

12-1-1978

# Marine Scientific Research

Linda A. Caruso

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## Recommended Citation

Linda A. Caruso, *Marine Scientific Research*, 10 U. Miami Inter-Am. L. Rev. 932 (1978)

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# The Impact of the Law of the Sea Conference on The International Law of Freedom of Marine Scientific Research

LINDA A. CARUSO\*

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## I. INTRODUCTION

The traditional legal principle of open access to the ocean, the extension of national sovereignty, and the international regimes proposed for the oceans at the Law of the Sea Conferences are in conflict with one another; an international conflict that has caused extensive controversy concerning the prerogatives of ocean scientists. Ocean scientists contend that "unimpeded access to all parts of the oceans is vital to the accomplishment of their work." Since schools of fish, geologic structures, and currents cross multiple zones, effective oceanographic research, scientists argue, may also require transit through zones of more than one coastal state.<sup>1</sup> This issue has inspired a coalition of developing states, both coastal and landlocked, who are opposed to an international regime which would allow free-

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1. S. BROWN, N. CORNELL, L. FABIAN & E. WEISS, REGIMES FOR THE OCEAN, OUTER SPACE, AND WEATHER 90 (1977) [hereinafter cited as BROWN]. Fabian, *The Ocean, The United States and the Poor Countries*, in THE UNITED STATES AND THE DEVELOPING WORLD: AGENDA FOR ACTION (1973) [hereinafter cited as Fabian]. Charney, *Law of the Sea: Breaking the Deadlock*, 55 FOREIGN AFF. 598, 601 (1977) [hereinafter cited as Charney]. Reprint 264 (Brookings Institution, Washington, D.C. 1973) [hereinafter cited as Reprint 264].

dom of access by marine scientific researchers to the various zones of a coastal state. Since the advanced industrialized states tend to be the researching states<sup>2</sup> the coalition contends that freedom of scientific research is merely a self-serving slogan that primarily benefits those technologically and scientifically advanced countries which are in a position to exploit the results of the research. These coalition states demand the right to control access to their territorial waters and to any resource zones that may be created. They desire a regime that requires the consent of the coastal state involved, prior to any research being done in that state's territorial waters or economic zone.<sup>3</sup>

The United States position is that consent should be required only for certain specified research activities.<sup>4</sup> One such exception to the United States philosophy of maximum freedom for marine scientific research involves ocean floor drilling on the continental shelf. Under existing international law, the consent of the coastal state involved must be secured prior to such drilling. Possibly because such drilling might involve environmental hazards or national security threats the United States believes this exception should be continued.<sup>5</sup>

While most states have not expressed strong views on the control of scientific research beyond the limits of national jurisdiction, a few have made outright demands for internationalization of all scientific research performed on the high seas. They have argued that an international regime, with either the capability to carry out its own research or the authority to regulate the activities of scientists, would be most beneficial to the developing countries in terms of dissemination of knowledge.<sup>6</sup> The United States, however, has maintained that international regulation of scientific research in the areas beyond a state's national jurisdiction is unacceptable.<sup>7</sup>

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2. Bello, *The Present State of Marine Science and Oceanography in the Less Developed Countries*, 8 INT'L LAW. 231 (1974).

3. BROWN, *supra* note 1, at 91. Charney, *supra* note 1, at 602.

4. H. Franssen, *The Third Law of the Sea Conference*, CONGRESSIONAL RESEARCH SERVICE, LIBRARY OF CONGRESS, Nov. 21, 1976, at 24 [hereinafter cited as Franssen].

5. Shapley, *Law of the Sea Meeting: A Wet Blanket for Ocean Research*, 181 SCI. 1024 (1973).

6. H. Franssen, *Developing Country Views of Sea Law and Marine Science in FREEDOM OF OCEANIC RESEARCH* 137, 155-156 (1973) [hereinafter cited as *Developing Country Views*]. See also, M.N. Franssen, *Oceanic Research and the Developing Nation Perspective*, *id.* at 179, 198.

7. Elliot L. Richardson, Special Representative of the President to the Law of the Sea Conference at the United Nations, United States Mission to the United Nations, Press Release USUN-57(77), with Questions and Answers appended (July 20,

## II. BENEFITS OF MARINE SCIENTIFIC RESEARCH

The United States, together with almost all of the major western nations, has maintained that oceanic research has benefited and will continue to benefit all mankind. Ocean research provides the scientific community with information which can lead to better management of resources, more accurate weather forecasting, reduction of navigational hazards, a more complete understanding and better control of marine pollution, and other, presently unforeseen, benefits.<sup>8</sup> Over the long term, the quest for basic knowledge on the world's oceans will yield information that can improve man's condition throughout the entire world.<sup>9</sup> All scientific research on the oceans, no matter how theoretical, is of some use, at least indirectly, to fisheries, oil and mineral exploitation, and military operations. While the benefits of scientific research may indirectly benefit all of mankind, the developing countries complain, the immediate benefits will flow to the technologically advanced and industrialized countries which can best utilize the information gleaned.<sup>10</sup> It seems more likely, however, that scientific research on the oceans will benefit all mankind. With burgeoning populations and dwindling resources on land, it is inevitable that man will become more dependent on the sea in the future.<sup>11</sup> Marine scientific research is necessary to enable man to make efficient use of the sea's bounty while protecting the environment.

## III. TECHNOLOGY FOR SCIENTIFIC RESEARCH

Submersibles are being used extensively today to study all aspects of oceanography, ocean engineering, geology, ocean waste disposal, archeology, reefs, and fishing grounds.<sup>12</sup>

1977) at 5 [hereinafter cited as Richardson, Press Release]. See generally Informal Composite Negotiating Text; Explanatory Memorandum by the President, United Nations Third Conference on the Law of the Sea, U.N. Doc. A/CONF. 62/W.P. 10/Add. 1 (July 22, 1977) at 6 [hereinafter cited as ICNT Explanatory Memorandum]. ICNT, *infra* note 35, at Part XI, Art. 151.

8. H. Franssen, *supra* note 4, at 24.

9. COMMISSION ON MARINE SCIENCE, ENGINEERING AND RESOURCES, OUR NATION AND THE SEA: A PLAN FOR NATIONAL ACTION, H.R. Doc. No. 91-42, 91st Cong., 1st Sess. 23 (1969).

10. *Developing Country Views*, *supra* note 6, at 137.

11. R. MILLER, THE SEA 302 (1975) [hereinafter cited as MILLER].

12. See generally SUBMERSIBLES AND THEIR USE IN OCEANOGRAPHY AND OCEAN ENGINEERING (1977); Busby, *An Overview of Submersible Activities Worldwide in 1977*, SEA TECH., Jan. 1978, at 15; R. Jones & Kotzer, *Manned Submersibles Study*

Until William Beebe and Otis Barton conceived, designed, and built the famous Bathysphere in the 1930's, no human being had ever survived a dive below 500 feet of water, yet it was known that an abundance of marine life forms existed below that depth. In their Bathysphere they made thirty-two deep scientific research dives. In the summer of 1934, while off the coast of Bermuda, they reached a depth of 3028 feet.<sup>13</sup> By 1960, man's scientific research had reached the furthest known depths of the oceans. The third submersible built by Auguste Piccard, *Trieste II*, refitted and operated by the United States Navy, dove to a depth of 35,800 feet in the Marianas Trench.<sup>14</sup>

In November 1977, a \$1.167 million contract to define the physical characteristics of the planned "Oceanlab" mobile underwater laboratory was awarded by the National Oceanic and Atmospheric Administration, to the Re-Entry and Environmental Systems Division of the General Electric Company in Philadelphia. The contract will entail providing preliminary specifications for the Oceanlab system; as well as program plans for subsequent phases. Oceanlab will provide the United States with the capability for advanced underwater scientific research and exploration during the 1980's. Its mission capabilities will help scientists and engineers meet the growing needs to develop and use offshore oil, gas and minerals, and conduct research to understand and better protect the oceans.<sup>15</sup>

Today, in addition to submersible vessels, free divers, using modern equipment and techniques, can perform scientific research at depths down to 1500 feet.<sup>16</sup> Studies of ocean diving safety are funded by the National Oceanic and Atmospheric Administration and the United States Coast Guard. In early 1978 these studies were expanded to extend beyond sport and recreational diving to commercial diving.<sup>17</sup> Late in 1977 a professional society, the Institute of Diving, was formed for commercial, sport, and scientific divers. The Institute is international in scope and will act for the advancement of profes-

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*Cosmic Radiation Deep in the Sea*, SEA TECH., Mar. 1978, at 24; Morrison, *Books*, SCI. AM., Mar. 1978 at 30.

13. R. WELKER, *NATURAL MAN: THE LIFE OF WILLIAM BEEBE* (1977); Morrison, *supra* note 12, at 30.

14. Walsh, *On Missing the Boat*, SEA TECH., Jan. 1978, at 47. Morrison, *supra* note 12.

15. Sheffer, *Offshore Engineering: OCEANLAB Contract Awarded to General Electric, Philadelphia*, SEA TECH., Dec. 1977, at 30.

16. R. STRAUSS, *DIVING MEDICINE* (1976); Morrison, *supra* note 12, at 32.

17. *Diving Insurance Meeting Told Safety Studies Now Funded by NOAA*, USCG, SEA TECH., Dec. 1977, at 9.

sional, literary, and scientific knowledge related to human oriented activity in the undersea environment.<sup>18</sup>

Smaller items of scientific and technological equipment are also important. For example, today's deep ocean cameras have assumed an important role in new oceanographic research and engineering applications. They are capable of descending to the abysmal depths and obtaining several thousand photographs in one dive. These precision manufactured, pressure-proof instruments have proved their operational reliability in every ocean of the world.<sup>19</sup>

Technological development is constantly taking place in ocean industries. The demands of the often hostile environments in which they operate require massive research efforts and investments to make nature more productive without undue ecological risks.<sup>20</sup>

Scientific curiosity about the earth's structure, more specifically the difference between the crust and the mantle of the earth, gave impetus to the Mohole project. American scientists decided to bore a hole through the earth's crust to find out the composition of the mantle. Since the crust of the earth is thickest under the continents and thinnest in the deep ocean, it was decided to drill the hole under the ocean. In 1963, a hole 601 feet deep was bored in the sea bottom off the coast of Baja California, Mexico, and core samples were brought up. These samples showed researchers that they had gotten through the marine sediments and into the basalt layer beneath. In addition to the great amount of scientific information gained from these core samples, the advance in technology in ocean drilling opened up future research and commercial possibilities.<sup>21</sup>

Other developed nations, such as the U.S.S.R., for example, are also forging ahead in technology for advanced scientific research on the high seas. The oceanographic research fleet of the U.S.S.R. outnumbered that of the United States by nearly a factor of three, with more than 200 research vessels as compared to the United States' eighty-one vessels. Within the last fifteen years the number of Soviet

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18. Sheffer, *Offshore Engineering: Institute of Diving Serving All Divers Formed in Florida*, SEA TECH., Dec. 1977, at 30. *International Diving Symposium Attendance More Than 1,500*, SEA TECH., Mar. 1978, at 36.

19. James, *Deep Sea 35 mm Camera Systems*, SEA TECH., Jul. 1977, at 18, 19.

20. NATIONAL OCEAN INDUSTRIES ASSOCIATION, NOIA BACKGROUND: A CLOSER LOOK AT THE NATIONAL OCEAN INDUSTRIES ASSOCIATION II (1978). *American Offshore*, Washington Post, Jun. 25, 1978, (Supplement), at 8; Atlantic City Press, Jun. 25, 1978, (Supplement), at 8.

21. MILLER, *supra* note 11, at 302.

scientific and technical personnel engaged in the study of oceanography increased from 700 to more than 7000; while in the United States personnel numbers increased from approximately 1500 to 3000.<sup>22</sup> This comparison, however, does not take into account privately funded and operated research vessels in the United States. According to Robert A. Frosch, former Assistant Secretary of the Navy for Research and Development:

Scientifically, the state of oceanography in the Soviet Union is clearly first class. The engineering and engineering concepts are coming along with the state-of-the-art as we have developed it in this country. They are operating at a faster and faster pace in this area, and there is no reason to assume that their technological capability for this kind of thing is likely to become inferior to ours in the future. I think they can do more or less what they choose to do both scientifically and in an engineering way in terms of whatever engineering capability they want to apply to it under their priority system.<sup>23</sup>

#### A. SEASAT and Ocean Weather

On June 26, 1978, the first space satellite dedicated solely to scientific ocean observation was launched. SEASAT is a project of the Office of Space and Terrestrial Applications of the National Aeronautics and Space Administration (NASA). The satellite will circle the earth fourteen times daily. By crossing both polar regions on each revolution it will cover ninety-five percent of the oceans surface every thirty-six hours. The satellite's five sets of instruments are designed to provide data on wave height and direction, surface wind speed and direction, ocean surface topography and temperature, currents and tides, and ice conditions.

If SEASAT lives up to expectations, it could lead to a global system that can continuously monitor the oceans. Such a system will be valuable in routing ships through more favorable waters, in forecasting sea conditions for offshore drilling, and in tracking icebergs that pose a threat to shipping.<sup>24</sup>

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22. Mulcahy, *A Time for Decision on the Federal Oceanographic Fleet*, SEA TECH., Jun. 1978, at 10, 34.

23. Frosch, *We Toured the U.S.S.R.'s Oceanographic Laboratories*, SCI. DIGEST, May 1973, at 10.

24. SEASAT: *An Ocean-Dedicated Satellite*, SEA TECH., May 1978, at 33. Wilford, "Ship" 500 Miles Out in Space To Explore Oceans of World, New York Times, Jun. 23, 1978, § A, at 10, col. 3; Burlington (Vermont) Free Press, Jun. 26, 1978, at

One can only speculate as to the benefits that will be derived from an improved understanding of global sea conditions. For example, major ocean currents hold the key to long-range weather forecasts. The kuroshio, or Japan current, and the gulf stream profoundly influence the weather conditions of the Eurasian and North American continents. Since water is 800 times as dense as the atmosphere it has a tremendous capability for storing heat, or conversely, storing little of it. Like the air currents, the ocean currents move and produce cyclonic and anticyclonic eddies which affect the weather.<sup>25</sup>

According to a recent report by a Florida State University meteorologist, Dr. T.N. Krishnamurti, to the National Science Foundation's office for the Global Atmospheric Research Program (GARP), temperature differences between the West African land mass and the Atlantic Ocean may be linked with conditions that spawn hurricanes.<sup>26</sup> This new knowledge could lead to the saving of many lives and the protection of property by improving hurricane warning systems.

The 1976-1977 winter was one of the worst recorded in the United States in the past one hundred years. A surprisingly similar winter occurred in 1917-1918. Both seasons were preceded by below average ocean surface temperatures in the North Pacific, and both produced prolonged record cold weather east of the Mississippi River and drought in the western states. The National Oceanic and Atmospheric Administration's National Climatic Center has prepared an integrated atmosphere/ocean data analysis package for both seasons using information derived from analysis of sediments in deep-sea cores secured from various locations in the world's oceans.<sup>27</sup> Most likely, this data will be coordinated with the data from SEASAT so that scientists can seek cause and effect relationships to improve long-range weather forecasting.

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2A, col. 1; O'Toole, *Newly Launched Statellite Will Oversee the Seas*, Washington Post, Jun. 27, 1978 § A, at 2, col. 5.

25. Booda, *Sea and Air—Inseparable*, SEA TECH., Jul. 1977, at 7.

26. *Soundings: African Desert May Play Crucial Role in Atlantic Storms*, SEA TECH., May 1978, at 7.

27. Matthews, *What's Happening to Our Climate?* 150 NAT'L GEOGRAPHIC 576, 581, 584, 601-602 (1976). Austin, *Changes and Challenges in Ocean Data and Information Services*, SEA TECH., Feb. 1978, at 12, 13-14. Jennings, *IDOE in Fourth Year of World Ocean Research*, SEA TECH., Jan. 1974, at 39.



## B. Oil Spills

Oil spills remain a massive and unresolved environmental problem.<sup>28</sup> After the oil spill caused by the wreck of the *Amoco Cadiz* on March 16, 1978—the largest in history—an American oceanographer observed that the technology for cleaning up oil lags far behind the technology for carrying it.<sup>29</sup> Much of the oil from the *Amoco Cadiz* emulsified quickly upon its release from the wreck and the resulting "mousse" heavily polluted at least 200 kilometers of the Brittany coast, which supports a tourist trade and considerable fisheries. The extent of the economic and ecological damage is not yet known, but is assumed to be extensive.<sup>30</sup> The limitations of tanker and spill cleanup technology were clearly disclosed during this incident.

The French Navy was in charge of cleanup operations. About 5000 troops and thousands of civilian volunteers worked on the cleanup. The French Navy apparently did not accept offers of help from other nations.<sup>31</sup> Containment booms proved ineffective except in estuaries. On the beaches, cleanup crews armed with shovels, pails, pumps, and farm tractors attacked the awesome mess. Experts disagreed on use of dispersant. The French Navy compromised by spraying a French product only in waters fifty or more meters deep and on an outgoing tide.<sup>32</sup> Under existing international law and voluntary industry agreements applicable to oil spill liability, a maximum of up to \$30 million will be available to meet cleanup costs and damages.<sup>33</sup>

28. Carter, "Amoco Cadiz" Incident Points Up the Elusive Goal of Tanker Safety, 200 SCI. 514 (1978) [hereinafter cited as Carter].

29. Grove, *Black Day for Brittany*, 154 NAT'L GEOGRAPHIC 124, 128, 133 (1978) [hereinafter cited as Grove].

30. See generally *Marine Pollution: Largest Oil Spill Ever Shows Cleanup Limitations*, SEA TECH., May 1978, at 30 [hereinafter cited as *Marine Pollution*]; Washington Star, Mar. 17, 1978, § A, at 1, col. 2; Washington Star, Mar. 17, 1978, § A, at 2, col. 3; Washington Post, Mar. 18, 1978, § A, at 1, col. 2; Washington Post, Mar. 19, 1978 § A, at 1, col. 2; Washington Star, Mar. 19, 1978, § A, at 2, col. 4; Mostert, *Super Ships: Why Giant Tankers Meet Disaster*, Washington Star, Mar. 19, 1978, § F, at 1, col. 5; Washington Post, Mar. 28, 1978, § A, at 15, col. 1; Evening Bulletin (Philadelphia), Mar. 29, 1978, at 2, col. 1; Browning, *French Blame Oil Spill on Loose Rules, Risk Taking*, Washington Star, Apr. 1, 1978, § A, at 1, col. 1.

31. *Marine Pollution*, *supra* note 30.

32. *Id.* Grove, *supra* note 29, at 130, 133.

33. Otsea, *The Intergovernmental Maritime Consultative Organization and Tankers: A Case Study in the Effectiveness of International Maritime Regulation*, 1 HASTINGS INT'L & COMP. L. REV. 123, 132-133 (1977); Carter, *supra* note 28. See also *Official Documents: The International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties*, 64 AM. J. INT'L L. 471, 476 (1970). *Official Documents: International Conference on Marine Pollution Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other*

According to French officials, cleanup and damages costs for the spill will far exceed the \$30 million liability level. Lawsuits are expected to begin shortly.<sup>34</sup>

Knowledge in the area of oil spills is meager and a great amount of research remains to be done. It would be tragic if insistence on control of marine scientific research by non-technological coastal states or by an international regime or both were to impede research which might prevent such disasters in the future. The pity and irony of it all is that those very same non-technological coastal states are likely beneficiaries of such research.

#### IV. THE UNITED NATIONS LAW OF THE SEA CONFERENCES

The United Nations has convened three Law of the Sea Conferences to resolve problems of national jurisdiction and rights in the oceans. The First and Second Conferences were held in 1958 and 1960, respectively. The Third Conference began in 1973 and held its seventh session during 1978. The United Nations Third Law of the Sea Conference prepared a total of three negotiating texts. These are the Single Negotiating Text (SNT) prepared by the third session in 1975, the Revised Single Negotiating Text (RSNT) prepared by the fourth session in 1976, and the Informal Composite Negotiating Text (ICNT) prepared by the sixth session in 1977.<sup>35</sup> These texts were to provide a basis for negotiation without affecting either the status of proposals already made by delegations or the right of delegations to submit amendments or introduce new proposals. In preparing the texts, the chairmen of the appropriate committees were charged to take into account all the formal and informal discussions that had been held.<sup>36</sup> Among the issues considered in the negotiating texts are scientific research in the exclusive economic zone and on the high seas.

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*than Oil*, 1973, 68 AM. J. INT'L L. 577 (1974). H.L. Jones, *Congressional Affairs: Convention on the Prevention of Marine Pollution*, 8 INT'L LAW. 637, 646 (1974). H.L. Jones, *Congressional Affairs: Oil Pollution on the High Seas*, 9 INT'L LAW. 351 (1975).

34. *Marine Pollution*, *supra* note 30, at 37.

35. United Nations Third Conference on the Law of the Sea Informal Single Negotiating Text, U.N. Doc. A/CONF. 62/WP. 8/Parts I, II and III (May 7, 1975) [hereinafter cited as SNT]; Third United Nations Conference on the Law of the Sea, New York Session, March 15 - May 7, 1976, Revised Single Negotiating Text, U.N. Doc. A/CONF. 62/WP. 8/Rev. 1/Part I (May 6, 1976) [hereinafter cited as RSNT]. Third United Nations Conference on the Law of the Sea, New York Session, May 23 - July 15, 1977, Informal Composite Negotiating Text, U.N. Doc. A/CONF. 62/WP. 10/Corr. 1 (July 15, 1977) [hereinafter cited as ICNT].

36. RSNT, *supra* note 35, at Part I at 1. H. Franssen, *supra* note 4, at 15. See also Swing, *Who Will Own the Oceans?* 54 FOREIGN AFF. 527, 532 (1976).

### A. *Scientific Research in the Exclusive Economic Zone*

The legal status of an exclusive economic zone beyond the territorial sea remains a highly controversial issue at the Law of the Sea Conference. Most coastal states, as a matter of self interest, favor the establishment of an exclusive economic zone with complete sovereign powers which would extend to 200 nautical miles offshore.<sup>37</sup> A key concern among policymakers in the United States and other maritime nations is that the traditional, well established legal doctrine of freedom of the high seas for such non-resource uses as navigation and scientific research not be affected by a state's jurisdiction over the economic resources present within its exclusive economic zone.<sup>38</sup> At the time the Revised Single Negotiating Text was written the developed nations opposed Part III, Articles 57 through 60, of the text which would have required the consent of the coastal state for all marine scientific research taking place either within the economic zone or on the continental shelf of that state. This opposition continued even though the negotiating text provided that a coastal state could not withhold its consent for the carrying out of research except for the four reasons specified in Article 60 of the RSNT.<sup>39</sup> The United States position at the time the RSNT was drawn up, and which was not fully reflected in the text, was that consent should not be required for all marine scientific research but, only for certain specified marine scientific research activities. Other research activities could be conducted upon compliance with specified criteria designed to protect coastal state interests. These criteria, the United States believed, could include notifying the coastal state in advance of the research to be conducted, allowing its nationals to participate in the research project, and sharing the data, samples, and analyses with the host government. The United States believed that scientific research directly related to resources within the exclusive economic zone of a coastal state should remain subject to coastal state consent, but if a determination were made by a coastal state to refuse access for scientific research to the area the disputed question would be subject to compulsory third party dispute settlement.<sup>40</sup>

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37. Shapley, *Law of the Sea: Energy, Economy Spur Secret Review of U.S. Stance*, 183 SCI. 290, 292 (1974).

38. Browne, *Law of the Sea Conference*, Issue Brief No. IB74104, FOREIGN AFFAIRS AND NATIONAL DEFENSE DIVISION, CONGRESSIONAL RESEARCH SERVICE, LIBRARY OF CONGRESS Nov. 11, 1974 (updated Feb. 5, 1977).

39. RSNT, *supra* note 35, at Part III, Art. 60.

40. H. Franssen, *supra* note 36, at 24. Hull, *Much Ado About Something—Dispute Settlement and the Law of the Sea Convention*, 11 INT'L LAW. 365 (1977) [hereinafter cited as Hull]; Sohn, *Peacekeeping in the Oceans: Conflict Management Under the*

The "Group of 77," a political coalition of developing coastal and landlocked states, with a present membership of more than 110 nations, rejected, and continues to reject, "resource-related" criterion and demands the right to refuse scientific researchers access to their economic zones altogether, at their own discretion.<sup>41</sup> They contend that scientific research may provide a cover for military intelligence gathering or for locating new deposits of resources.<sup>42</sup>

The ICNT was formulated at the sixth session of the Law of the Sea Conference. Negotiations regarding marine scientific research within a coastal state's exclusive economic zone or on its adjoining continental shelf were protracted and extensive. The negotiations were aimed at establishing a balance between the right and duty of the coastal state to grant consent and the exercise of its jurisdictional power to withhold it.<sup>43</sup> Committee III Chairman Yankov of Bulgaria revived his test proposal from the fifth session which, if it had been incorporated into the ICNT, would have markedly expanded the discretion of the coastal state to deny consent. This proposal was not incorporated into the Informal Composite Negotiating Text due to opposition from the developed nations. Nevertheless, Chairman Yankov stated that he expected to use his test proposal in any future negotiations.<sup>44</sup>

The U.S.S.R. proposed that all marine scientific research be subject to coastal state consent and suggested Part III, Article 60, paragraph two of the RSNT, which limited denial of consent for scientific research to the four specific categories listed, be deleted. The U.S.S.R. also proposed the limitation of dispute settlement to dis-

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Law of the Sea Conference (Unpublished manuscript, copy given to L.A. Caruso by Prof. L.B. Sohn on Aug. 8, 1977); Address by L.B. Sohn, Bemis Professor of International Law, Harvard Law School, Procedures for the Settlement of Disputes, Panel on United Nations Conference on the Law of the Sea, Annual Meeting of the Section of International Law, American Bar Association, Sheraton-Chicago Hotel, Chicago, Illinois (Aug. 8, 1977) (recorded on cassette tape by L.A. Caruso), *reported in* 12 INT'L LAW. 21, 51 (1978) [hereinafter cited as Sohn].

41. Charney, *supra* note 1, at 602.

42. McGeehan, *Strategic and Security Implications of a New Ocean Regime*, 5 STRATEGIC REV. 80, 87 (1977). Notably, the revelation that Howard Hughes' "Project Jennifer" was not a mining enterprise but a Central Intelligence Agency funded salvage operation for a Soviet ballistic missile submarine incited international suspicion. See C. BURLESON, THE JENNIFER PROJECT (1977). Washington Star, Oct. 26, 1977, § A, at 2, col. 2.

43. ICNT Explanatory Memorandum, *supra* note 7, at 12.

44. Delegation Report (United States), Sixth Session of the Third United Nations Conference on the Law of the Sea, May 23-July 15, 1977 at 18. (Office of Law of the Sea Negotiations, State Department, Washington, D.C.) [hereinafter cited as Delegation Report].

putes regarding the method of conducting research—not the issue of whether consent should be granted or denied. The proposal by Chairman Yankov and the two proposals by the U.S.S.R. received substantial support from the Group of 77.<sup>45</sup> The United States reiterated its opposition to a general consent regime and stressed the importance of marine scientific research to the United States.<sup>46</sup>

The ICNT retains the basic consent system of the RSNT but provides that under normal circumstances consent shall be granted when the research is exclusively for peaceful purposes, in order to increase scientific knowledge of the marine environment for the benefit of mankind.<sup>47</sup> Coastal states may, however, withhold their consent to a project which is of direct significance for the exploration and exploitation of natural resources, or one which involves drilling or the use of explosives, or a project involving artificial islands and installations. There are additional reasons included in the ICNT, which were not in the RSNT, for which consent may be withheld. Consent may be withheld if the researching state or organization has communicated inaccurate information regarding the nature and objectives of the project or has outstanding obligations to the coastal state from a prior research project.<sup>48</sup>

Many scientists, especially U.S. scientists, are not satisfied with this. They believe that consent should not be required for open scientific research which will be published and available to everyone. They are willing to inform the coastal state in advance and to invite them to participate in the planning and conduct of the research. Further, they are willing to share samples and data with the coastal state and to assist the coastal state in its analysis of the results.<sup>49</sup> Treasure hunters, unlike research scientists, are more than willing to apply to the coastal state for permission and to pay a royalty to the state in return for exclusive rights.<sup>50</sup> Scientists reject this approach and insist that the waters adjacent to a country cannot be treated as its exclusive territory.<sup>51</sup>

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45. *Id.*

46. *Id.* at 19.

47. ICNT, *supra* note 35, at Part XIII, Art. 247.

48. *Id.*

49. Fye, *Freedom of Research at Sea Slipping Away*, SEA TECH., Jun. 1977, at 10, 12 [hereinafter cited as Fye].

50. H. HASS, *MEN BENEATH THE SEA: MAN'S CONQUEST OF THE UNDERWATER WORLD* 183-184 (1975).

51. Guidry, *Cousteau: Seas Need Protection*, Washington Star, Nov. 23, 1977, § A at 1, col. 1.

The text regarding compulsory dispute settlement was changed in the ICNT. Compulsory dispute settlement applies to scientific research except for disputes arising out of the exercise by the coastal state of a right or discretion in accordance with Article 247 or the termination of a research project in accordance with Article 254.<sup>52</sup>

Ambassador Richardson implied that he was pleased with the changes reflected in the ICNT regarding publication of scientific data. Article 61 of Part III of the RSNT was eliminated. This article would have given the coastal state the right to restrict publication of scientific data after the project was completed without the consent of scientists. Under the ICNT the coastal state, in granting consent, must indicate in advance if it wishes to impose such a restriction. If so, the scientist can decide whether he wishes to proceed with the project under such circumstances.<sup>53</sup> Thus far, the opposing sides remain sharply divided on certain aspects of the scientific research issue and a workable compromise has not been reached. A number of delegations, however, have indicated that they believe the ICNT to be a good basis for negotiation.<sup>54</sup>

The developed and developing countries do not always act as unified voting blocs, especially when confronted with the variety and complexity of the issues involved in the Law of the Sea (LOS) negotiations. Marine scientific research, however, is one issue in which the differences between developed and developing countries are most apparent and the growing tension between these factions has become a factor in the LOS debate.<sup>55</sup>

### B. Scientific Research on the High Seas

Scientific research at sea has always been a part of the traditional freedoms of the seas.<sup>56</sup> More specifically, the right to conduct scientific research in the oceans beyond the territorial sea has been traditionally one of these freedoms.<sup>57</sup>

52. ICNT, *supra* note 35, at Part XIII, Art. 265. See also Hull, *supra* note 40; Sohn, *supra* note 40.

53. Richardson, Press Release, *supra* note 7, at 2.

54. Delegation Report, *supra* note 44, at 19.

55. Fabian, *supra* note 1. Cadwalader, *Freedom for Sciences in the Ocean*, 182 SCI. 15, 20 (1973) [hereinafter cited as Cadwalader]. Reprint 264, *supra* note 1.

56. H. Franssen, *supra* note 4, at 23.

57. COMPTROLLER GENERAL OF THE UNITED STATES, REPORT TO THE CONGRESS, RESULTS OF THE THIRD LAW OF THE SEA CONFERENCE 1974 to 1976 at 26 (June 3, 1977).

The ICNT provides that states, irrespective of their geographical location as well as competent international organizations, shall have the right, in conformity with the present Convention, to conduct marine scientific research in the water column beyond the limits of the exclusive economic zone.<sup>58</sup> In Part VII of the ICNT, freedom of scientific research is enumerated as one of the freedoms of the high seas. This freedom, however, is subject to limitation by two other parts of the text, Part VI regarding the continental shelf, and Part XIII on marine scientific research.<sup>59</sup>

The ICNT, Part IX, states that marine scientific research in the Area shall be carried out exclusively for peaceful purposes and for the benefit of mankind as a whole, in accordance with Part XII of the present Convention.<sup>60</sup> Part XII covers protection and preservation of the marine environment. This reference to Part XII is possibly in error. The reference probably should be to Part XIII, marine scientific research, since Part XIII states that marine scientific research activities shall comply with all relevant regulations established in conformity with the present Convention, including those for the protection and preservation of the marine environment.<sup>61</sup>

International political controversy over the activities of marine scientists is increasing. This issue draws together the accumulated resentments of the world's have-not nations toward the traditional dominance of the maritime arena by the technologically and scientifically advanced nations. The have-nots charge that freedom of the seas and freedom of ocean science are little more than self-serving slogans for those who benefit most from those freedoms.<sup>62</sup>

To developing nations the concept of common heritage implies not only sharing in the benefits to be obtained from the exploitation of the resources of the Area, but, more important, an effective and total participation in all aspects of the management of this common heritage. To be more precise, the developing nations seek to participate in all the activities to be carried out in the Area, including marine scientific research.<sup>63</sup>

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58. ICNT, *supra* note 35, at Part XIII, Art. 258.

59. *Id.* at Part VII, Art. 87.

60. *Id.* at Part XI, Art. 143. The seabed, ocean floor, and subsoil beyond the limits of national jurisdiction are referred to as "the Area." *Id.* at Part I, Art. 1.

61. *Id.* at Part XIII, Art. 241.

62. Brown & Fabian, *Diplomats at Sea*, 52 FOREIGN AFF. 301, 310 (1974). General Series Reprint 282 (Brookings Institution, Washington, D.C., 1974).

63. Aguilar, *How Will the Future Deep Seabed Regime be Organized?*, in LAW OF THE SEA: THE EMERGING REGIME OF THE OCEANS 43, 47 (1974).

As so often happens, this international political disagreement has generated an international legal disagreement. There is a fundamental disagreement over the legal basis for activities within the ocean. Underlying the position of the developing countries is the assumption that common heritage has replaced freedom as the basis for all law of the sea. Under the assumption the International Seabed Authority, which would be created pursuant to the recommendation of the United Nations Seabed Committee, would acquire at least potential jurisdiction over all ocean activities formerly considered free.

Access for scientists to all of the oceans beyond narrowly defined limits of national jurisdiction is one of the freedoms the developed countries hope to preserve. Even if one accepts the common heritage concept, scientific freedom can be justified. Research does yield knowledge of potential social utility. No state can properly erect barriers that restrict mankind from learning what it must know about the ocean in order to optimize its use for the benefit of all. It would be ironic if the new law of the sea, which is being created with the intent of making the common heritage doctrine a reality, were to contain provisions which would impede the understanding of the marine environment. All nations, rich and poor alike, are going to depend increasingly upon that knowledge in the years ahead.<sup>64</sup>

It is evident that most of the advances in scientific understanding are now being made by scientists in those countries sufficiently affluent to afford basic (i.e., not directed toward early application) scientific activity. This is particularly true in oceanography where fewer than a score of countries are engaged in the investigation of fundamental ocean problems in regions remote from their own national waters. The field of study is necessarily as broad as the subject matter itself. Oceanic processes know no political boundaries, and their study certainly requires access to the high seas. To the extent that rapid and efficient pursuit of scientific understanding is desired, a free regime encouraging research activities by those with a present capability seems most desirable. Clearly, restrictions in the high seas would work against the attainment of that goal.<sup>65</sup> The right of freedom of marine scientific research in the area is a critically important right to be protected.<sup>66</sup>

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64. Cadwalader, *supra* note 55, at 16-20. See also Pardo, *A Statement on the Future Law of the Sea in Light of Current Trends in Negotiations*, 1 OCEAN DEV. & INT'L L.J. 315, 324 (1974).

65. Wooster & Redfield, *Consequences of Regulating Oceanic Research*, in FREEDOM OF OCEANIC RESEARCH 219, 228 (1973).

66. *Supra* note 60.



### C. Prospects for Future Negotiations

At one time, we were advised that a new Law of the Sea Treaty would enhance the interests of the U.S. scientific research community. This argument no longer seems valid since the draft convention would probably place marine scientists in a weaker position in dealings with coastal states and may give an International Seabed Authority the potential to regulate scientific research in the deep seabed.<sup>67</sup> The regulations, and the power to regulate, given to an International Seabed Authority by the ICNT would probably stifle rather than encourage scientific inquiry. And, since there were no substantive changes in the scientific research articles during either the first or second stages of the seventh session, prospects for any future changes are poor.<sup>68</sup>

Referring specifically to the exclusive economic zone, Ambassador Elliot L. Richardson, Special Representative of the President for the Law of the Sea Conference, reported that the Soviet Union and a large number of coastal states continued to insist that the existing text on scientific research represented a reasonable balance that ought not to be disturbed. When this opinion was expressed in the plenary session, the United States took issue with this view and gave notice that it intended to persist in efforts to make the text more compatible with freedom of scientific research.<sup>69</sup>

The developing countries appear to exhibit an unfounded paranoia on the subject of scientific research.<sup>70</sup> They argue that scientific research off their shores has operated to the benefit—both commercial and military—of the rich countries, often at the expense of the poor countries.<sup>71</sup> They do not, however, support this allegation with any evidence that marine scientific research has been conducted in any way at their expense. Rather than recognizing the benefits that marine scientific research would bring to all mankind—including themselves—they have chosen to focus on the fact that

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67. Address by the Honorable John M. Murphy (Dem., N.Y.), Chairman, Committee on Merchant Marine and Fisheries, United States House of Representatives, before the Seminar on the Ocean Law Conference, presented by the International Resources Committee of the Federal Bar Association, The Mayflower Hotel, Washington, D.C. (June 5, 1978) [hereinafter cited as Seminar on the Oceans Law Conference].

68. Address by Norman Wulf, United States Law of the Sea Delegate, at the Seminar on the Oceans Law Conference, *supra* note 67.

69. Elliot L. Richardson, Statement, May 22, 1978.

70. Address by Norman Wulf, *supra* note 68.

71. BROWN, *supra* note 1.

developed countries would benefit also. This, they seem to find intolerable.

#### V. CONCLUSIONS

The Law of the Sea negotiations have already had an impact on marine scientific research. The process of obtaining permission to do research has become more formalized and lengthy. In addition, there is a greater likelihood of permission being denied, and if granted, containing many more regulations than a few years ago.

In addition to interfering with scientific work, failure of coastal states to grant permission to do research has also deprived the coastal state of the benefits of that research. For example, a plan to study the process known as upwelling, wherein vertical currents bring nutrients from the ocean bottom to the surface waters, thereby refertilizing the surface waters, was thwarted. Since the upwelling results from offshore winds blowing the surface water away from the beach, the research would have necessitated coming within the region over which the coastal state had jurisdiction and therefore required its permission before research could commence. The research, which ultimately would have benefited the fisheries industry of the coastal state is not being done. This is a greater loss to the coastal state than to the oceanographers who were refused access to the area.<sup>72</sup>

This is not an isolated case. In 1976, the records of the University National Oceanographic Laboratory System, which coordinates the activities of the University Oceanographic fleet, indicate that about half of the scheduled cruises for work in waters over which other nations claim control have had requests denied, or have had major hindrances sufficient to prevent the cruise taking place. At least eighteen nations were involved in one way or another in inhibiting scientific research in this way.<sup>73</sup> Fortunately, the picture is not unrelievedly grim. On June 28, 1978, Indonesia and the Federal Republic of Germany (West Germany) signed a science and technology agreement for cooperation in marine energy research.<sup>74</sup>

The direction the Law of the Sea negotiations are going, and certainly if a Treaty is approved that resembles the text on scientific research in the ICNT, indicates an increasing diminution of freedom

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72. Fye, *supra* note 49, at 10, 13.

73. *Id.*

74. Washington Post, June 30, 1978, § F. at 5, col. 6.

for scientific research. The impact on necessary research will be that scientists will tend to avoid areas which are politically and legally difficult.<sup>75</sup>

The United States position on scientific research espoused at the Law of the Sea Conference appears to be fair and workable. Provisions are made to protect the rights of coastal states and to encourage marine scientific research. But more than this, the coastal states would reap untold benefits from marine scientific research. The United States, in its concern for marine scientific research for the benefit of all mankind, should accept nothing less from any treaty which comes out of the Law of the Sea Conference. It is vital that scientific research enjoy maximum freedom—for the benefit of all mankind. The oceanographic research community must be protected from the imposition of arbitrary or unreasonable restrictions on scientific research. If not, future marine scientific research, critical to the survival of the oceans, and mankind, will be crippled.<sup>76</sup>

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75. Fye, *supra* note 49, at 13.

76. Handler, *National Academy of Sciences Expresses Alarm*, SEA TECH., June 1977, at 13.