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**The Intergovernmental Oceanographic Commission:**  
**its Capacity to Implement**  
**An International Decade of Ocean Exploration**  
**by**  
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## INTRODUCTION

From the beginning of the debates in the UN Seabed Committee, the importance of fact-finding -- scientific, technical and legal -- has occupied the thoughts and discussions of delegates concerned with the peaceful uses of the seas beyond the limits of national jurisdiction. UN members have adopted numerous resolutions to this end. For example, by Resolution 2467, UN members established a 42 member standing committee on the Peaceful Uses of the Seabed and Ocean Floor Beyond the Limits of National Jurisdiction which expanded the studies carried out by the AD Hoc Committee on the Seabed, endorsed the United States sponsored International Decade of Oceanic Exploration, and requested the Secretary General to study the question of establishing machinery to promote the exploration and exploitation of seabed resources and their use.<sup>1</sup>

Such initiatives have enabled UN delegates to expand their knowledge of a variety of issues concerning the peaceful uses of the seas. Although, since 1970 the principal concern of representatives in New York has been legal questions, such as the limits to national jurisdiction and the scope and jurisdiction of an international seabed authority, the advance of scientific knowledge of the ocean has been of prime concern to UN affiliated agencies, and most especially to the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

Because of the Commission's experience in promoting international cooperation in ocean investigations from the time it was established in 1960, the General Assembly in 1968 assigned to IOC the task of implementing the International Decade of Ocean Exploration (IDOE), the initial and accelerated phase of the Long-Term Expanded Program of Oceanic Exploration (LEPOR). The assignment of IDOE to IOC however raises a fundamental question which will be explored in this study: does the IOC have the capacity to carry out the goals and tasks of IDOE? Successful implementation will generate knowledge of the world oceans whose ecological importance to the maintenance of life in the biosphere is critical. Such knowledge should also provide a continuing source of reliable information and expertise which could enlighten policy makers at both the national and international levels.

### The International Decade of Ocean Exploration

The IDOE was first proposed by President Johnson in his State of the Union Message, January 17, 1968<sup>3</sup> and elaborated in a Conservation Message of March 8, 1968. The spirit of the earlier and successful world-wide effort in international scientific cooperation, the International Geophysical Year (IGY) encouraged President Johnson to propose IDOE.<sup>4</sup>

The United States first proposed IDOE in the form of a draft resolution at the third session of the General Assembly's Ad Hoc Committee in Rio de Janeiro, August, 1968. This resolution recognized an increasing international desire to promote the peaceful exploration of the ocean and the seabed, a sentiment already articulated most especially by Malta's Ambassador Pardo at the twenty-second General Assembly.<sup>5</sup> Members of the Ad Hoc Committee welcomed and endorsed the Proposal and submitted it to the twenty-third General Assembly in their Report.<sup>6</sup> Following debate on it in the First Committee, the General Assembly on December 20, 1968 adopted resolution 2467D which called for an IDOE for the 1970's.<sup>7</sup> The Resolution:

1. welcomed the concept of IDOE to be undertaken within the framework of a Long-Term Program of Ocean Research and Exploration....

2. invited member states to formulate proposals for national and international scientific programs and agreed activities to be undertaken during the Decade... to transmit these to the... IOC in time to begin the Decade in 1970, and to embark on such activities as soon as possible...
3. urged member states to publish as soon as practicable the results of all activities which they will have undertaken within the framework of the Decade as part of a long-term coordinated program of scientific research and exploration, and... to communicate these results to the IOC...
4. requests the UNESCO to invite its IOC to:
  - a. intensify its activities in the scientific field within its terms of reference and in cooperation with other interested agencies,
  - b. cooperate with the UN Secretary-General... in the preparation of the comprehensive outline of the scope of the long-term program of ocean research of which the Decade will be an element,
  - c. keep the Secretary-General informed of all proposals, programs and activities of which it is informed in accordance with paragraphs 2 and 3 above,
  - d. report through the appropriate channels to the General Assembly at its twenty-fourth session on the progress made in the implementation of the present resolution.<sup>8</sup>

The Intergovernmental Oceanographic Commission responded to the United Nation's request by convening in June, 1969, an Intergovernmental Working Group on the Long-Term Expanded Program of Ocean Exploration and Research (LEPOR) which drafted a Comprehensive Outline on the Scope of the Expanded Program.<sup>9</sup> At IOC's Sixth Plenary Session in October 1969 the Outline was discussed, modified, and approved and by session resolution, transmitted to the United Nations where it received the General Assembly's endorsement.<sup>10</sup> Since 1969, the scope and content of Comprehensive Outline have been elaborated into a set of cooperative exercises which IOC members endorsed at the Seventh Session, in 1971.<sup>11</sup> At the same session, representatives also endorsed IDOE as the acceleration phase and point of departure for accomplishing the tasks of LEPOR.<sup>12</sup>

#### Intergovernmental Oceanographic Commission (IOC)

The Intergovernmental Oceanographic Commission of UNESCO was established in 1960 by the eleventh General Conference of UNESCO to promote scientific investigations of the oceans with a view to learning more about the nature and resources of the oceans through the concerted actions of its members.<sup>13</sup>

Since its founding in 1960, IOC has coordinated several international expeditions and some two hundred scientific cruises. The IOC also has promoted gathering, storage, and dissemination of data, and has fostered cooperation between its member governments and intergovernmental as well as non-governmental organizations. Working groups established by the Commission study both scientific and legal aspects of ocean exploration. Thus delegates of the UN General Assembly by resolution 2172, in 1966 requested IOC to broaden its base in order to formulate and coordinate the Long-Term and Expanded Program of Oceanic Exploration,<sup>14</sup> and by resolution 2467D, in 1968 requested IOC to assist the Secretary-General in preparing a Comprehensive Outline of the Scope of the Expanded Program.<sup>15</sup>

At the Seventh Session of the IOC in 1971, members adopted a resolution on the IDOE, in which they (1) recognized IDOE as the acceleration phase and essential initial element of LEPOR, (2) proposed that IDOE last from 1971 through 1980 and consist of appropriate national oceanographic activities of significant size and scope in which the participation of scientists from other nations would be actively sought, (3) invited members to inform the IOC Secretary of major projects which they wish to have as components of IDOE, and (4) instructed the Secretary to bring proposals promptly to the attention of the IOC Executive Council for efficient processing and coordination.<sup>16</sup>

### Framework for Analysis of IOC's Capability

To determine whether IOC is capable of fulfilling the tasks and performing the functions of IDOE, the following conceptual framework has been applied to IOC's past, present and projected experiences.

Three concepts -- (1) tasks, (2) functions, and (3) capability, -- are central to a consideration of an international organization's capability. Tasks are substantive matters that an organization must carry out to accomplish its goals. Goals determine tasks and dictate the parameters of tasks. The IDOE has certain tasks, that is, substantive activities, which must be accomplished during the 1970's if the goals set for it are to be achieved. Briefly, the tasks of IDOE are: exploration of the living resources of the oceans, exploration of the mineral resources and the ocean floor, and study of the world ocean processes including air-sea interaction, and marine pollution. In Chapter I, the goals and tasks of IDOE are to be discussed.

To achieve tasks, certain functions must be performed. These include the following: planning, program development, research, coordination, norm-setting, enforcement of norms and the settlement of disputes, political persuasion, administration, and the conduct of operations. In Chapter II, the functions required of IOC to implement these tasks and goals during the Decade will be considered.

The third concept, capacity, refers to the Commission's ability to perform tasks and functions assigned to it. To be judged capable, it must "pass" certain tests of capacity: legal competence, structural capacity, resource capacity and political capacity. These four aspects of capacity are discussed in Chapters III, IV, V, and VI respectively.

By applying these tests it is possible to determine IOC's capacity to implement IDOE. An assessment of IOC's overall capacity forms the concluding chapter.

## CHAPTER I: TASKS AND GOALS OF IDOE

A discussion of goals (general objectives to be achieved) and tasks (substantive activities to be accomplished) forms the starting point of this study of IOC's capacity.

The goals of the Long-Term and Expanded Program of Oceanic Exploration and Research (LEPOR) and the International Decade of Ocean Exploration (IDOE) and the tasks involved have been defined by government officials, by scientists, and by delegates at international meetings. In adopting the comprehensive Outline of the Scope of the Expanded Program, delegates at IOC's Sixth Session in 1969 defined LEPOR's goal: "to increase knowledge of the ocean and its resources to enhance their use for peaceful purposes."<sup>1</sup> The Group of Experts on Long-Term Scientific Policy and Planning (GELTSPAP), established by IOC's Sixth Session to develop further the scope and content of LEPOR elaborated this goal in their first report. They emphasized that "enhance" means increased use as well as Rational Planning and management of ocean use through international cooperation.<sup>2</sup>

Goals of IDOE complement those of LEPOR. For example, in An Oceanic Quest: The International Decade of Ocean Exploration published in 1969, members of the National Academy of Science - National Academy of Engineering Committee defined the principal goal of the IDOE, as achieving more comprehensive knowledge of ocean characteristics and their changes and more profound understanding of oceanic processes for the purpose of more effective utilization of the ocean and its resources."<sup>3</sup> In the U.S. National Marine Council's Fourth Report, 1970 Decade's purpose is further expanded to:

1. Preserve the ocean environment by accelerating scientific observations of the natural state of the ocean and its interactions with the coastal margin -- to provide a basis for (a) assessing and predicting man-induced and natural modifications of the character of the oceans; (b) identifying damaging or irreversible effects of waste disposal at sea; and (c) comprehending the interaction of various levels of marine life to permit steps to prevent depletion or extinction of valuable species as a result of man's activities;
2. Improve environmental forecasting to help reduce hazards to life and property and permit more efficient use of marine resources -- by improving physical and mathematical models of the ocean and atmosphere which will provide the basis for increased accuracy, timeliness, and geographic precision of environmental forecasts;
3. Expand seabed assessment activities to permit better management -- domestically and internationally -- of marine mineral exploration and exploitation by acquiring needed knowledge of seabed topography, structure, physical and dynamic properties, and resource potential, and to assist industry in planning more detailed investigations;
4. Develop an ocean monitoring system to facilitate prediction of oceanographic and atmospheric conditions -- through design and deployment of oceanographic data buoys and other remote-sensing platforms;
5. Improve world wide data exchange through modernizing and standardizing national and international marine data collection, processing, and distribution; and
6. Accelerate Decade planning to increase opportunities for international sharing of responsibilities and costs for ocean exploration, and to assure better use of limited exploration capabilities.<sup>4</sup>



As the goals of LEPOR and IDOE are related, so the tasks or substantive activities that must be undertaken during LEPOR and IDOE to accomplish goals are complementary. To illustrate this relationship and also to describe substantive tasks to be accomplished, tasks identified by IOC's Group of Experts on Long-Term Scientific Policy and Planning (GELTSPAP) and by the U.S. IDOE Office are to be discussed under four major headings. (1) Geology, Geophysics and Mineral Resources (geo-science exercises); (2) Living Resources and their relation with the marine environment (bio-science exercises); (3) Problems of Ocean-Atmosphere Interaction, Ocean Circulation, Variability, and Tsunamics (physical science exercises) and (4) Marine Pollution (pollution exercises). Each of these has been designated a priority area by the Comprehensive Outline, GELTSPAP, and the IDOE.

#### A. Geology, Geophysics, and Mineral Resources (Geo-Science Exercises)

Although knowledge of the sea's mineral resources has increased in recent years, a great deal remains unknown with regard to the history of the earth, the processes by which minerals form on the ocean floor, the sea floor's topography and the location of mineral deposits. GELTSPAP has proposed twelve cooperative geo-science exercises which are intended to advance necessary knowledge in these areas: the charting of the sea floor; systematic geological and geophysical surveys of continental margins; studies of marginal seas, e.g., Caribbean, Gulf of Mexico, Mediterranean and the Japan Sea; monitoring of river mouths; deep drilling at key sites in the ocean floors, and magnetic surveys of the world ocean. Because of the variety of exercises proposed, efforts on regional, national and international scales are required to fulfill these tasks.<sup>5</sup>

Within the context of the proposed geo-science exercises, the IDOE Office has established a Seabed Assessment Program. The goal of this program is to gather data on the geologic structures and sedimentary distributions of the continental margins, the properties of the ocean floor and chemical and physical processes of the deep ocean.<sup>6</sup>

#### B. Living Resources and Bio-Science Exercises

As some authorities estimate that the sustainable yield of the living resources is 4 to 5 times the present harvest, increased knowledge and exploration of the living resources is a second major task of LEPOR and the Decade.

Proposed fishery and biological studies are intended to gather and synthesize knowledge of the abundance, distribution and availability of fish populations of commercial and potential commercial interest. Management studies including conservation of fish are to be carried out with a view to reducing the cost of production and enhancing the use of fisheries. To this end, GELTSPAP has proposed projects on living resources to be carried out within the framework of existing international cooperative investigations such as the North Eastern Central Atlantic, the Caribbean and adjacent regions, Mediterranean and the Indian Ocean. In addition, new cooperative projects are to be planned and implemented in areas where little is known about fisheries, e.g., Southern Oceans, and Polar oceans, and in coastal and related areas. Finally, two proposed projects are to focus on supporting services: establishment of international information services for national and regional marine science programs and the promotion of specific research having practical use such as deep sea living resources.<sup>7</sup>

In support of these substantive activities, the IDOE Office has established a Living Resources Program. The first project to be initiated is the Coastal Upwelling Ecosystem Analysis (CUEA) which is intended to provide understanding of physical and biological processes in coastal upwelling ecosystems.<sup>8</sup>

### C. Problems of Ocean Atmosphere Interaction, Ocean Circulation, Variability and Tsunamis (Physical Sciences Exercises)

The importance of understanding the processes of ocean-atmosphere interaction, ocean circulation and variability and of gathering data on a global and regional scale to assist in prediction of ocean processes has increasingly been recognized by meteorologists and physical oceanographers and by participants in IOC meetings and the UN Conference on the Human Environment. Through the World Meteorological Organization (WMO) meteorologists in conjunction with the International Council for Scientific Unions (ICSU) have organized the Global Atmospheric Research Program (GARP) and global observational networks, the World Weather Watch (WWW) and the Intergrated Global Ocean Station Systems (IGOSS). GELTSPAP has proposed several exercises to be carried out on local, regional and international scales and within the existing WMO-ICSU framework to supplement existing programs. The Group of Experts has proposed, for example, studies of coastal undercurrents and sub-surface counter-currents in various ocean regions including highly productive regions such as equatorial upwelling zones. These are expected to contribute to understanding oceanic processes and the rational use of living resources.<sup>9</sup> As an initial phase of these exercises the IDOE Office has established Environmental Forecasting Program, which is to provide the scientific base to improve environmental forecasting. Projects include "Climate: Long-range Investigation, Mapping and Prediction" (CLIMAP), the Midi-Ocean-Dynamic Experiment (MODE); and the North Pacific Experiment (NORPAX) a study of long-period, large-scale ocean and atmospheric interactions.<sup>10</sup>

### D. Marine Pollution (Pollution Exercises)

Because of its impact on man's welfare, the problem of marine pollution has attracted the attention of a number of international organizations, and committees including the UN Conference on the Human Environment, the Intergovernmental Maritime Consultative Organization (IMCO), and the Group of Experts on Scientific Aspects of Marine Pollution (GESAMP). Members of IOC and its GELTSPAP have also acknowledged the importance of a scientific basis for managing pollution at national, regional and international levels. The GELTSPAP has proposed that IOC sponsor the periodic "Review of the State of Health of the Ocean," coordinate existing research in marine pollution, and promote regular communication among scientists and scientific institutions by arranging the linking of existing laboratories and scientists concerned with marine pollution research and by sponsoring the establishment of International Centers for Pollution Information and Data Exchange.<sup>11</sup> The GELTSPAP also has suggested that regional investigations be promoted in the Arctic Ocean and in tropical and subtropical regions where mineral exploitation is occurring. Finally, GELTSPAP has proposed a detailed study to identify precisely the elements of a marine pollution monitoring system.<sup>12</sup>

An initiatory phase of the proposed marine pollution exercises is the IDOE Environmental Quality Program whose participants are conducting geochemical ocean sections study (GEOSECS) and a study of baseline data, transport and biological effects of pollutants in the ocean.<sup>13</sup>

The proposed exercises and programs described within the above four headings illustrate the broad tasks of LEPOR and the more specific tasks of IDOE, the initial phase of LEPOR. Also important for purposes of this study, they suggest several pertinent conclusions which bear on succeeding chapters. First, exercises in one scientific task area are likely to overlap another academic or applied scientific area. For example, marine pollution studies are related to surveys of living resources. The interdisciplinary nature of the scientific investigations is a hallmark of the Decade. In practical terms, this means that program

planning and implementation will require interdisciplinary planning and implementation by teams of scientists in laboratories, in meetings and aboard ships. Second, the vast scope of scientific effort suggested by the preceding discussion means that organized efforts by national governments, by scientific societies and other bodies and by international organizations are necessary to achieve the Decade's goals. No nation has enough ships, men, or equipment to conduct a complete or systematic survey of all aspects of the world oceans. To fulfill these tasks, cooperative efforts on many levels are required. Most especially such efforts are needed on the international level where endeavours of all national governments participating in the Decade must be channeled to pursue the ultimate goal, the enhanced and national use of the ocean and its resources.

## CHAPTER II: FUNCTIONS TO BE PERFORMED

To achieve the goals and tasks of IDOE, national governments will have to engage in vast international cooperative efforts. To facilitate these efforts, the UN General Assembly has assigned certain responsibilities for LEPOR and IDOE, to the Intergovernmental Oceanographic Commission, which since 1960 has developed and coordinated a number of scientific investigations of the ocean.

If the necessary tasks are to be carried out successfully by IOC, the Commission must be able to perform certain functions. International organizations have [In the Past] performed a variety of functions including the following: (1) planning, (2) research, (3) co-ordination, (4) norm-setting, (5) enforcement and dispute settlement, (6) administration, (7) political persuasion, and (8) conduct of operations.<sup>14</sup> Although the Commission may not need to perform all of these, each should be discussed to determine which are essential for achieving tasks of the Decade.

(1) Planning: This is a critical function to be performed by IOC in order that the scientific ocean programs proposed within the IDOE be efficiently and economically developed and evaluated. For example, IDOE planners must develop co-ordinated national plans (1) to assess unused fish stocks (2) to determine composition of deep-sea mineral deposits and establish, assess and evaluate program priorities in order to determine the content of future programs.

(2) Research: A second function carried out by international organizations either directly or indirectly will be necessary to achieve Decade goals. Pure and applied research in land-based laboratories as well as on research vessels will require technical personnel from various fields of marine sciences (marine biology, physical oceanography, marine geology and chemistry, and geophysics) and will require both interdisciplinary and international cooperation of scientists. Though it may be desirable at a later time, IOC will not need to conduct research itself. Instead IOC will facilitate the coordination of research plans and operations of national governments and scientific institutions.

(3) Co-ordination is a principal and characteristic function of international organizations and key function IOC is expected to perform. In implementing the tasks of the Decade, the Commission is expected to foster interdisciplinary, intergovernmental, and interagency co-ordination for gathering, storage, and dissemination of data from ocean programs, for planning, developing and evaluating national, international and interdisciplinary programs, and for the certification of research vessels desiring to investigate continental shelves of foreign states.

(4) Norm-setting: Although international organizations do not legislate in the usual sense of the term and are not empowered to make laws binding on their membership, they have, facilitated the establishment of norms that serve as rudimentary laws in that national authorities enforce them whether or not they are included in specific legislation. These norms regulate the behavior of states in their relationship with each other.

IOC may contribute to the setting of norms that will facilitate the achieving of goals and tasks of the Decade. In cooperation with other international organizations, the Commission will need to set norms for marine environmental monitoring and prediction, for the regulation of the use of ocean data acquisition systems, and for intercalibration of data.

(5) Enforcement and Dispute Settlement: Because states act upon dictates of perceived national interest, international organizations rather typically are used to facilitate agreement on norms rather than enforcing them. Responsibility for the latter usually falls to national governments. What norms they enforce, however, may depend on how their interests are shaped by interactions within international organizations. While IOC's role in enforcement of norms will be to persuade members to observe norms and codify them in national law, the IOC cannot realistically force or compel states to observe norms. Moreover, tasks and goals of IDOE may be achieved without the Commission's performing this function.

Related to the enforcement function is dispute settlement. If the Decade is to succeed, the IOC must make some provision for settling disputes among/between member states which may arise from conflicting interpretations of national and international laws regulating scientific investigation of the ocean. Although the number of disputes to be settled or norms to be enforced during the Decade may be minimal, some provision for performance of these functions must be made.

(6) Administration, another function characteristic of all institutionalized activity, must be exercised by IOC if IDOE is to be implemented efficiently. Although national governments will bear chief responsibility for implementing the tasks of the Decade, the IOC staff will need to administer day-to-day activities of the organization itself, e.g., relations with other IGOs, NGOs, and participating member states. Performance of this function is closely associated with other functions, especially coordination and planning national and international programs.

(7) Political Persuasion: A seventh function that international organizations perform is political persuasion. As the focal point in the UN system for planning and coordinating the Decade, the Commission will need to accommodate diverse views of member states and affiliated organizations in order to maintain their continued cooperation and to promote agreement of program priorities and requisite tasks. Moreover, the Commission will need to persuade eligible non-members to join, including maritime and landlocked states, and technically advanced and less advanced states.

(8) Conduct of Operations: Characteristically, international organizations have been coordinative rather than operational agencies. This is because the tasks and goals agreed upon by members are carried out by national rather than international authorities. While the global nature of ocean exploration and management may eventually call for IOC to become partly operational, i.e., to own and operate research vessels and ocean monitoring networks, this situation is not likely in the near future for several reasons. First, if the IOC were to take on the function of operating programs itself, national governments might perceive the international management as a threat to their interests. Second, if programs operated were not congruent with the interests of national governments, these

governments might well withdraw support. For these reasons the conduct of operations is not thought essential to IOC's capacity to implement Decade tasks.

In this Chapter, the functions characteristic of international organization have been described. These have been determined with reference both to the past and present performance of international organization. Although IOC need not perform all of these functions, to fulfil the tasks of the Decade it must perform functions of planning, coordination, administration, and political persuasion.

IOC's capacity to fulfil those functions deemed essential and to implement Decade tasks and goals is now to be considered. Accordingly, we turn first to a discussion of the Commission's legal competence.

### CHAPTER III: THE LEGAL COMPETENCE

The legal competence of an intergovernmental organization is one criterion of its capacity to perform its assigned tasks and necessary functions. To be legally competent, an intergovernmental organization must be legitimate; it must be recognized by the international community of member states and empowered by constitutional authority to perform certain functions necessary to the fulfillment of its assigned tasks and goals. Does the IOC possess the legal competence to perform the functions necessary to fulfilling the Decade's tasks?

#### A. Establishment of IOC

One factor that legitimates an international organization is the circumstances of its founding. International organizations are established by national governments in two ways: (1) by international conference called for the express purpose of creating a new organization and (2) by decision of an existing international body to establish a new organization.

The IOC of UNESCO was established by a combination of these means. An International Conference on Oceanographic Research (ICOR) held in Copenhagen in 1960, and attended by representatives from various nation-states interested in marine science, specifically recommended that an Intergovernmental Oceanographic Commission be established within UNESCO and more especially within its then Department of Natural Sciences. This recommendation was introduced at UNESCO's Eleventh General Conference in November, 1960, and upon the General Conference's unanimous consent, the IOC was "legally" established within UNESCO's Department of Natural Sciences.<sup>15</sup>

The Commission was endowed with an intergovernmental character and semi-autonomous status. Its intergovernmental character is conveyed by Article 2(1) of its original Statutes which accords membership to all member states of UNESCO, FAO, the UN and other UN agencies willing to participate in the international programs of the Commission. Article 4 of the Revised Statutes accords membership to any member state belonging to any one of the organizations of the United Nations system.<sup>16</sup>

IOC's semi-autonomy is illustrated by the fact that the Secretary heads the IOC Secretariat within the Natural Resources and Environmental Research Department of UNESCO's Natural Science Sector. He is responsible to the Director-General of UNESCO through the Assistant Director-General for Science. However, IOC also has a Chairman who is responsible not to UNESCO's Director-General, but to the member states of the Commission. Though the problem of IOC's semi-autonomy is discussed in detail in subsequent chapters,<sup>17</sup> suffice it to say that the rationale for creating this, a semi-autonomous body, within UNESCO was to

enable IOC to receive voluntary contributions from member states and enjoy "the same legal personality, privileges and immunities and facilities enjoyed by UNESCO."<sup>18</sup>

While the IOC Statutes do not specify that it may make jurisdictional claims on its member states, its attachment to its parent body, UNESCO, which has an "international personality," that is, certain privileges and immunities and the right to bring legal claims, endows it with this authority.

#### B. IOC's Constitutional Authority

A second factor that determines an international organization's legal competence is its constitutional authority to perform the functions necessary for implementing its assigned tasks. The UNESCO Constitution, the Commission's Statutes and its Rules of Procedure are examined to determine whether the IOC has the constitutional authority to perform essential functions, namely, planning, coordination, administration and political persuasion.

(1) Planning, Development and Evaluation of Programs. Both the original and revised Statutes legally enable IOC to exercise this function. They assign the planning function to the Assembly, Executive Council, Secretariat, subsidiary bodies, and an International Secretariat Committee on Scientific Programs relating to Oceanography (ICSPRO). For example, Article 2 of the new Statutes authorizes the Commission to define problems and solutions which require international cooperation in the field of scientific investigation, to develop and recommend programs and to review the results of such investigations.<sup>19</sup> The Executive Council is authorized to perform such functions including planning as may be assigned by the Commission.<sup>20</sup>

The Commission acting alone or jointly with other organizations is authorized by Statute to establish committees or other subsidiary bodies composed of representatives of interested member states and to determine the mechanism through which it may obtain scientific advice.<sup>21</sup>

The legal role of the Secretariat in planning IOC programs and in collaborating with other organizations is provided in Articles 2 and 3.<sup>22</sup> By this, the IOC is to support the objectives of international organizations with which it collaborates and may ask these organizations to take its requirements into account in planning and executing their own programs.<sup>23</sup> Clearly then, the IOC Statutes give a mandate to the various organs of the Commission to plan programs.

(2) Co-ordination. Although neither the IOC Statutes nor the UNESCO Constitution specifically mentions inter-disciplinary co-ordination, they do provide for inter-governmental and inter-agency co-ordination, thereby encompassing interdisciplinary co-ordination. In respect to intergovernmental co-ordination, Article 1(2) states that the purpose of the Commission is to be achieved through "the concerted action of its members."<sup>24</sup> The Commission is to develop, recommend and co-ordinate international programs for scientific investigation which call for concerted action of its members.<sup>25</sup>

As for inter-agency co-ordination, Article 1(3) requests the Commission to collaborate with all international organizations concerned with the Commission's work and especially those prepared to contribute to IOC's Secretariat and to sustain the work of the Commission; in return such organizations may use the Commission for advice and review in the area of marine science.<sup>26</sup> Staff members of FAO, WMO, IMCO and other UN organizations may be outposted to IOC's Secretariat through agreement with these organizations.<sup>27</sup> The Commission is also authorized to co-ordinate international programs for scientific investigation of the ocean<sup>28</sup> and to co-ordinate the nature, forms and methods of the

the exchange of oceanographic data through the world data center, specialized data centers and by other means.<sup>29</sup> Finally, the Commission may establish subsidiary bodies or appoint committees composed of IOC members, individual experts and/or representatives of other organizations.<sup>30</sup>

(4) Administration. Both the IOC Statutes and Rules of Procedure authorize IOC to perform this function. The Statutes establish and define IOC's administrative and constitutional semi-autonomy within UNESCO.<sup>31</sup> For example, UNESCO provides IOC with a Secretariat and makes available personnel and material as necessary to the Commission's work.<sup>32</sup> Moreover, the Secretary of the IOC is appointed by the Director-General of UNESCO.<sup>33</sup>

The Rules of Procedure define the Secretariat's function more precisely; it is to service all meetings, ensure day-to-day co-ordination of international programs, fix dates for and take necessary steps for convening meetings, and submit reports on its activities to UNESCO's General Conference.<sup>34</sup>

The Statutes establish the organization of Commission activities. For example, Article 7 specifies that the Assembly, the final authority in the Commission, meet every two years, that it may delegate responsibility for implementing its decisions to the Executive Council, and that it provide guidance to the Secretariat and create subsidiary bodies.<sup>35</sup> The financing of IOC programs and activities is provided for by Article 10. Programs sponsored by the Commission are to be carried out with the aid of participating member states in accord with obligations that each is willing to assume; expenditures of the Commission are to be financed from funds appropriated by the General Conference of UNESCO and other UN organizations. Voluntary contributions may be accepted and established as trust funds in accord with the financial regulations of UNESCO, administered by the Director-General and allocated by the commission for its purposes.<sup>36</sup>

(5) Political Persuasion. Neither the UNESCO Constitution nor the IOC Statutes specifically provides for IOC's performing this function. Nevertheless, a legal basis for what clearly is a political function is implicit in several Articles of the IOC Statutes. Article I(2) which states that IOC's purpose is "to promote scientific investigation with a view to learning about the nature and resources of the ocean through the concerted action of its members."<sup>37</sup> This suggests that IOC is expected to influence national policies. The IOC has "legal channels" to exercise political persuasion as membership in the IOC is open to any member state of any one of the organizations of the UN system.<sup>38</sup> Legally, then, any state belonging to a UN agency may apply for membership on the condition that it is willing to participate in IOC's programs. The Commission also determines the conditions under which inter-governmental and nongovernmental organizations engaged in ocean studies may participate.<sup>39</sup> Thus the relations of the IOC with its members and other interested organizations as defined in its Statutes provide the legal basis through which the IOC may exercise the function of political persuasion.

### Conclusions

In the preceding paragraphs, the legal bases of IOC's competence to perform four functions deemed essential to its implementation of Decade tasks have been considered. The basic documents, i.e., the UNESCO Constitution and the IOC Statutes, endow IOC with the legal competence to perform some functions and indirectly authorize it to perform others.

At this writing, the Statutes and Rules of Procedure do not specifically authorize the Commission to conduct operations, establish and enforce norms, or settle disputes. These functions have not been determined essential to IOC's

achieving the tasks of the Decade. Should Commission members determine at a later time that any or all of these need to be performed, they may amend the the Statutes according to the amendment procedure.<sup>40</sup>

Another aspect of IOC's legal competence is its appropriateness as a subsidiary body of UNESCO to investigate the global ocean. The crux of the matter is the location of the IOC in UNESCO, an organization whose concerns are educational and cultural as well as scientific, but not primarily scientific. More particularly, some believe that the Commission's programs would receive more attention under an international nongovernmental organization, such as the International Council of Scientific Unions (ICSU) or under a new specialized agency having autonomous status. Clearly certain problems arise with either alternative.<sup>41</sup> For the present, however, Commission members have sought an interim solution by establishing the Inter-Secretariat Committee for Scientific Programs to Oceanography (ICSPRO); this interagency body composed of the Executive heads of FAO, WMO, IMCO, UNESCO and the UN together with the IOC Secretary is intended to function as a central planning and coordinating body in marine affairs. Its effectiveness is considered in the following Chapters on the Commission's Structural, Resources and Political Capacity.

#### CHAPTER IV: STRUCTURAL CAPACITY

Legal competence is one test of IOC's capacity to implement the tasks and goals of IDOE. Structural capacity, a second test, refers here to formal organization, and the relationships that exist among its internal and external bodies, as well as the organization's ability to adapt to tasks assigned to it by creating new structures or expanding existing ones.

A discussion of the Commission's structural capacity will include a description of the international marine science community of which IOC is a part and of the Commission's formal structure including arrangements for national representation.

##### A. The International Marine Science Community

An informed view of the Commission's formal structural relations with its subsidiary bodies and other international organizations requires some discussion of the international marine science community with which it is linked. Institutions which comprise this community include both national and international, governmental and nongovernmental organizations of marine science.

Oceanography as a scientific discipline and professional occupation is not confined to the advanced industrial countries. Though one hundred and eight colleges and universities in the United States and Canada offer courses and degrees in oceanography and though major oceanographic institutes such as Scripps Institution of Oceanography and the Woods Hole Oceanographic Institute are located in the U.S., Oceanographic Institutes are to be found in Uruguay, Monaco, South Vietnam, Bulgaria, Finland, India, the Ivory Coast, West Germany, France, Denmark, and the UAR.<sup>42</sup> Several private oceanographic foundations which promote research and development of oceanography, include the International Oceanographic Foundation of the University of Miami in Florida, the Oceanographic Foundation in Hawaii, and the Cousteau's Oceanographic Museum at Monaco.



Apart from academic and philanthropic institutions, oceanography has its professional societies and committees. For example, there are the International nongovernmental Scientific Committee and Oceanic Research (SCOR), the Advisory Committee on Marine Resources Research (ACMRR), the International Association for the Physical Sciences of the Ocean (IAPSO), the Gulf and Caribbean Fisheries Institute (GCFI), the International Association of Limnology (IAL), the International Union of Biological Sciences (IUBS), the International Union of Geodesy and Geophysics (IUGG), the Pan-Indian Ocean Science Association, the Scientific Committee on Antarctic Research (SCAR), and the World Data Centers for Oceanography in Moscow and Washington. Each of these has counterparts on the national level that implement programs agreed upon in international meetings.<sup>43</sup>

Oceanographers also support a number of professional journals and meetings which further lines of communication among oceanographers. Two of a large number are to be noted. UNESCO publishes the quarterly, International Marine Science, recently renamed, International Marine Science Newsletter. SCOR publishes and circulates its proceedings as do other scientific societies. Among SCOR's publications is International Ocean Affairs, a special report prepared by a joint working group appointed by SCOR, ACMRR, and WMO (Advisory Committee); it describes some problems of oceanography and politics in the late 1960's.<sup>44</sup> Three International Oceanographic Congresses have been held and a fourth is scheduled. The first, sponsored by the American Association of the Advancement of Science, was held in New York in 1959, the second, co-sponsored by UNESCO and the USSR, was held in Moscow in 1966 and the third whose theme was "the Ocean World" took place in September, 1970 in Tokyo. A fourth Congress will take place in the United Kingdom in 1976. In addition to these congresses, a variety of regional, national and international meetings and symposia take place every year where oceanographers gather to discuss issues and problems and to present papers on aspects of their work.

Apart from the nongovernmental professional societies, numerous governmental -- national and international -- institutions for oceanography exist. For example, within the U.S. Government oceanography or marine science is the concern of some thirty bureaus and divisions some of which have been brought within the Department of Commerce in 1970.<sup>45</sup> Within the U.S. Department of State's Office of the Special Assistant to the Secretary of State is a division "Oceanography and International Organizations." In the U.S. Congress, Senate Foreign Relations Committee and the House Merchant Marine and Fisheries Committee both have sub-committees on Oceanography.<sup>46</sup>

International intergovernmental organizations with marine science interests number approximately twenty-four. Of these, those affiliated with the UN include: the Intergovernmental Oceanographic Commission (IOC), the Food and Agricultural Organization (FAO), the International Atomic Energy Agency (IAEA), the Intergovernmental Maritime Consultative Organization (IMCO), the Indo-Pacific Fisheries Commission (IPFC), and the World Meteorological Organization (WMO).<sup>47</sup> Other intergovernmental organizations related to oceanography are the Inter-American Tropical Tuna Commission (IATTC), the International Council for the Exploration of the Sea (ICES), the International Hydrographic Organization (IHO), the International Pacific Halibut Commission (IPHC), and the International Whaling Commission (IWC).<sup>48</sup>

These institutions -- nongovernmental and governmental, national and international and the various channels of communication between them represent the large framework within which oceanographers throughout the world have organized to advance their interest and knowledge of oceanography. The IOC, through its formal structure, is related to this framework as well as being a major focus of oceanographic effort within it.

## B. Formal Structure

The Commission's formal framework consists of the Assembly, Executive Council, the Secretariat, Working Groups, Scientific Advisory Groups, the Inter-Secretariat Committee on Scientific Programs Relating to Oceanography, a trust Fund and the Commission's relations with member governments and intergovernmental and nongovernmental organizations. The discussion of the formal framework is divided into two parts. The first part focuses on the internal structure; the second on the external structure.

(1) Internal Structure. The internal structure of the IOC comprises the organization of the Commission and its relationship to those bodies which it creates. The Commission Statutes authorize the establishment of IOC's policy-making bodies and prescribe their relations to each other and with affiliated organizations.

There is the main governing body, the IOC Assembly, which meets every two years for two weeks<sup>49</sup> and brings together representatives from the 74-member states and observers from some twenty-five affiliated IGOs and NGOs. The Assembly is the one structure through which the IOC maintains links with its members, organizations within the UN system and institutions within the marine science community. As the final authority, it adopts resolutions on program planning and implementation, establishes norms of conduct, creates guidelines for subsidiary bodies, and provides a forum for deliberation on marine matters for representatives of member states and affiliated organizations. Members of the Assembly elect a Chairman who presides over all plenary meetings of the session.

The Executive Council, which replaces a Bureau and Consultative Council is the restricted body of the Commission. Its members are elected by the Assembly and they represent, except for the Chairman, member states. The Executive Council meets between sessions of the Assembly.<sup>50</sup> Though the number of meetings held depends on the volume and urgency of business, the Council usually meets three times between sessions. The Council formulates policy directives for the Secretariat and subsidiary bodies; their policy recommendations are usually submitted to the Assembly for approval,<sup>51</sup> but they sometimes issue these without Assembly approval.

Subsidiary bodies may be created according to IOC Statute to coordinate or execute specific projects.<sup>52</sup> In practice, both the Executive Council and the Assembly establish subsidiary organs, determine their composition and terms of reference, and modify the terms of reference. Since its founding in 1960, the Commission has established more than twenty subsidiary bodies.<sup>53</sup> These groups are of two kinds, groups of experts and intergovernmental working groups. The former are composed of scientists who are not bound by instructions from their national governments, whereas the latter are composed of representatives of member states. Members of these groups are responsible for the planning and coordination of IOC programs, e.g., cooperative expeditions such as the International Indian Ocean Expedition (IIOE), the International Cooperative Investigation of the Tropical Atlantic (IOITA), and the Cooperative Studies of the Kuroshio (CSK), Caribbean (CICAR), and Mediterranean (CIM).

Delegates of national governments who attend meetings of the Assembly, the Executive Council, and its international working groups constitute the Commission's representational membership. Though the IOC Statutes do not prescribe that particular government departments send representatives to IOC meetings, a perusal of the lists of participants indicates that a diversity of governmental departments has been represented at Commission meetings. For example, at the Seventh Session in 1971, representatives from Departments of State, Education, Defense, Commerce or their equivalent, from the permanent missions to UNESCO, and from universities and oceanographic institutes were in attendance.<sup>54</sup> This phenomenon results from the fact that until recently most member governments have not had ocean affairs or science departments of any real significance. Despite this diversity of sponsoring departments, however, the dominant occupational group in Commission meetings from 1960 to 1969 has been marine scientists. More recently the percentage of representatives from foreign offices has increased, although some have said this indicates that ocean affairs are too important to be left to the scientists. It also suggests an increasing involvement of IOC in the preparations for the Law of the Sea Conference.<sup>55</sup>

### C. External Structure

The external structure of the IOC consists of the formal linkages of the Commission with organizations with which it is related. Relations with four major organizations are to be considered.

(1) Relations with UNESCO. The Commission's links with UNESCO are financial and administrative. When IOC was established in 1960 within UNESCO's then Department of Natural Sciences, an Office of Oceanography was concurrently established within the Department to provide IOC with a Secretariat.<sup>56</sup> Through its regular program and budget, the UNESCO General Conference allocates funds for staff salaries, conferences, and some IOC - sponsored programs.

By Statute, the IOC Secretariat is daily responsible for the implementation of resolutions and recommendations approved by the Commission.<sup>57</sup> This requires its staff members to communicate with member states and affiliated organizations and participate in meetings of IOC working groups and relevant UN committees and councils such as the UN Seabed Committee and the Economic and Social Council. The staff is also authorized to schedule all IOC meetings, provide conference services, prepare and disseminate reports, and assist in administering Commission sponsored activities, e.g., cooperative programs and training and education.<sup>58</sup>

With the assignment of the Decade and LEPOR to IOC, the Secretariat has faced financial as well as administrative problems. In anticipation of the need for increased financial support during the Decade, IOC members authorized the Director-General in 1969 to establish a Trust Fund to be administered by him on behalf of IOC and to which member states would make voluntary contributions to augment IOC programs.<sup>59</sup> The Trust Fund is further considered in Chapter V, Resource Capacity.

A major administrative problem has developed from the IOC Secretariat's "time sharing" with UNESCO's Office of Oceanography. Priorities of each have conflicted with the increased workload brought about by the assignment of the Decade tasks. A related problem is the unclear lines of authority between the UNESCO Director-General and the IOC Secretary and the IOC Chairman and the IOC Secretary.<sup>60</sup> To remedy this situation which was of concern even prior to the assignment of LEPOR, the UNESCO Director-General on 13 October 1972 administratively separated the IOC Secretariat from the Office of Oceanography.

The former will continue to service meetings of the Commission and its subsidiary bodies; the latter will devote itself wholly to UNESCO Marine Affairs and two different persons have been appointed to fill the respective posts of IOC Secretary and Director of the Office, now Division of Oceanography.<sup>61</sup>

IOC members have authorized a study of the Commission's relocation to Geneva. The relocation is also supported by the IOC Chairman who believes that the Commission's physical relocation will enable IOC's Secretariat to be materially broadened, to assist more directly in matters of the UN Seabed Committee, and to improve IOC's working relations with the WMO located in Geneva and with which IOC sponsors two joint programs, GARP and IGOSS.<sup>62</sup>

(2) Relations with International Intergovernmental Organizations (IGOs).

IOC has long been affiliated with both UN and non-UN organizations having an interest in marine affairs. IOC is related to the Food and Agriculture Organization (FAO), the Intergovernmental Maritime Consultative Organization (IMCO), the World Meteorological Organization (WMO) and the Economic and Social Council (ECOSOC) of United Nations. Relations with these organizations remained informal, until 1969, when Article 1(3) of the revised statutes authorized formal collaboration with all international organizations that contributed to the work of IOC; in return, they are to use the Commission for advice and review in marine sciences.<sup>63</sup> Subsequently the Inter-Secretariat Committee on Scientific Programs Relating on Oceanography (ICSPRO), was established and included the Executive heads or representatives of UN, UNESCO, FAO, WMO and IMCO together with the IOC Secretary.

Apart from its relations with the UN organizations, IOC also cooperates with a number of non-UN IGOs. Prominent among these are the International Council for the Exploration of the Seas (ICES), the International Commission for the Scientific Exploration of the Mediterranean (ICSEM), the International Commission for the Northwest Atlantic Fisheries (ICNAF), and the World Data Centers for Oceanography of the ICSU.<sup>64</sup> Relations between these and the IOC facilitate the exchange of information on activities of mutual interest in marine affairs and assistance in planning and coordinating programs. Moreover representatives of these IGOs attend IOC meetings where they may make oral and written statements without the right to vote.<sup>65</sup>

(3) Relations with Non-Governmental Organizations (NGOs). Among the important NGOs with which IOC is linked are several scientific committees and associations of the International Council of Scientific Unions (ICSU). These include the Scientific Committee on Oceanic Research (SCOR), the Scientific Committee on Antarctic Research (SCAR), the International Union of Geodesy and Geophysics (IUGG), the International Association for the Physical Sciences of the Ocean (IAPSO), the International Union of Geological Services (IUGS), and the Engineering Committee on Oceanic Research (ECOR).<sup>66</sup> Both SCOR and ECOR are official advisory bodies to the Commission.

Representatives of these organizations attend and participate in Commission meetings and provide a principal source of scientific expertise for planning the substance of IOC programs. For example, SCOR in concert with other NGOs and IGOs has been responsible for defining the scope and content of IOC scientific programs.<sup>67</sup> In cooperation with experts of the Advisory Committee on Marine Resource Research (ACMRK) of FAO, the Advisory Group on Ocean Research of WMO, SCOR scientists defined the initial outline of the scope of the Comprehensive Program for the Long-term and Expanded Program of Oceanic Exploration and Research.<sup>68</sup> SCOR has contributed to the further development of the scope and content of the Comprehensive Outline and has played an active role in assisting the Group of Experts on Long-term Science Policy and Planning in this regard.<sup>69</sup>

From this discussion of the IOC's formal structure and the relationships with its subsidiary bodies and affiliated organizations, the Commission may be said to have the framework in which tasks of the Decade can be allocated for implementation. In addition to its long-established bodies, the Assembly, the Council, various subsidiary groups, the Secretariat, and relations with the international marine science community, Commission members have made structural innovations deemed necessary to implementing the Decade. These have included the expansion of the former Bureau and Consultative Council into the Executive Council, the establishment of a Trust Fund and Inter-Secretariat Committee on Scientific Programs Relating to Oceanography (ICSPRO) and a group of Experts on Scientific Policy and Planning to develop the scope and content of the Expanded Program of which IDOE is an important element. The consideration and dispatch with which IOC members have established these suggests their ability to adapt the formal structure to manage new tasks assigned to it.

## CHAPTER V: RESOURCE CAPACITY

A third test of IOC's capacity to implement the tasks of IDOE is resource capacity. The Commission must have sufficient resources to implement its assigned tasks and must manage these efficiently. The IOC's ability to mobilize and manage resources -- personnel and financial -- for the Decade constitutes the test of its resource capacity. It is also necessary to discuss the international cooperative expeditions IOC has sponsored as a further illustration of the way in which personnel and financial resources are managed.

### A. Financial Resources

The Commission relies on four major sources for its financing: (1) UNESCO's Budget (2) ICSPRO (3) the Trust Fund and (4) Member State Contributions. The adequacy of these will determine in large measure the Commission's capacity to implement the tasks of the Decade.

#### 1. UNESCO Regular Program and Budget

UNESCO's General Conference prepares biennially the work program and budget and authorizes the allocation of funds to UNESCO's various departments, including IOC. Despite the fact that IOC competes, as do all UNESCO programs, for funds from the administrative budget, the General Conference has, nevertheless, allocated funds to IOC in increasing amounts since IOC's establishment as the table on page 2 illustrates.

Included in the biennial allocation to the Commission are staff salaries, and services performed by the Secretariat, e.g., international cooperative expeditions, study of the feasibility of international research and training vessel, and freedom of scientific research in the

UNESCO Regular Budget<sup>70</sup>

<u>Year</u>	<u>Total Marine Science</u>	<u>IOC</u>
1959- (pre-IOC)	\$ 31,590	-
1960	27,250	-
1961	183,266	\$ 21,015
1962	247,798	21,048
1963-64	485,369	159,000
1965-66	451,458	165,000
1967-68	558,000	150,000
1969-70	681,960	227,480
1971-72	843,000	352,000

high seas.<sup>71</sup> The remainder of the marine science allocation is designated for UNESCO's marine science program. This includes promotion and exchange of methodology, information and assistance to national laboratories and to Member States, fellowships in marine science, and training and education in marine science.<sup>72</sup>

Because of the demonstrated interest in IOC as the focal point for coordinating the expanded program, and the pressing need for increased resources to support the growing scope of oceanographic activities in the U.N., the Director-General proposed a growth rate of 10% for each of the biennial periods 1973-74 and 1975-76.<sup>73</sup>

Although neither IOC Member States nor the IOC Secretariat has formal control over the UNESCO budget, UNESCO funding of IOC activities has worked as well as might be expected. Because of the present Director-General's interest in IOC, it is very likely that IOC's requests will be met at least as long as Mr. Maheu remains Director-General.

2. Inter-Secretariat Committee for Scientific Programs Relating to Oceanography (ICSPRO)

ICSPRO, established in 1969 at the Sixth Session of IOC, and composed of the Executive heads of UN, UNESCO, FAO, WMO, IMCO together with the Chairman of the IOC, was expected to make significant contributions to IOC's Secretariat in support of the anticipated increase in oceanographic activity.<sup>74</sup> Although among the ICSPRO organizations, FAO and WMO have made significant contributions, these have not reached the level of support or staff envisioned in Resolution VI-9, which called for \$100,000 in supporting services.<sup>75</sup> As the prospects for the increase of ICSPRO contributions in the future does not appear hopeful according to one IOC Secretary, the IOC Secretariat has sought increased UNESCO support for its programs.<sup>76</sup>

### 3. Trust Fund

The Sixth IOC Session in September, 1969, endorsed the Trust Fund and invited the Director-General of UNESCO to establish it by November, 1969.<sup>77</sup> This fund is to receive voluntary contributions of member states and interested organizations to augment funding of IOC activities<sup>78</sup> by UNESCO and contributed by member states.

Although members have expressed interest in contributing to the Fund only two had contributed to the Fund by September 1971. Greece donated \$100 and Argentina, \$5000. The IOC Secretary has refrained from direct approaches to "other potential sources" in the absence of indications of further support from members and pending the IOC's decisions with respect to the uses to which monies will be put.<sup>79</sup>

### 4. Member State Contributions

Member states represent the most important source of IOC funding. Though members are not legally obliged to support IOC programs, they have voluntarily assumed obligations when participating in international programs sponsored by the Commission.<sup>80</sup> To illustrate: Admiral Langeraar, IOC Chairman, reports that despite the relatively small budgetary allocation received by IOC, he yearly "coordinates" upwards of \$100,000,000 in contributions of member states to IOC programs.<sup>81</sup> Closer examination reveals that the amount of member state contributions is related to a state's ocean capability, that is, the critical mass of trained scientists, R&D in marine science, and ships and equipment.<sup>82</sup> Approximately ten of IOC's seventy-four member states have an oceanographic capability. Of these five states -- the U.S., U.S.S.R., U.K., Canada and Japan -- represent 75-90% of the world's ocean capability and are the principal contributors to IOC programs. Another group of states: Norway, Sweden, Denmark, West Germany, France, Spain, Portugal, Italy, and Poland have some ocean capability and have contributed to IOC programs.<sup>83</sup> Several authoritative sources believe that these ten member states, because of their respective national ocean capability and willingness to participate in IOC sponsored programs, can carry out the tasks of the Decade without the assistance of other members. This view raises, however, an important dimension of IOC's political process, namely, the need for broad-based international cooperation in the planning and implementation of Decade activities. This is to be considered in the next chapter, Political Capacity.

Assuming that member states and the UNESCO General Conference will continue to support IOC programs as they have in the past, the Commission's financial resources appear adequate to Decade tasks. Continued support from these sources will require that the political process continue to promote agreement among members with respect to program priorities.

#### B. Mobilizing and Managing Personnel for IDOE.

In its broadest sense, "personnel" includes the existing staffs of the Commission, its affiliated organizations, and member governments, as well as the potential pool of marine affairs specialists that will be available through the 1970-1980 period. Although the principal concern here will be the IOC Secretariat Staff and its ability to mobilize and manage personnel for the Decade, a word about the pool of available marine science affairs specialists is germane for it is from this pool that national governments and international organizations will recruit staff -- administrative and scientific -- in coming years.

## 1. Availability of Marine Science Affairs Specialists

As noted previously, more than 108 American colleges and universities in the United States offer courses and programs in oceanography. Institutions or learning in a handful of other countries provide training and education in marine affairs,<sup>84</sup> However, there are altogether some 3,000 Oceanographers in the world, most of these are specialists in marine biology, geology, or physical oceanography and most come from technologically advanced nations.<sup>85</sup> In this regard, the Commission's Working Group on Training and Education has for several years sought ways of providing less developed countries with technical education to enhance their use of mineral and living ocean resources; their efforts have resulted in little more than an exchange of views on the problem, whose scope ranges well beyond education in marine science to the problem of the development of science policy and institutions in the developing countries.<sup>86</sup> In this respect the more appropriate structure for planning and implementing training/education is the UNESCO Division of Marine Science in cooperation with UNDP and the requesting country has actively im-<sup>87</sup>plemented various marine developing projects including training and education.

These efforts notwithstanding the imbalance in sources and numbers of available personnel for Decade projects suggests that it will be the marine scientists in developed states that will man Decade programs. However, it is hoped that scientists from developed states will find ways of encouraging scientific and technical personnel in developing states to participate in Decade projects.

## 2. Mobilizing and Managing IOC Secretariat Staff

Mobilizing personnel for the IOC Secretariat Staff is a function of the availability of marine scientists, discussed above; it is also a political problem related to the capacity of IOC to persuade national governments and affiliated agencies to outpost staff on a temporary or permanent basis.

As discussed in preceding paragraphs, the source of IOC Secretariat Staff is the advanced technological states. Indeed an examination of training and nationality of staff members, 1960-1973 reveals that most if not all have scientific and technical backgrounds and hail from developed states. For example, the position of IOC Secretary has been held by scientists from the U.S., the U.S.S.R., and the U.K. IOC's First Secretary was Dr. Warren S. Wooster of Scripps Institution of Oceanography. Dr. N.K. Federov, a Russian, succeeded Dr. Wooster. In 1970, Dr. S.J. Holt, an Englishman and marine Biologist succeeded Dr. Federov. Cmdr. D.P.D. Scott, an Englishman, has recently succeeded Dr. Holt. Other staff positions have been held by scientists from the U.S., U.S.S.R., Argentina, Panama, West Germany, Norway, New Zealand, Monaco and Japan. No staff members have been recruited from Africa or Asia (except for Japan).<sup>88</sup> The staff reflects geographic distribution within advanced industrial states, but not of all maritime states.

In recruiting available personnel for the Decade from national governments and affiliated organizations, IOC has encountered some difficulty. Though it has received increased budgetary allocation from UNESCO, this may not enable necessary staff expansion for the Decade. IOC's staff remains small. The ICSPRO, established in 1969 to enable Secretariat expansion, has provided only two additional staff members, one from FAO and one from WMO. The prospects that affiliated agencies will increase staff support are not hopeful.<sup>89</sup>



Related to this difficulty is the problem of the rate of staff turnover. Many scientifically and technically competent persons do not wish to accept administrative assignments except for a short-term period, and there has often been delay in filling vacant posts.<sup>90</sup>

In assessing IOC's managing of personnel, two criteria might be applied. First, it has been said that formal hierarchy and specialization of task within the hierarchy promotes efficiency among group members in fulfilling assigned tasks and goals.<sup>91</sup> The following table suggests that such a hierarchy according to position and task specialization in the IOC Secretariat exists. As was noted in Chapter III, the administrative

<u>IOC SECRETARIAT</u> <sup>92</sup>	<u>IOC</u>
Secretary (D-1)	100%
Deputy Secretary (P-5)	100%
Assistant Secretary (P-5) (Cooperative Investigations)	100%
Assistant Secretary (P-5) (IGOSS and DATA Exchange)	100%
Assistant Secretary (P-5) (LEPOR)	100%
Program Officer (P-4) (IGOSS and DATA Exchange)	100%
Program Officer (P-4) (Education and Training)	100%
Program Assistant (P-2) (Publication and Documentation)	50%
<u>OUTPOSTED STAFF</u>	<u>IOC</u>
FAO - (P-5) (LEPOR, etc.)	100%
WMO - (P-3) (Cooperative Investigations; IGOSS, etc.)	100%
IMCO - (P-3) (ODAS, Pollution)	50%

efficiency problem faced by IOC has been remedied by the separation in October, 1972 of the UNESCO Office of Oceanography and the IOC Secretariat.<sup>93</sup> This separation should enable staff to devote full-time effort to carrying out priorities assigned under the Decade.

Administrative efficiency of staff is said to be promoted by ensuring the recruitment of technically competent personnel.<sup>94</sup> Most, if not all, of the professional staff have scientific or technical backgrounds. Though the IOC meets these tests of administrative efficiency, it must again be noted that the Commission has had difficulty in recruiting staff from member governments and related organizations. Moreover, even though most of the staff have scientific and technical backgrounds, the preponderant number are from the developed countries. The criterion of geographical distribution is sacrificed to achieve technical competence.

We have come full circle and returned to the problem of training and education in marine science, a problem that continues to besit commission members. On the basis of existing documents and the above discussion, the Commission may be said to have only minimal capability to mobilize and manage personnel for the Decade.

### C. Coordination of International Ocean Expeditions

Despite the difficulties encountered in mobilizing and managing financial and personnel resources, the Commission has coordinated more than 200 scientific cruises as well as several major international cooperative expeditions. Its achievements in this area suggest that it has mobilized and managed its limited resources efficiently. Three cooperative Expeditions are singled out for consideration here to illustrate IOC's management of resources.

#### 1. The International Indian Ocean Expedition

In adopting the IIOE as an official program at its first session, Commission members set in motion the study of fisheries and meteorological aspects of the Indian Ocean. With the help of SCOR (Scientific Committee of Oceanic Research) / Standard methods of collecting data and data exchange and dissemination were also fostered.<sup>95</sup>

Some twenty-three countries participated in IIOE. The "ship-operating" participants included Australia, France, West Germany, India, Indonesia, Japan, Pakistan, Portugal, Republic of South Africa, Thailand, U.S.S.R., U.K. and U.S.A. Other participating states included Burma, Ceylon, China, Ethiopia, Israel, Italy, Malagasy Republic, the then Federation of Malaya, Mauritios and the Sudan.<sup>96</sup>

The magnitude of the IIOE in terms of personnel, ships, money and participating states made the expedition the largest oceanographic endeavour undertaken to 1965. In coordinating efforts the Commission demonstrated its ability to manage limited resources efficiently. The "Collected Reprints" of IIOE scientific papers have been published and disseminated and the preparation and publication of IIOE Atlases has been supported with assistance from UNESCO.<sup>97</sup>

#### 2. International Cooperative Investigation of the Tropical Atlantic (ICITA)

The ICITA as approved by IOC's Second session consisted of a mid-winter (Equialant I) and mid-summer (Equialant II) multiple vessel survey of the Tropical Atlantic, inclusive of the coasts of South America and Africa. Fourteen ships of seven states (Argentina, Brazil, the Congo (Brazzaville), Nigeria, Ivory Coast, U.S., and U.S.S.R.) participated in Equialant I (February - April, 1963). Eleven vessels from eight nations (Argentina, Brazil, Nigeria, Spain, U.S.A. and U.S.S.R.) participated in Equialant II (August, September, 1963). In addition, scientists from the Federal Republic of Germany, the United Kingdom, Venezuela and from various federal, university and private organizations in the U.S.A. participated aboard several of the vessels.<sup>98</sup> During Equialant III (February-March, 1964) eight vessels from six nations (Congo (Brazzaville), Ghana, Ivory Coast, Spain, U.S.A., U.S.S.R.) made direct current measurements and oceanographic and marine biological observations in the area between latitudes 10°N and 10°S, from 30° West to the African coast.<sup>90</sup> ICITA was essentially completed by the Commission's Fifth Session in 1967 when members agreed to terminate the ICITA as soon as ICITA atlases were published. Volume I of the ICITA Atlas is to be published by UNESCO in early 1973.<sup>100</sup>

#### 3. Cooperative Study of the Kuroshio (CSK)

The CSK has been the longest cooperative expedition coordinated by IOC members. The CSK program established three priorities: synoptic and multi-disciplinary surveys of the whole Kuroshio twice a year; studies of the frequency and extent of the Kuroshio's short-term fluctuations; and studies of its

seasonal variation.<sup>101</sup>

During the first phase of CSK, forty research vessels from seven countries carried out two synoptic surveys, summer and winter, which were supplemented by more frequent observations in key areas. Twenty-seven of the participating ships came from Japan, three each from the U.S.A., U.S.S.R., and South Korea, two from the Philippines, and one each from the Republic of China and Hong Kong. UNESCO provided ten "shipboard" fellowships to enable scientists from IOC countries to participate in the expedition. FAO provided sea-going group fellowships for fisheries research for the 1967-68 period.<sup>102</sup>

The CSK is one of IOC's on-going expeditions. The Fifth IOC Session endorsed a second phase of CSK that would focus on the South China Sea and adjacent regions and which would include bathymetric surveys in cooperation with the IHO. Two symposia on CSK have been held under the sponsorship of IOC with CSK participants and proceedings are to be published with financial assistance from UNESCO.<sup>103</sup> A third symposium is being planned for 1973.

#### 4. International Decade of Ocean Exploration (IDOE)

IOC's experience in coordinating IIOE, ICITA and CSK has provided the basis for planning and implementing the tasks of IDOE and LEPOR. After the Comprehensive Outline of the Scope of the Expanded Program had been adopted in 1969 at the Sixth Session, a Group of Experts on Long-Term Scientific Policy and Planning (GELTSPAP) established by the session, defined and elaborated four major substantive areas for LEPOR: Geology and Geophysics, Ocean Air Interaction, Living Resources and Marine Pollution.<sup>104</sup> A resolution acknowledging IDOE as the accelerated phase of LEPOR adopted at the Seventh Session in 1971 called upon member governments to submit IDOE program priorities to the IOC Secretariat.<sup>105</sup>

Meanwhile in 1970 the U.S. government, the initiator of the concept of the Decade, established an Office of IDOE within its National Science Foundation. In conjunction with IOC/GELTSPAP, IDOE staff developed several programs corresponding to the four program areas and cooperative exercises recommended by GELTSPAP, (Environmental Quality, Seabed Assessment, Environmental Prediction and Marine Pollution. Projects developed by scientists within each have been funded and are underway.<sup>106</sup> Scientists from institutions in the U.S. and some other countries are participating either through commitment of research ships, laboratories and equipment or as shipboard trainees. Thus far the major financial contributor to IDOE has been the U.S. government. Over a three year period it has provided approximately \$50 million for IDOE programs.<sup>107</sup>

IDOE has been planned and adopted as the official phase of LEPOR by IOC member states much the way that other IOC - sponsored programs have been planned. Yet a number of states perceive it as principally a U.S. effort and have been reluctant to participate in IDOE programs even though they maintain an interest in other Commission activities. U.S. initiative and follow-through in terms of committing resources to IDOE projects reveal the extent to which the resource capacity of an international organization, such as IOC, to carry out a set of programs is dependent upon the resources of a few, technologically-advanced member states. As long as major advanced states continue to support IOC-sponsored IDOE programs, it is likely that these will be implemented and that the store of knowledge developed will enhance the use of the ocean and its resources -- personnel and financial -- to carry out programs that it adopts.

On the basis of its coordinating IIOE, ICITA and CSK, it has demonstrated further an ability to manage limited resources effectively. Its continued ability in this area will depend not only on mutual interest of member states in advancing knowledge of the ocean but on members ability to influence each other as well as affiliated organizations to support this goal.

## CHAPTER VI: POLITICAL CAPACITY

Political capacity, the final, although perhaps most important, criterion of an international organizations's capacity to perform functions and to fulfil tasks, is the organization's ability to influence the behavior of member governments and affiliated organizations.

The IOC, since its founding in 1960, appears on the basis of available documentary evidence, to have promoted its members' interest in scientific ocean investigation. Until the Sixth Session decisions were made by consensus. While Commission meetings have not been conflict-free, in general, issues between 1960-1969 have not been so controversial as to polarize states. However, with the submission of the ocean item to the UN General Assembly in 1967, a shift occurred in substantive content of IOC agenda items from a predominantly scientific-technical content to a scientific-legal-political content. This was also paralleled by a similar shift in the composition of professionals represented in meetings.<sup>108</sup> The controversiality of IOC debates increased and the first vote in the Commission's history was taken on proposed Article 2(i) of the Revised Statutes during the Sixth Session in 1969. The paragraph at issue provided that one of IOC's functions would be "to promote the freedom of scientific investigation of the ocean for the benefit of mankind."<sup>109</sup> Representatives of Latin American States, sensitive to the implications of this paragraph, called for the vote. Although supported by Romania and Spain, they were outvoted by twenty-eight other members, including the U.S. and U.S.S.R. Five other states abstained.<sup>110</sup> The IOC Chairman remarked that "The Commission had come of age."<sup>111</sup>

While the techniques of concensus formation -- session committees, informal drafting groups, tea breaks, and appropriate interventions in the debate by the IOC Secretary and Chairman -- will be used in the future to promote agreement among members, concensus is likely to be more difficult to achieve.<sup>112</sup> The substantive content of agenda items has shifted, the number of items which members must discuss has increased markedly with the assignment by the UN General Assembly of LEPOR and IDOE, and the Commission has become more formally involved in UN activities, most especially the Conference on the Human Environment, the UN Seabed Committee, and the ACC Sub-Committee on Marine Science.<sup>113</sup>

Nevertheless, to determine the Commission's political capacity to influence the behavior of member states and affiliated organizations, we must examine its membership as well as its degree of authority in promoting agreement among members and the extent to which resolutions it has adopted have been implemented.

### 1. Membership

One theme of this study has been that IOC programs are implemented through the concerted actions of its members. They meet to plan and coordinate programs and are the principal source of financial and personnel resources.

The political capacity of IOC's membership to influence other members and affiliated agencies can be estimated by applying the test of "essentiality."<sup>114</sup> Do the Commission's members include all of those states necessary in implementing the tasks of IDOE? Presumably this includes coastal and landlocked states as well as developing and developed states.

IOC's membership has expanded from forty member states in 1960 to seventy-four as of 1973.<sup>115</sup> Included are coastal, landlocked, developing and developed states, those with a national ocean capability as well as those with a "marine resource capability," that is, port facilities, territorial seas and continental shelves. The membership of the latter are deemed essential to achieve Decade tasks because of the need for the use of port facilities during the conduct of investigations and for permission to explore continental shelves and margins.

However, not all states with presumed interests in marine affairs belong to the Commission and several factors seem to militate against their joining. First, many eligible non-members are more interested in fisheries than ocean exploration, for the fishing industry provides a "stable" socio-economic base for their populations. If the Commission is able to promote fisheries and related bio-science studies during the Decade, they may enlist the support of eligible non-members.

Second, eligible non-members have not joined for various political reasons. Known to have favored the establishment of an autonomous World Oceanographic Organization (WOO) on Malta instead of the expansion of a semi-autonomous IOC, Malta did not join IOC until 1971. Other eligible non-members have also viewed IOC as a rich man's club, dominated by the world's nuclear, industrial, and oceanographic giants. While it is not known how widely this notion is shared, the IOC Chairman has successfully persuaded several eligible states of the opportunities the Commission offers and these states have subsequently joined.<sup>116</sup>

In sum, while this lack of representativeness of the international marine science community may not prevent the Decade from being carried out, it does limit the political capacity of IOC members to plan programs and to promote the establishment and enforcement of norms on a broad scale. Moreover, it also limits the Commission's capacity as a forum for the expression of interest and debate on international marine affairs.

## 2. Degree of Authority

The Commission is an intergovernmental semi-autonomous organization located within UNESCO's Department of Environmental Science and Natural Resources Research. The implications of semi-autonomy for IOC's political capacity to influence its relations with affiliated organizations and to implement resolutions are to be considered here.

### a. Promoting Relations with Affiliated Organizations

To develop and promote a (sound) overall program in scientific ocean investigation, the IOC needs to coordinate efficiently programs of other organizations with an interest in marine science with its own programs. The Commission's structural relations with its members and affiliates have been discussed in Chapter IV and its ability to coordinate programs among these affiliates has been examined in Chapter V. Does the Commission have the political capacity to obtain support from these organizations and to influence them to use it for "advice and review" in marine science affairs during the Decade?

The experience of the Commission suggests that it has influenced other organizations favorably to its goals. Since 1960, the number of affiliates of IOC has increased from fifteen to twenty-four.<sup>117</sup> In one instance, the IOC, through mutual agreement with the Director-General of FAO, adopted the non-governmental ACMRR as one of its scientific advisory bodies and since then representatives of ACMRR have participated regularly in IOC meetings and

pro-offered advice in fisheries oceanography.<sup>118</sup> Frequently, the Commission has called upon its affiliates for advice in planning or in assisting in the implementation of cooperative expeditions and these requests have been honored.<sup>119</sup>

With the assignment of the Decade tasks to IOC in 1968 the Commission formalized its relations with its affiliates through the Inter-Secretariat Committee on Scientific Programs Relating to Oceanography (ICSPRO). The "charter" members of ICSPRO, FAO, WMO, IMCO, the UN, and UNESCO pledged sizeable funds to be used for conference services and the outposting of personnel to the IOC Secretariat to assist with the Decade.<sup>120</sup> Moreover the UN General Assembly and the 15th session of the FAO Conference commended IOC on its establishment.<sup>121</sup> Although ICSPRO is recognized as a potential central body to plan and coordinate marine science programs and services within the UN system, it has not been able to perform fully the functions expected of it or to cope with newly emerging needs. FAO and WMO have not contributed monies and/or personnel to the IOC Secretariat to the extent expected. Because IOC remains administratively, legally and physically within UNESCO, affiliates believe that the staffing and funding of the IOC's Secretariat remains the principal responsibility of UNESCO.<sup>122</sup> No ICSPRO members, except UNESCO, have called upon the IOC for advice and review in marine science and there have been few signs of the Commission being used as an instrument for discharging marine science programs of affiliated ICSPRO agencies.

Although the establishment of ICSPRO indicates IOC's ability to influence other organizations to affiliate themselves with IOC, the Commission has achieved quite limited success in enjoining ICSPRO members to commit resources to the IOC Secretariat and to use it for advice and review in marine science.

b) Implementation of Resolutions do not legislate in the same sense of national assemblies, representatives at Commission meetings adopt resolutions and recommendations which create "obligations" for members. The number of resolutions and recommendations adopted by Commission members and the scope of their subject matter suggests that the policy process has affected agreement among members. IOC in seven sessions has adopted 147 resolutions, or approximately 21 resolutions per session. The former Bureau and Consultative Council, now the Executive Council, has adopted on the average twenty-five recommendations per meeting.<sup>123</sup> Moreover, members have reached agreement in those areas pertinent to achieving scientific ocean investigation as indicated in Table V. Categories of resolutions in rank order are as follows: (1) Data management, (2) Cooperative expeditions, (3) Oceanographic studies, (4) Administrative matters, and (5) Mutual assistance. Legal matters, oceanographic conferences, and advisory bodies -- the three other categories of resolutions -- have been relatively less important to Commission members.

Documentary evidence suggests that most, though not all, of IOC's resolutions have been implemented on both the national and international level, as the following discussion illustrates.

#### 1. Data Management

Data management includes standardization and intercalibration of data, data collection (ocean data acquisition systems), data exchange, storage, retrieval and dissemination of data (Oceanography Section of World Data Centers). Each of these sub-categories represents a basic form of international cooperation and a major means of advancing oceanography.

The IOC has attempted to promote acceptance among its members of each of these areas. Since its establishment, the Commission with the assistance and advice of its scientific advisory body, SCOR, has urged members to adopt standard methods and techniques in implementing programs.<sup>124</sup> Resolutions endorsing official Commission programs such as IIOE, ICITA, and CSK have often called upon members to adopt standard methods and techniques in implementing a program. The Commission's effort in data standardization and intercalibration has fostered the establishment of National Data Centers in Washington and Moscow. The latter is regarded as the most successful of all World Data Center Sections.<sup>125</sup>

Full and expeditious exchange of information is another basic form of international cooperation which the Commission has prompted. Data of declared National programs is exchanged through World Data Centers where it is available to all IOC members as well as numerous non-members.<sup>126</sup> The Commission has also sponsored Manual on International Oceanographic Data Exchange which participating member states are asked to observe. The Manual has been revised twice and is to be continuously updated in light of new findings of the IOC Working Group on Data Exchange.<sup>127</sup>

While acceptance by members of standards methods and exchanging data has been short of universal,<sup>128</sup> the Commission's intervention has been responsible for upgrading quality control and for establishing the most successful of the WDC Sections. Data management is likely to continue to be a priority for the Commission. Member states at the Seventh Session of the Commission in recognizing the need to cope with increase in the output of data, adopted an interim standard international data inventory form to be used for the submission of information and requested the Working Group on International Oceanographic Data Exchange to prepare compatible formats for the exchange of data and to review arrangements for international data exchange.<sup>129</sup> At the same session Commission members instructed the IOC Secretary to prepare a comprehensive plan for the establishment of an integrated information system on marine research and to communicate this resolution to the Executive Office of UNISIST to ensure coordination of its activities with the World Science Information System.<sup>130</sup> Based on IOC's previous efforts and relative success in promoting means for the management of ocean data, it is expected that these resolutions will be acted upon.

## 2. Cooperative Expeditions and Oceanographic Studies

A large number of IOC resolutions have been adopted in the category. International Cooperative Expeditions. They include resolutions adopting the respective expedition as official IOC programs, resolutions necessary to the implementation of the program, e.g., enjoining participation of other organizations, appointing additional coordinators for fisheries, meteorological or pollution aspects of the program, and resolutions terminating the expedition. An example is the International Indian Ocean Expedition (IIOE). By Resolution I-4 of its First Session, the Commission designated specific substantive areas for study and mode of coordinating these.<sup>131</sup> Later resolutions invited WMO to assist in the development of meteorological aspects of IIOE,<sup>132</sup> for substantive studies of fisheries, oceanography, for the publication of Indian Ocean Atlases and Data Reports.<sup>133</sup>

Resolutions on Oceanographic Studies include the Comprehensive Outline of the Scope of the Expanded Program the International Decade of Ocean Exploration,<sup>134</sup> the establishment of the Group of Experts on Long-Term Scientific Policy and Planning and as noted elsewhere the terms of these resolutions have been implemented by Commission members.<sup>135</sup>

### (3) Mutual Assistance, Training and Education

Although the Commission has had a long standing interest in this area, ocean expeditions and data management have been given a higher priority. With the adoption of IDOE and LEPOR, Commission members have emphasized the need to give highest consideration to this area. To this end, they have recently defined IOC's role more precisely. Training and Education is to be a major component of all future cooperative programs; IOC is to review and coordinate marine science training programs of affiliated organizations, and to assist members directly or indirectly through UN Specialized agencies in establishing national programs. The IOC Secretariat is to serve as the focal point for exchange of information and for liaison with international and regional organizations and member states.<sup>136</sup>

### (4) Legal Aspects of Scientific Research

Apart from resolutions mentioned in preceding paragraphs, the Commission has adopted resolutions in other substantive areas. Of special importance for IOC is political capacity during the Decade are those regarding legal aspects of scientific research.

At its fifth session (1967), the Commission established by resolution a Working Group on Legal questions related to Investigations of the Ocean. This group has considered impediments to oceanographic research and legal principles which would facilitate scientific investigation.<sup>137</sup> Deliberations have resulted in the adoption by the Commission of resolutions on the clearance of vessels and on the legal status of Ocean Data Acquisition Systems.

#### a) Clearance of Vessels

One impediment to scientific research recognized by the Working Group was the difficulty of research ships in arranging to enter foreign ports and in obtaining the consent of the coastal state to enter its territorial sea. The Working Group proposed a draft resolution on the clearance of vessels which after considerable debate in the Sixth Session's Committee on Legal Affairs was adopted in plenary session, September, 1969.<sup>138</sup> The resolution endorsed three principles intended to promote fundamental scientific research during the Decade. These principles are:

- a. As soon as a tentative decision is made to carry out a research program, the coastal state shall be informed to ensure that it may be associated with the planning of the program,
- b. A formal description of the nature and location of the research program is to be submitted to the coastal state and IOC as soon as possible to enable the coastal state to respond in advance and to participate effectively in the research programs,
- c. The IOC Secretary is to transmit a formal description received by the coastal state within twenty days of receipt along with the Commission's request for favorable consideration and, if possible, a factual description of the requesting states' international scientific interest in the investigation.<sup>139</sup>

The Commission's passive role in facilitating oceanographic research was deemed essential so that it would not prejudice the coastal or requesting state's views. By resolution of IOC's Seventh Session, members were also encouraged to conclude bilateral or regional agreements concerning scientific research in ocean areas.<sup>140</sup> Such agreements, although of a "limited nature",



may ultimately contribute to the development of a convention on the principles of the freedom of Scientific Research, a topic which is of concern to the UN Seabed Committee as it prepares for the forth-coming Conference on the Law of the Sea.

b) Legal Aspects of Ocean Data Acquisition Systems (ODAS)

Ocean Data Acquisition Systems (ODAS) represents an area of long interest to the Commission. At its first session, the Commission authorized a working group of experts to study the existing networks of ODAS and requesting UNESCO to consult with IMCO to clarify the legal status of manned and unmanned buoys.<sup>141</sup> UNESCO and IMCO concluded that the law of the sea only generally referred to fixed stations and that little was known of the domestic rules governing them. UNESCO/IMCO consultations continued and the Commission developed an information paper on "Legal Problems Associated with Ocean Data Acquisition Systems (ODAS)" which summarizes existing national and international legislation on ODAS.<sup>142</sup> This was distributed to all UN members as background to the 1962 Preparatory Conference of Governmental Experts on the Legal Status of Ocean Data Acquisition Systems (ODAS) authorized by UNESCO's Fifteenth General Conference. UNESCO convened this Conference in cooperation with IMCO in February, 1972.<sup>143</sup> A second Preparatory conference is to be held in 1974-75 followed by a Conference of Plenipotentiaries on the Legal Status of ODAS. An IOC Group of Experts prepared a draft convention for these Conferences which was circulated to all UN members for comment.<sup>144</sup>

Contrary to the view that IOC, because of its semi-autonomous status, cannot effectively deal with other treaty-level organizations of the UN system, IOC has demonstrated through its role in preparing for a conference and convention on Legal Aspects of Ocean Data Acquisition Systems that it, in cooperation with other UN agencies, can work with treaty-level organizations of the UN system.

The Commission's capacity to influence behavior of member states and affiliated organizations to its goals indicates strengths and weaknesses. Although its membership has increased since 1960 not all states having a maritime interest belong; though most, if not all affiliated organizations with an interest in marine science affairs are represented at Commission meetings and participate in the planning, coordination and administration of IOC sponsored programs. The Commission as the focal point in the UN System for the Decade and LEPOR has not been as successful in enjoining ICSPRO members to contribute as they hoped to the work of IOC's Secretariat. Yet the Commission, despite its semi-autonomous status, has contributed through affiliation with UNESCO and IMCO to the Preparatory Conference on ODAS.

Finally, Commission members have adopted numerous resolutions which have been directed towards accomplishing its goal of advancing knowledge of the ocean with respect to its enhanced and rational use, and many of these have been implemented. However, the Commission has been more able to influence members compliance with methods of gathering and storing data and data exchange and with planning and implementation of oceanographic expeditions, than with, for example, developing programs for mutual assistance, training and education. It is hoped that the Commission's renewed emphasis on training and education will strengthen the role in this area, so important to the Decade as well as to LEPOR. Despite limitations on the Commission most especially its semi-autonomous status, through its political process it has been able to foster agreement among its members on the kinds of tasks and goals that will be required during the Decade. In this regard, the Commission has at least a minimum political capacity to implement the Decade.

TABLE OF RESOLUTIONS ADOPTED BY IOC  
1961-1972(1)

SESSIONS

Categories of Resolutions	1	2	3	4	5	6	7	TOTAL
Data Management	5 (42%)	9 (40%)	7 (41%)	7 (44%)	5 (18%)	1 (4.5%)	8 (27%)	42 (29%)
Cooperative Exp.	3 (25%)	8 (36%)	5 (29%)	3 (19%)	9 (32%)	4 (18%)	2 (6.7%)	34 (23%)
Oceanographic Studies	0 (0%)	1 (4.5%)	2 (12%)	5 (31%)	5 (18%)	4 (18%)	5 (17%)	22 (15%)
Oceano, Workshops, Conf., Assemblies	0 (0%)	0 (0%)	1 (6%)	0 (0%)	0 (0%)	2 (9%)	2 (6.7%)	5 (3.3%)
Mutual Assistance (Training and Education)	3 (25%)	0 (0%)	1 (6%)	1 (6%)	4 (14%)	1 (4.5%)	2 (6.7%)	12 (8%)
Advisory Bodies Sub.	0 (0%)	2 (9.5%)	0 (0%)	0 (0%)	0 (0%)	3 (13.6%)	1 (3.3%)	6 (4%)
Legal Matters	0 (0%)	1 (4.5%)	1 (6%)	0 (0%)	2 (6.5%)	3 (13.6%)	1 (3.3%)	3 (5%)
Administrative Matters	1 (8%)	1 (4.5%)	0 (0%)	0 (0%)	2 (6.5%)	3 (13.6%)	7 (23%)	14 (9%)
Other	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 <sup>(2)</sup> (3.6%)	1 <sup>(3)</sup> (4.5%)	1 <sup>(4)</sup> (6.7%)	4 (2.7%)
TOTAL	12 (100%)	22 (100%)	17 (100%)	18 (100%)	28 (100%)	22 (100%)	30 (100%)	147 (100%)

(1) Compiled from Resolutions from each of Seven Sessions, 1961-1971.

(2) Resolution on increasing membership

(3) Resolution expressing thanks to outgoing IOC Secretary, N.K. Federov

(4) Resolutions on the publication of IOC Technical Series on LEPOR and of International Marine Science.

## CHAPTER VII: CONCLUSIONS

In the UN Seabed debates it has become increasingly clear that scientific information and knowledge about the ocean will be a major need and support for whatever international regime is established to regulate hard mineral, oil and gas, and fishery production and marine pollution.

Prior to the assignment of the tasks and goals of the Decade and LEPOR in 1968 to the IOC, the Commission promoted the development of scientific knowledge of the world ocean through the concerted action of its members and more especially through scientific cruises, cooperative expeditions, and development of standard methods for data management. To accommodate the tasks and goals of the Decade assigned to it, the Commission revised its statutes, revamped its formal structure and made provisions, e.g., Trust Fund and ICSPRO to acquire necessary financial and personnel resources. Does the Commission have the capacity to implement the tasks and goals of the Decade?

In applying four tests (or criteria) of capacity to the Commission's experience -- legal, structural, resource and political -- we have found that IOC exhibits both strengths and weaknesses. In terms of strength, the Commission has a legal basis to administer, to coordinate and to promote agreement among members and affiliates with respect to its goals and tasks. Statutes authorize necessary functions to be performed by IOC organs, establish a formal structure for decision-making, and provide the means by which IOC obtains and manages its limited resources. IOC's experience in planning and implementing international ocean expeditions suggests that member states, affiliated agencies and the IOC Secretariat have worked together to manage limited resources efficiently. Moreover, these participants have achieved agreement in the past relatively easily on tasks and goals.

However, the Commission's weaknesses in the recent past appear to outweigh its strengths. Although Commission members responded with dispatch when the UN General Assembly designated it as the focal point for coordinating the Decade and LEPOR and broadened its base, a number of problems have arisen. The number of agenda items has increased and their substantive content has shifted to a mix of legal-political and scientific concern. Representatives to IOC meetings, once predominantly marine scientists, now include representatives of foreign offices. Political agreement among a more diverse group of representatives may be more difficult to achieve. Although contributions from a handful of member states are likely to sustain IOC's work as long as these members continue to find multi-lateral planning and coordination desirable. IOC has been unable to mobilize additional financial support for the Decade and LEPOR through its Trust Fund or through ICSPRO.

IOC's semi-autonomous status, long thought to hamper its administrative efficiency and political effectiveness, continues to be a weakness. Efforts have been made to correct this; for example, in October, 1962 the UNESCO Marine Science Office was separated (administratively) from the IOC Secretary. This has freed IOC staff from UNESCO responsibilities and permitted them to devote full-time to IOC activities. The Executive Committee has been asked to find additional ways of strengthening the ICSPRO mechanism. Notwithstanding these efforts, attitudes of affiliate agencies will be difficult to change, particularly because only one of the charter ICSPRO members, UNESCO, has used the Commission for advice and review in marine science affairs and as most affiliates have regarded IOC's staffing as a problem for the UNESCO Secretariat.

One ideal solution to these problems, according to some, would be the elevation of IOC to the level of an autonomous ocean agency. However, a variety of constraints hamper such an effort at the present time including the large expense of a headquarters and the lack of political support among member-states and affiliated agencies. IOC's present status within UNESCO at this writing seems the only practical alternative.

Given the strengths and weaknesses of the Commission, in the balance the Commission appears to have at least a minimum capability to implement the tasks and goals of the IDOE.

## FOOTNOTES

### Introduction

1. UN, GAOR, A/RES/2467, 18 December, 1968.
2. This present study is a very condensed version of the author's doctoral dissertation, The IOC: Its Capacity to Implement the IDOE, presented to the University of Pennsylvania, 1970 and available from University Microfilms, Ann Arbor, Michigan. The author gratefully acknowledges the guidance offered by Professor Philip E. Jacob, now of the University of Hawaii and Professor David S. Cheever, University of Pittsburgh. For careful comments on an earlier draft of the present study, my thanks to the IOC Secretary, Cmdr. P.D.P. Scott.
3. President L.B. Johnson, "State of the Union Message," New York Times, January 18, 1968, p. 1.
4. Ibid.
5. UN, GA, Ad Hoc Committee to Study the Peaceful Uses of the Seabed and the Ocean Floor Beyond the Limits of National Jurisdiction, Report, (A/7230, September, 1968) (New York: UN, 1968) pp. 61-62.
6. Ibid.
7. UN/GAOR. A/RES/2467D, 18 December, 1968.
8. Ibid.
9. Comprehensive Outline on the Scope of the Long-Term Expanded Program of Ocean Research and Exploration, (UNESCO/IOC Technical Series No. 7, 1970, Paris France).
10. Resolutions of the Sixth Session, Report of Sixth Session, SC/ IOC/19, June, 1970.
11. UNESCO/IOC, Report of the Group of Experts on Long-Term Scientific Policy and Planning, GELTSPAP/I/17, 23 December, 1970.
12. UNESCO, IOC, Seventh Session, October, 1971. IDOE, Res. 7. 27 (SC/IOC/VII/46) 5 Nov., 1971, Paris, France.
13. UNESCO, IOC: Five Years of Work, 1966, "Article I. Statutes of the IOC," Annex II, p. 37.
14. UN, GAOR, A/RES/2172, 8 December, 1966.
15. UN, GAOR, A/RES/2467D, 18 December 1968.
16. UNESCO, IOC, Seventh Session, October, 1971. International Decade of Ocean Exploration (IDOE) Res. 7. 27 (SC/IOC/VII/46) 5 November, 1971.

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1. Comprehensive Outline of the Scope of the Long-Term Expanded Program of Oceanic Research and Exploration, (UNESCO/IOC, Technical Series #7, 1970) Paris, 1970.
2. Report of the Group of Experts on Long-Term Scientific Policy and Planning, (IOC/B-76; GELTSPAP I/17, 23 December, 1970), p. 2.
3. An Oceanic Quest: The International Decade of Ocean Exploration, Washington, D.C.: National Academy of Science - National Academy of Engineering, 1969.
4. U.S. National Council for Marine Resources and Engineering Development, Fourth Report, Washington, D.C.: U.S. Government Printing Office, 1970.
5. GELTSPAP, op.cit., pp. 19-23.
6. U.S. Office for the International Decade of Ocean Exploration, International Decade of Ocean Exploration: Progress Report, Washington, D.C.: U.S. Dept. of Commerce, Jan. 1973, pp. 14-23.
7. GELTSPAP Report, op.cit., pp. 8-12.
8. IDOE: Progress Report, op.cit., p. 24.
9. GELTSPAP Report, op.cit., pp. 4-7.
10. IDOE: Progress Report, op.cit., pp. 9-13.
11. GELTSPAP Report, op.cit., pp. 12-18.
12. Ibid., p. 15.
13. IDOE: Progress Report, op.cit., pp. 1-8.

CHAPTER II

14. See for example Daniel S. Cheever. "The Role of International Organization in Development of Marine Resources," International Organization (Summer, 1968); Ernst B. Haas, Beyond the Nation-State, (Stanford, Calif.: Stanford University Press, 1964); Philip E. Jacob and Alexine Atherton, The Dynamics of International Organization, (Homewood, Ill.: Dorsey Press, 1965); Walter R. Sharp. Field Administration in the UN System, (New York: Frederick A. Praeger, 1961).

CHAPTER III

15. IOC: Five Years of Work, (UNESCO/IOC), Technical Series 2, Paris, 1966.
16. IOC Statutes, found in IOC: Five Years of Work, Annex II, ibid.,. (Hereafter referred to as Original Statutes).
17. See Chapter V, Resource Capacity and Chapter VI, Political Capacity.
18. UNESCO, Dept. of Natural Sciences, Report of the Preparatory Meeting of the International Conference on Oceanographic Research (UNESCO/NS/Ocean/96, March, 1960), pp. 1-8.
19. Original Statutes, op.cit.; UNESCO/IOC Statutes as amended by the 16th General Conference, (SC/IOC-VII/14, July, 1971) hereafter referred to as Revised Statutes, Article 2 (a).
20. Ibid.
21. Original Statutes, Article 5; Revised Statutes, Article 6.
22. Original Statutes, Article 8; Revised Statutes, Article 1, 2 and 3.
23. Revised Statutes, Article 3.
24. Revised Statutes, Article 1(2). See also Original Statutes, Article 1(2).
25. Revised Statutes, Article 2(b).
26. Revised Statutes, Article 1(3).
27. Revised Statutes, Article 9(1).
28. Revised Statutes, Article 2(c).
29. Revised Statutes, Article 2(e).
30. Revised Statutes, Article 6.
31. Original Statutes, Article 1(2); Revised Statutes, Article 1(2).
32. Original Statutes, Article 8; Revised Statutes, Article 9.
33. Original Statutes, Article 8; Revised Statutes, Article 10.
34. Original Statutes, Article 8; See also UNESCO/IOC "Rules of Procedure," Report of Fifth Session, Annex IV (SC/CS/150/December, 1968).
35. Original Statutes, Article 3; Revised Statutes, Article 7.
36. Original Statutes, Article 9; Revised Statutes, Article 10(1) (2) (3).

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37. Original and Revised Statutes.
38. Original Statutes, Article 7; Revised Statutes, Article 1, 3, 9, 10.
39. Original Statutes, Article 7; Revised Statutes, Article 8.
40. Amendment procedure is provided by Article 13, Revised Statutes.
41. For Example, the ICSU alternative would be impractical because the international institution that plans and implements the Decade must engage the co-operation of governments if necessary functions are to be performed, and this will require an intergovernmental rather than a non-governmental organization. An autonomous ocean agency, although desirable, is likely not to be able to muster necessary political support at this writing.

CHAPTER IV

42. U.S., National Council on Marine Resources and Engineering Development, Reports on North America, Latin America, Africa, East Asia, the Near East and South Asia (Washington, D.C., U.S. Government Printing Office, April 1968).
43. See the Yearbooks of the International Council of Scientific Unions, Paris, France; See also Lists of Participants at various IOC sessions.
44. SCOR, International Ocean Affairs, LaJolla, California, 1967.
45. Edward Wenk, Jr., The Politics of the Ocean, Seattle, Washington, University of Washington Press, 1972, See especially, pp. 332-364; Eugene Skolnikoff, "National and International Organization for the Seas," in E.A. Gullion, ed., Uses of the Seas, New York: Columbia University Press, 1968, pp. 98-112.
46. Ibid.
47. Skolnikoff, op.cit.
48. FAO, Work of FAO and Related Organizations Concerning Marine Science and Its Applications, FAO Fisheries Technical Paper No. 74 (FR/T74 (EN)), Rome, 1968.
49. IOC Statutes, Article 5(1) (2) (4) and Article 7.
50. Ibid., Article 5(3) (5).
51. Rules of Procedure, op.cit.
52. IOC Statutes, Article 6.



## CHAPTER IV Continued

53. UNESCO/IOC, Executive Council, Report of the Secretariat for the First Session (IOC/EC-I/5, Annex I, April, 1972) Paris, France.
54. UNESCO/IOC. Draft Report of the Seventh Session, October, 1971, (SC/IOC/VIII/46), Paris, France.
55. The IOC Chairman, Rear Adm. W. Langeraar, has represented IOC at meetings of the UN Seabed Committee.
56. IOC: Five Years of Work, op.cit.
57. IOC Revised Statutes, Articles.
58. Ibid., Article 2.
59. UNESCO/IOC, Sixth Session, September, 1969, Measures to be Taken to Ensure Adequate Participation of the Interested Organizations of the UN System in Supporting the Work of IOC (SE/IOC/VI-4, Add, May 1969), pp. 1-4. Announcement of IOC Secretary N.K. Federov, Sixth Plenary Session, September 1969.
60. UNESCO/IOC, "Proposed for Rationalizing the Structure of the Commission," (SC/IOC-VII/16, Paris, July 15, 1971; "Suggestions on the Working Relations Between the Commission and UNESCO by the IOC Chairman" (SC/IOC-VII/45, Paris, Sept. 30, 1971).
61. Written communication from IOC Secretary, Comdr. P.D.P. Scott, May 1973.
62. "Suggestions on the Working Relations Between the Commission and UNESCO by the IOC Chairman," op.cit.
63. IOC Revised Statutes, op.cit.
64. See note #2, Chapter IV above.
65. IOC Revised Statutes, Article 8.
66. See note #2 above.
67. See for example, Warren S. Wooster, "Interactions between Intergovernmental and Scientific Organizations in Marine Affairs," International Organization, Winter, 1973, pp. 103-115.
68. Ibid., See also Global Ocean Research, Report of Joint Committee of SCOR, ACMRR, FAO, WMO, Rome and Ponza, Italy, Scientific Committee on Ocean Research, 1969.
69. Wooster, op.cit., See also Report of GELTSPAP, op.cit.

CHAPTER V

70. The references for the UNESCO Approved Program and Budget from which this table is compiled are as follows: 1959-60 (IOC/5, p. 83); 1960, ibid.; 1961 (11 C/5, 1961-62), pp. 162-72; 1962, ibid., 1963-64 (12 C/5, 1963-64) pp. 199-202; 1965-66 (13 C/5, 1965-66) paragraphs 729-753; 1967-68 (14 C/5, 1967-68) p. 231; 1969-70 (15 C/5, 1969-70), pp. 290, 292; 1971-72 (16 C/5, 1971-72), pp. 223, 229.
71. Ibid.
72. Ibid.
73. UNESCO/IOC, Observations by the Director-General, (SC/IOC-VII/43, Add. 1, p. 2.)
74. UNESCO/IOC/Seventh Session, Report of the Secretary, (SC/IOC-VII/9, 5 October, 1971) p. 4.
75. Ibid.
76. Ibid.
77. UNESCO/IOC, Sixth Session, September, 1969, Resolutions Adopted at the Sixth Session, "Resolution: IOC Fund-In-Trust, VI-6" (UNESCO/SC/IOC/VI/32, September, 1969) p. 11.
78. Ibid.
79. Report of the Secretary, Seventh Session, op.cit. p. 2.
80. See, however, Article 9 of IOC Revised Statutes.
81. Communication with Adm. Langeraar, IOC Chairman, Woods Hole, Mass., Feb. 5, 1969.
82. See UN, Economic and Social Council, "Marine Science and Technology: Survey and Proposals," Annex V: Countries Commitment to Marine Research, E/4487, 24 April 1968, New York: United Nations, 1968, pp. 1-4.
83. Ibid.
84. See Chapter III above.
85. Richard C. Vetter, International Directory of Oceanography, 4th edition, Washington, D.C.: National Academy of Science -- National Research Council, 1964, p. ii.
86. See "Needs and Interests of Developing Countries, Proceedings, 7th Annual Conference of the Law of the Sea Institute, Kingston, R.I.: University of Rhode Island, 1972, pp. 1-20 and especially "Remarks" by Edward A. Miles, pp. 18-20.

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87. See UNESCO approved Program and Budget for various years for funds allocated for marine science training by UNDP to the Office of Marine Science. With the separation of the IOC Secretariat and the UNESCO Oceanography Secretariat, the latter is expected to continue carrying out marine science training while IOC may be expecting to review proposals for training and education and refer these to UNESCO's Division of Oceanography.
88. Nationality of staff has been determined on the basis of Reports of IOC's Seven Sessions. References are as follows: I: October, 1961 -- UNESCO/NS/76 of 1 Feb. 1962; II September, 1962 -- UNESCO/NS/180 of 10 Dec. 1962; III June 1964 -- UNESCO/NS/171 of 29 Oct., 1964; IV Nov. 1965 -- UNESCO/NS/203 of 31 March, 1966; V: October 1967 -- UNESCO/SC/CS/150 of 25 March, 1968; VI Sept. 1969 -- UNESCO/SC/MD/19 of 1 June, 1970, and Communication with Cmdr. Scott, IOC Secretary.
89. Report of the IOC Secretary, Seventh Session, op.cit.
90. UNESCO/IOC, Secretariat Services for the Commission: Observations by the Director-General, SC/IOC-VII/43. Add. 1, 1 Oct., 1971, p.2.
91. Herbert Simon, Administrative Behavior, Second Edition, New York: Free Press, 1965, pp. 20-44.
92. Report of the Secretary, Seventh Session, op.cit., Communication with IOC Secretary, Cmdr. D.P.D. Scott, May 23, 1973.
93. Communication with IOC Secretary, Cmdr. D.P.D. Scott, May 10, 1973.
94. Simon, op.cit.
95. IOC, Report of the First Session, Annex V, p. 19, Report of Second Session, p. 15, Report of Third Session, p. 6.
96. IOC: Five Years of Work, op.cit., p. 16.
97. UNESCO, Report of the Director General, 1971, Paris: UNESCO, 1971.
98. Report of Second Session, op.cit., Annex I, p. 8; Annex III, p. 29. IOC: Five Years of Work, op.cit., p. 16.
99. IOC: Five Years of Work, op.cit.; Report of Fourth Session, op.cit.; Report of Fourth Session, op.cit., Annex V, p. 8.
100. IOC, Report of Fifth Session, op.cit., Annex III, pp. 18-19.
101. Report of Third Session, op.cit., Annex II, p.24; Annex VI, p. 58.
102. Report of Fourth Session, op.cit., Annex V, p. 8.
103. Report of Fifth Session, op.cit., Annex III, pp. 18-19. "Resolution VI-8: Cooperative Study of the Kuroshio and Adjacent Regions," Resolutions of the Sixth Session, op.cit., p. 15.

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- 104. Report of GELTSPAP, op.cit.; see also Chapter I.
- 105. IOC, Seventh Session, October, 1971, IDOE, Res. 7. 27 (SC/IOC/VII/46), 5 Nov. 1971, Paris, France.
- 106. Office of IDOE, "International Decade of Ocean Exploration, "Washington; D.C.: National Science Foundation, October, 1971.
- 107. Communication with Mr. Louis Brown, NSF, Office of IDOE, June 27, 1973.

CHAPTER VI

- 108. The writer explores this fully in Chapter III and Chapter VI of her doctoral dissertation, op.cit.
- 109. IOC, Draft Statutes, Article 2(i), op.cit.
- 110. Observation of Sixth Session, Paris, France, 1969.
- 111. Statement by IOC Chairman Langeraar, IOC Sixth Session, Paris France, 1969.
- 112. Galey, op.cit.
- 113. Compare the number and scope of agenda items for example of the Seven Sessions: IOC is represented in meetings of these UN Bodies either by the IOC Secretary or IOC Chairman.
- 114. Inis L. Claude, Swords into Plowshares, New York: Random House, 1963, pp. 93-95.
- 115. UNESCO/IOC, Executive Council, Report of the Secretariat (IOC/EC-I/5, Annex I, April, 1972) Paris, France. Kenya joined IOC in September, 1972.
- 116. Communication with IOC Chairman, Adin Langeraar, September, 1969.
- 117. Report of First Session, op.cit.; Report of Sixth Session, op.cit.
- 118. UN, FAO, Advisory Committee on Marine Resources Research, Reports of Sessions: I: (Blb/RI4/EN, Jan. 1963) II: (Flb/R20/EN/1964) III: (Flb/R23/EN/1965).
- 119. Warren Wooster, op.cit.
- 120. UNESCO/ICSPRO, Report of Second Session, ICSPRO/2 Paris France, February, 1970, p. 2.
- 121. Ibid.

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122. Report of Third Session, ICSPRO/3, Geneva, Switzerland, July, 1970., p. 6.
123. The number and scope of resolutions of the Seven IOC Sessions has been compiled from the session reports, op.cit.
124. Warren S. Wooster, "International Oceanography," Published by the Committee of Sugaware Festival Volume, Tokoyo, Japan, 1964; Report of First Session, op.cit., pp. 28-29; Report of Third Session, op.cit., Annex V, pp. 1-2.
125. Communication with Dr. Thomas Austin, Formerly Director, NODC, Sept. 10, 1969.
126. Ibid.
127. Report of Third Session, op.cit., pp. 28, 74-77; Report of Fifth Session, op.cit., p. 15.
128. The word standardization holds negative connotations for scientists who prefer to develop new techniques rather than use existing ones. One problem in data exchange has been that unless a state has declared the cruise or expedition from which it is obtained as part of a "declared national program," the state is technically not obliged to exchange data.
129. UNESCO/IOC, Seventh Session, Oct. 1971, "Ocean Data Management" (SC/IOC/46, 4 Nov. 1971) Paris France.
130. UNESCO/IOC, Seventh Session, Oct. 1971. Resolution on Integrated Scientific Information Service on Aquatic Sciences and Fisheries (SC/IOC/VII/46) Nov. 1971, Paris, France.
131. Report of First Session, op.cit.
132. Report of Second Session, op.cit.; Report of Third Session, op.cit. See also IOC: Five Years of Work, op.cit.
133. Ibid.
134. Comprehensive Outline, op.cit.
135. See Introduction and Chps. I for discussion of these.
136. Proceedings 7th Annual Law of the Sea Institute, op.cit., UNESCO/IOC, Executive Council, First Session, Hamburg, July, 1972, Summary Report (IOC/EC-I/16, Aug. 1972) Paris, France, pp. 8-10.
137. Report of Fifth Session, op.cit., Annex V, p. 5. See also UNESCO/IOC Working Group on Legal Aspects of Scientific Research, Summary Report, (SC/IOC/VI/15, Paris, 1969).

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138. Summary Report, ibid.
139. Resolutions of the Sixth Session, op.cit.
140. UNESCO/IOC, Seventh Session, October, 1971, Legal Questions Related to Scientific Investigation of the Oceans: Res. 7.11 (SC/IOC/VII/46) Nov. 4, 1971, Paris France.
141. Report of First Session, op.cit.
142. Legal Problems Associated with Ocean Data Acquisition Systems, IOC Technical Series #5, Paris, UNESCO, 1969, p. 7.
143. UNESCO/IMCO, Preparatory Conference of Governmental Experts to Formulate A Draft Convention on the Legal Status of Ocean Data Acquisition Systems (ODAS), Jan. - Feb., 1972, Summary Report (Sc-72/CONF. 85/8, March 1972) Paris, France, pp. 1-3.
144. Ibid., "Resolution 2: Convening of a Second Session of the Preparatory Conference," Annex II, p. 1.