

## NEW TECHNOLOGIES AND THE LAW OF THE MARINE ENVIRONMENT: SOME RECENT DEVELOPMENTS

SAID MAHMOUDI

Professor of International Law (Stockholm University )

### I. Introduction

Alexandre Kiss was a man with great and genuine interest in many fields of science. Unlike that of most of his colleagues, his expertise and enthusiasm were not limited to law in general or any specific section of international law. His deep engagement in and vast knowledge of art, culture, the social sciences and the natural sciences are well known to his friends and students. A few months before his passing away, he enthusiastically discussed with me an article on the relation between science and law that he had published some years earlier in a Dutch international-law periodical. He also told me his planned article about the relationship between physics and environmental law.

Given this background, it was not surprising that a great part of the work of the European Council of Environmental Law (Conseil Européen du Droit de l'Environnement – CEDE) – the important academic forum Kiss established in 1974 and of which he was president until his death in 2007 – was during 1996 and the early part of 1997 devoted to the then very new subject of the legal status of the recently discovered genetic resources around seabed hydrothermal vents. The deliberations of lawyers and marine scientists in this forum resulted in an important report, published on 17 May 1997.<sup>1</sup> This was one of the first studies, if not the very first, on the legal aspects of this new scientific discovery and an inspiring source for many scholarly studies.

When the CEDE was invited to arrange an international conference in the International Year of the Oceans (1998), the subject “New Technologies and Law of the Marine Environment” was in the light of the CEDE’s preceding activities was a natural

---

<sup>1</sup> ”Legal Problems Concerning Bio-Prospecting for Genetic Resources Located in Marine Hydrothermal Vents beyond National Jurisdiction”, Rapporteur: Professor Patricia Birnie; Scientific Advisers: Professor António Domingos Abreu, Ms. Dubravka Bujic-Bultrini, Mr. Lyle Glowka, Professor Benilde

choice. Held in Lisbon on 18–19 September 1998, the Conference dealt with many issues concerning the relation of new technologies and management of the marine environment. The proceedings were published in 2000.<sup>2</sup>

For the purpose of the Present Memorial Conference, I shall touch upon recent developments concerning the legal issues of deep-seabed genetic resources in areas beyond national jurisdiction. It should be noted that even the legal status of these resources in certain marine zones under coastal State jurisdiction needs further study and clarification. This is particularly the case – not addressed here – of seabed genetic resources in the outer continental shelf.

Knowledge of the genetic resources of the seabed beyond national jurisdiction was almost non-existent during the negotiations in the 1970s for the 1982 Law of the Sea Convention. Hence that convention lacks any specific provision on the exploration and exploitation of these resources. During the 1980s and 1990s important scientific projects were carried out in the Pacific and the Atlantic Oceans. They resulted in the discovery of new living organisms, particularly in the area of certain hydrothermal vents. Some of these organisms depend for their survival on warm water produced by hydrothermal vents and bacteria existing there at depths of down to 4000 metres. Their unique features, and particularly their ability to survive in extreme cold or warmth, have prompted speculations about their enormous importance for science, great economic value and immense potentiality in the pharmaceuticals or biological sectors. The general understanding is that, compared to deep-seabed mineral resources, these genetic resources are of immediate economic interest, and their exploitation is technically and financially more viable.

The 1997 CEDE report developed some main legal aspects of the management of these new resources. One such aspect was the legal status of the said organisms. They live under the seabed, move in constant contact with the seabed and at times float in the water column. The 1982 Convention has differing regimes for living resources in the water and those considered to be sedentary. The same applies to the bacteria that are vital to life-support systems and reside in the columns thrown up from the seabed. They can also be regarded as part of the seabed or as organisms in the water column.<sup>3</sup> The 1997 report considered the legal status of genetic resources, bacteria and their habitats unsettled. One concern expressed at that time was that uncoordinated patent issuance by some countries for such resources might jeopardise their rational and sustainable use and limit the possibility of access by other countries for marine scientific research purposes.

To assess whether there was a need for new legal rules for regulating access to these resources and for protecting the very fragile environment surrounding them, the

---

Mendes and Professor Pedro Ré. The Report is reproduced in Beurier. In KISS–MAHMOUDI (eds.): *New Technologies and Law of the Marine Environment*. The Hague: Kluwer Law International, 2000, 229–237.

<sup>2</sup> *Ibid.*

<sup>3</sup> D. LEARY: *International Law and the Genetic Resources of the Deep Seabed*. Paper presented at a conference entitled *The World Ocean in Globalization: Challenges for Marine Regions*. Oslo 21–23 August 2008.

CEDE report analysed some relevant provisions of the 1982 Law of the Sea Convention and the 1992 Convention on Biological Diversity (hereinafter referred to as CBD). As regards the latter, it argued that in addition to the general obligation in Article 192 to protect and preserve the marine environment, several other provisions were potentially relevant. In this regard, mention was made of the Part XI provisions relating to use for peaceful purposes, marine scientific research, and duties in relation to other activities in the marine environment. Some provisions in Part XII were also mentioned. They concerned measures relating to protection of the ecosystem, use of technologies, and the introduction of alien species.

As regards the CBD, the Report underlined that it did not address the questions of access to and benefit-sharing of genetic resources in areas beyond national jurisdiction. The Report concluded that no rules in force clearly controlled and regulated the new activities relating to genetic resources in seabed areas beyond national jurisdiction. It proposed the adoption of concrete measures, possibly in the UN General Assembly, the International Seabed Authority or the Conference of the Parties to the Biodiversity Convention, to ensure that these genetic resources and their habitats are protected, to encourage scientific research on these resources, and to ensure that the resources are used equitably for the benefit of the international community as a whole.

## II. Developments in Recent Years

Now, over ten year after the publication of this pioneer and seminal report prepared by Alexandre Kiss's group within CEDE, legal aspects of activities relating to these genetic resources have gained increased attention both at intergovernmental level and in academic debate. As the CEDE Report predicted, the issue has been touched upon by the Conference of the Parties of the CBD and debated in the UN General Assembly. Notwithstanding this increased attention, it cannot be claimed that the legal aspects of such activities are clearer today than in 1996. The most serious and comprehensive deliberations on the legal aspects have taken place within the framework of the General Assembly.

States' concern about the problem of unregulated access to and use of the marine genetic resources beyond areas of national jurisdiction increased during the early 2000s. The General Assembly therefore decided in 2004 to establish an *Ad hoc* Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (hereinafter referred to as the *Ad hoc* Working Group).<sup>4</sup> It also the same year requested the Secretary-General to prepare a report on this issue to assist the Working Group in preparing its agenda.<sup>5</sup> The Secretary-General's report, published in 2005,<sup>6</sup> dealt with general issues relating to all marine genetic resources beyond national jurisdiction. Among other issues, mention was made of the difficulties to differentiate marine

---

<sup>4</sup> UN Doc. A/RES/59/24, 73.

<sup>5</sup> *Ibid.* 74.

<sup>6</sup> UN Doc. A/60/63/Add.1.

scientific research from commercial activities involving genetic resources, commonly referred to as bioprospecting. It was reiterated that there is no internationally agreed definition for either marine scientific research or bioprospecting.<sup>7</sup>

The *Ad hoc* Working Group had its first session in 2006.<sup>8</sup> This was the first time that issues relating to all aspects of the management of all genetic resources in areas beyond national jurisdiction were discussed by a number of UN Member States and relevant NGOs. Many delegations in this session expressed the view that the 1982 Law of the Sea Convention provided the legal framework for the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. As regards the CBD, it was pointed out by several delegations that this only complemented the Law of the Sea Convention because the CBD's jurisdictional scope did not extend to the conservation and sustainable use of components of marine biological diversity beyond areas of national jurisdiction.

Much of the discussion relating to the legal aspects was focused on marine scientific research. A number of delegations pointed out that if marine scientific research were not conducted with due care, it could itself have adverse effects on biodiversity. These delegations stressed that such research should be conducted in conformity with the provisions in Part XII of the 1982 Convention. Other delegations emphasised the freedom of scientific research and cautioned against any effort to impose restrictions on this freedom. They favoured self-regulatory codes of conduct to be adopted by the scientific community over international rules on scientific activities.

Other delegations emphasised that marine scientific research should conform with the provisions of part XIII of the 1982 Convention, in particular article 240 on general principles for the conduct of marine scientific research and article 241, which provides that marine scientific research activities shall not constitute the legal basis of any claim to any part of the environment and its resources.

The main disagreement over legal issues was between the Group of 77 and delegations from industrialised countries. Developing countries generally maintained that on their view of the principle of the common heritage of mankind, access to deep-seabed genetic resources beyond areas of national jurisdiction should (like the mineral resources in the Area) in principle be subject to equitable sharing of benefits. To emphasise this point of view, they noted the symbiotic relationship of genetic resources with non-living marine resources and other living resources in the surrounding water column. They contended that a regulatory mechanism, including the adoption of improved norms and/or an implementing agreement to the Convention, may become necessary to clarify such matters as the relationship between marine scientific research and bioprospecting. A regulatory mechanism could also address the question of access to those resources and legal options for benefit-sharing, including non-monetary benefits, international cooperation in marine scientific research through the exchange, sharing and dissemination of information on research programmes, their objectives and

---

<sup>7</sup> *Ibid.* 50–51.

<sup>8</sup> Outcome of the Meeting of the *Ad Hoc* Working Group is published as UN Doc. A/61/65. Legal and institutional issues are discussed in pages 7–9 of this report.

results, and cooperation in the transfer of technology. The mandate of the International Seabed Authority, which under Article 145 of the 1982 Convention covers the protection of the marine environment including biodiversity, could – according to this group of States – potentially be expanded to deal with all issues relating to deep-sea biodiversity, including genetic resources. The group opposed any provisions purporting to grant free access or unrestricted freedom of exploitation of genetic resources beyond areas of national jurisdiction.

The industrialised countries, on the other hand, argued that the resources are covered by the regime of the high seas under part VII of the Law of the Sea Convention. According to them there is no legal gap with respect to living resources in areas beyond national jurisdiction since freedom of the high seas applies to these resources too. On this basis, they saw no need for a new regime to address the exploitation of marine genetic resources in areas beyond national jurisdiction or to expand the mandate of the Authority.

Still other delegations opined that clarification was needed with regard to the legal status of the genetic resources named. They acknowledged the problem that the genetic resources in question, unlike mineral resources, exist on or under the seabed as well as in the water column. When in the water column, they may arguably be under the regime of the freedom of the high seas.<sup>9</sup> But most of the time they are under the seabed or have a sedentary character.

Both the advocates of the freedom of the high seas and those who felt the need for an innovative approach cautioned against an ideological confrontation like the one during the 1970s negotiation for the regime of deep-seabed mining. A criticism that the opponents of an ISA-like mechanism directed against the G-77 approach was that the international community should not make the same mistake as it did in the case of deep-seabed minerals, i.e. to establish a very detailed legal regime and regulate an industrial activity that did not yet exist. For these critics, the core legal issue is patents rather than the legal status. They believed that the named resources are at any rate subject to the regime of the freedom of the seas, their management subject to patents issued by interested States, perhaps somehow anchored to an international arrangement. The idea is not new and reminds us of similar proposals during early stages of negotiations for the legal regime of deep-seabed mining.

Further to the first session of the *Ad hoc* Working Group, the General Assembly requested the Secretary General to prepare a new report with due regard to the views expressed in that session. The Report, which was published in March 2007,<sup>10</sup> witnessed much attention to basic scientific information. A part dealt with micro-organisms such as enzymes, viruses and picoeukaryotes, which are genetic resources of actual or potential value.<sup>11</sup> The new genetic resources are found, according to the Report, in various areas of the oceans associated with coral reefs, oceanic islands,

---

<sup>9</sup> Cf. PISUPATI-LEARY-ARICO: Access and Benefit Sharing: Issues Related to Marine Genetic Resources. 10 (3) *Asian Biotechnology and Development Review*, July 2008.

<sup>10</sup> UN Doc. A/62/66

<sup>11</sup> *Ibid.* 53.

seamounts and other hydrographical areas. Some occupy unique and often extreme habitats in the ocean and display adaptation to these environments. Examples of these environments are salt ponds, coral reef crests and hydrothermal vents. The Report further underlined the symbiotic relationship of microorganisms with deep-sea minerals and other non-living resources.<sup>12</sup>

In addressing relevant legal issues, the Secretary-General's Report of 2007 stresses that the dual character of marine genetic resources as tangible and information resources requires the application of measures for their conservation and sustainable use as well as for the flow and management of the information they embody. It repeats the relevance of the Law of the Sea Convention and the applicability of the Convention in areas beyond national jurisdiction and of the CBD to activities and processes carried out under the jurisdiction or control of the coastal States. More importantly, it indicates that the regulations adopted by the International Seabed Authority to govern the impact of prospecting and exploration activities on the environment of the Area may apply also to genetic resources.<sup>13</sup>

The eighth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (hereinafter referred to as ICP) that was held in June 2007 devoted its entire work to the question of marine genetic resources in general. As regards resources beyond areas of national jurisdiction, the discussions in the meeting were influenced by the Secretary-General's Report published only three months earlier. The ICP Report<sup>14</sup> describes in detail the divergent views of the developing countries and the industrialised countries on the legal aspects of marine genetic resources located in areas beyond national jurisdiction.

Some developing countries considered that access to these resources and benefit-sharing should be based on the principle of the common heritage of mankind since all activities relating to them are to be for the benefit of humankind as a whole. These countries emphasised that the marine genetic resources in question could not be subject to free access and private ownership. In short they advocated an equitable regime that would guarantee both actual access and fair benefit-sharing.<sup>15</sup> The opposite view was expressed by several industrialised countries which believed that Part XI of the 1982 Convention was not relevant to marine living resources. Such resources, according to them, were under the regime of the high seas in Part VII. They opposed any regime that might interfere with high-seas freedoms. They were in general not convinced of the need for a new international regime because such a regime could inhibit research. Yet, another view was that a comprehensive new regime for exploration and exploitation of genetic resources should be developed within the framework of the 1982 Convention. They underlined the need for adoption of an integrated approach for conservation and sustainable use of the resources in question both in the water column and on the bed of the deep-sea.<sup>16</sup>

---

<sup>12</sup> *Ibid.* 55.

<sup>13</sup> UN Doc. A/62/66/Add.2, 61.

<sup>14</sup> UN Doc. A/62/169.

<sup>15</sup> *Ibid.* 71–73.

<sup>16</sup> *Ibid.* 74–75.

The Second session of the *Ad hoc* Working Group was convened in April-May 2008 and ended with the co-chairpersons' joint statement reporting the main results of the discussions.<sup>17</sup> The common denominator was again the recognition of the 1982 Convention on the Law of the Sea as the legal framework for all activities in the oceans and seas. The divergence of opinion between States that consider genetic resources in areas beyond national jurisdiction as common heritage of mankind and hence in principle under the regime of Part XI, on the one hand, and those which consider these resources as part of the regime for the high seas, remained. Nevertheless, some delegations repeated the proposal put forward in the ICP meeting in June 2007, namely elaboration of a new comprehensive regime for the named genetic resources within the framework of the 1982 Convention. Even in this session, the opposite view was that such a new regime may impede scientific research and would be difficult to monitor and enforce.<sup>18</sup> The previously touched-upon issue of intellectual property rights was highlighted in this session. Some delegations proposed that practical measures relating to benefit-sharing for access and use of genetic resources should be adopted. Generally the achievements of this session were meagre, and much of the discussion seemed to have the character of intellectual exercise rather than a constructive and purposeful search for solutions to the actual problems. The fate of the *Ad hoc* Working Group is not clear, and depends very much on whether the General Assembly will consider it meaningful to continue international negotiations on this issue.

### III. Assessment

As was predicted in the 1997 CEDE Report, the discussions so far at a rather low international level, have taken place mainly within the framework of the General Assembly even though delegations in the recent *Ad hoc* Working Group expressed the wish that similar negotiations should take place in other forums including of course the Conference of the Parties of the CBD. Negotiations so far recall similar deliberations during the 1970s for the legal regime of deep seabed mining. Although genetic resources in the marine areas beyond the limits of national jurisdiction refers to a very broad range of resources under the seabed, on the seabed and in the water column, the point of departure for the majority of the delegations in the *Ad hoc* Working Group has mainly been the unique resources discovered on the seabed around hydrothermal vents, and of both great scientific significance and commercial potential.

There are, however, many differences between these resources and manganese nodules regulated in Part XI of the 1982 Convention. In addition to substantial differences between the political climate in the world in the 1970s and today, the very fact that these resources are living organisms that at times can float in the water without constant attachment to the seabed immediately makes them potentially subject to the regime of the high seas. By merely calling them 'common heritage of mankind', we

---

<sup>17</sup> UN Doc. A/63/79.

<sup>18</sup> *Ibid.* 9.

cannot expect that a legal regime similar to the one created by the political bloc structure of the UN in the 1970s for deep seabed minerals will be established for the new resources.

Irrespective of how they are qualified, legal arrangements for the conservation of, access to and benefit-sharing of marine genetic resources have to accommodate the common interests that exists in them. Countries with the necessary technological capabilities and particular scientific or commercial interests will probably not resist the pressures that exist for registration of national patents. The ultimate goal of international negotiations should therefore be to safeguard the objectives of conservation, access and benefit-sharing by harmonizing national legal measures through internationally agreed arrangements.

New technologies in this case, like in almost all other similar cases, have two facets. On the one hand, they open new opportunities, enhance the quality of life, and contribute to scientific and economic development. On the other hand, they may have some adverse and hitherto unknown effects on environments that have been at peace for millions of years. Like in the case of the manganese nodules of the deep seabed, the initial discussions about marine genetic resources and their legal aspects are more focused on their use. The issue of environmental impact does not seem to have done equally well in the deliberations. It is therefore not surprising that questions relating to patents and benefit-sharing have so far occupied much space and time. If we agree with the wise statement that technology is a good servant and a bad master, it is important not to neglect the negative effects of improper use of advanced technologies on very sensitive organisms of the deep seabed and their habitats. This requires careful and stringent regulation of access for all purposes.