioprospecting. The second is that research for commercial purposes is seen as resource exploitation rather than MSR. There are compelling arguments for both positions.

A convincing argument in support of the position that commercially oriented research in the high seas is indeed MSR is the wording chosen in Article 87 and Part XIII. States did not expressly submit to MSR in the high seas as excluding commercially oriented research. This argument goes both ways, though, as states did not either expressly consent to an inclusion of commercially oriented research as MSR. Nevertheless, the important point to make here is that a distinction between fundamental and applied research was proposed and

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<sup>43</sup> Churchill and Lowe (n 29), at p. 401.

<sup>44</sup> Convention on the Continental Shelf (Geneva, 29 April 1958, in force 10 June 1964) 499 *UNTS* 311, Article 5(8).

<sup>45</sup> Nordquist (n 40), at p. 433.

rejected. The only explicit regulation of the *purpose* of MSR applicable to the high seas is that it shall be conducted “exclusively for peaceful purposes”.<sup>46</sup> In the absence of a codified distinction between pure and applied sciences for MSR in the high seas, it is the ordinary meaning of the term MSR that parties have to fall back on. As seen above, MSR can be said to be a systematic investigation related to the marine environment based on methods and principles of science. There is no similar common meaning to the term bioprospecting, as several conceptions are in circulation. Indeed, drawing a line between bioprospecting and MSR is difficult from a practical point of view. First, bioprospecting clearly has methodological elements of scientific research, such as the systematic search or sampling of marine resources based on methods of science. Secondly, the persons and equipment used may also be same for the two activities, e.g. in taxonomical studies and bioprospecting cruises. A bioprospector can therefore just as easily be a marine scientist in the traditional sense of the word, as a commercial entity, or a combination of these. Perceptions on whether a cruise has scientific or commercial objectives may also vary according to different participants and funding partners. Third, a research expedition initially considered a purely academic undertaking might develop into a commercial enterprise upon discovery of a commercially interesting compound. Furthermore, it may be argued that a commercial objective for an expedition does not eliminate a simultaneous objective to increase human knowledge of the oceans. This difficult distinction has given rise to substantial debate and scholarly literature.<sup>47</sup>

The position that MSR excludes commercial bioprospecting finds support through a

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<sup>46</sup> UNCLOS, Article 240(a).

<sup>47</sup> See e.g. C. Salpin and V. Germani, ‘Patenting of Research Results Related to Genetic Resources from Areas Beyond National Jurisdiction: The Crossroads of the Law of the Sea and Intellectual Property Law’ (2007) 16(1) *RECIEL* 12-23, at p. 15-17; Arico and Salpin (n 11), at p.15-16; Scovazzi (n 28), at p. 310-313.

contextual interpretation. Though the Convention does not employ terms such as fundamental or applied research to MSR, such a distinction is *de facto* introduced with respect to the EEZ and the continental shelf.<sup>48</sup> Similarly, the regime of the Area distinguishes between MSR, which all states may undertake for the benefit of mankind,<sup>49</sup> and other activities such as “prospecting”<sup>50</sup> or “exploration and exploitation”<sup>51</sup> which are subject to the control of the International Seabed Authority, which acts on behalf of mankind. The fact that this distinction was introduced for other zones could suggest that MSR also excludes commercially oriented scientific research in the high seas. Considerations of the effective implementation of the objectives of MSR, i.e. the promotion of the “study of the marine environment”,<sup>52</sup> could call for a similar understanding of the term in all jurisdictional zones, including the high seas.

If commercially oriented research were to be excluded from the meaning of MSR in the high seas, a line would theoretically have to be drawn between purely scientific and commercial research. For bioprospecting, there would have to be a parameter for establishing when a cruise was conducted for purely scientific purposes and when it crossed a “line of commercialisation” and became something else. Of some indication here could be a statement made by the United Nations Secretary-General:

In most cases, genetic resources are collected and analyzed as part of scientific research projects, in the context of partnerships between scientific institutions and industry. It is only at a later stage that knowledge, information and useful materials extracted from such resources enter a commercial stage. The difference between scientific research and bioprospecting therefore seems

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<sup>48</sup> See Churchill and Lowe (n 29), at p. 405.

<sup>49</sup> UNCLOS, *e.g.* Articles 256 and 143.

<sup>50</sup> *Ibid.*, Article 16(2)(f)(ii) and Annex III, Article 2.

<sup>51</sup> *Ibid.*, *e.g.* Articles 1(1)(3), 137 and 153.

<sup>52</sup> *Ibid.*, preamble, para. 5.

to lie in the use of knowledge and results of such activities, rather than the practical nature of the activities themselves.<sup>53</sup>

Interpreting this view, a line could theoretically be drawn at some point after the end of a cruise. Yet, if the concern were to establish the rights and obligations of bioprospectors while at sea, the distinction would have to be drawn at an earlier stage. Generally, attempts at such earlier distinction are drawn on the basis of the intent of researchers.<sup>54</sup> Applying a characteristic such as intent that is typical of natural persons to legal persons can be problematic.<sup>55</sup> In this context, it could mean establishing the presence of a commercial intent of a consortium or institution, although different teams or individuals within the larger cruise staff or administration may have different intents and objectives for the cruise. Where there is a difference of intent, it would be necessary to determine whose intent shall prevail. Furthermore, if intent should determine conditions of access, it would have to be assumed that such intent exists prior to conducting the activity and does not evolve afterwards, which may not be the case. This would exclude fundamental research activities that only later result in the identification of commercial application and serendipitous discoveries of commercially interesting biological features. Clearly establishing a commercial or non-commercial intent is

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<sup>53</sup> United Nations Secretary-General, 'Oceans and the Law of the Sea: Report of the Secretary-General' (A/60/63/Add.1, United Nations, 2005) para. 202.

<sup>54</sup> See *e.g.* Subsidiary Body on Scientific, Technical and Technological Advice, 'Study on the Relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with Regard to the Conservation and Sustainable Use of Genetic Resources on the Deep Seabed' (UNEP/CBD/SBSTTA/8/INF/3/Rev.1, Montreal, 2003) para. 47.

<sup>55</sup> Wegelein (n 33), at p. 83, who argues that the problems of establishing intent should result in interpreting MSR as comprising both pure and commercial research. See also M.F. Hayes, 'Charismatic Microfauna: Marine Genetic Resources and the Law of the Sea' in M.H. Nordquist *et al.* (eds), *Law, Science & Ocean Management* (Martinus Nijhoff Publishers, Boston, 2007) 683-700, at p. 692.

not an easy task. Despite criticism, a distinction based on intent has gained some traction.<sup>56</sup>

For the case that bioprospecting is covered by the MSR regime, a further question is what this would entail in relation to the conditions applicable to bioprospecting in practice. UNCLOS establishes both general principles and concrete rights and obligations for MSR. We will in the following analysis look at the relationship between bioprospecting as a predominately commercial activity, which may result in patents, and some of these UNCLOS rights and obligations. This is of particular interest for the discussions on the how commercial research relates to the inclusion of benefit sharing in a future legal regime for ABNJ, for which some are calling.

#### *Bioprospecting as MSR: Patenting bio-inventions*

The publication of research results is a deeply rooted scientific tradition and is reflected in UNCLOS Article 244 as an obligation to “publish and disseminate information and knowledge” that results from MSR. When bioprospecting leads to a new commercial application, exclusive intellectual property rights are often established to protect the invention, and it is therefore important to examine how these rights coincide with the obligation to “publish and disseminate” knowledge derived from MSR. There are three reasons to do so given the context of the current inquiry. First, clarifying the obligation would offer a partial answer to the question of which obligations fall upon bioprospecting if considered as a form of MSR. Second, this obligation may provide arguments when considering bioprospecting as a form of MSR. Last, the sharing of knowledge may constitute a form of benefit sharing,<sup>57</sup> an important perspective to bear in mind in the debate on the role of benefit sharing in the realm of the law of the sea.

Patents are the most relevant form of IPR with regard to bioprospecting. A patent

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<sup>56</sup> Broggiato (n 13), at p. 37.

<sup>57</sup> See *e.g.* Matz-Lück (n 10), at p. 70.

provides the holder with an exclusive right to an invention for a limited period of time. The TRIPS Agreement<sup>58</sup> requires members to make patents available for “products and processes, in all fields of technology” meeting three basic requirements: The invention must be deemed “new”, “involve an inventive step” and be “capable of industrial application”.<sup>59</sup> The overarching rule in patent law provides that inventions, not discoveries, are eligible for patenting. Differentiating between these concepts can be hard in the case of biotechnological inventions. There is no universal definition of what is considered an invention, but it can be considered as a new product or process with no previous existence.<sup>60</sup> All the same, many substances that have been isolated from naturally occurring substances found in nature are being patented, often without undergoing substantial changes.<sup>61</sup>

A first task is to establish what UNCLOS requires to be published and how such publication must occur. According to Article 244, states and competent international organisations shall make available “by publication and dissemination through appropriate channels information on proposed major programmes, their objectives as well as *knowledge* resulting from marine scientific research.”<sup>62</sup> To this end, states shall “actively promote the flow of scientific data and information.”<sup>63</sup>

The phrase “knowledge resulting from marine scientific research” indicates that

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<sup>58</sup> See Agreement on Trade-Related Aspects of Intellectual Property Rights (Marrakesh, 15 April 1994, in force 1 January 1995), Article 27(1).

<sup>59</sup> *Ibid.*

<sup>60</sup> L. Westerlund, ‘Biotech Patents: Equivalency and Exclusions under European and US Patent Law’ (Ph.D Thesis, Stockholms universitet, 2001), at p. 32.

<sup>61</sup> *Ibid.*, at p. 57.

<sup>62</sup> UNCLOS, Article 244(1) [emphasis added].

<sup>63</sup> *Ibid.*, Article 244(2). The provision also provides for the transfer of technology resulting from MSR. Technology transfer will be discussed below.

conclusions and findings that are a consequence of the MSR activity are what are to be shared. In bioprospecting, the title to research results is likely to be regulated by contracts between or understandings among the participants or funding parties. As Gorina-Ysern points out, university IPR policies may regulate and limit freedom to disseminate results.<sup>64</sup> Industry contracts may also stipulate terms for the publication of results or even exclude it.<sup>65</sup> The duty to make the information available articulated in Article 244 is placed upon states and competent international organisations, whereas nationals are not specifically mentioned. This may have the practical implication that only where states hold title to the research results would there be an obligation to make such knowledge public.<sup>66</sup> If research is conducted by private entities and national legislation does not provide for similar dissemination obligations falling upon private subjects, the result would be that only a proportion of the total sum of marine research would be made public, which seems to run counter to the objective of the provision, namely to ensure the general dissemination of MSR. Another possible interpretation is that Article 244 obliges or at the very least encourages states to “actively promote” the dissemination of knowledge from MSR irrespective of whether it is the state itself or its nationals that hold the title to the research results.

Where bioprospecting has led to a patented invention, publication may encounter further issues. The patent system balances the exclusivity conferred by a patent claim with publication. This is often referred to as the *quid pro quo* of patent law,<sup>67</sup> as previous publication bars further patentability in identical form. Publication in patent law takes the

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<sup>64</sup> M. Gorina-Ysern, *An International Regime for Marine Scientific Research* (Ardsley, Transnational Publishers, 2003), at p. 387-396.

<sup>65</sup> Salpin and Germani (n 47), at p. 22. See also Gorina-Ysern (n 64), at p. 396-399.

<sup>66</sup> Salpin and Germani argue that the obligation to publish is more likely to be complied with when the research is publicly funded, see Salpin and Germani (n 47), at p. 22.

<sup>67</sup> M.W. Tvedt, ‘Patent Law and Bioprospecting in Antarctica’ (2011) 47(1) *Polar Record* 46-55 at 51.

form of a disclosure of the invention.<sup>68</sup> The justification for requiring patent holders to disclose the invention can be explained by the blocking effect on other inventions: it notifies third parties of the invention and its scope, and explains the application of the invention.<sup>69</sup> The TRIPS Agreement Article 29(1) requires that parties make applicants disclose inventions “in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art.”<sup>70</sup> A question that can be raised is whether written disclosures of inventions arising from bioprospecting in the high seas do in fact satisfy the requirements of UNCLOS Article 244 to make such knowledge available through appropriate channels.

Considering a few general features of patent disclosure is informative. First, the inventions are publicly disclosed and are likely to contain descriptions at a very high technical level and sometimes formulated by patent lawyers. The UNCLOS requirement is not detailed with regard to how the research must be presented. Probably, one may not read into Article 244 a requirement to make this information comprehensible to persons other than those skilled in the art. Second, the general disclosure is likely to omit references to where the biological material originated, unless domestic regulation requires this. This is the controversial question of disclosure of origin, which has arisen as a result of CBD obligations. Although certain domestic IPR statutes require disclosure of origin, support is far from universal and no proposals to amend the TRIPS Agreement have so far been

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<sup>68</sup> The issue of disclosure of an invention must not be mistaken for the controversial question of disclosure of the origin of biological material or traditional knowledge. These are separate concepts, which bear similar denominations.

<sup>69</sup> See Westerlund (n 60), at p. 77-79.

<sup>70</sup> See similarly the European Patent Convention (Munich, 5 October 1973, in force 7 October 1977), Article 83. The somewhat different United States regulation requires description of an invention in such full, clear, and exact terms as to enable any skilled person in the art to make and use the invention, see Westerlund (n 60), at p. 81.

successful.<sup>71</sup> Currently, then, a written disclosure need not state that the biological material was collected in the high seas. In relation to Article 244, such an omission is of less importance since the provision applies generally to all zones of jurisdiction and does not require parties to specify the zone in which MSR was undertaken. A separate question is whether Article 244 requires the publication of results to inform the reader that the knowledge is a result of MSR. On the one hand, according to a straightforward textual interpretation of the UNCLOS requirement to make MSR knowledge “available”, there is no obligation to state that the knowledge results from MSR, so long as the results are published. On the other hand, since an important objective is the promotion of MSR, one could argue that there is an obligation to disclose that the patent results from MSR. After all, states do have the general obligations to “promote and facilitate the development and conduct of marine scientific research”<sup>72</sup> and to “integrate the efforts of scientists in studying [...] the marine environment.”<sup>73</sup> Such responsibilities could speak to there being an obligation to indicate that the knowledge results from MSR. The answer to this question probably also depends on how scientists assess the added value of knowing that the information results from MSR.

Several states have accepted the deposit of microorganisms as a supplement to or in place of the written description. Such deposit is regulated, *inter alia*, by the Budapest Treaty on International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure.<sup>74</sup> The Budapest Treaty does not prevent patent holders from making descriptions

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<sup>71</sup> See J. Straus, ‘How to Break the Deadlock Preventing a Fair and Rational Use of Biodiversity’ (2008) 11(4) *The Journal of World Intellectual Property* 229-295.

<sup>72</sup> UNCLOS, Article 239.

<sup>73</sup> *Ibid.*, Article 243.

<sup>74</sup> Budapest Treaty on the International Recognition of the Deposit of Microorganism for the Purposes of Patent Procedure (Budapest, 28 April 1977, in force 19 August 1980).

of inventions available to others, but it imposes no such obligation. Disclosure of an invention can therefore be more limited under the Budapest Treaty than under general patent law, as third party access to the written disclosure may be replaced with deposits to which third parties may not have access. While domestic regulations may provide for an effective implementation of UNCLOS Article 244, this task is rendered difficult as a result of the principle of secrecy practiced under the Budapest Treaty system.

There is no time frame set in Article 244 for the publishing or dissemination of research results.<sup>75</sup> Awaiting the approval of a patent application before publishing would therefore not appear to pose problems. Patents may prevent swift publication of research on marine biological material. Depending on the contracts made with researchers in each case, compliance with UNCLOS Article 244 may be delayed or altogether excluded. There are two alternative views of the legal situation: on the one hand, the position can be held that MSR is the legal basis of bioprospecting as a high seas freedom, although IPR legislation currently prevents the effective implementation of the obligation to publish research results. This would mean there is an implementation gap concerning existing benefit-sharing mechanisms applicable to bioprospecting as MSR. On the other hand, the implementation gap can be seen as an argument against considering bioprospecting as a form of MSR: since the patent procedures following bioprospecting work against important obligations under the MSR regime, the reasons for considering this activity as an MSR activity are less compelling.

Publication is not the only issue that merits a discussion of the interfaces between the MSR regime and patents arising from bioprospecting. In the following, we will discuss patents viewed as claims to the marine resources.

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<sup>75</sup> But see UNCLOS, Article 143(3)(c), stating that in the case of MSR in the Area, dissemination of research results and analysis shall be made “when available”.

### *MSR as a basis for patent claims*

Pursuant to Article 241, marine scientific research activities “shall not constitute the legal basis for *any claim* to any part of the marine environment or *its resources*.”<sup>76</sup> For the case in which bioprospecting is considered to be MSR, the question is whether this provision prevents states and their nationals from seeking or granting patents based on inventions derived from high seas biological material. As will be shown, this is a controversial question.

The term “any claim” is broad. A claim can mean a “demand for a remedy or assertion of a right”.<sup>77</sup> The inclusion of the word “any” would suggest that a broad meaning is intended, and that both public and private claims are comprised therein. A patent claim is a legal proprietary title whose validity is sanctioned by a public authority and is enforceable in relation to other natural and legal persons.<sup>78</sup> A patent claim, according to the ordinary meaning of the term, would constitute a claim.<sup>79</sup>

The term “marine environment” is equally broad. Article 241 is placed under Section 1 of Part XIII, entitled “[g]eneral provisions”, and therefore applies generally to MSR undertaken in all parts of the ocean, including the high seas. The “resources” of the marine

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<sup>76</sup> *Ibid.*, Article 241 [emphasis added].

<sup>77</sup> J. Law and E.A. Martin, ‘claim’, *A Dictionary of Law* (Oxford Reference Online edition, Oxford University Press, 2009). Available at [www.oxfordreferenceonline.com/views/ENTRY.html?subview=Main&entry=t49.e630](http://www.oxfordreferenceonline.com/views/ENTRY.html?subview=Main&entry=t49.e630); accessed 7 June 2013.

<sup>78</sup> Whether a patent claim should be classified as private or public is debatable. For the purposes of the issue discussed here, no such classification is necessary.

<sup>79</sup> See M. Gorina-Ysern, ‘Legal Issues Raised by Profitable Biotechnology Development Through Marine Scientific Research’ in *ASIL Insights* (Washington, American Society of International Law, 2003). Available at [www.asil.org/insigh116.cfm](http://www.asil.org/insigh116.cfm); accessed 16 March 2013. She considers that IPR constitute a claim in relation to Article 241.

environment would, according to a natural understanding of the term, comprise both living and non-living resources of the marine environment, both macroorganisms and microorganisms.

It is marine scientific research “activities” that cannot lawfully constitute a “legal basis” for a claim. It can be argued that the marine scientific research activities are not the *basis* for a patent claim itself: what obtains exclusivity through the claim is not the marine resource sampled by MSR activities, but rather the subsequent intellectual endeavour taking place in mainland laboratories and testing facilities.<sup>80</sup> To this it may be interjected that the MSR activities are a prerequisite for the mainland activities. A possible yet highly controversial position is that the close link between MSR and subsequent intellectual endeavours is an argument that should lead to considering MSR as the legal basis of patent claims.

The wording of Article 241 is open to opposite interpretations. It is therefore necessary to examine in more detail state practice and the context in which the Article was adopted. The draft proposals, as received by Sub-committee III of the Sea-Bed Committee, vary with regards to the kind of claims MSR could not lead to and which areas of sea the provision would apply to.<sup>81</sup> It would appear that the issue of patenting and MSR were not discussed or were not a main concern. What may be concluded from the negotiations, however, was that parties deliberately adopted a wide understanding of the term “claim”, including both jurisdictional claims and claims to exclusive exploration and exploitation of

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<sup>80</sup> Wegelein argues along this line, stating that “acquired data of any scientific research do not necessarily qualify as intellectual property as they only represent facts, the conclusions drawn from them are [...] copyrighted material. [...] The individual achievement of the scientist must be distinguished from the raw data.” Wegelein (n 33), at p. 119.

<sup>81</sup> Nordquist (n 40), at p. 464.

the resources of another state.<sup>82</sup> Wegelein argues that Article 241 could not have been intended to exclude IPR, as scientific research “would become meaningless from the standpoint of scientific activity”<sup>83</sup> and scientists want their findings associated with their names. This argument is based on a presumption that IPR is the main, or even the only, incentive to conduct MSR. This cannot be entirely true, considering the value of the “study” of the marine environment recognised in UNCLOS<sup>84</sup> and the many expeditions undertaken to further human understanding of the oceans and marine life.

There are, however, no indications of state practice since the adoption of the Convention that support an interpretation of Article 241 as excluding patenting of inventions resulting from MSR.<sup>85</sup> On the contrary, such an interpretation would risk running counter to state obligations under patent law. UNCLOS provides that the Convention “shall not alter the rights and obligations of State Parties” arising under other agreements which are compatible with UNCLOS and “which do not affect the enjoyment by other State Parties of their rights or the performance of their obligations under this Convention.”<sup>86</sup> UNCLOS and the TRIPS Agreement are compatible as long as compliance with the latter does not affect the exercise by a state of its obligations under UNCLOS.<sup>87</sup> Accordingly, it is not likely that an understanding of Article 241 preventing patents on inventions derived from MSR in high seas could develop without substantial changes in patent law.

To sum up these discussions on bioprospecting and MSR, there are compelling arguments for considering MSR as the legal basis of bioprospecting as a high seas freedom.

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<sup>82</sup> Gorina-Ysern (n 64), at p. 363.

<sup>83</sup> Wegelein (n 33), at p. 119.

<sup>84</sup> UNCLOS, preamble, para. 5.

<sup>85</sup> See *e.g.* Gorina-Ysern (n 64), at p. 364.

<sup>86</sup> UNCLOS, Article 311, para. 2. The TRIPS Agreement contains no similar provision.

<sup>87</sup> Salpin and Germani (n 47), at p. 20.

For such bioprospecting cruises that are conducted without commercial intent and do not result in subsequent commercial applications, there is no reason to consider the activity as anything but MSR. For those cruises that are conducted with commercial intent or result in commercial applications, the answer is less certain. The wording in Part XIII does not indicate whether the parties intended to exclude commercial research. Yet some of the more concrete MSR obligations do not seem to fit very well with the standards of exclusivity and secrecy that are sometimes practised in bioprospecting. This can be interpreted as an implementation deficit of Part XIII. Alternatively, this seeming discrepancy could be seen as an argument against considering MSR as the legal grounds for lawful bioprospecting.

Taking this position does not mean, of course, that bioprospecting is not permitted under the law of the sea. In the following, we will examine the consequences of viewing bioprospecting as simply not covered by the explicitly regulated freedoms of the high seas.

### **Bioprospecting as a freedom *sui generis***

Article 87, as previously stated, does not provide an exhaustive list of freedoms of the high seas. Broggiato explains how, during the 20 years of exploitation of marine GR in ABNJ through sampling, no one has alleged in the diplomatic debate that this practice is unlawful.<sup>88</sup> For the case in which one does not retain the view that bioprospecting is either a form of fishing or MSR, the question still remains as to what conditions would apply to bioprospecting in the high seas. More pertinently for our purpose, the question is what remains of provisions aiming at some form of benefit sharing.

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<sup>88</sup> Broggiato (n 13), at p. 36. Her argument refers in particular to sampling in the deep seas of ABNJ. See also D.K. Leary, 'International Law and the Genetic Resources of the Deep Sea' in D. Vidas (ed), *Law, Technology and Science for Oceans in Globalisation: IUU Fishing, Oil Pollution, Bioprospecting, Outer Continental shelf* (Martinus Nijhoff, Leiden, 2009) 352-369, at p. 362.

### *Relevant rights and obligations*

It can first be noted that the activity is subject to the general conditions applicable to all activities in the high seas. This means, for instance, that bioprospecting may only be conducted for peaceful purposes,<sup>89</sup> in accordance with the general provisions pertaining to flying the flag of a state<sup>90</sup> and in compliance with general environmental standards.<sup>91</sup> States must furthermore show “due regard for the interests of other States in their exercise of the freedom of the high seas.”<sup>92</sup> What “due regard” entails is not further specified in the treaty text. The obligation to show due regard for the interests of other states can be seen in relation to the general principle of cooperation between states. It can also be viewed as a duty to take into concern the rights accorded by the treaty to other states.

Another question is whether not considering bioprospecting as a sub-category of MSR means that all provision relating to MSR lose binding force upon states and their nationals whose bioprospecting activities give rise to a commercial application at a later stage or for whom a commercial intent can be established. It can be argued that because bioprospecting encompasses steps and procedures that are typical of, if not identical to, MSR activities, bioprospecting should be conducted in accordance with the general principles for MSR found in Article 240. This means that bioprospecting should be conducted “with appropriate scientific methods and means” that are compatible with UNCLOS.<sup>93</sup> Even in the presence of a clear commercial intent, this intent does not eliminate the scientific procedures used in

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<sup>89</sup> UNCLOS, Article 88.

<sup>90</sup> *Ibid.*, Article 94.

<sup>91</sup> *Ibid.*, Part VII, Section 2 and Part XII.

<sup>92</sup> *Ibid.*, Article 87(2).

<sup>93</sup> *Ibid.*, Article 240(b).

sampling activities. The general objectives of the Convention to conserve oceanic resources,<sup>94</sup> is an argument in favour of applying this provision also to bioprospecting as a distinct high seas freedom. The same could be adduced with a view to achieving effective implementation of the objective of Article 240.

Also as a general principle, MSR shall not “unjustifiably interfere with other legitimate uses of the sea” and it shall be “duly respected” in the course of such other uses.<sup>95</sup> A first remark is that bioprospecting is as an example of such a legitimate use of the high seas. When mutual respect is warranted for MSR and bioprospecting, there is less need to discuss whether analogies should be drawn from this principle.<sup>96</sup> This can be seen in relation to the general principle of fulfilling obligations in good faith and refraining from abuses of rights.<sup>97</sup> As pertains to the high seas, it can also be seen as an expression of the obligation to show “due regard for the interest of other states”.<sup>98</sup>

A further question that can be raised is what the due respect that must be displayed for MSR means for the activity of bioprospecting. One scenario in which the question might arise is when bioprospecting has led to a patented gene sequence that is later sampled again by other persons involved in MSR. The situation could be seen as one in which bioprospecting blocks subsequent MSR, as the right to “make” or “use” a gene sequence or microorganism is now subject under patent law to the consent of the patent holder.<sup>99</sup> What is

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<sup>94</sup> *Ibid.*, preamble, para. 5.

<sup>95</sup> *Ibid.*, Article 240(c).

<sup>96</sup> An interpretation of the words “unjustifiable” and “duly” may lead to the conclusion that the required mutual respect would entail that the exact same level of non-interference or respect is required.

<sup>97</sup> UNCLOS, Article 300.

<sup>98</sup> *Ibid.*, Article 87(2).

<sup>99</sup> TRIPS Agreement, Article 28(1)(a), for the case of a product. In theory, albeit less practical, the question can also arise as an infringement of the exclusive right to “import”, where sufficient purification or change to the

considered an infringement will invariably depend on an interpretation of the claim and the relevant patent law. The TRIPS Agreement opens up for domestic legislation to make exemptions from the scope of the exclusive rights conferred as long as exemptions do “not unreasonably conflict with the normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner.”<sup>100</sup> Generally, research undertaken to understand a patented invention or to conduct experiments on the invention can be permitted.<sup>101</sup> A study undertaken by the Organisation of Economic Co-operation and Development shows that the extent of the exemptions offered in domestic legislations vary.<sup>102</sup> In relation to the subsequent MSR, this means that the extent to which a researching endeavour may proceed without infringement will be determined by country-specific research exemptions or lack of such. At least in theory, subsequent research on sampled material can constitute an infringement where MSR leads researchers to synthetically reproduce a sequence they have sampled but which is already patented. What’s more, infringement may also occur when marine scientists make or use a close derivative of the patented sequence if the patent covers this.

If MSR were blocked in some way, it would perhaps not constitute “due respect” of (fundamental) MSR. Yet even if this general principle of Article 240(c) were implemented in the relevant domestic legislation, it would probably provide little resistance to the rights

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organism has happened during the cruise at high seas.

<sup>100</sup> *Ibid.*, Article 30.

<sup>101</sup> See e.g. A. Stenvik, *Patenters beskyttelsesomfang* (Cappelen Akademisk Forlag, Oslo, 2001), at p. 120; Salpin and Germani (n 47), at p. 21. See also the so-called Stockpiling Case concerning research exemptions in Canadian law: *Canada – Patent Protection of Pharmaceutical Products* (2000) WT/DS114/R (WTO Dispute Settlement Panel).

<sup>102</sup> C. Dent *et al.*, ‘Research Use of Patented Knowledge’ (STI Working Paper 2006/2, OECD, Paris, 2006), at p. 17-22.

conferred by a valid patent claim in a civil case, especially since Article 240 does not award rights to private parties. An interpretation by which these different instruments of international law can be harmonised is by simply considering MSR as coming to an end at the end of the expedition and excluding subsequent research. Choosing this point of cessation in time of MSR would evidently not apply to all activities, since for example publication duties still await upon return. According to this line of interpretation, MSR rights such as access to the high seas and the “due respect” required of others throughout its course apply only while at sea, while obligations apply both during and after a cruise.

Concerning bioprospecting as distinct from MSR, the issue of rights and obligations subsequent to the cruise can be raised. More particularly, the question is whether the MSR obligation to publish and disseminate results can be given normative value for the activity of bioprospecting. First of all, the effective implementation of Article 240 and the objective of spreading knowledge among parties both speak in favour of considering that publication obligations also apply to bioprospecting. Yet these are arguments based on the close resemblance of MSR and bioprospecting. If one is adamant in saying that bioprospecting is *not* MSR, the particularities of bioprospecting have to be taken into consideration. A commercial intent or subsequent commercial use of the biological material may require discretion in order to achieve eventual success. Not surprisingly, there is no counterpart to Article 244 in Part VII that can support a duty of publication as a general principle applicable to high seas activities.<sup>103</sup> Unlike the obligations to use appropriate scientific methods, which were stated above as probably also applying to bioprospecting, disseminating information on commercial applications does not have the same direct impact on the high seas environment. On the contrary, such impact primarily lies in a greater range of inventions available. It would appear that there is no obligation to publish results to be drawn from analogies of the

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<sup>103</sup> But see UNCLOS, Article 118. It concerns co-operation in the conservation of living resources.

treaty text. This may rather depend, however, on the value attributed to Part XIV, which concerns the transfer of marine technology. This concept will be explored in the following.

### *Transfer of technology*

Part XIV, entitled “Development and Transfer of Marine Technology”, is closely related to MSR and is often discussed as part of the MSR regime.<sup>104</sup> Yet the Convention does not make technology transfer obligations depend specifically on MSR. The provisions would therefore be as relevant for bioprospecting as for (fundamental) MSR. In this part, a redistributive principle is established. States have the general obligation, directly or through competent international organisations, to “cooperate in accordance with their capabilities to promote actively the development and transfer of marine science and marine technology” and to “endeavour to foster the economic and legal conditions for the transfer of marine technology for the benefit of all parties concerned on an equitable basis.”<sup>105</sup>

As a result of great resistance from developed states during the negotiations on UNCLOS, Part XIV of the Convention lacks specific obligations and has been described as a *pactum de contrahendo*.<sup>106</sup> The limited practical impact of the provisions on technology transfer can be illustrated by the fact that in promoting transfer, states shall have due regard to all legitimate interests, including the rights of holders and suppliers of marine technology.<sup>107</sup> Patents may be one such legitimate interest preventing the transfer of marine technology from bioprospecting to developing states. Rights conferred by patents trump a state obligation to “endeavour to foster” technology transfer in case of a conflict. Several parties to UNCLOS now consider Part XIV to be the part of the Convention with the gravest

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<sup>104</sup> See *e.g.* Churchill and Lowe (n 29), at p. 404.

<sup>105</sup> UNCLOS, Article 266, paras. 1 and 3.

<sup>106</sup> Churchill and Lowe (n 29), at p. 418.

<sup>107</sup> UNCLOS, Article 267.

implementation gap.<sup>108</sup>

Nevertheless, irrespective of its limited practical impact, it should be highlighted that the principle of technology transfer envisages a transaction from those enjoying greater benefits to those to those enjoying fewer. Accordingly, it is a form of benefit sharing. As Part XIV shows, ABS is not a concept alien to the regime of the high seas, which may provide hope for ABS proponents. A lesson to be drawn from Part XIV is that for any ABS regime to be effectively implemented it must take patent law into account.

### **Closing remarks**

New forms of high seas activities give rise to challenges for the interpretation of UNCLOS. By adopting an activity perspective, it has been shown that obligations under UNCLOS vary depending on the legal grounds for exerting a freedom of the high seas. Currently, there is no definite answer to whether the legal basis for bioprospecting is fishing, MSR or something else. For a predominately commercial activity, these legal grounds coincide or conflict to various degrees with the rights and obligations under patent law. It may be that bioprospectors can live comfortably with this uncertainty, as duties are chiefly placed upon states, not research entities. The provisions of UNCLOS that invite or oblige benefit sharing are, however, strongest for MSR, and in this sense, it could be a strategic advantage for proponents of high seas ABS if they were to argue that UNCLOS makes no distinction between pure and applied sciences, and that bioprospecting should be fully subject to the MSR regime. If bioprospecting is an activity which the listed freedoms of Article 87 do not comprise, what is left of benefit-sharing obligations concerning bioprospecting in the high

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<sup>108</sup> Ad Hoc Open-Ended Informal Working Group, 'Letter Dated 30 June 2011 from the Co-Chairs of the Ad Hoc Open-Ended Informal Working Group to the President of the General Assembly' (A/66/119, New York, 2011), para. 36.

seas could in part derive from analogies from the MSR regime, as well as the vaguely formulated and inefficient provisions on technology transfer.