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THE INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION: AN UNCERTAIN FUTURE

By Robert H. Stockman

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THE INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

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INTRODUCTION

The international character of ocean space has been a fundamental tenet of nation state practice for centuries,[1] and the history of international institutions concerned with some aspect of the ocean has been both lengthy and substantial. However, changing economic, social, and political realities of the postwar era and the developing scientific and technological capabilities to explore and exploit the ocean interacted so that by 1967 serious international attention was being directed towards the sea as a potentially greater source of benefit or of conflict for nations.

Formation of the United Nations Committee on the Peaceful Uses of the Seabed and Ocean Floor Beyond the Limits of National Jurisdiction and continuing intergovernmental debates since then have indicated that existing international law and institutions relating to ocean space need revision and strengthening. While there may be an emerging measure of consensus among states about the increasing necessity for some form of management for the ocean and resource-rich coastal seas, nations have generally maintained divergent views of the complex issues relating to the blending of jurisdiction and control between the interests of individual states and the international community as a whole.

Numerous proposals to increase the contribution and effectiveness of international law and institutions in the management of ocean space have been suggested by states, by nongovernmental organizations, and by individuals as well[2] with varying degrees of departure evidenced

from the international status quo. Some proposals envision elaborate new institutions, while more moderate schemes include expansion of existing organizations associated with the UN system.[3] The Intergovernmental Oceanographic Commission (IOC) has been one focal point considered for expansion in the debate about ocean space.

Created in 1960 as a part of the United Nations Educational, Scientific and Cultural Organization (UNESCO), the IOC has been throughout most of its existence a relatively specialized intergovernmental body that served the needs of marine scientists in the coordination of certain nationally supported oceanographic expeditions. With a comparatively limited membership of states, a modest budget, and a professional secretariat staff of fewer than ten persons, the IOC has been the primary international forum to promote global marine research.

The emerging importance of the ocean and its resources to states of the world community as a possible source of wealth, and the more recent realization of the potentially grave dimensions of marine pollution have propelled scientific and technological knowledge about the ocean to a new level of significance to mankind. It is clear that rational management of ocean space will require a well-founded base of scientific information upon which various options for decision can be assessed. As the only intergovernmental body in the United Nations system devoted

entirely to the facilitation and promotion of international marine research, the IOC has a potentially great and useful role in contributing to the efforts of the UN system and states to provide for equitable and optimal use of the sea by man.

However, the IOC has suffered from many of the sources of malaise that afflict international organizations and impede their effectiveness, as well as several difficulties unique to its association with oceanographers and the practice of marine research. The past effectiveness and current capacity of the IOC to fulfill an increasing mandate have been seriously questioned, and the future ability of the IOC to undertake a substantially expanded responsibility to insure an adequate scientific basis for decision-making for ocean space is uncertain.

The purpose of this study is to review the evolution of the IOC in response to changing international marine needs and to assess the capacity of the Commission to respond to increasing international requirements for knowledge about the ocean and marine resources now and in the future. It is hoped that this analysis will provide some insight into what services the IOC is likely to provide in any future regime to manage ocean space--and, more importantly, what it could provide to assist in the international solution of problems that threaten the responsible and productive use of the ocean for the benefit of all mankind.

EARLY EVOLUTION OF THE IOC

Although the oceans have been used by man for millennia for navigation, fishing, and warfare, the importance of scientific information in relation to practical uses of the sea has only quite recently been recognized.[4] Until World War II, national efforts concerned with marine research had been discontinuous and sporadic and had been undertaken by only a very few states.[5] After World War II the emerging importance of the submarine to naval and strategic warfare provided a significant stimulus for basic and applied oceanographic research in several states, particularly the United States. In addition, the increasing need for protein from fish and indications of selected stock depletion spurred biological research to seek a more rational basis for national fishing efforts.

With the exception of several notable but limited international organizations, the International Council for the Exploration of the Sea (formed in Stockholm in 1902 to study the North Atlantic Ocean[6]) and the International Hydrographic Organization (formed in Monaco in 1921 to coordinate charting practices)[7], the Fisheries Division and regional fisheries commissions of the Food and Agriculture Organization (FAO) were the only significant focal points of marine science in the United Nations system as of the mid-1950s.

The interest of UNESCO in marine science began during this period, and in November 1955, UNESCO established the International Advisory Commission on Marine Sciences (IACOMS).[8] IACOMS provided advice on the allocation of small sums of money for individual research activities, discussed the advantages and disadvantages of an international research vessel, and assisted in the planning of a modest program of training marine scientists by short courses and fellowships.[9] By this time national oceanographic efforts were sustaining very modest gains in support, and the successful International Geophysical Year (IGY) in 1957 demonstrated the obvious advantages of international cooperation in science. Although few in number, members of the oceanographic research community began to coalesce and form the rudiments of an international constituency of marine scientists concerned about the continued advance of their science in national and international programs.[10]

Although the IGY demonstrated the relative effectiveness of cooperative investigations on planetary and regional scales at the nongovernmental organization (NGO) level, a complementary need for intergovernmental action and coordination was obvious. As a result of the experience gained during the IGY, the nongovernmental International Council of Scientific Unions (ICSU) created a Special (later Scientific) Committee on Oceanic Research (SCOR) to continue the type of international cooperative efforts of IGY in the field of oceanography.[11]

Several prominent oceanographers concerned with the emerging needs of marine science (principally Dr. Roger Revelle, then President of SCOR) began to review institutional alernatives for an intergovernmental organization for marine research.[12] The FAO and its Fisheries Division were viewed as being insufficiently oriented towards science in their applied biological studies.[13] The FAO was dominated by agricultural ministries, and in the United States, the Department of Agriculture was the primary actor in FAO activities. The World Meteorological Organization (WMO) was overwhelmingly an instrument of national weather forecasting bureaucracies that were relatively unconcerned with atmospheric research as compared with routine observation.[14] The Intergovernmental Maritime Consultative Organization (IMCO) dealt primarily with navigation and safety of life at sea.[15]

The initial (and recurring) desire for an independent treaty body, the World Oceanographic Organization (WOO), was quickly stifled by the American and Soviet governments. There was a stubborn reluctance on the part of the two governments to accept a continued proliferation of independent treaty organizations, and at least in the case of the United States, complicated fisheries treaties were thought to be jeopardized by such a new organization.[16] It is important to remember, also, that the frustration due to the failure of the Geneva Conferences on the Law of the Sea in 1958 and 1960 to agree on

key boundary issues was a fresh reminder of the difficulties inherent in intergovernmental deliberations about marine issues by such a large number of states with divergent interests.

The oceanographers chose "to cast their lot with the pedagogues" of the United Nations Educational, Scientific and Cultural Organization (UNESCO) rather than with the "farmers of FAO."[17] In 1958 an International Panel of Honorary Consultants to IACOMS recommended increased promotion of marine research and initiation by UNESCO of a new effort in this regard. While IACOMS continued its advisory functions, the Commission also served as a forum for consideration of the development of a special intergovernmental institution in the UN system. At the tenth session of the UNESCO General Conference held in Paris in 1958, a resolution was adopted that provided for the convening of an intergovernmental conference on oceanographic research.[18]

By March 1960 scientists met in Paris in a preparatory meeting for the Intergovernmental Conference on Oceanic Research (INCOR) and concluded:

> One international research ship for the vast stretch of 71% of the earth's surface would be like one drop of water in the ocean. The same or less funds on coordination of national efforts (as IGY had already shown) would produce better results.[19]

The Conference was held in Copenhagen in July 1960. By then the concept of the IOC had been clarified. Representatives of the FAO Secretariat had proposed at first that the program of

the Commission should be cooperatively developed by UNESCO, WMO and FAO, and then more specifically recommended that the IOC should be sponsored by UNESCO and FAO.[20] Oceanographers responded negatively because of their poor opinion of FAO's scientific record, and government representatives complained that the joint sponsorship would be too complicated (despite positive evidence of interagency organs in many cases). As no surprise, the UNESCO Secretariat supported the criticism of formal FAO involvement.[21]

The Copenhagen Conference approved a number of recommendations to

> insure the common use by member states concerned of international services for oceanographic research and the training of personnel and on the other hand, the immediate application of an international research and training program in the marine sciences.[22]

The major recommendation of the Conference was that an Intergovernmental Oceanographic Commission be established <u>within UNESCO</u>

> to promote scientific investigation with a view to learning more about the nature and resources of the oceans through concerted actions of its members.[23]

In November-December 1960, The Eleventh Session of the UNESCO General Conference adopted the recommendations of the Copenhagen Conference and, by Resolution 2.3, set up and approved funds for the IOC and an Office of Oceanography to be placed under the authority of the UNESCO Department of Natural Resources. The original statutes of the IOC (later substantially

amended) created a formal structure for the Commission, consisting of an assembly that was to meet annually (changed to biannually in 1964) with all member states represented. The assembly was to elect a Chairman and two Vice-Chairmen who would make up the Bureau, which was to meet between assemblies (a Consultative Council of several member states was formed in 1964 to meet with the Bureau to advise on matters of substance). Routine administration of the IOC was the responsibility of a permanent Secretary who served simultaneously as Director of the UNESCO Office of Oceanography, which was created to deal mainly with technical and educational assistance. The Secretary was to be assisted by a small secretariat, but most of the work of IOC was to be performed by committees and ad hoc working groups of national scientists. The semi-autonomous character of the IOC within UNESCO is illustrated by the fact that the Secretary of the Commission is directly accountable to the Director General of UNESCO and UNESCO provides the secretariat and staff services for the IOC; yet the IOC has a Chairman and Vice Chairmen directly responsible to member states of IOC. Membership in the Commission is arranged by notification to the Director General of UNESCO, and amendment of the Statutes must be made by the General Conference of UNESCO.[24]

THE QUIET YEARS[25]

By the end of the first session of the IOC, which met in Paris from 19-27 October 1961, a total of 40 states had become

members.[26] As a result of the statutory arrangements that created the IOC, marine science in the UN system was to be pursued in

> two parallel streams, with some cooperation but little real coordination (at the intergovernmental level).[27]

Oceanographers regarded IOC as "their" organization, while fisheries scientists participated in the programs of FAO. The two streams, which could be called fundamental oceanography and fishery research, were later supplemented by modest marine-related activities integrated into the efforts of WMO, IMCO, and the International Atomic Energy Agency (IAEA).

During the early part of the decade of the 1960s, the IOC enjoyed a number of successes in coordinating the efforts of developed states with marine science capabilities in important cooperative oceanographic projects. The first, and perhaps most successful program, the International Indian Ocean Expedition (IIOE), was initiated by SCOR in 1959, and the coordinating role was transferred to IOC in 1961. With 23 participating countries, 2000 scientists, 40 research vessels, and 180 research cruises involved in the IIOE until 1965,[28] the mutual advantages of international cooperation in marine research were demonstrated dramatically.

The IIOE was to be followed by other successful regional scientific investigations in the Tropical Atlantic, the western Pacific,[29] and later in the Mediterranean and the Caribbean.[30]

In addition to the important expedition coordination during this period, the IOC provided a useful forum for the communication and resolution of a number of technical details related to oceanographic research.[31] Going beyond coordination of national efforts, the IOC sought from the time of its first session to develop a comprehensive program for the study of the world ocean.[32]

In its role as an organization to "help scientists get their work done," the IOC has been characterized as a "rich man's science club"[33] primarily of service to the developed states, which monopolized expensive oceanographic capabilities. Even though a few developing states were early members of the IOC and the problem of mutual and technical assistance was an explicit concern of IOC, little substantive progress was made in assistance to the developing states in the early years. IOC membership was available without extra financial commitment to member states of UNESCO (as well as other UN organs), yet there was little incentive for developing states to participate. The UNESCO Office of Oceanography, working in close connection with IOC, was able to provide relatively small sums of financial assistance for technical training in marine science, but the resources available were minor compared to the sums administered by FAO for fishery development research. In addition, the predominant orientation of the IOC toward basic scientific research rather than applied resource exploration was perceived by the developing states as being largely irrelevant, more often than not,

to the needs of developing states. They were less interested in oceanography and more concerned with marine resource development. The changing role of IOC concerning mutual assistance will be examined more completely in a later section detailing the period of the politicization of marine issues.

Until the seminal intergovernmental events concerning the ocean in 1967, the IOC was relatively free from controversy.[34] However, the question of the relationship between the IOC and other bodies in the UN system, which began at the Copenhagen Conference, was to be a recurrent one. The original statutes of the Commission contained provisions that were designed to accommodate the interests of the other specialized agencies, particularly FAO, without joint sponsorship of the IOC. The statutes called for exchange of documents, outposting of agency staff to the IOC and the possibility that the IOC might provide advice to other agencies on matters relating to marine research. The statutory arrangements were regarded by the other agencies as being so inequitable that they did not provide staff to the IOC Secretariat, and IOC reports and recommendations on marine science elements of agency programs were largely ignored.[35]

Not only did the agencies feel reluctant to accept the advice of the quasi-independent IOC, the IOC itself was somewhat resistant to the efforts of the FAO to establish advisory links to the Commission. A sense of independence permeated the

membership of IOC even though it was a subsidiary of UNESCO.

> People went to great lengths in IOC meetings to avoid referring to 'IOC of UNESCO', they said simply 'IOC' and they said it on the same level as UNESCO and FAO and in fact the UN itself.[36]

The IOC finally accepted the services of the Advisory Committee on Marine Resources Research (ACMRR) in addition to SCOR as being the primary advisory sources to the Commission. The ACMRR was a quasi-nongovernmental organ to FAO on the fisheries aspects of marine research, and there was some debate whether or not such a formal arrangement with ACMRR was desirable or necessary.[37] As will be discussed later, the distinction between basic science and marine resources research has been a central element of contention in the evolution of the IOC.

With ACMRR and SCOR as official advisory bodies, the IOC's concern for a comprehensive plan to provide a rational pattern for cooperative research was expressed as a request to SCOR in consultation with other bodies to prepare a "general scientific framework (GSF) for the comprehensive study of the world ocean."[38] The first product was a draft GSF presented to the third session of the IOC in June 1964.

> The document must have disappointed some. Rather than spelling out priorities and milestones, rather than constituting sailing orders for the oceanographic fleets of the world, the report was a far reaching and imaginative discussion of the intriguing and important scientific problems in the ocean as seen by its authors.[39]

The "quiet years' for the IOC began to come to a close in 1966 when, in response to a substantial awakening of interest in the ocean and its resources by the United States, Resolution 2172 (XXI) was passed by the UN General Assembly asking the Secretary General

> to prepare a survey and proposals for marine science and technology.[40]

This increasing attention being given the sea was to accelerate in August 1967 with the proposal of Malta's Ambassador Arvid Pardo to place the question of the internationalization of the seabed and its resources on the agenda of the General Assembly.[41] The "quiet years" for the IOC were over.

THE POLITICIZATION OF MARINE ISSUES

Although proposals for international control of the sea or seabed had been enunciated repeatedly since the 1950s by private citizens and groups,[42] Ambassador Pardo's request to have the issue placed upon the General Assembly agenda provided the first widespread and serious attention given to the idea at the intergovernmental level.[43] The events immediately following led to the creation of first an ad hoc, and then a standing Committee on the Peaceful Uses of the Seabed and Ocean Floor Beyond the Limits of National Jurisdiction of the United Nations which provided a political forum for issues that were first limited to the seabed. By the end of the decade, however, the issues under discussion had been extended to cover all kinds of substantive matters that related to "ocean space" and that were supposed to

be subjects of the third Law of the Sea Conference beginning in 1973.[44] The intensity of debate and the awakening awareness of the important roles to be played by international organizations in the management of the ocean were to have a very significant impact on the IOC.

The responses of the United States and the Soviet Union to the Pardo proposal were cautiously conservative.[45] The Soviet Union repeatedly claimed that discussion of seabed matters was most appropriate for the IOC, and that important legal questions for scientific research at sea were already undertaken there. At the fifth session of the IOC late in 1967, the Soviets continued their drive to preserve the IOC as a central forum for marine debate. The desire of the Soviet Union to emphasize the role of the IOC was probably due, in large part, to the limited membership and relatively nonpolitical character of the Commission as well as the fact that a Soviet national was currently the Secretary of the IOC.[46]

Despite the Soviet reluctance to see the creation of a new intergovernmental body to debate marine issues, the unrestrained enthusiasm for the potential riches of the sea that might be of benefit to the developing states and the American desire to put off precipitous action by favoring the creation of a committee to undertake further study led to the creation in 1968 of the Ad Hoc Seabed Committee.[47]

Meanwhile, in response to General Assembly Resolution 2172 on the resources of the sea, the IOC Bureau in early 1967 requested SCOR and ACMRR to provide advice on the scientific aspects of the possible implementation of the Resolution. SCOR and ACMRR formed a joint working group to

> identify the problems in marine science and technology requiring international cooperation for their investigation and application, the forms of cooperation required, and the manner these were then handled by existing organizations.[48]

Meeting in Helio Cabala, Italy, in July 1967, the working group produced the report International Ocean Affairs that was discussed during the fifth session of the IOC in October. More importantly, the Helio Cabala report was used extensively in the preparation of the report of the Secretary General released in mid-1968.[49]

The Secretary General's report on a survey and proposals regarding marine science and technology recommended a strengthened IOC as a focal point for an

> expanded programme of international cooperation to assist in a better understanding of the marine environment through science.[50]

The Secretary General explicitly proposed that the General Assembly recommend to member states and the specialized agencies that the base of the IOC should be broadened by modification of its statutes to provide for joint support, secretariat services and equitable participation with all agencies with marine program elements.[51] In order to prepare for the

implementation of the Secretary General's recommendations, the IOC Bureau arranged a meeting of consultants (including representatives of UNESCO, WMO, and FAO) to discuss the "functional, statutory, administrative and financial implications" of the expanded programme of marine research.[52] The consulting group reported "a large measure of agreement" between the representatives of UNESCO, FAO, and WMO on steps to broaden the IOC.[53]

In essence, the consultant's report proclaimed that with statutory modifications to relate the IOC more closely with the other interested agencies, the Commission would have a primary role

> in the formulation and coordination of the expanded programme, which would include scientific research and related service activities concerning not only the ocean itself but also its boundaries and resources.[54]

The broadened role of the IOC would not detract from the responsibilities of governments or specialized agencies who would use the Commission as an instrument for discharging marine responsibilities through coordinated efforts. Specific steps that provided for a special coordinating board (which was formed in 1969), and a major change in IOC statutes (adopted at the sixth session in 1969) were thought to be adequate even though the IOC would remain in UNESCO.[55]

The proposals to broaden the IOC were not received without some controversy in the First Committee and Seabed Committee

in the General Assembly. The Japanese delegate to the Seabed Committee felt that the IOC program should be given increased support, but not an increase in functional mandate.[56] The representative of Australia was more concerned that the broadening of the IOC should not interfere with the activities of other UN bodies.[57] Noting with surprise the report of the consultants and reaffirming that the IOC must not become a specialized agency, the representative from Belgium responded with some apparent irritation that

> the publication of this document shows how some 'consultants' are trying to assume the right to decide upon the future of the IOC. The representative of UNESCO will perhaps allow me to remind him that all decisions are to be taken by the member states themselves and formulated by the true representatives of those states.[58]

Ironically, the most pointed criticism of the proposal to broaden the IOC came from Ambassador Pardo, who had originally introduced to the General Assembly the agenda item that noted the advance of science and technology promising great benefits from ocean resources. Somewhat paradoxically, Dr. Pardo claimed in the First Committee of the General Assembly

> We must, however, deprecate overemphasis on exploration of the seabed and on the scientific aspects of the item before us and also express clearly our doubts on current plans which are being formulated with regard to IOC...The Secretary General's expanded program will produce a more rapid expansion of scientific knowledge... [that] will also result in a more precise evaluation of the mineral resources and of the military potential offered by the seabed...which will make commercial and military exploitation easier...The commendable scientific programmes proposed will eventually intensify existing pressures for national appropriation and exploitation of some areas now universally recognized as being beyond national jurisdiction.[59]

Dr. Pardo acknowledged further that the expansion of IOC was "not illogical on a purely technical or bureaucratic plane," but that the creation of a stronger IOC which might evolve into a specialized agency would impede the creation of a body for seabed administration. Therefore, he hoped that amendments would be made to a draft resolution

> to clarify the point that there is no General Assembly endorsement of an expansion of the role of IOC.[60]

Members of the IOC viewed the new Seabed Committee of the UN as a possible competitor in the UN system.[61] Nevertheless, components of the IOC assisted the Secretary General in the preparation of reports for the Seabed Committee and provided advice on topics within IOC's "terms of reference."

In response to a number of important factors in the United States, not the least of which was the accelerating world awareness and debate about seabed resources, the President of the United States announced his support of the concept of an International Decade of Ocean Exploration (IDOE) in the 1968 State of the Union Message and in a later special address.[62] The Soviets initially expressed suspicion that the IDOE was an American attempt to head off action by the Seabed Committee, but they were convinced eventually of the logic of the broad rationale for the American IDOE proposal.[63]

The IOC ultimately welcomed the U.S. IDOE proposal as an opportunity to increase their role, but not without some debate.

Among other things, IDOE was seen by some to be an "ineffective device to get more money from member governments."[64] Because of the political efficacy of suppressing U.S. authorship[65] as well as relieving any obligation for costly Soviet reciprocity,[66] the IDOE was endorsed as the American part of a Long Term and Expanded Program of Oceanic Research (LEPOR), which borrowed the rubric from the Secretary General's earlier study.[67] The semantic change was rationalized in the following way:

> The proposal for an international decade was welcomed as a useful initiative and widely supported. The suggestion that IOC in preparing a programme for expanded cooperation should utilize the proposal of the Secretary General and take into consideration the proposal for the decade was also supported. It was appreciated that a long term program would extend beyond the decade and that the period would vary for different programmes. With respect to ECOSOC Resolution 1381 (XLV), what was envisaged in the proposal for an international decade was a dovetailing of approaches rather than a conflict.[68]

Explicit and strong support came from the General Assembly late in 1968 in Resolutions 2414 (XXIII) and 2467 D (XXIII), which acknowledged the central role of IOC in marine research. In both Resolutions the Secretary General was requested to develop a comprehensive outline of the scope of the long-term and expanded program of oceanographic research, with the assistance and recommendations of IOC, to be presented to ECOSOC and the UN General Assembly during the sessions in 1969.

Calling upon a SCOR-ACMRR-WMO joint working group that was formed in mid-1968 to consider the appropriate scientific aspects of international marine research as a result of the IDOE proposal, the IOC Bureau in February 1969 addressed specific questions regarding LEPOR to the joint working group and formed an IOC intergovernmental working group to review the products of the joint group (of nongovernmental staff).[69] The SCOR-ACMRR-WMO joint working group met in Ponza and Rome during late April and early May 1969 and produced the comprehensive report Global Ocean Research, which was published 1 June 1969.[70] The so-called Ponza report dealt broadly with important scientific components that should be considered in LEPOR and attempted to provide proposals for implementation.

Despite recommendations from SCOR and ACMRR to the IOC at its sixth session in September 1969 that further revision of the Ponza list of projects would be pointless, the plenary session of the IOC decided to have its intergovernmental working group use the Ponza report as a basis for programs in a "Comprehensive Outline of the Scope of LEPOR."[71] The final IOC report was in fact a concise outline that was wrought from the Ponza study in four days of concentrated effort by the intergovernmental working group.[72][73]

The comprehensive outline of the IOC was received with formal appreciation and ultimately received support in the General Assembly in Resolution 2560 (XXIV). But a number of

criticisms were leveled at the IOC effort. In the Second Committee of the General Assembly the representative from Belgium regretted that the outline did not indicate time limits, priorities, or cost estimates.[74] In the Seabed Committee, the delegate from Nigeria thought that the absence of detailed plans

> was particularly disappointing in that the outline was based on a report whose authors had been expressly instructed under their terms of reference to comment on the practical problems of implementation of such a program including priorities and timing, taking into account the funds, facilities and personnel which would probably be required.[75]

In fact, the purpose of the IOC intergovernmental working group was to modify the Ponza report in an attempt to translate project concepts into well-defined programs.

> The first of the reports (Ponza) had been drawn up by a joint group of scientists, i.e. by private individuals with no government ties who looked upon research from a purely scientific standpoint. The draft comprehensive outline, on the other hand, had been drawn up by the representatives of various governments, and although based on the Ponza report, had been conceived from a different point of view.[76]

That the planning effort was not successful in being able to be more specific about programs was probably due in part to the often encountered difficulty in getting scientists to provide assistance in the assessment of priorities. Furthermore, there was probably some inability or unwillingness on the part of

governmental representatives to detail program elements that might be viewed as possible commitments. Later, a noted marine scientist was to refer to the exercise of developing the LEPOR outline as a "travesty of how scientific programs should be developed."[77]

Of perhaps more importance, representatives of some developing states charged that their interests were largely being ignored. The delegate to the Seabed Committee from Nigeria

> felt that on the whole the special importance of the entire question for the developing countries to which the General Assembly had given special attention in the relevant resolutions, had not been adequately or even seriously taken into account in the outline. It was hardly reflected at all except in the final paragraph, which gave the impression of having been tacked on as a reluctant afterthought.[78]

It is interesting to take note of the fact that when the IOC invited participation on the intergovernmental working group to review and revise the Ponza report to produce the comprehensive outline, only 19 of 65 member states responded, of which only 3 would be considered developing states.[79] The question of IOC services to developing states will be addressed more completely later.

Although LEPOR had received strong support from the General Assembly and LEPOR programs were anticipated to begin in 1970, by 1973 the commitments of states to the expanded program have not been as great as hoped for, and the IOC role has not been greatly enhanced.

Throughout this period of the politicization of marine issues since 1967, numerous strains were placed upon the IOC from internal and external sources that had impacts on its adaptive evolution in response to changing circumstances. The frustrating aspects of controversy regarding IOC's performance were reflected by its Chairman, Admiral W. Langeraar, in 1969.

> Various criticisms had been leveled at IOC; it had been accused of giving too much influence to the scientists, and also of not giving them enough; it had been described as a rich man's club where the interests of the smaller countries were neglected, and at the same time some critics claimed that the smaller countries were gaining too much influence; it was described as an autonomous organization that was going beyond its terms of reference, and at the same time it was urged to promote greater freedom of scientific research and remove all legal and jurisdictional obstacles to scientific activities by bringing together background information for the benefit of international lawyers and treaty experts.[80]

Later he said,

> But there is no reason to despair.[81]

At the sixth session of the IOC in 1969, several significant procedural and substantive events for the future of the IOC were initiated. The amendment of the Commission's statutes to provide for a broader connection with the specialized agencies while IOC remained in UNESCO was approved and scheduled to become effective at the seventh Assembly session in 1971.[82]

The revised Statutes define the IOC's functions and purpose more precisely, but they also provide a degree of flexibility to respond to change.

> For example, the Statutes permit the Commission to determine how it will obtain scientific advice, how other agencies with marine science interests are to be affiliated, and how amendments are to be made. Yet along with the specification of its statutory authority, the language of the Statutes permit a flexible rather than strict interpretation.[83]

The change in statutes, coupled with the implementation of the newly formed Inter-Secretariat Committee on Scientific Programs Relating to Oceanography (ICSPRO) agreement were to provide a joint secretariat for IOC and multiagency planning for marine programs for the first time.[84] The effectiveness of these arrangements will be assessed later.

Procedurally, the IOC was forced at the sixth session to abandon its practice of decision-making by consensus for a formal vote on certain issues. The first vote taken in the history of the IOC was over the matter of the appropriate function of the Commission in the promotion and facilitation of the freedom of scientific research to be expressed in the formulation of the new statutes for IOC.[85]

The problem of permission for oceanographic research in the waters over which coastal states claim jurisdiction was politically sensitive because of the discord about the extent of jurisdiction and the motives for research. Because of the

increasing discussion about controls over scientific research (cases of actual interference were not numerous if burdens of bureaucratic "red tape" for consent are discounted) that caused concern among some ocean scientists after the conclusion of the 1958 conventions on the law of the sea and the recent politicization of marine issues, various proposals were offered which called for IOC assistance in obtaining coastal state consent for research when required.[86] Some proposals considered an active IOC role to certify and legitimize the intentions of the party seeking consent, but the IOC ultimately decided upon a considerably more passive intermediary role.[87] The divergence of interests between the members of the IOC with the capacity for extended oceanographic research and the members who were sensitive to the derogation of their sovereignty with respect to decisions over consent for research in their claimed jurisdiction (principally Latin American States) was too great to yield a consensus. It should be noted that the question of the IOC Secretariat's capacity to offer anything more than the most passive service to obtain coastal state consent for research was a serious consideration.[88]

Another indication of the divergence of the interests of IOC members at the sixth session occurred when it was decided that a Group of Experts on Long Term Scientific Policy and Planning (GELTSPAP) would be useful to establish

priorities for LEPOR. Controversy arose concerning the relationship of GELTSPAP to other advisory bodies, and more critically, whether its membership would be composed of governmental representatives or independent scientists.[89] Because sufficient agreement was lacking, the decision was postponed until the next meeting of the IOC Bureau.[90]

While some issues at the sixth session of IOC were contentious, most were not;[91] the IOC moved to broaden its role in at least one important scientific area and decided to restrict its role in another. The idea for an Integrated Global Ocean Station System (IGOSS) had been formally assigned to a working committee for planning by the fifth session of the IOC in 1967. By the sixth session, a plan for Phase I of IGOSS had been formulated in close cooperation with WMO and was accepted as a basis for organizing a large-scale system of data collection for oceanographic and meteorological research. This bureaucratically attractive scheme would provide a rationale for long-term commitments of governmental funds and manpower to operate a complicated system of routine observations.[92] The scientific merits of such a program have been questioned by at least one distinguished physical oceanographer.[93]

On the matters of marine pollution and marine resources assessment, IOC largely demurred in 1969. Although the topic of marine pollution was subjected to the Commission's

attention as early as 1964[94] and working groups were intermittently assigned to examine certain scientific aspects of pollution which culminated in a major section of the LEPOR outline, the IOC was reluctant to establish itself as a contender for the "lead agency role" on this issue. In fact in in 1969 when attention was accelerating on the subject of marine pollution, a joint Group of Experts on the Scientific Aspects of Marine Pollution(GESAMP) was created as a result of an IOC proposal to UN organizations at its fifth session. While IOC had its own working group on the subject and SCOR representatives participated on GESAMP, IMCO was made the administrative home for GESAMP and a focal point for marine pollution in the UN system.[95] Of course, the IOC was aware of the interests and programs of the other UN bodies concerned with marine pollution in a jurisdictional sense, and it sought to limit its involvement strictly to the purely scientific aspects of marine pollution.[96]

In the case of marine resource assessment, IOC had consistently limited its efforts to basic rather than applied oceanography.[97] This position on applied research can be attributed to a recognition of the competences of other UN organs, principally FAO, and more importantly, to the perception of marine scientists of the fundamental importance of basic research. The impact of the general unwillingness of IOC to apply scientific information to useful purposes has been criticized[98] and associated with IOC's

relative lack of political support from developing states. The implications of the IOC view of its role with respect to the needs of the UN system to provide useful services to developing states will be discussed later.

THE CRITICAL TWO YEARS[99]

Since the approval of the draft amendments to the IOC statutes by the sixteenth session of the UNESCO General Conference in 1970, the implementation of measures to broaden the Commission and enhance its effectiveness has not been entirely successful. In this period of transition and expected growth, the IOC approached the operational phases of several large and important scientific programs; yet prevalent reservations remained about the capacity of the IOC to fulfill its enlarged mandate.

By the time of the first session of the IOC Executive Council in July 1972 (under the revised statutes), the achievements of the IOC in the area of coordinating international cooperative investigations were noteworthy. Planning, coordination, and follow-up phases of investigations were undertaken in such regions as the Indian Ocean, Tropical Atlantic, western Pacific, Caribbean, Mediterranean, eastern central Atlantic, north Atlantic and the southern ocean,[100] although not with equal success in each region.[101]

Planning had progressed on IGOSS to the point that an operational plan for an IGOSS Pilot Project was developed and implemented on a regional basis in January 1972. Twenty-two IOC member states

expressed interest in participating in the Pilot Project.[102] As a dramatic example of the possible benefits from collaborative research programs at sea, the Federal Republic of Germany received 4,750 oceanographic observations during the IGOSS Pilot Project from March to October 1972, of which only 350 observations were from their own ships.[103] Other important services included documentation prepared for a Preparatory Conference of Governmental Experts to develop a draft convention on the legal status of ocean data acquisition systems (ODAS) and improvements and extensions of the Tsunami Warning System in the Pacific.

In addition to the more "traditional" IOC endeavors, the Commission began to emphasize two broad areas of inquiry in the context of the slow-starting LEPOR to an unprecedented extent. On the basis of a study by GELTSPAP in November 1970,[105] which was endorsed by the IOC Bureau in March 1971, the IOC established priority upon investigations of marine pollution and resource assessment. As a result of the GELTSPAP proposal of research priorities, a joint working group of ACMRR/SCOR/Advisory Committee on Oceanic Meteorological Research of WMO (ACOMR)/GESAMP on scientific investigation of pollution in the marine environment met in October 1971 to formulate recommendations for the IOC program.[106] Earlier in 1971, urgent requests from the Intergovernmental Working Groups on Marine Pollution and on Monitoring and Surveillance of the United Nations Conference

on the Human Environment as well as recommendation 12.5 of the IOC Bureau and Consultative Council twelfth meeting reinforced the importance of marine pollution research to the IOC mission.[107]

The report of the joint working group was presented to the seventh session of the IOC and the recommended program of Global Investigation of Pollution in the Marine Environment (GIPME) received enthusiastic approval from the Commission.[108] Estimates were made of the additional Secretariat capabilities needed for GIPME and the Chairman of the IOC was directed to formulate proposals for additional financial support to the Secretary General of the UN Conference on the Human Environment and to the heads of ICSPRO agencies.[109]

The potential opportunity for expansion of IOC operations afforded by marine pollution research was quickly capitalized upon as a central theme in 1971, despite an earlier, more conservative posture on the subject. In fact, in his message at the seventh session of IOC, the Chairman reaffirmed the responsibilities of IOC to concern itself with issues broader than science for its own sake:

> ...a new decade has started, the seventies, and at the same time our commission also moved into the second decade of its existence. The decade before us will undoubtedly be dominated by progressive ocean technology, existing scientific research and results, and will demand new partially unexplored ways to master and manage that technology. In our own field this precipitous progress will become manifest in oceanographic exploration and research, but it will also lay on the shoulders of us all the increased burden to keep a constant watch on the health and quality of the marine environment.[110]

In June 1972 the UN Conference on the Human Environment included firm recommendations in its action plan for increased support for the IOC in its efforts dealing with environmental research.[111] Almost immediately following the Stockholm Conference, the first session of the IOC Executive Council met in early July and the message of the IOC Chairman was dominated by the urgency of marine pollution research to the IOC:

> For us in IOC it should be a matter of rejoicing that such a relatively large part of the burden to stand guard over this heritage is laid on our shoulders. It should be a matter for humility to recognize how much will depend on our decisions and our cooperative actions...All together it should be a great stimulant to our work to realize how much the world is counting on us to do a good job.[112]

Later, in the Spring of 1973 a detailed application for support for marine pollution research was submitted to the new Environment Secretariat.[113] Among other things, a comprehensive report on the "health of the ocean" is planned.[114]

In the area of marine resource assessment, the new commitment of IOC to what might be considered applied research was not as fervent as in the case of the pollution research "bandwagon." Nonetheless, any increase in emphasis on practical research will probably have some impact upon the political strength of IOC with the developing states. The GELTSPAP report[115] underscored the importance of two broad subjects of LEPOR inquiry that would substantially aid marine resource

development planning. Numerous specific proposals for further investigation of living resources and their relations with the marine environment provided for augmented cooperation between physical and biological scientists to study such phenomena as coastal upwelling ecosystems, the living resources of the deep sea, and the potential for mariculture in shallow water.[116] Proposals relating to marine geology, geophysics and mineral resources (geosciences) included systematic surveying of the geology of continental margins (where the potential petroleum and natural gas deposits make this project the most economically attractive in the near term), charting of the deep-sea floor, geology of the Mediterranean and marginal seas as well as river mouth monitoring for pollution transport processes.[117]

The Chairman of GELTSPAP summarized that the dual emphasis of basic and applied marine research in the recommendations

> would vastly advance our knowledge of our planet and 'inner space' and help to equip the nations, developed and less developed, to increase their use of the oceans very profitably indeed.[118]

It should be acknowledged that the practical orientation was probably due in large measure to projects decided upon somewhat unilaterally in the U.S. for IDOE.[119]

During this period from 1970 to the present, several other indications of the expansion of the IOC research perspective appeared. The nongovernmental advisory body SCOR considered proposals for broadening its base from primarily physical

oceanography to associate biologists, geologists and meteorologists who are interested in marine problems more closely with the important advisory tasks of SCOR. Some progress has been made to engage a wider base of expertise in SCOR deliberations by the establishment of new "horizontal" links with other disciplinary bodies in the International Council of Scientific Unions.[120]

In a parallel undertaking, recommendations from the ninth session of the IOC Bureau and Consultative Council and then by the sixth plenary session of the IOC in 1969 concerned the desirability of an advisory body on ocean engineering for such programs as IGOSS and LEPOR.[121] By the time of the seventh session of IOC in 1971, an Engineering Committee on Oceanic Resources (ECOR) applied to be recognized as a nongovernmental advisory body to IOC, and the Commission accepted ECOR.[122]

In spite of attempts to improve and adapt the IOC by means of amended statutes, creation of ICSPRO, and the branching out into projects of a more applied nature for pollution research and resource assessment, IOC has continued to suffer from what appears to be chronic ailments. The IOC Secretariat was still so understaffed that it could not meet the increasing demands put upon it; programs for mutual assistance and technical training were grossly inadequate from the point of view of providing effective incentives for developing states to become more involved in the activities of the IOC. Legal and bureaucratic constraints impeded ameliorative steps for IOC expansion. For example, the important IOC

publication International Marine Science ceased in 1970 because of a lack of staff support;[123] and attempts to resume publication were not successful until November 1972.[124]

The problem of IOC Secretariat capacity and its difficulty in meeting demands for expanded IOC services was a continuing one. The ICSPRO agreement in 1969 was designed to provide IOC with a jointly staffed Secretariat and additional resources for program support. Yet, by the end of 1971, difficulties with the provision of officers from the agencies and the considerable delays for appointment of successors to funded positions resulting from a rapid turnover of personnel produced a situation so desperate that the secretariat averaged "little more than 50% of its authorized strength of 8 professionals during the period" after the sixth session of IOC (6 supported by UNESCO, 1 by WMO, 1 by FAO).[125]

Repeated recognition of IOC staff and financial inadequacies led to formal proposals for "rationalizing" the structure of the IOC Secretariat to obtain better use of available resources.[126] At the seventh session of the IOC in 1971, the Chairman had produced a proposal for restructuring the subsidiary bodies of IOC under the direction of four new standing committees.[127] The rationale was to reduce the number of meetings and to streamline IOC functions. However, the issue of restructuring the IOC became controversial, and the seventh plenary session (after a formal vote) decided to separate the IOC Secretariat from the UNESCO Office of Oceanography and called for further study and proposals regarding the IOC structure

to be presented at the first IOC Executive Council session in 1972.[128]

The primary aspects of internal reorganization at issue were the appropriateness of sufficient IOC task definition before organizational rearrangements, and whether or not another layer of bureaucracy would in fact increase secretariat efficiency. The delegates from Britain and Australia were particularly concerned about the priority of refined IOC task definition to reduce the workload to essential efforts.[129] On the other hand, some Latin states and particularly the Soviet Union were concerned about the erosion of control from the executive bodies to the new standing committees and the increase in complexity of an already unwieldy bureaucratic structure.[130] Disagreement on the several reorganization proposals[131] prevailed at the Executive Council meeting in July 1972, and still another request for study and proposals was made to an ad hoc working group to be brought together.[132]

The ad hoc Working Group on Rationalizing the Structure of the Intergovernmental Oceanographic Commission met immediately following the first session of the Executive Council, and individual members of the ad hoc group were assigned tasks in seven areas of interest to be considered at the second session of the group in January 1973. Several positive proposals emerged that were to be considered for implementation by the second session of the IOC Executive Council in May 1973.[133]

In order to strengthen the links and formalize the relationship of the IOC with the organizations participating in ICSPRO, the Chairman of the ad hoc group, Mlle. Martin-Sane of France, prepared a draft protocol to the statutes of the Commission. The draft protocol was presented to the sixth session of ICSPRO for comments in December 1972, and it was decided that it was

> neither necessary nor desirable to further amend the statutes of the Commission at this time.[134]

As an alternate approach, members of ICSPRO prepared a revised text entitled "Draft Principles and Procedures Concerning the Mutual Relationship of the IOC and the Organizations Participating in ICSPRO," after consultation with the Director of the UNESCO Office of International Standards and Legal Affairs.[135]

At the second session of the ad hoc Working Group in January 1973, the draft principles and draft resolution generated by ICSPRO in December to be considered by the IOC Executive Council were reviewed and several difficulties were identified by representatives of member states. The Soviet representative expressed concern that the principles drafted by the international civil servants of ICSPRO

> would transform the Commission into an interagency body, with a joint secretariat to carry out the needs of the ICSPRO agencies in marine science rather than those of the member governments.[136]

Other states felt that the ICSPRO proposal to the Executive Council would weaken the IOC. By unanimous decision the ad hoc Working Group recommended to the IOC Executive Council that IOC should

enter into separate "formal agreements" with ICSPRO agencies to define unambiguously the reciprocal obligations, and it provided a model of such an individual agreement for discussion.[137]

With respect to the important task of "rationalizing the structure of the subsidiary bodies" of IOC, the ad hoc Working Group reviewed a proposal by the delegate from Canada, Dr. N. J. Campbell. The IOC was strongly criticized for the

> structure of subsidiary bodies resulting in a lack of scientific direction over the years and an inability of the Commission to respond adequately to the studies and reports produced by the subsidiary and advisory bodies.[138]

Dr. Campbell proposed that the basic structure of the Commission's subsidiary bodies should be drastically reorganized into a number of Working Committees composed of national representatives supported where necessary by groups of experts and ad hoc bodies for special tasks.

After some debate, the criticisms of the Soviet Union based on disfavor of working committees generally and of Argentina, Canada and Brazil favoring the abolition of the IOC Legal Working Group were overcome, and the ad hoc Working Group approved the concept of (initially) five Working Committees with the following assignments:

1. International Oceanographic Data Exchange
2. Training, Education and Mutual Assistance
3. Ocean Science Policy (replacing CELTSPAP and including responsibility over cooperative investigations as well as LEPOR)
4. IGOSS
5. GIPME [139]

Furthermore, it was recommended that the IOC First Vice Chairman serve as the "alter ego" of the Chairman, while the other three Vice Chairmen of IOC be delegated responsibilities in (1) ocean science policy (2) oceanographic services (3) training, education, and mutual assistance.

Finally, the ad hoc Working Group on Rationalizing the Structure of the IOC considered a proposal by Mr. William Sullivan of the United States to increase the efficiency of the Secretariat.

> In his opinion, and the group concurred, the priority task was to ensure that a work plan and financial requirements of the Commission were made available at regular intervals to the Assembly and Executive Council for this consideration, in order that they may assess programme priorities, finances and staff needed to service the various projects of the Commission and prepare proposals for the consideration of the appropriate authorities from the ICSPRO agencies and other bodies providing support to the Commission.[140]

In discussion, Mr. Sullivan indicated that there was a precedent in the case of the International Bureau of Education (IBE) in UNESCO, which prepares its own budget and submits it to the Director General of UNESCO as authorized by IBE statutes. Preliminary consultation with UNESCO authorities illuminated no serious problem with this proposal

> subject only to the proviso that the final decision on the overall budget ceiling for support provided by UNESCO to the Commission remains with UNESCO.[141]

In fact, it was judged that the IOC Assembly could recommend a greater percentage increase in budget than anticipated by UNESCO planning, provided that an increase could be clearly justified.

The second session of the Executive Council met during May 1973 and adopted the report of the ad hoc working group on rationalizing the structure of the Commission with certain reservations.[142] As a result, the Council instructed the Secretary of the IOC to present a draft program of work and financial requirements to the next Executive Council and Assembly sessions and to consider the measures identified by the working group to increase the efficiency of the Secretariat. Furthermore, the Council supported the other working group recommendations concerning strengthened relationships of the IOC with scientific advisory bodies, nonparticipating member states, and other organizations interested in its work and reaffirmed the Commission's role with respect to marine environmental protection.[143]

However, disagreement prevailed at the second Council session over the major issues of strengthening the ICSPRO arrangement, restructuring the subsidiary bodies, and the revision of the responsibilities of the Vice-Chairmen.[144] In the absence of a consensus, the Executive Council transmitted draft resolutions covering the issues for consideration and disposition by the eighth Assembly and requested the delegate from Canada to assist the IOC Secretary in elaborating on the terms of reference of the proposed working committees.[145]

Although significant progress toward agreement on restructuring the IOC in order to make its operation more responsive and efficient was delayed until at least the eighth session of the IOC

Assembly in November 1973, the Secretary of IOC announced some more immediate steps to enhance the performance of the Commission's broadening duties. The Special Committee of the UNESCO Executive Board had made a study of oceanography within UNESCO during March 1973.[146] A draft resolution from the Special Committee to the Executive Board concerning additional staff assignments for the IOC Secretariat was adopted by a substantial majority of UNESCO Executive Board. The resolution

> invites the Director General (of UNESCO) to examine the possibility of increasing in the near future the staff of the Intergovernmental Oceanographic Commission by four members (two professional, plus two general service category) in order to permit the Commission's Secretariat to carry out the increasing responsibilities which have devolved upon the IOC in recent years.[147]

The Director-General indicated that he would investigate the possibility of providing one additional Professional Officer within the current biennium from existing funds.

The problem of technical assistance to the developing states was also critical. Although the IOC had always paid obeisance to the "interests of the developing states," the record of achievements in that endeavor was consistently marginal. Some technical assistance was provided for in IOC-coordinated expeditions such as IIOE, but IOC working groups approached mutual assistance "slowly and cautiously."[148] One working group on mutual assistance was completely dormant between the fifth and sixth session.[149] In July 1969 UNESCO established a position for a Training and

Education Officer in the Office of Oceanography, and discussions at the sixth session called for further meetings of the working groups on Mutual Assistance and Training and Education in Marine Science.[150] The joint meeting of the two working groups on assistance met at Malta in 1971, and by the seventh session of IOC an elaborate and explicit set of recommendations on programs for immediate implementation with indications of financial means was accepted at the seventh session.[151] At that meeting, the Chairman of the IOC apologized for the weak IOC record on technical and educational assistance, and he concluded

> There are several reasons why on this subject of mutual assistance less progress can be reported than the importance of the subject warrants. While on the one hand the Commission tries, with its limited resources and within its terms of reference, to be of the greatest possible service to member states and gives guidance to a number of cooperative investigations in ocean areas, on the other hand, it has to keep itself informed on what is going on in other domains of intergovernmental cooperation. It is especially the manifold initiatives that were taken up by the United Nations with regard to the world's ocean that make it imperative that IOC keeps pace with these developments and provides whatever scientific information is needed or requested.[152]

By the time of the first session of the IOC Executive Council in July 1972, "considerable displeasure" was expressed regarding the lack of progress in implementing the seventh IOC session resolutions on assistance. There was at that time no member of the IOC Secretariat working on assistance, and a draft plan for well-balanced training programs could be developed only

later in 1973.[153] The Council emphasized highest priority in this area, consolidated existing working groups into one working group on Training, Education and Mutual Assistance (TEMA), and made specific recommendations for improving the assistance role of IOC.[154] However, the representative from UNESCO stated that there was "little possibility" of more help being made available from UNESCO.[155]

The first session of the new working group on assistance met in Paris during March 1973, and a relatively large attendance reflected an increasing awareness by developing and developed states of the importance of assistance in connection with marine research.[156] Thirteen recommendations were made by the working group to be considered by the Executive Council. There was some avoidance of specific details and concrete action proposals, and increased success in the area of assistance in marine science is uncertain at least for the near future. Particularly important issues concerned the problems of evaluating past performance of such programs as fellowships in marine science, and the increasing need for developing states to take the initiative to apply for specific types of assistance that will suit their needs as they perceive them.[157] The potentially greater role of the IOC TEMA Working Group with respect to marine-related assistance programs of other ICSPRO agencies was also cited as being inadequately developed.

During the critical two years after steps were taken to expand the IOC, some progress was made in building a stronger organization to undertake its multifaceted mandate. The Secretariat

and professional scientists serving on subsidiary bodies produced a substantial number of useful services, and in view of the constraints of time and finances, they performed a noteworthy job. Yet, many fundamental problems remain unsolved; the future of the IOC in relation to the growing involvement of the UN system with ocean space will be answered better after the development of the IOC has been put into analytical perspective.

THE EVOLUTION OF THE IOC IN PERSPECTIVE

The early years of the IOC (until 1966-67) can be characterized as being generally successful with reference to its then existing goals. The coordination of large multinational research expeditions was no mean service. It is instructive to consider what coordination to the scientist actually represents in one important example, the International Indian Ocean Expedition:

> Discord between individual scientists and specialized guilds was common, some complaining of coercion to participate, some believing that biological or air-sea interaction components were unduly subordinated, and some finding that available ships were inadequate for the missions undertaken.. [A study] revealed disquieting thinness of planning and coordination by the participants; the scattered objectives, projects, scientists, ships, and languages had produced a melange best characterized as enthusiastic chaos. The expedition was a patchwork of ad hoc arrangements between individual scientists, not a deficiency per se, since this undirected style was the only basis on which the scientific community would have undertaken the enterprise.[158]

Despite the weakness in overall planning,

> The IOC coordinated research [vessel cruise] tracks, got customs courtesies extended to participating ships, coordinated cruises, helped to establish the first international sorting center for zooplankton samples in India, began to work out a meteorological program for IIOE in 1961, standardized data collection techniques, and is in the process of publishing atlases and collected reprints of previously published works which contain the results of the Expedition. [159]

The IOC undertook the IIOE and later coordinating efforts with a very modest Secretariat and limited funds. As of the biennium 1963-64, the IOC Secretariat comprised four professionals with a regular program budget of $44,000 and an additional $50,000 for IIOE coordination. SCOR received $25,000 for its advisory services from UNESCO.[160] As an example of the amplifying effects of investment in international cooperation, Dr. Federov claimed that

> for every 100,000 U.S. dollars provided by UNESCO as supporting funds for IOC, its members contributed 15 to 20 million dollars directly to cooperative research programs and that this rate of return expanded recently by a factor of 3 or 4.[161]

Professor Skolnikoff has evaluated the effectiveness of international organizations, and he has concluded that there are general conditions that tend to promote organizational effectiveness.[162] While he does not claim that all or even most of the conditions must be satisfied, he believes that the following criteria singly or in combination describe the more successful international organizations today:

1. specialized, especially technical, subject matter
2. clear, justified, and agreed mission

3. membership restricted in number on the basis of interest in subject
4. organizational structure that reflects interest, power, and knowledge of member governments
5. small secretariat
6. little public attention
7. subject matter of moderate political or economic interest [163]

Until the mid-1960s, the IOC met each of Professor Skolnikoff's conditions quite well. The benefits of the IOC accrued predominately to marine scientists, which at the time was appropriate and desirable. Much of the data collected on international investigations had been analyzed in a form that suited the interests and needs of the individual research scientists; little effort was made to apply the results of expeditions to immediate economic needs.[164]

However, as even Professor Skolnikoff acknowledges, effectiveness can be defined by a number of different criteria, and ultimately the effectiveness of an organization may be high, but it may simultaneously make only a very marginal contribution toward the fulfillment of international needs. He states

> a major problem is what is meant by the 'effectiveness' of an organization. Effectiveness from whose point of view? Does it mean simply efficiency of performance of a secretariat once tasks are agreed, ability to create an environment that encourages governments to reach agreements and carry them out, equality of representation or some measure of benefit achieved by all member nations?[165]

After the stimulus of Ambassador Pardo's agenda request in August 1967,[166] awakening international interest in the potential importance of marine resources politicized issues relating to the sea. The relatively "effective" facilitation of cooperative marine

research by the IOC was no longer regarded by many states as sufficient. Ocean science and exploration were recognized as a valuable means as well as ends in themselves. Rational decisions about marine resource development had to be based upon scientific fact.[167] In this regard, knowledge is the basis of power.

To the extent that the already developed states had the capacity to undertake expensive marine research with elaborate ships and equipment and had a relative monopoly of skilled manpower to interpret the results of the investigations, the developing states were

> united in the fear that the developed [states would] soon gain the knowledge to exploit the oceans without their participation.[168]

The open publication of research results as a justification for freedom to undertake marine research is of little actual value to developing states with little indigenous capacity to apply those results. More importantly, the "innocence" of intent for research is somewhat irrelevant if open publication of results can benefit those users whose motives are not so innocent.[169]

It was time for the IOC to question its goals, priorities, and even its clientele. The need to provide advice and services on technical questions forming a basis for political debate to the Secretary General of the UN and the Seabed Committee was unavoidable. Moreover, the greater involvement of developing states in the affairs of IOC was imperative, if for no other self-serving reason than that the future of relative freedom of marine research was uncertain without the understanding and support of most states.

Although oceanographers lamented the fact that IOC was spending less time on purely scientific activities,[170] the time was rapidly passing when the efforts of the ocean scientists were viewed with indifference by most states; the oceans were becoming too important to be left to the scientists.

The composition of member state delegations is an indicator of the character of a state's interest and involvement in the IOC. Because of the fact that the Commission is an intergovernmental organization, national governments are the only official members. Despite the international nature of the activities of the IOC, most national representatives to the Commission until the sixth session of the Assembly were not sent from the foreign policy ministries of their respective governments. Before the sixth session in September 1969, the United States was the only member state of IOC that consistently sent a foreign office (State Department) representative to IOC sessions.[171] Scientists and scientific administrators were frequently delegates.

At the sixth session more representatives of foreign ministries attended than at any other previous session,[172] and the subtle shift in representation resulting from the previous politicization of marine issues signalled a perceptible change in Assembly deliberations toward more political issues.

The increasing world interest in the sea was a mixed blessing to the IOC. A greater awareness of the potential economic benefits from the ocean implied a greater attending commitment to exploration of the sea. Large-scale international efforts propelled the IOC onto a new level of importance to the UN system. Yet, the

intensely political debate about the ocean stemmed from the asymmetrical national capabilities for marine exploitation which would tend to reinforce the existing economic disparity between the states of the "North and South"[173]; the net effects of the politicization may have been to impede the success of IOC expansion.

The ultimate success of the expansive phase of the IOC to meet the new demands being placed upon the UN system to assist in the development and protection of marine resources remains uncertain. Specific measures to strengthen the IOC since 1967 did not perform as well as intended. In order to project the probable role of IOC into the near-term future it will be necessary to evaluate the progress of the Commission's expansion in terms of its organizational capacity to fulfill its broadening mandate.

Five tests of capacities an organization must have to fulfill its tasks have been suggested by Professor Cheever on the basis of detailed study by Margaret E. Galey: political, legal, structural, resource, and administrative. He contends that the IOC has been weak in all of these.[174] Even though there is a large degree of interdependence between the five tests, it will be clearer to examine each test individually.

Political Capacity

All of the other tests of organizational capacity in a sense derive from the test of political influence. For this reason, a relatively detailed examination of the reasons for the political weakness of the IOC is indicated.

First, it is necessary to make a distinction between the aspects of the political influence of the IOC over the relatively "internal" actions of the comparatively limited community of marine scientists and the case of influence over important policies and actions of governments in ways that generally affect marine research.

In the first case, that of the IOC capacity to influence the oceanographic community, the IOC has had some positive impact on the conduct of national marine research operations at the technical level. As Professor Galey acknowledges, the legal capacity of IOC to perform such functions as norm setting and enforcement is marginal at best.[175] Nonetheless, by means of political persuasion the IOC has had measurable success in norm creation, particularly in the area of standardization of techniques of oceanographic measurement and the reporting of research results. Although the record of the IOC in promoting standardization and data exchange in marine research has not been completely successful, the performance of IOC in this regard is better than that of most international scientific bodies. In fact, the Oceanography Section of World Data Center A is said to be the most successful of the scientific sections.[176]

The relative success of the IOC in promoting international marine science programs in contrast to a heterogeneous aggregate of national efforts is probably due in part to the informal structure and network of relationships of individuals participating in the affairs of the IOC. Professor Galey has studied the importance

of the positive contributions of the informal structure of the Commission and its subsidiary bodies, and she has recognized the value of individual leadership in the achievements of the IOC.[177] The role of the Chairman of the IOC is often catalytic, and the leadership abilities of Admiral Langeraar have been acknowledged.[178] In addition, the pivotal position of IOC Secretary was occupied until the sixth session by an American (Warren S. Wooster) and a Soviet (K.N. Federov) marine scientist of considerable professional stature. As an indication of the strength of informal relationships, the incumbency of the two senior positions on the IOC Secretariat was reserved until the late 1960s for a Soviet and American national by tacit agreement.[179]

The means by which political influence is directed to precipitate a consensus on a variety of IOC matters that form the substance of resolutions or recommendations has been examined by Professor Galey.

> Consensus is developed by formal and informal means in the discussion of agenda items and the formulation of resolutions and recommendations. The IOC Chairman or Secretary play key roles in developing agreement on items upon which member states or affiliated organizations express divergent views. After introducing an item the Chairman calls upon the Secretary or a member of the Secretariat staff to report on the item. Following the report, the Chairman calls for general debate on the item. The Chairman then summarizes the major points of the debate. If the members agree, the Chairman appoints a group to draft a resolution to be presented to the meeting for approval. If members are not in agreement, the Chairman may appoint an ad hoc group, consisting of those members having most conflicting views and in which compromise may be achieved. These groups provide a convenient means for circumventing debate on controversial items. They also contribute to the process of consensus formation. ...[180]

> Apart from the formal means of developing a consensus, informal discussions outside of meetings, that is, at coffee breaks, meals, and other gatherings contribute to the development of consensus. Many delegates and executive officers of the IOC acknowledge this to be a fact. Admiral Langeraar, the IOC Chairman, frequently called for tea breaks during the sixth plenary session or meetings of session committees with the announced hope that tea and talk would help resolve differences.[181]

The political influence manifested in the second case, which is more broadly directed toward policies of governments and international organizations, is much more tenuous and difficult to measure. Indeed, the success of the IOC in this case is critical to the attainment of the Commission's objectives. An assessment of the political capacity of the IOC must examine the sources of power at the intergovernmental level.

Because of the fact that few universal intergovernmental organizations are truly operational (i.e. independently financed) in the sense that states are,[182] the political influence of an international organization is largely a reflection of the political power of the national clientele that it serves and its relative importance to that interest group. That clientele might be non-governmental as in the case of recent environmental initiatives by state members in the UN system responding largely to indirect pressure from private environmental groups, but the actual political influence results from the translation of nongovernmental pressure (i.e., public concern) into governmental action (i.e., legislative and executive measures), primarily at the nation

state level. In this connection, international organizations can achieve political influence over states and other intergovernmental organizations in two distinctly different ways:

1. internally, by serving interest groups within a state which in turn exert pressure on the national government to support the organization and its policies
2. externally, by mobilizing "world opinion" or the intervention of other governments to influence states or other IGOs.

Clearly, the former mode is presently the predominant one; as will be discussed later, the potential of the latter is significant, but its implementation depends upon a greater evolution of international organizations' service and operational capabilities.

In the case of the IOC, its political influence has been consistently quite weak. In the early years when IOC served the marine scientists primarily in a few developed states, IOC influence was so minimal that UNESCO allowed IOC to function somewhat autonomously. To be sure, the marine science interests in most states were so fragmented in various ministries and private institutions that they were hardly able to muster national support for themselves let alone increased support for IOC. Part of the difficulty arose from the organization and priorities of governments and partly from the scientific community itself.[183]

Scientists perceive themselves as apolitical usually and only participate in the political process to the extent that it is necessary to obtain financial support from governments for costly

research. As mentioned earlier in connection with IIOE, marine scientists tended to operate independently as individuals, and as a result, a unified and politically sophisticated constituency has never really applied pressure for mutual interests.

> Scientists are often parochial and will say... we want to be let alone. We want to work in our own laboratory on our own ship; don't bother us with proposals for international research projects...but of course keep the papers coming in from all the[foreign] laboratories.[184]

In addition to a general unwillingness to become involved in political activity to further their interests, scientists also resist direction of their research to applied goals that would tend to bring governmental support.

> Too often scientists display the classic behavior pattern of the retreat to the "Ivory tower," claiming that their scientific role is legitimized because they seek to 'understand' nature, wanting funding and support while overlooking reciprocal obligations. In more countries today, such isolation, such neglect of cost effectiveness of scientific activity, and relationship of scientific discovery to other social, economic, and political priorities is being questioned.[185]

The norms of the scientific community[186] favor the pursuit of knowledge for its own sake and a seemingly relentless demand from scientists for the generous support of basic research is useful to the extent that participants in the political process tend to be myopic in their perceived need for demonstrable short-term benefits.[187]

In the developed countries, the relative absence of positive political pressure from the marine scientists (usually a small number of individuals anyway) to produce political support for the IOC is aggravated by the negative influence of competing ministry bureaucracies (i.e., weather, agriculture) which do not wish to see their influence and the influence of "their" international organization diminished by an increase in the support of IOC. Not only is the state the site for bureaucratic competition, but the interests of state bureaucracies extend the competition to the associated international organizations as well. The role of international bureaucracies will be discussed later.

Until 1967 the primary service to the developed states from IOC was the facilitation of cooperative marine research efforts to share expenses for large investigations.[188] However, the "costs" of such services to the developed state can originate from different sources. Certainly, foreign ministries often are unable to harmonize or streamline various positions of that state in numerous functional international organizations when each state ministry has a primary and self-interested role in state representation.[189] At best, there is some duplication of effort and attendant inefficiency; at worst, agencies of the same state can work at cross purposes in their respective international organizations. An increase in the political strength of an international organization in this sense, then, can reduce the developed state's capacity to coordinate its positions into a

coherent whole that minimizes expensive duplication of efforts.

Of perhaps greater importance to developed states, the costs of political influence of an international organization such as the IOC may become excessive as increasing numbers of developing states join and exert increasing pressure for greater assistance at the possible expense of some technical programs. For this reason, developed states often favor a restriction of the political leverage of international organizations such as the IOC to maintain effective control over their financial commitment, while enjoying the services in their interest.

Since 1967 two important transitions have occurred which potentially enlarge the scope of services to be obtained from a stronger IOC. First, the increasing world awareness of the economic benefits to be gained from marine resources has engendered intense political debate and a tendency for some coastal states to follow policies of disorderly unilateral action with respect to marine jurisdictional boundaries. There is the danger that many of the critical actions by states, particularly the developing, will be based upon inadequate scientific or technological information relating to any jurisdictional alternative; some states are uncertain about where their best interests lie even if they wanted to maximize them. Engaging broader participation by most coastal states in a stronger IOC might lead to a greater sense of understanding and confidence in the process of rational development of marine resources

based on sound scientific and technological analysis. To the extent that developed states can shift the substantive debate about marine resources from a political level in a political forum (the Seabed Committee) to a more technical level in a less political IOC, agreement and accommodation that are acceptable to developed states are more likely to occur. The Soviets attempted such an emphasis on IOC in 1967 while resisting the pressure for a Seabed Committee. Similarly, the American IDOE proposal was partially based on the objective of "injecting" some political adrenalin into IOC.[190]

Second, the increasing concern in the late 1960s for environmental protection in some states (primarily the developed) provided the basis for a significant new area of services a politically stronger IOC might provide. Not only is there a more urgent rationale for research and monitoring at sea, but the potential for political support to attach priority to IOC efforts is increased because of the greater constituency that would be served. Political pressure from numerous citizen groups in developed states in favor of environmental research measures may yet provide the most salient constituency for a strengthened IOC.

To the developing states, the IOC has offered few benefits or services. Notwithstanding the modest benefits of technical assistance programs which have been operating since the creation of IOC and the UNESCO Office of Oceanography, the participation of developing states has been increased, but it has not been as

great as in other organizations in the UN system. Membership in the Commission is open to states without any formal payment for participation. UNESCO membership is not a requirement. The real costs of additional skilled manpower to attend sessions and participate in secretariat or working group activities are often very great to some developing states. Even if they have nationals trained in marine science (some don't), their services are probably put to better use in the native country.[191] For this reason, developing states have favored the relative political strength of large plenary bodies such as the General Assembly or the Seabed Committee where they have some control and do not need representatives with technical competence.[192]

After 1967 the benefits to developing states from IOC participation have increased slightly as such large programs as LEPOR have emerged which offer the promise of peripheral opportunities for educational and technical assistance. Yet, there remains the fundamental problem that many developing states aren't particularly interested in marine science per se.[193] Rather, they are principally interested in the application of science to the development of marine resources for economic benefit.

IOC has only quite recently concerned itself with the needs for applied research <u>in addition to basic studies</u>, and it remains to be seen whether or not it can provide useful services in that area. As will be discussed later, it may be that the importance of the function of disinterested analysis and application of research

through the IOC will become a politically useful service that could exceed the benefits of technical assistance and training for nationals of developing states.

For the sake of completeness, it should be mentioned that certain developing states may perceive a benefit from greater IOC influence in a negative way. That is, rather than the provision of services directly to the developing state (i.e., mutual assistance), an IOC subject to some effective control by the developing states might at least impair certain activities which would benefit the developed states. The controversy regarding the process of coastal state consent for research in the debate about the revision of the IOC statutes is one such case. More recently, the attempt by Argentina and Brazil (also Canada) to achieve the abolition of the IOC Legal Working Group is another example.[194]

In summary, the relative political weakness of IOC has been largely due to its specialized technical focus that served a comparatively small and uninfluential clientele of marine scientists in a few developed states. However, after 1967, marine science and its applications became a matter of broader interest than to just the marine scientific community. The developed states with the capability to explore and exploit the ocean looked upon the IOC as a forum to facilitate marine research that they could apply in ways that developing states feared to be exclusively in the interest of the developed. Although the IOC has not

offered many services to developing states in the past, a new priority has been signaled for technical and mutual assistance to developing states to engage them in useful participation in IOC functions. Finally, the ultimate impact of the potentially larger constituency that may be served by IOC planned and coordinated programs relating to marine pollution research may be critical to the further evolution of political strength of the IOC

Legal Capacity

The principal legal weakness of the IOC is that it is not an independent treaty organization on an equal level with the specialized agencies of the UN system. IOC was established by UNESCO, and from the point of view of UNESCO, it is firmly attached there. There were practical advantages to the IOC association with UNESCO that were perhaps more appropriate when IOC was created as a small specialized body with a limited mandate. In addition to the reluctance of the Soviet Union and the United States to support the proliferation of specialized agencies that might become new centers of political influence or expense, the anticipated demands on the IOC Secretariat to serve the Commission were minor. Administrative support, office space, translation, and publication services could be provided efficiently by UNESCO.

The significant disadvantages to the UNESCO affiliation affected IOC in two ways. First, IOC expansion was limited by UNESCO financial limits and priorities. Second, the ability

of IOC to coordinate and plan for marine research in the UN system was severely restricted by its subordinate legal status as a part of UNESCO. Until the concept of LEPOR matured late in the 1960s, coordination of marine research was the responsibility of the UN Administrative Committee on Coordination Subcommittee on Marine Science and Its Application.[195] Coordination was at the secretariat level, usually by a single annual meeting, and the results were strictly advisory only. The record of the ACC has been criticized often.

> Everybody knows that the ACC hasn't coordinated anything in its life, and in fact one international official said...that there's one dirty word that has never been used in the ACC, and that is coordination. People in fact talk about 'appropriate mutual consideration'.[196]

With the emergence of LEPOR and the identification of IOC as the focal point in the UN system for marine science, the need for an expansion of IOC staff and statutory revision to administer LEPOR was widely agreed upon. The Inter-Secretariat Committee on Scientific Programs Relating to Oceanography (ICSPRO) was to be a partial remedy. In addition to providing for a joint IOC secretariat supported in part by WMO, FAO, IMCO, and the UN, the ICSPRO agreement called for the IOC Chairman to meet at least annually with the executive heads of UNESCO, UN, FAO, WMO, IMCO (rather than at the administrative level) to provide coordinated

planning of marine science programs throughout the UN system. Although the Chairman of the IOC was formally included and the Commission Secretary also served as ICSPRO Secretary, UNESCO was to be the official representative of IOC. The practical effectiveness of IOC to influence the other agencies remains to be seen. Speaking about the ICSPRO arrangement for IOC, Professor Miles observed that when there is a rapid advance of technology as in the case of that for the ocean :

> The effect on existing intergovernmental organizations is usually to increase the scope of their tasks. This leads to an increase in interagency conflict for a number of reasons; at the international level the size of the pie is so small that secretaries general see themselves as being involved in a zero sum game, which in a way they are; also national delegates to executive committees of the organizations see themselves as being involved in competition with other agencies in their own countries...[ICSPRO] is important because if it were enforced it would restrict the authority of the secretary general on questions involving program innovation in this area. They would lose some of the freedom they now have. National delegates on executive committees would also not like it because it would leave them open, they think, to greater harm from competing national agencies, and this in the long run would lead them to attempt to subvert the arrangements by exercizing greater control on the IOC.[197]

It is instructive to speculate why the agreement was made, if the parties did not intend to use it most effectively. Of course, there was the cosmetic effect of the appearance of greater coordination as larger programs were anticipated, even though the agreement would have little actual impact. But, there were probably other more self-serving considerations for each secretary general.

Although UNESCO has always resisted joint sponsorship of IOC, it probably recognized that the advantages of staff additions outposted from other agencies under UNESCO control would enhance the IOC capability at little extra UNESCO expense. On the other hand, the agencies may have agreed to provide staff to IOC because they wanted to insure their participation in the program benefits of LEPOR. It is likely that the slow start of LEPOR, the uncertainty about its future, and the delays in outposting personnel from the agencies are more than coincidental.

In this connection, proposals for an independent IOC have been made repeatedly,[198] and UNESCO has consistently resisted such a change. According to Professor Skolnikoff, UNESCO is usually cited as the organization that is most aggressive about expanding its areas of responsibility, and it would appear that it also actively resists reductions in responsibility. UNESCO reluctance is probably due, in part, to the bureaucratic imperative to maintain control over a subordinate body that has the potential to receive increased support. There is also the possibility that an independent IOC might ultimately become a competitor for scarce funds. In any case, the Secretary General has repeatedly cautioned the IOC that it would be better to remain in UNESCO.[199]

A UNESCO representative has justified the IOC affiliation by saying,

> it is quite logical that IOC should be in UNESCO. This threefold articulation--historic, legal and scientific...will not be overlooked...[changes in IOC legal status] could not take place without the express approval of the General Conference of UNESCO, for it is there that the representatives of members states decide upon the orientation and the general line of conduct of UNESCO.[200]

In the continuing absence of political pressure for a truly stronger, independent IOC, it is unlikely that the Commission will be removed from UNESCO, and the problems associated with that affiliation will have to be solved in other ways.

In June of 1972, the Chairman of the IOC proposed a new Inter-Organizational Committee for Ocean Programmes Support (IOCOPS) to replace ICSPRO, by making IOC a formal party to the ICSPRO agreement and adding IAEA.[201] As a result of the criticism of the efficacy of the ICSPRO agreement, the sixth session of ICSPRO in December 1972 reformulated the agreement to, among other things, include the Chairman of the IOC as an ex officio member and to propose draft principles and procedures for stronger affiliation of ICSPRO agencies and IOC, as mentioned earlier.[202]

As an indication of the dimensions of the problem of the IOC role in the coordination of marine science in the UN system, a draft report prepared by the UN Secretariat on ocean use and marine cooperation for the 55th session of the Economic and Social Council in the Summer of 1973 did not even mention IOC![203] The Secretary of the IOC registered his concern to the representative of the United Nations at the IOC Executive Council and he

said the document would be revised "to take the Secretary's comments into account."[204]

Structural Capacity

The structure of IOC, both internally and externally in its relations with UNESCO and other UN organs, was reasonably suitable for its coordinative and consultative role in the early 1960s. The formal structure of the IOC comprises the Assembly or Plenary session, the Executive Council (formerly a Bureau and Consultative Council provided this function), the Secretariat, and the subsidiary bodies. The Assembly is the one structure through which the IOC maintains links with its total membership, other interested organizations, and potential members and provides policy guidance to the other units of the Commission. Convened every two years for two weeks with all members, observers, and representatives from other intergovernmental and nongovernmental organizations, the Assembly

> as the final authority, passes resolutions dealing with program planning and norms of international conduct; it establishes guidelines for subsidiary organs, and it provides a forum for "political persuasion" for states and organizations with an interest in scientific investigation of (sic) oceans. In its discussion of oceanographic programs, it advertises its tasks and goals to the international community.[205]

The Plenary sessions were originally presided over by the Bureau, consisting of the IOC Chairman and two Vice-Chairmen; and with the Consultative Council, they acted as the steering committee of the biennial meeting. The work of the Plenary session had increased so greatly by the time of the fifth Assembly that

the Bureau and Consultative Council proposed the establishment of four ad hoc session committees.[206] The four committees were instituted at the sixth Assembly session in 1969 and dealt with legal, scientific, and administrative matters and the problems of cooperative investigations. However, the problems associated with choosing committee chairmen and conducting business during a two-week period made this somewhat ineffective.[207]

Meeting for the first time under amended Statutes, the seventh session of the Assembly in 1971 adopted the recommendations of the Bureau and Consultative Council and established four session committees (scientific research activities, administrative and legal matters, and Education, Training and Mutual Assistance). The Chairman appointed committee chairmen and assigned guidelines for work:

> When it first convened, each Committee appointed a rapporteur from among the delegations, who worked with the Secretariat in preparing their reports, which formed the basis for...the Summary Report. (A) Vice-Chairman was assigned to control the schedule of meetings of the session committees, of the steering Committee, and of the ad hoc groups throughout the session. Generally, two committees met simultaneously...(and) The reports of the Committees were distributed as session documents and their substance subsequently condensed and assimilated ...[208]

The issue of the effectiveness of the existing method of establishing session Committees with the chairmen and membership decided at the beginning of each session was a matter of concern to the Chairman of IOC and to some member states as well. As

mentioned earlier, proposals for standing committees under the direction of the four Vice-Chairmen of IOC to facilitate the performance of the Assembly sessions (as well as the intersessional business) were the subject of broad disagreement between members. Attempts were made during preparations for the eighth Assembly session at the second session of the IOC Executive Council to reorganize the plenary meeting. A proposal by the United States to have the session Committees meet during the first week to review and prepare substantive proposals for consideration during a second week of plenary meetings was intended to "speed up" the work of the Assembly.[209] This attempt to minimize the time devoted to plenary meetings at the beginning of the session was strongly opposed by the representative from Argentina,

> since this would not permit a general debate thus denying member states which are not members of the Executive Council the opportunity to express their general views on the general activities of the Commission.[210]

There was also an objection to the Secretary's apportioning of the work of the session committees, and a compromise by the Chairman called for a half-day Plenary session on the first day to take care of administrative details. In a further effort to provide preparatory services for the Assembly, the third session of the IOC Executive Council will meet immediately prior to the eighth session of the Assembly.

Originally the Bureau of IOC, consisting of the Chairman and two Vice-Chairman, met in between assembly sessions to provide more

continuous executive guidance. Soon, in 1964 the size of the Bureau proved to be inadequate to provide sufficient representation of assembly interests, and a Consultative Council was created officially after an informal consultative committee had served since 1961.[211] The Consultative Council was to be composed of 9 selected members states which would meet with the Bureau to tender advice to create a broader base for executive decisions.

With increasing responsibilities placed on the IOC in the late 1960s as a result of LEPOR and IGOSS, the IOC was widely recognized as being structurally inadequate to meet the demands of expanded programs. The amended statutes created a new larger Executive Council to replace the Bureau and Consultative Council, which could undertake more continuous and thorough executive direction of IOC activities. The Executive Council will involve an increase in membership of the old Bureau from three to five members (one Chairman and four Vice-Chairmen) and a merger with the Consultative Council increased to ten members. Although the IOC has its own policy-making and executive bodies, all matters of substance (Secretariat support levels, membership adjustments, and amendments to the Statutes) must be approved by UNESCO, which greatly increases the response time of IOC to issues that need attention. Recent recommendations from the Chairman of IOC to change the reporting channels to UNESCO from those of the Assistant Director General for Science in order to expedite IOC matters were rejected by the Secretary General.[212]

The operating agents of IOC, the Secretariat and subsidiary and advisory bodies, were able to function satisfactorily until the awakening interest in the sea in the mid-1960s. The personnel of the IOC Secretariat have multifaceted responsibilities which are of fundamental importance to the Commission. Before the meetings of the Assembly and Executive Council, the Secretariat is responsible for the preparation of appropriate documents, and Secretariat staff attend all sessions and report on the substantive events in meeting records.

Between Plenary and Executive Council sessions of the IOC, the Secretariat performs the day-to-day tasks of correspondence and communication to arrange and link the activities of the Commission's subsidiary "action" bodies and to discharge any other assignments identified by the executive or plenary bodies. Communications and coordination between other organs of the UN system are also increasingly necessary and time-consuming, and travel for the professional staff is considerable. The volume of material prepared by the Secretariat has grown noticeably. Approximately thirty circular letters of varying length and distribution were produced in the 9 months between the first and second sessions of the IOC Executive Council during 1972-73.[213]

The accelerating political debate in the UN which created a demand for scientific advice placed additional burdens on the Secretariat and subsidiary bodies to provide a factual base for discussion. According to the original statutes, the Secretary

of IOC was also assigned to serve as the Director of the UNESCO Office of Oceanography. While the Secretariat's function was to service the IOC, the UNESCO Office was responsible for the dispersal of technical and educational assistance programs in marine science. In practice, the Office and Secretariat worked quite closely because of the fact that assistance programs were often integral parts (although small) of IOC-coordinated expeditions such as IIOE. As a result of the relative integration between the Secretariat and Office, the requirements of responding to the most pressing issues often relegated staff efforts on assistance to a less active status.

Even though the Secretariat and staff services of IOC are being slowly augmented by UNESCO and the contributions of the other ICSPRO agencies, the heavy workload being placed on IOC was still straining the capacities of the Secretariat and the Office to perform either of their roles effectively.[214] For this reason, a separation of the Secretariat and the UNESCO Office (now Division) under the direction of different individuals has been recently agreed upon. It is recognized that frequent and meaningful articulation between the two bodies would be of critical importance; yet, the Division was seen to underscore the important missions of each organ and to illuminate the needs for more staff to provide more services. The separation also was a practical prerequisite for another important IOC initiative: the proposal for outposting the Secretariat to Geneva from its location in Paris.[215]

The difficulty in obtaining additional staff support from ICSPRO agencies led the Chairman of IOC to propose that the secretariat be moved to Geneva to capitalize on a number of opportunities for advantage. The Secretariat could communicate more freely with WMO (based in Geneva) in connection with IGOSS and thereby reduce staff travel costs. It would be convenient for the secretariat to be housed and serviced by the UN in Geneva, thus making the difficulties claimed by the UN in providing support as an ICSPRO agency less credible. Furthermore, Geneva approximates a midpoint between Rome (FAO), Paris (UNESCO) and Vienna (IAEA), and finally, it was expected that the new Environment Secretariat would be located in Geneva.[216]

Aware of the fact that such an outposting of the IOC Secretariat could be a de facto beginning for further initiatives to recommend an IOC independent of UNESCO, the Secretary General of UNESCO firmly demanded that it must be demonstrated clearly that such an outposting of the Secretariat would secure significant staff donations from ICSPRO agencies which would, of course, be placed under UNESCO control. With the placement of the Environment Secretariat in Kenya, and the IOC siting proposal under further study, it is uncertain whether sufficient support can be developed for implementation.

The structural weaknesses of IOC are in large measure due to the legal and political realities of the current situation which reinforce the existing UNESCO affiliation. The weakness inherent in this subordinate position to UNESCO could be minimized if

sufficient resources could be provided for IOC operations.

Resource Capacity

The severe limitations of the IOC to undertake the responsibilities of IGOSS, LEPOR and GIPME, as well as satisfactory programs of assistance to developing states, are directly related to the inadequate financing and staff services available. The stabilization of the level of financing available to international organizations generally and the relatively low priority of IOC in particular suggest that in the absence of some new commitment to priority for marine research (i.e., accelerated investigations for resource management or pollution monitoring), the level of resources available to IOC is probably now as much as the system will allow (by means of assessment).

As mentioned earlier, the amount of financial support that UNESCO is able to provide IOC is constrained by the competing demands of a multitude of UNESCO programs, many of which have considerable support from the developing states.[217] IOC funding from UNESCO is probably on a plateau.[218] The ICSPRO palliative could only provide assistance in kind; the personnel, printing, and meeting services donated by ICSPRO agencies, when they were available, were not as efficient or as firmly committed to the mission of IOC as they could have been.

At the meeting of the Bureau and Consultative Council in 1969, the concept of a special trust fund was broached as a possible remedy. It was supported by the sixth session, and the fund was established in 1970 by UNESCO for IOC.[219] This technique, common

in the UN system, allows selective and voluntary increases in support of international organizations by member states, but conditions are often attached regarding the uses to which the funds can be put. After some discussion, it was decided that contributions to the trust fund for unspecified purposes would be used for training, education, and mutual assistance in developing states "with special emphasis on subsequent employment of marine scientists."[220]

The IOC subsequently authorized initial use of the fund for finalizing a draft plan for organization of training courses. As of June 1973, a total of $90,087 had been received or offered, the bulk of which ($50,000) was offered by the U.S. for the financing of IDOE planning meetings.[221] The potential utility of the trust fund where states can "earmark" voluntary contributions for particular uses is great; yet, the trust fund has not attracted significant contributions from states at time of critical need.

The primary source of development assistance, UNDP, may be relied upon to a greater extent ($700,000 for 1973-1974 expected)[222] for the UNESCO Division of Oceanography funding, but it is unlikely that IOC or UNESCO Division support from UNDP will even approach the approximately $136 million of applied fisheries projects administered by FAO.[223] Again, it should be emphasized that IOC is unable to contract for UNDP funds directly, and more importantly, the initiative for UNDP funds must come from developing states themselves.[224] The interest and political support of the developing

states are critical for IOC expansion, but that interest must be stimulated by a greater effort by IOC to convince the developing states of the potential services that IOC might provide. Modest sums committed to the trust fund for this purpose might yield significantly amplified results.

On 1 March 1973, the IOC submitted a revised Application for Support from the Environment Fund to the Environment Secretariat. The proposal, which totals $479,000 for 1973-1974, is a comprehensive and explicit response to recommendations from the United Nations Conference on the Human Environment in 1972. Among other things, the IOC application to the Environment Fund would provide for the development of an interdisciplinary marine pollution data and scientific information referral system.[225]

Administrative Capacity

The administrative weaknesses of IOC are partly a consequence of the dependence upon UNESCO approval of many executive matters, and this greatly extends the length of time from the decision stage to implementation. The problem of staff inefficiency due to rapid turnover and slow replacement of personnel is a continuing one. Even though there are a number of institutional constraints for the IOC to accomplish its tasks, it still remains to be considered whether or not the administrative capacity of IOC is optimal within the prevailing limits. Several governments do not believe that the administrative framework of IOC is effective.

In the first case, the chronic task of finding sufficient and experienced professional and clerical staff support has been limited by UNESCO's ability to reprogram funds from other sources or to expand the overall UNESCO budget to provide additional support to the IOC. UNESCO has recognized the relative importance of the IOC, and in the late 1960s, the IOC budget increased by 50% while the UNESCO general budget rose by only 6%.[226] Nevertheless, the sums UNESCO has been able to provide have not been enough for the IOC to perform all of its tasks, particularly in the clerical area and the documentation for meetings.

> From an intergovernmental point of view, marine science is on a plateau; it is not going to get very much more money from UNESCO and it can't do very much with the small sums of money that it has now.[227]

The IOC is also limited by the fact that, as a subordinate organ of UNESCO, it cannot contract to receive UNDP funds directly to assist developing states in the way that FAO has been able to do so effectively.[228]

A related problem is the difficulty in obtaining staff replacements due to UNESCO hiring practices.[229] Not only are the contractual appointments for personnel relatively short-term but there is also a rapid "turnover" of individuals for a variety of reasons. As a consequence, the Secretariat is often staffed with relatively inexperienced personnel, and when staff positions are vacated, frequently very long periods of time are required for replacement.[230]

Because of the fact that the professional staff services of the IOC Secretariat are so very minimal when compared with the tasks required, the overwhelming share of the effort to plan, advise, and study substantive issues is undertaken by an elaborate network of ad hoc bodies, working groups, committees, and advisory organs. In addition to the official advisory bodies, SCOR, ACMRR, and ECOR, there were twenty-two subsidiary organs attached to IOC at the end of 1971.[231] The burgeoning expenditures for travel, documentation, and translation to service so many meetings became so critical that the Chairman of the IOC responded with proposals for "rationalizing" the structure of the Commission. At the seventh session in 1971, the Chairman recommended that IOC activities should be reorganized under the direction of four standing committees.[232] As discussed earlier, there were divergent views by member states concerning the wisdom of creating standing committees, because of fears of increased bureaucratic complexity and of the possible redistribution of de facto decision-making power in the organization. The issue was placed under further study by an ad hoc committee which was assigned to report to the second Executive Council session in 1973.[233]

As mentioned earlier, the ad hoc Working Group on Rationalizing the Structure of the IOC prepared detailed recommendations to be considered by the IOC Executive Council in May 1973. The proposed restructuring would create five Working Committees to confer with groups of experts and ad hoc bodies, and it would delegate additional responsibilities to the four Vice Chairmen of the IOC.[234]

Such rationalization of structure will probably require a larger and more efficient full-time Secretariat staff to provide continuity and direction to the ad hoc efforts of the "action groups." It remains to be seen whether the Secretariat staff will be sufficient to maximize the benefits from a reorganized administrative structure. Some efforts are being made to engage other ICSPRO agencies and member states to bear a greater burden of the costs of meetings.

Summary of IOC in Perspective

The IOC has been relatively weak in all measures of organizational effectiveness. The interdependence between all of the tests of capacity is such that the strengthening of any one would probably produce some increase in the others. For example, a change in IOC structure making it more independent might improve the responsiveness of the organization in such a way that more states would gain confidence in the organization to provide important services, and political and resource support might then increase. Similarly, a streamlined administrative framework might enhance the ability of IOC to undertake certain functions more effectively, and as a result, encourage more support from states. However, it is most likely that the political and resource capacities are most critical, and that modest but deliberate steps to strengthen these capacities would strengthen the others most dramatically.

The association of IOC with UNESCO, the creation of working committees, and the retention of the Secretariat in Paris would be

manageable constraints if modest increases in IOC secretariat staff can be furnished in conjunction with increased resources to begin to create visible and measurable services to an enlarged constituency. If developing states begin to realize that they stand to gain from greater assistance opportunities, particularly in terms of applied information for resources development, they will tend to support and rely upon IOC to a greater extent; simultaneously, the developed states, particularly the strong maritime ones, will recognize the self-serving value of an increasing reliance of developing states on scientific information and analysis as a basis (at least potentially) for decisions about national jurisdictions and resource management. As a concept, LEPOR has stimulated expectations for an increased role to be played by IOC to provide useful services to more states. Eventual implementation is necessary for the fulfillment of those expectations.

The very recent concern by many states about the latent dangers of marine pollution has engendered yet another opportunity for the IOC to enlarge its constituency of service consumers to a broader spectrum of the public at large. As of 1973, the building momentum of environmental concern and the promise of international solutions to marine resource management problems are at a critical point of departure. Programs such as IGOSS, LEPOR, and GIPME are in the very early stages of operation. IOC is receiving some increase in staff to fulfill its mandate. Additional resources are likely to be forthcoming from the UN Environment Fund. An international

conference on the law of the sea is planned, which, despite widespread pessimism about the opportunity for international consensus on certain issues,[235] nevertheless indicates an implicit belief by most states that international cooperation and agreement are preferable to unilateral and scientifically irrational state acts with respect to the sea and its resources.

THE FUTURE OF THE IOC

Before speculating about the possible futures for IOC, it will be useful to examine briefly the general requirements of the UN system for a more active role in the management of ocean space. That there is a pressing need for some action--intergovernmental or national-- to implement a greater degree of control over uses of the sea is recognized by a majority of states. The events in the UN General Assembly and in the Seabed Committee since 1967, which culminated in the formal arrangement for an intergovernmental conference to revise the law of the sea, attest to the consensus that the existing scheme to insure orderly use of the ocean is inadequate. But that is where the consensus seems to stop. The debates about alternative regimes to manage the ocean and the rich coastal seas are characterized by strategies whereby each state dauntlessly strives to maximize its perceived values in the short term. To be sure, the relative absence of definitive analyses to attempt to explain natural processes and assess the distribution and accessibility of marine resources for many coastal states makes the policy positions of those states irrational in the sense that they are unsure of where their interests lie.

As a further complication, extraneous considerations have arisen, such as a need for a state (or the party in office) to arbitrarily extend its sovereignty as a sign of its independence regardless of the economic or ecological wisdom of the action.[236]

One thing is clear from the lengthy deliberations about the future of ocean space: there is no coherent or effective voice for the longer term world interest.[237] The world interest in maximizing the values obtained from orderly and rational use of the sea by the greatest number of parties in the long term is distinctly different from the aggregation of a large number of diverse state policies seeking some perceived short-term interest. The conflict between the two perspectives is most apparent in the trends of state practice with regard to living resources and pollution.[238]

Various elaborate schemes have been proposed which were intended to offer more rational and orderly approaches to the regulation of the use of the ocean for community goals. However, it is obvious that there does not exist now, or that there will exist in the near future, sufficient consensus among states on common objectives. They are unwilling to consider derogation of their short-term interest as they perceive it for any regime that is centered on a more planetary view.

Recognizing the obstacles to boldly innovative arrangements for altering the prevailing distribution of decision-making and enforcement mechanisms for management of ocean space, several scholars have sought to devise viable yet effective measures to improve the capacity of the UN system with respect to the sea.[239]

There will need to be a subtle yet important shift from the consultative and coordinative role of international organizations into more operational modes.[240]

Despite the emphasis of international organizations on consultative, advisory, and coordinative functions, they can also tend to play a political or policy role. This has been called "parliamentary diplomacy" and

> is thought to assist member governments to define their interests more broadly and press them more effectively than can be done in bilateral diplomacy. It increases governments' ability to share information, mobilize support, conduct joint operations, and seek to isolate countries pursuing unwelcome lines of action.[241]

The most critical commodity for a more effective international role is information about the ocean, its resources and its potential uses.[242] The ability to identify the most efficient conditions for resource development as well as to anticipate costly degradation of resources from pollution requires large-scale research and analysis. The coordination of national efforts is not sufficient--disinterested analysis and evaluation of research results are desperately needed, and in fact may evolve into the principal means of power available to international institutions to influence and persuade states to alter their behavior to conform to a greater degree to the community interest. The value of such knowledge about the sea and its resources is of potential use to all states, and access to that knowledge is a primary reward for cooperation.[243]

There is only one intergovernmental organization that has as its exclusive interest the promotion of scientific research at sea. That is the IOC. Although other agencies have program components concerned with the sea,[244] the organizational goals are oriented towards other major purposes. The IOC, then, is in a crucial position to contribute to the strengthening of the capacity of the UN system to assist in the management of ocean space.

What is the future role of the IOC likely to be?

First, it is necessary to acknowledge that it is unlikely that the IOC will atrophy to the point of extinction. At the very least, the kinds of routine coordination of national marine science efforts in cooperative investigations at the technical level that the IOC has performed since its inception will continue to be of some service to the developed states with oceanographic capabilities. Indeed, an international "switchboard" for governmental and nongovernmental contacts related to marine science in states and international organizations is a very useful service.

As before, very modest opportunities for training and education will be arranged through the operational investigations of states coordinated through IOC; UNDP support for assistance in marine science will probably remain at relatively low levels and will continue to be administered through the UNESCO Division of Oceanography. The use of the IOC trust fund has not been encouraging so far, and it is difficult to predict any significantly

increased contributions through that mechanism. The UNESCO Division of Oceanography will probably become increasingly detached from the IOC as a result of the formal separation of the IOC Secretariat from the former UNESCO Office of Oceanography, and the contemplated outposting of the Secretariat to Geneva would further isolate technical assistance from direct IOC influence. If the future role of the IOC is to be any different from its past, significant support from states will be required to respond to unmet international needs with respect to ocean space.

The impediments to increased support can be attributed to two sources: the past performance of IOC and the continuing policies of states. In order to convince states that the IOC is worthy of increased support, it is essential that the IOC maximize its services to these states, through its structure, Secretariat, and wise assignment of priorities, even under the prevailing constraints. On the other hand, coherent national policies and firm leadership over diverse and often competing governmental ministries are necessary to assure that international organizations which "deserve" broader support, because of their performance and the need for expanded services, are in fact given that support. In the absence of demonstrated competence of IOC to undertake greater responsibilities, or of more coordinated national policies for ocean space, the increasing demand for international services will tend to be answered by other international organizations which, perhaps,

have less potential for service in the longer term. Initiatives by FAO, WMO, and IMCO have already indicated their interest in expanding the marine component of their responsibilities. Recently, the United States proposed to the IMCO Council that expanded responsibilities for marine pollution control should be assumed by a new Marine Environment Protection Committee of IMCO.[245] The marine scientific expertise in IMCO is presently minimal, and it is unclear how the very necessary scientific basis for deliberations will be provided to IMCO.[246]

The success of the attempts to broaden the capacity of the IOC to assume greater operational and planning responsibilities for LEPOR, IGOSS, and GIPME is by no means guaranteed by the statutory or structural modifications that have been adopted. In fact, the chronic problems with the IOC Secretariat inadequacies, despite modest improvements, will probably continue to be a serious handicap to any increase in performance unless certain priorities are identified and followed. In addition to serving as a forum for international discussion of technical problems related to marine science and as a switchboard for multinational expeditions, important new efforts in the areas of data exchange, coordination of environmental monitoring of the sea, and technical assistance will ultimately have to be complemented by a growing responsibility for analysis and interpretation of data for environmental protection and resource development.

In the near term, services of disinterested data analysis would probably be a greater benefit to developing states than the more traditional program of training nationals of each state to provide "honest" judgments for each government. The very productive IOC alliance with nongovernmental bodies such as SCOR indicates the promise of scientific cooperation at the international level. Yet the discontinuous and ad hoc services provided by the scientists will probably not be sufficient to analyze and interpret even a fraction of the volumes of data and results from national marine investigations. A proposed International Institute for Physical Oceanography[247] and various proposals for international environmental institutes[248] are examples of suggested new efforts in recognition of the importance of new institutions for data analysis and planning. The recent requests for information regarding the resource benefit implications of various jurisdictional alternatives by General Assembly Resolution 3029 (XXVII) B are illustrative of the kinds of emerging analyses which are required and which may have a very significant impact on community policies for the ocean.

The initial size of such an analytical capability may not have to be great. With some assistance from the environmental fund as well as the possibility that the developed states could "donate" the services of prominent professional scientists to serve as individuals for a short period (1-2 years), significant new information could result from internal and contract studies.

The disinterest of the scientists could be widely accepted if an arrangement for selection and operation such as that for the International Law Commission were established.[249] Of perhaps greater importance, participation in such analytical services would have to be viewed by the scientific community as an "honor" from the scholarly perspective and from an ethical point of view, an important contribution to the goals of the scientific community. To the extent that such analytical services promote international understanding and cooperation in ocean development and depoliticize marine research to the point that freedom for investigations in the ocean is widely respected and supported, professional participation by eminent scientists might be held in esteem and in consonance with the norms of the scientific community.

Even if Secretariat efficiency is enhanced, and the IOC can begin to attract a wider constituency of states by offering an attractive institutional site for greater support to obtain expanded services, a broader orientation to include applied analysis and environmental monitoring for pollution may not be sufficient. There is no present indication that governments will be willing or able to increase the coordination of their policies in other international organizations to force greater priority for intergovernmental support of IOC efforts. There seem to be few advocates for an expanded IOC even to the degree designed to implement LEPOR, let alone for the independent IOC.

Moreover, the apparent trend in international negotiations indicates that greatly enlarged national jurisdictions at least

for marine resources will result by agreement at the Law of the Sea Conference, or in the absence of multilateral agreement, the same result will occur by unilateral action.[250] The net result may be a considerable degree of restriction to the freedom of scientific research. Organized political pressure of sufficient impact from the scientific community may have come too late.

At a time when the benefits of intergovernmental cooperation through organizations like IOC should be augmented by strong acts of national leadership, the climate is ominous. In the United States, support for IDOE, the major component of LEPOR, is on the decline.[251] A changing American commitment to marine science that attaches less priority to marine research will undoubtedly have a debilitating effect on the support by other states. Even the issue of marine pollution, once separated from the rhetoric of international assemblies, may not be compelling enough to force responsible action by states to pursue less aggressively their exclusive short-term self interest. The rhetoric of the UN Conference on the Human Environment appears to have had minimal impact on the bureaucratic sensitivities of the agencies.

One observer noted:

> The ambivalent attitude of the UN specialized agencies who were out to guard their special hunting preserves from intruders but who also scented the environmental money that might replenish their treasuries.[252]

The ultimate implications of the political pressures surrounding the initiation and siting of the Environment Secretariat are

unknown, but they will probably not be as encouraging as one would have hoped for. The response of the United Nations Environment Program to the IOC application for funds will be an indicator of the international commitment to environmental protection. Finally the United States' proposal to utilize IMCO as a site for institutional growth concerning marine pollution will have uncertain implications for the future capacity of the UN system to contribute to ocean space management; to be sure, it is less than a vote of confidence in the IOC.[253]

CONCLUSION

If the expansion of the IOC is going to be successful so that its potentially very important scientific function will mature to strengthen international organization for ocean space, several critical measures will probably be necessary.

The staff problems of the IOC can be met without further change of the affiliation with UNESCO, the statutes, or the recently revised ICSPRO agreement. The outposting of professional and clerical staff from ICSPRO agencies to shore up IOC are already provided for in the ICSPRO compact, but need to be firmly implemented. Recent personnel assignments from the agencies and UNESCO offer encouragement.[254] The difficulties in getting personnel transferred, and the qualifications and experience of the staff that are transferred, could be improved considerably by concerted pressure from representatives of states to the executive bodies of ICSPRO organizations. That is, if more coordination of policy positions were undertaken at the nation

state level, the bureaucratic inertia of state ministries and international secretariats could be countered more effectively.

The problem of the effective UNESCO ceiling on financial allocation to IOC could be offset by greater use of the IOC trust fund,where contributions may be designated for specific purposes. For example, if a very modest increase in state support on the order of one percent of total expenditures for marine science were channeled to the IOC,[255] the Commission's present annual resources would be quadrupled.[256] Efforts to rationalize the IOC structure in order to reduce the number of costly meetings should be encouraged as much as possible to reduce IOC costs. Recommendations for a well-planned program of work and financial requirements (WFR), if adopted, should greatly assist the monitoring and adjustment of priorities by the policy bodies of IOC.

Furthermore, the IOC should be somewhat more selective about what coordination efforts should be accepted for active involvement. The costs of direct IOC coordination in certain regional investigations with a limited number of states participating might be reduced significantly if the IOC were to accept a more peripheral role when states or regional bodies can handle the expensive details of limited expedition coordination themselves. It should be emphasized, however, that while the IOC involvement might be curtailed in certain coordinative efforts, its role in data exchange and ultimately broad interpretation should be accelerated.

The most critical need for the IOC is to develop a viable and expanded constituency in order to implement and sustain a truly useful international service. It will take acts of national leadership to recognize and support the important scientific purposes of a stronger IOC. Rational decisions about ocean space and marine resource development which should be expressed in an evolving law of the sea are in the interest of all states.

The developing states must be influenced to recognize the importance of scientific and technical information for decisions. Technical assistance and disinterested analyses are undoubtedly necessary. It is clearly in the interest of the developed states which have the capacity for research to assure that investigations at sea can be undertaken freely and that the results are analyzed for all states to use. The preservation of even the existing restrictions to marine research may depend upon greater support and marine technology transfer from the developed states for assistance to the developing through the IOC, and other sources of aid (with guidance and recommendations from the IOC).

The members of the scientific community will have to recognize that the promotion of their interests as scientists may depend upon a greater community cohesiveness and consensus to influence political institutions toward objectives they believe are important. Trends toward greater emphasis on applied research should not be resisted blindly; governments increasingly require shorter term

payoffs from research as well as the unpredictable longer term benefits of basic research.

As of 1973, leadership from the scientific community, national governments or from the UN system for an expanded IOC does not appear to be forthcoming.

Notes

1. The term "ocean space" has been made popular by Dr. Arvid Pardo in his more recent interventions about new international concepts needed for dealing with the sea at the international level.
2. See Edward Wenk, Jr., The Politics of the Ocean, (Seattle : University of Washington Press, 1972), pp.426-427.
3. See, for example, Edward Wenk, Jr., "International Institutions for the Rational Management of Ocean Space," Ocean Management 1, July, 1973, pp. 171-200.
4. See Warren S. Wooster,"Oceanography and International Ocean Affairs," in Pacem in Maribus:The Ocean Environment, Proceedings of the Preparatory Conference on Ecology and the Role of Science, April 1970 (Malta: Royal University of Malta Press, 1971),pp.175-187; Edward Wenk,Jr., The Politics of the Ocean, pp. 3-95.
5. For a brief summary of major oceanographic expeditions, see Rhodes W. Fairbridge, The Encyclopedia of Oceanography, (New York: Reinhold, 1966), pp.603-604.
6. Edward Wenk,Jr., The Politics of the Ocean, p.278.
7. Ibid.
8. Margaret E. Galey,The Intergovernmental Oceanographic Commission: Its Capacity to Implement the International Decade of Ocean Exploration, unpublished Ph.D. dissertation, Graduate Program in International Relations, University of Pennsylvania, 1970, p.9. [hereafter referred to as Margaret E. Galey, IOC]
9. Sidney J. Holt, "The Intergovernmental Oceanographic Commission-- A

Biased History," in the Proceedings of the Fifth Annual Conference of the Law of the Sea Institute, June 15-19, 1970 (Kingston: University of Rhode Island, 1971),p.131.[hereafter annual proceedings of the Law of the Sea Institute Conferences will be referred to as LOSI accompanied by the number of the annual conference].

10. Sidney J. Holt, LOSI 5, p. 131; Edward Wenk, Jr., The Politics of the Ocean, pp.216-217.

11. Sidney J. Holt, LOSI 5, p. 131.

12. Ibid;Roger Revelle,"International Cooperation in Marine Science," Science 126, Dec. 27, 1957, pp.1319-1323.

13. Sidney J. Holt, LOSI 5, p.131.

14. Daniel S. Cheever,"The Role of International Organization in Ocean Development," International Organization 26 , Summer 1968, p.636.

15. Ibid.

16. Edward Wenk, Jr., The Politics of the Ocean, p.217.

17. Warren S. Wooster, commentary on a presentation by Sidney J. Holt, LOSI 5, p. 146.

18. UNESCO/NS/176, p.9.

19. Intergovernmental Oceanographic Commission (Five Years of Work), IOC Technical Series No. 2 (Paris: UNESCO, 1966), p.5.

20. Sidney J. Holt, LOSI 5, p.131.

21. Ibid.

22. UNESCO/NS/176, p.1.

23. IOC Technical Series No. 2, p.5.

24. Margaret E. Galey, IOC, p.63.

25. Sidney J. Holt, LOSI 5, p. 150.

26. UNESCO/NS/176, p.1.

27. Sidney J. Holt, LOSI 5, p.131.

28. IOC Technical Series No. 2, p.5.; Daniel S. Cheever,"The Role of International Organization in Ocean Development," p.636.

29. IOC Technical Series No. 2, p.5.

30. SC/CS/150, pp. 19-20.

31. For example, IOC had established working groups on communications, ocean data systems, and oceanographic data exchange.

32. Warren S. Wooster,"Interactions between Intergovernmental and Scientific Organizations in Marine Affairs," International Organization 27, Winter 1973, p.106.

33. Warren S. Wooster, LOSI 5, p.145.

34. Of course, political questions were raised at meetings concerned with the proper representation of some states (i.e. People's Republic of China being absent),but were deplored by most states; the impact of such political rhetoric appears to be minimal--see, for example, UNESCO/NS/176, p.3.

35. Sidney J. Holt, LOSI 5, p.132.

36. William L. Sullivan, commentary on a presentation by Sidney J. Holt, LOSI 5, p.148.

37. Sidney J. Holt LOSI 5, p.132; UNESCO/NS/176, pp.3-4,17-18.

38. Warren S. Wooster, "Interactions between Intergovernmental and Scientific Organizations in Marine Affairs,"p.106.

39. Ibid. p.107.

40. ECOSOC Resolution 1112 (XL) of 7 March 1966 requested the UN Secretary General to prepare a study of seabed resources, and UN Resolution 2172 (XXI) was passed 6 December 1966.

41. The impact of Dr. Pardo's agenda request is discussed in the following works: Daniel S. Cheever, "The Role of International Organization in Ocean Development ";Edward Wenk, Jr., The Politics of the Ocean, pp.260-262; Gerard J. Mangone, "The United Nations, International Law, and the Bed of the Seas," Ocean series 303 ,(Washington,D.C.: Woodrow Wilson International Center for Scholars, 1972).

42. See Gerard J. Mangone,"The United Nations, International Law, and the Bed of the Seas,"p.22. The Commission to Study the Organization of Peace had broached the subject as early as 1957.

43. See note 41.

44. UN General Assembly Resolution 2750C (XXV) of 17 December 1970.

45. See Daniel S. Cheever,"The Role of International Organization in Ocean Development,"pp.629-633.

46. Robert L. Friedheim,"International Organizations and the Uses of the Ocean," in Multinational Cooperation,ed. Robert S. Jordan, (New York: Oxford University Press,1972) p.274.

47. Although the United States initially favored a "committee on the oceans," an ad hoc Seabed Committee was adopted by UN General Assembly Resolution 2340 (XXII). See Daniel S. Cheever, "The Role of International Organization in Ocean Development," p.632 and Edward Wenk, Jr., The Politics of the Ocean, pp.260-272.

48. Warren S. Wooster,"Interactions Between Intergovernmental and

Scientific Organizations in Marine Affairs," p.107.

49. E/4487

50. Ibid., p.76.

51. Ibid., p.77.

52. A/C.1/973, p.1.

53. Ibid., p.2.

54. Ibid.

55. Ibid. p. 3.

56. A/AC.135/WG.2/SR.12, p.13.

57. A/AC.135/WG.2/SR.13, p.20.

58. A/C.1/PV.1589, p.13.

59. A/C.1/PV.1589, p.13.

60. Ibid., p.17.

61. Edward Wenk, Jr., The Politics of the Ocean, pp.238-239.

62. Ibid., pp.230-231.

63. Ibid., p.232.

64. Ibid., p.235.

65. Ibid.

66. Warren S. Wooster, LOSI 5, p.154.

67. E/4487.

68. A/AC.135/SR.23, p.148.

69. Warren S. Wooster, "Interactions between Intergovernmental and Scientific Organizations in Marine Affairs," p.108.

70. Global Ocean Research (La Jolla: SCOR, 1969).

71. Warren S. Wooster, "Interactions between Intergovernmental and Scientific Organizations in Marine Affairs," p.108.

72. "Comprehensive Outline of the Scope of the Long-Term and Expanded Programme of Oceanic Exploration and Research," IOC Technical Series No. 7 (Paris:UNESCO,1970).

73. A/AC.138/SC.2/SR.22, p.135.

74. A/C.2/SR.1286, p. 8.

75. A/AC.138/SC.2/SR.16. p. 15.

76. A/AC.138/SC.2?SR.22, p. 121.

77. Comment by Dr. John A. Knauss, LOSI 5, p. 154.

78. A/AC.138/SC.2/SR.16, p. 14.

79. A/AC.138/SC.2/SR.22, p.134.

80. A/C.2/SR.1286, p. 3.

81 SC/MD/19, Annex II, p. 2.

82. SC/MD/19, Annex III, p.3.

83. Margaret E. Galey,IOC, p. 144.

84. SC/MD/19, p. 14.

85. Margaret E. Galey, IOC,p. 220-226.

86. SC/MD/19, p. 21.

87. William T. Burke,"Marine Science Research and International Law," Law of the Sea Institute Occasional Paper No. 8 (Kingston: University of Rhode Island, 1970), pp. 9-17; Robert L. Friedheim,"International Organizations and the Uses of the Oceans,"pp. 275-276.

88. William L. Sullivan ,"Freedom of Scientific Inquiry," in LOSI 4, p. 374.

89. Warren S. Wooster,"Interactions between Intergovernmental and Scientific Organizations in Marine Affairs,"p. 109;SC/MD/19,p. 13.

90. Ibid.

91. The subjects of resolutions of the Assemblies of the Inter-governmental Oceanographic Commission can be divided as follows:

Subject area	Number
international cooperative programs (IIOE, ICITA, CSK and Others)	44
data exchange	10
fixed stations (also oceanographic data acquisition stations)	7
communications	7
development of national and regional programs	6
relations with IGO's and NGO's	17
ocean-atmosphere interaction and ocean variability	5
bathymetric charts	4
standardization and intercalibration	3
tide gauges	3
mutual assistance and training and education	4
marine pollution	5
general scientific framework	3
planning activities	5
subsidiary bodies	2
oceanographic conferences	5
IGOSS	3
IOC trust fund	1
international underwater lab	1
international research and training vessel	1

membership	1
IOC Correspondence Manual	1
aids to navigation	1
International Institute of Physical Oceanography	1
publications	1
IOC procedure, structure, operations	4
IOC budget and staff	2
Tsunami Warning System	1
legal questions related to research	2
	141

Data for the first through sixth Assemblies from Margaret E. Galey, IOC, pp.247-248. Revised to include the seventh Assembly.

92. IOC Technical Series No. 8 (Paris:UNESCO,1971).

93. Henry Stommel,"Future Prospects for Physical Oceanography," Science 168, 26 June 1970, pp. 1531-1537.

94. Warren S. Wooster,"Interactions between Intergovernmental and Scientific Organizations in Marine Affairs," p. 110.

95. E/4487, Annex XIV, pp.1-4.

96. Sidney J. Holt, LOSI 5, p. 157.

97. A/AC.135/SR.18, p. 78.

98. E/4665, p. 16; Sidney J. Holt, LOSI 5, p. 135.

99. SC/MD/29, p. 4.

100. Ibid., pp.9-10.

101. Ibid. For example, the Cooperative Investigations of the Mediterranean (CIM) were suffering from coordination and support problems by participating states.

102. 17/ C/69, p. 1.

103. IOC/EC-II/6 add.1,p.4.

104. Ibid.

105. IOC B-76, 1970.

106. Warren S. Wooster, "Interactions between Intergovernmental and Scientific Organizations in Marine Affairs," p.111.

107. Report of the ACMRR/SCOR/ACOMR/GESAMP Joint Working Party on Global Investigation of Pollution in the Marine Environment, San Marco di Castellabate and Rome, 11-18 October 1971. FAO Fish. Rep. No. 112, 1971.

108. IOC Resolution VII-22, SC/MD/29, Annex VII, p. 17.

109. Ibid.

110. SC/MD/29, Annex III, p.2.

111. See Action Plan recommendations 87,89,90,91, pp.46-47, A/CONF.48/14.

112. IOC/EC-I/16, Annex IV, p.2.

113. IOC/EC-II/10.

114. IOC/EC-II/3, p.9.

115. Report of the Group of Experts on Long-Term Scientific Policy and Planning. IOC/B-76, 1970.

116. IOC/B-96, Annex IV, p.4.

117. Ibid.

118. IOC/B-96, Annex IV, p.4.

119. See,for example, An Oceanic Quest,(Washington: NAS,1969), Publication 1709, and International Decade of Ocean Exploration, NSF 71-34 (Washington: GPO,1971), and International Decade of Ocean

Exploration, Progress Report Volume 2: July 1972 to April 1973, prepared by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Environmental Data Service, under contract to the National Science Foundation, Office for the International Decade of Ocean Exploration, September 1973.

120. Warren S. Wooster, LOSI 5, pp. 157-158; also SCOR Proceedings, Volumes 7 and 8 , (La Jolla: SCOR, 1971 and 1972).

121. IOC Resolution VI 20, SC/MD/19, Annex III, p. 15.

122. IOC Resolution VII-1, SC/MD/29, Annex VII, p.1.

123. SC/IOC VII/9, p.3.

124. IOC Resolution VII-12, SC/MD/29, Annex Vii, pp.6-7.
IOC/EC-II/6, add.1, p.2.

125. SC/IOC VII/9, p.2.

126. See, for example, IOC/B-96, p. 11.

127. SC/IOC VII/16.

128. IOC Resolution VII-15, SC/MD/29, pp. 8-12.

129. Professor William T. Burke, personal communication.

130. Ibid.

131. In addition to the Chairman's proposal to "rationalize" the structure of IOC, draft plans were also generated by the United States and the Soviet Union. see IOC/EC-I/16., p.7.

132. IOC Executive Council Resolution 6.10-1(EC-I), IOC/EC-I/16, p.7.

133. IOC/STRUCT-II/18

134. Report of the United States Delegation to the Second Session of the Intergovernmental Oceanographic Commission Ad Hoc Working

Group on Rationalizing the Structure of the Commission, Paris, January 8-13, 1973.

135. IOC/STRUCT-II/18, p.2.

136. Report of the United States Delegation to the Second Session of the Intergovernmental Oceanographic Commission Ad Hoc Working Group on Rationalizing the Structure of the Commission, p.2.

137. Because of difficulties raised by the Legal Advisor of UNESCO, neither the word "formal" nor the word "agreement" appears in the recommendation. Ibid., p.3.

138. Ibid., p.5.

139. Ibid.

140. IOC/STRUCT-II/18, p.7.

141. Ibid.

142. IOC/EC-II/3, pp. 5-8.

143. Ibid,Annex , p.11 .

144. Ad Hoc Committee recommendations 1,4,5.

145. IOC/EC-II/3, p.8.

146. Ibid., pp.2-3.

147. Ibid., p. 3.

148. Robert L. Friedheim, "International Organizations and the Uses of the Ocean,"p. 277.

149. Ibid.

150. IOC Resolution VI-17, SC/MD/19, Annex III, p.14.

151. IOC Resolution VII-31, SC/MD/29, Annex VII, p.25.

152. SC/MD/29, Annex III,p.2.

153. IOC/EC-I/16, p.9.

154. IOC Executive Council Resolutions 6.2-1 and 6.2-2, IOC/EC-I/16,

Annex II, pp.4-5.

155. IOC/EC-I/16, p.9.

156. Professor William T. Burke, personal communication.

157. Ibid.

158. Edward Wenk, Jr., The Politics of the Ocean, p. 217.

159. Robert L. Friedheim, "International Organizations and the Uses of the Ocean," pp.271-272.

160. UNESCO Approved Programme and Budget, 1963-1964, 12 C/5.

161. Margaret E. Galey, IOC, p. 166. In the case of data exchange services, it is difficult to estimate the monetary value of the elimination of the need for costly duplication of observations by another state.

162. Eugene B. Skolnikoff, The International Imperatives of Technology, (Berkeley: University of California, Institute of International Studies, 1972), p. 159.

163. Ibid.

164. Sidney J. Holt, LOSI 5, p.135.

165. Eugene B. Skolnikoff, The International Imperatives of Technology, p. 158.

166. See note 41.

167. Robert L. Friedheim, "International Organizations and the Uses of the Ocean," p. 268.

168. Ibid.

169. Ibid., pp.268-269.

170. Ibid., p.273.

171. See note 8.

172.

Composition of Representation at IOC Plenary Sessions 1961-1971*

Session/ Member States	Legal/ Political	Scientific Administrators	Scientists	Military	Total Representatives
1961/40 states	22 (23%)	30 (31%)	31 (32%)	13 (14%)	96
1962/44 states	17 (18%)	30 (31%)	29 (30%)	20 (21%)	96
1964/51 states	15 (14%)	39 (38%)	39 (38%)	10 (10%)	103
1966/54 states	12 (11%)	37 (33%)	49 (44%)	13 (12%)	111
1967/58 states	22 (18%)	39 (31%)	46 (37%)	18 (14%)	125
1969/66 states	47 (29%)	33 (20%)	59 (37%)	20 (12%)	159
1971/72 states	54 (27%)	74 (36%)	57 (28%)	18 (9%)	203
Total	189 (21%)	282 (31%)	310 (35%)	112 (13%)	893 (100%)

* Statistics for 1961-1969 are from Margaret E. Galey, IOC, p. 113. Figures for the seventh Assembly in 1971 were computed, and there may be a minor problem of comparability between the two compilations. In the absence of explicit criteria for division between legal/political and scientific administrators in Professor Galey's work, the division using the titles accompanying delegates for the 1971 data may be somewhat arbitrary.

173. Margaret E. Galey, IOC, p. 274.

174. Daniel S. Cheever, LOSI 4, p. 385.

175. Margaret E. Galey, IOC, pp. 69-72.

176. Ibid., pp.256-257.

177. Ibid., pp.122-137.

178. Ibid., p.134 and p.218.

179. Ibid., p.154.

180. Ibid., p.215-217; quoted text from unpublished preliminary research of Professor Galey that was furnished by Professor William T. Burke.

181. Ibid.

182. The International Bank for Reconstruction and Development and Intelsat are possible qualified exceptions; see Eugene B. Skolnikoff, The International Imperatives of Technology, p. 138.

183. See, for example, Edward Wenk, Jr., The Politics of the Ocean, pp. 240-244.

184. Warren S. Wooster, LOSI 5, p. 143.

185. Robert L. Friedheim, "International Organizations and the Uses of the Ocean," p. 273.

186. For a general discussion of the norms of the scientific community, see Norman W. Storer, The Social System of Science, (New York: Holt, Rinehart and Winston, 1966) and Don K. Price, The Scientific Estate, (New York: Oxford University Press, 1965). In fact, a recent unpublished study by Dr. Russell Bernard while a Fellow at the Center for Marine Affairs, Scripps Institution of Oceanography, would suggest that continuing problems would be likely to occur between the scientist and the public-decision maker. There seems to be a fundamental ethical schism between policy-makers and scientists; the scientist's "pursuit of truth ethic" creates a communication barrier with the policy-maker, who must necessarily subscribe to a "decision ethic" which requires judgments with insufficient information for choice.

187. See Michael D. Reagan, Science and the Federal Patron, (New York: Oxford University Press, 1969), pp. 303-319.

188. See note 19.

189. Eugene B. Skolnikoff, The International Imperatives of Technology, p. 124.

190. Edward Wenk, Jr., The Politics of the Ocean, p. 238.

191. Eugene B. Skolnikoff, The International Imperatives of Technology, p. 126.

192. William T. Burke, "Law, Science and the Ocean," Natural Resources Lawyer 3, May 1970, p. 199.

193. Warren S. Wooster, LOSI 5, p. 145.

194. Report of the United States Delegation to the Second Session of the Intergovernmental Oceanographic Commission Ad Hoc Working Group on Rationalizing the Structure of the Commission, p. 6.

195. Sidney J. Holt, LOSI 5, p. 132.

196. Edward L. Miles, LOSI 5, p. 150.

197. Ibid.

198. For examples, see Oceanography 1966, (Washington:NAS,1967),p. 183; International Marine Science Affairs, (Washington: NAS, 1972) p.23; Warren S. Wooster, LOSI 5, p. 146. It should be noted that these recommendations are exclusively from parties with the needs and interests of the marine science community in mind.

199. IOC/EC-I/16, p.2;

200. A/C.1/PV.1596, p. 57.

201. Report of the Chairman of the IOC,"Size and Efficiency of the Secretariat of IOC," 14 June 1972.

202. IOC/EC-II/11, p. 1.

203. IOC/EC-II/3, p. 2. The Report of the Secretary on Marine Co-Operation was presented to ECOSOC on 11 May 1973 as document E/5332. The Economic and Social Council adopted a resolution on Marine Co-operation on 9 August 1973 (E/RES/1802 [LV]).

204. Ibid.

205. Margaret E. Galey, IOC, p. 91.

206. Ibid., p.90.

207. Ibid., p.217.

208. SC/MD/29, p. 6.

209. Report of the United States Delegation to the Second Session of the Executive Council of the Intergovernmental Oceanographic Commission, Paris France, May 7-12 1973, p. 22.

210. Ibid.

211. IOC Resolution II-15, NS/191, p. 31, Annex II.

212. SC/IOC-VII/43, p. 3.

213. IOC/EC-II/6, p. 2.

214. The Draft UNESCO Programme and Budget, 17 C/5, calls for 6 professional staff members. The IOC Secretariat began 1972 with one Acting Secretary (half-time), four full-time, and two part-time professional staff members (IOC/EC-I/5). In 1972, a new Secretary and a full-time staff member (assigned from WMO) were assigned to IOC (IOC/EC-I/16, p. 4)By the time of the second session of the Executive Council in 1973, staff members

outposted from IMCO and FAO had improved the Secretariat's capacity (IOC/EC-II/6,p. 1.).

215. The proposals for separation and outposting to Geneva were contained in the report of the Chairman of IOC, SC/IOC-VII/43.

216. Report of the Chairman of the IOC,"Size and Efficiency of the Secretariat of IOC," 14 June 1973, p. 6.

217. Eugene B. Skolnikoff, The International Imperatives of Technology, p. 120.

218. Warren S. Wooster, LOSI 5, p. 146.

219. IOC/EC-I/14.

220. IOC.EC-I/16, Annex II, p. 9.

221. Ibid., and IOC/EC-II/3, p. 4 cites a contribution from France of 100,000 francs ($24,500).

222. Approved UNESCO Programme and Budget, 17 C/5.

223. FAO Department of Fisheries Field Projects 1972 (Rome: FAO, 1972).

224. IOC/B-96, p. 12.

225. IOC/EC-II/10.

226. A/AC.138/SC.2/SR.22, p. 135.

227. Warren S. Wooster, LOSI 5, p. 146.

228. Sidney J. Holt, LOSI 5, p. 139.

229. Ibid.;The Chairman of the IOC blamed the lack of experienced staff in the IOC Secretariat on the long time that is necessary to fill vacant posts, and the relatively short contract periods in UNESCO (SC/IOC-VII/43 , p. 2). The Director General of UNESCO observed that the staffing arrangements of UNESCO

are no more tortuous than for other international organizations (SC/IOC-VII/43 Add.1, pp. 3-4.).

230. Ibid.

231. SC/IOC-VII/5.

232. SC/IOC-VII/16.

233. IOC/EC-I/16, Annex II, p. 7, IOC Executive Council Resolution 6.10 (EC-1).

234. IOC/STRUCT-II/18, p. 6.

235. Robert L. Friedheim,"A Law of the Sea Conference-- Who Needs It? " Professional Paper No. 97, (Arlington: Center for Naval Analyses, 1972), pp. 14-15.

236. Ibid.

237. For discussion concerning the world interest as opposed to other interests, see George Modelski, The Principles of World Politics, (New York: The Free Press, 1972), pp. 224-225. Myres S. McDougal and William T. Burke, The Public Order of the Oceans: A Contemporary Law of the Sea, (New Haven: Yale University Press, 1962), Chapter 1; Edward Wenk, Jr.,The Politics of the Ocean, pp. 434-437.

238. For example, see Hiroshi Kasahara,"Extension of Fishery Jurisdiction," LOSI 6, pp.101-104;also, Michael Hardy, "International Control of Marine Pollution," Natural Resources Journal 11, April 1971, pp. 296-348.

239. See Edward Wenk, Jr., The Politics of the Ocean,pp.426-437, and Edward Wenk, Jr., "International Institutions for the Rational

Management of Ocean Space."

240. Edward Wenk, Jr., The Politics of the Ocean,pp. 429-430.

241. Daniel S.Cheever, "The Role of International Organization in Ocean Development," p. 642.

242. Edward Wenk, Jr.,The Politics of the Ocean, p. 434.

243. Ibid.

244. See, for example, Report of the Eleventh Session of the ACC Subcommittee on Marine Science and Its Applications, 22 February 1971, CO-ORDINATION/R.856, and Report of the Twelfth Session,16 February, 1972, CO-ORDINATION/R.919, for descriptions of the marine activities of organs of the UN system.

245. Ocean Science News 15, 8 June 1973, p. 3.

246. Ocean Science News 15, 13 July 1973, pp. 1-2.

247. IOC Resolution VII-10, SC/MD/29, Annex VII, p. 5.

248. See Richard N. Gardner,The Role of the UN in Environmental Problems," World Eco-Crisis, ed. David A. Kay and Eugene B. Skolnikoff, (Madison: University of Wisconsin Press, 1972),pp. 81-83; comments by United States Senator Warren G. Magnuson on Senate Resolution 399, in International Environmental Science, Proceedings of the Joint Colloquium before the Committee on Commerce, United States Senate and the Committee on Science and Astronautics, House of Representatives, 92nd Congress, 1st session (Washington: GPO, 1971),pp. 128-135.

249. For a description of the International Law Commission, see Herbert W. Briggs, The International Law Commission,(Ithaca:

Cornell University Press,1965).

250. See Ann L. Hollick,"Seabeds Make Strange Politics," Foreign Policy 9, Winter 1972-1973, pp.148-170. For a discussion of the consequences of the failure of international agreement, see the Proceedings of the Sixth Annual Conference of the Law of the Sea Institute, University of Rhode Island,(Kingston: University of Rhode Island, 1972).

251. U.S. funding for IDOE dropped from $18 million in FY 1973 to $17 million for FY 1974.

252. Resources 42, (Washington: Resources for the Future, 1973),p. 13.

253. For a discussion of the preferability of IMCO, see Allan I. Mendelsohn, "Ocean Pollution and the 1972 United Nations Conference on the Environment,"Jour. of Maritime Law and Commerce 3, pp. 385-398.

254. See IOC/EC-II/6, pp. 1-2.

255. Although E/4487 lists the marine science efforts of states as of 1967 (Annex V,pp 1-4), the list is probably incomplete. Professor Wenk estimates that the United States effort in Marine Science is about one third the world total (Edward Wenk, Jr.,The Politics of the Ocean, p. 232), so that the current U.S. expenditures of about $200 million annually would translate into approximately $500 million annually worldwide.

256. Current IOC regular program funding is expected to be $500,545 for the biennium 1973-74, (Approved UNESCO Programme and Budget, 17 C/5).

List of Abbreviations

ACC	Administrative Committee on Coordination (ECOSOC)
ACMRR	Advisory Committee on Marine Resources Research (IOC and FAO)
ACOMR	Advisory Committee on Oceanic Meteorological Research (WMO)
ECOR	Engineering Committee on Oceanic Resources (IOC)
ECOSOC	United Nations Economic and Social Council
FAO	Food and Agriculture Organization
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Pollution
GELTSPAP	Group of Experts on Long-Term Scientific Policy and Planning (IOC)
GIPME	Global Investigation of Pollution in the Marine Environment
GSF	General Scientific Framework (IOC)
IAEA	International Atomic Energy Agency
IACOMS	International Advisory Commission on Marine Sciences (UNESCO)
ICSPRO	Inter-Secretariat Committee on Scientific Programs Relating to Oceanography
ICSU	International Council of Scientific Unions
IDOE	International Decade of Ocean Exploration
IGOSS	Integrated Global Ocean Station System
IOC	Intergovernmental Oceanographic Commission
IOCOPS	Inter-Organizational Committee for Ocean Programmes Support (proposed)
IGO	Intergovernmental Organization
IGY	International Geophysical Year
IIOE	International Indian Ocean Expedition
IMCO	Intergovernmental Maritime Consultative Organization
INCOR	Intergovernmental Conference on Oceanic Research
LEPOR	Long-Term and Expanded Programme of Oceanic Exploration and Research
NGO	Nongovernmental Organization
ODAS	Ocean Data Acquisition Systems
SCOR	Scientific Committee on Oceanic Research
TEMA	Working Group on Training, Education and Mutual Assistance (IOC)
UNDP	United Nations Development Programme
UNESCO	United Nations Educational Scientific and Cultural Organization
WMO	World Meteorological Organization
WOO	World Ocean Organization (proposed)

STATUTES OF THE COMMISSION
(as approved by the eleventh session and amended by the thirteenth session of the General Conference of Unesco)

Article 1

1. An Intergovernmental Oceanographic Commission, hereafter called the Commission, shall be established within the United Nations Educational, Scientific and Cultural Organization.

2. The purpose of the Commission shall be to promote scientific investigation with a view to learning more about the nature and resources of the oceans, through the concerted action of its members.

Article 2

1. Membership of the Commission shall be open to all Member States of the United Nations Educational, Scientific and Cultural Organization, the Food and Agriculture Organization, the United Nations and other agencies of the United Nations system which are willing to participate in oceanographic programmes that require concerted action by them.

2. Member States of the above-mentioned organizations shall acquire membership of the Commission by notifying the executive head of one of the organizations to which they belong that they are willing to participate in oceanographic programmes which require concerted action. Any such notice received by the executive head of an organization other than the United Nations Educational, Scientific and Cultural Organization shall be transmitted to the Director-General of the latter.

3. Any member of the Commission may withdraw from it by giving notice of its intention to do so to the Director-General of the United Nations Educational, Scientific and Cultural Organization or to the executive head of one of the organizations mentioned in paragraph 1 above of which the said State is a member, who shall transmit such notice to the Director-General of the United Nations Educational, Scientific and Cultural Organization. Such notice shall take effect at the end of the first session of the Commission which follows the date on which notice has been given or, if notice has been given during the course of a session of the Commission, at the end of that session.

Article 3

1. The Commission shall be convened, as a rule, every two years, except that other intervals between sessions may be determined by the Commission.

2. Each Member State shall have one vote and may send at its own expense such representative advisers and experts as are required to the session of the Commission.

3. The Commission shall determine its own rules of procedure and voting.

Article 4

1. The Commission shall consider and recommend international programmes for oceanographic investigation, together with the necessary steps for their execution which call for concerted action by its members. The Commission shall review the results of scientific investigation and define the basic problems requiring international co-operation.

2. The Commission shall also recommend, in accordance with the international programmes of oceanographic investigation referred to in paragraph 1 above, the nature, forms and methods of exchange of oceanographic data through world data centres, specialized data centres, and by other means.

Article 5

1. The Commission may create, for the examination and execution of specific projects, committees composed of members interested in such projects.

2. The Commission may delegate to any such

committee all or any of its powers with respect to the project for which the committee was created.

Article 6

1. During the course of each session, the Commission shall elect a Chairman and two Vice-Chairmen, who shall together constitute the Bureau of the Commission between sessions and throughout the following session. The term of office of the members of the Bureau shall commence at the end of the session during which they have been elected and expire at the end of the next session. The Bureau may be convened, if necessary, between sessions at the request of the Director-General of the United Nations Educational, Scientific and Cultural Organization or of one of the members of the Bureau.

2. During the interval between sessions, the Bureau of the Commission shall perform such functions as may be assigned to it by the Commission.

3. During the course of each session and after electing the members of its Bureau, the Commission shall designate certain Member States which will appoint representatives to a Consultative Council. The Bureau shall seek the advice of the Consultative Council on all matters it considers substantial between sessions prior to taking action on such matters, and shall serve with the Consultative Council as a steering committee at sessions.

4. The representatives on the Consultative Council and their alternates and advisers, may attend all meetings of the Bureau, except executive sessions. The Consultative Council may not meet except with the Bureau and shall have no officers.

5. The Member States designated in accordance with paragraph 3 above shall hold office from the end of the session during which they have been designated until the end of the next session. No Member State which is represented on the Bureau shall be designated to the Consultative Council at the same time.

Article 7

1. Representatives of Member States of the United Nations Educational, Scientific and Cultural Organization, the Food and Agriculture Organization, the United Nations and other agencies of the United Nations system which are not members of the Commission may participate in meetings of the Commission without the right to vote.

2. Representatives of the organizations mentioned in Article 2, paragraph 1 above, may participate in meetings of the Commission, without the right to vote.

3. The Commission shall determine the conditions under which other intergovernmental organizations and non-governmental organizations shall be invited to participate in meetings of the Commission without the right to vote.

Article 8

1. The Secretariat of the Commission shall be provided, under the authority of the Director-General of the United Nations Educational, Scientific and Cultural Organization, by the Department of Natural Sciences of that Organization, which shall make available to the Commission such personnel and material as are necessary for its work. The Secretariat shall be headed by the Director of the Unesco Office of Oceanography. Members of the staff of the Food and Agriculture Organization and other interested organizations listed in Article 2, paragraph 1 above, may be added to this personnel by agreement with these organizations.

2. The Secretariat shall be responsible for servicing the meetings of the Commission.

3. The Secretariat shall ensure the day-to-day co-ordination of the international programmes of oceanographic investigations recommended by the Commission; it shall also fix the date of the next session of the Commission, under instructions from the Bureau, and take the necessary steps for the convening of the session.

4. The Secretariat shall collect from the Member States of the Commission and from various international organizations concerned, suggestions for international programmes of oceanographic investigation and shall prepare them for consideration by the Commission.

5. In addition to its duties for the Commission, the Secretariat shall co-operate actively with the Secretariats of the Food and Agriculture Organization, the World Meteorological Organization (WMO) and other agencies mentioned in Article 2, paragraph 1 above, which are engaged on the study of the oceans.

Article 9

The international programmes of oceanographic investigation recommended by the Commission to its Member States for their concerted action shall be carried out with the aid of the resources of participating Member States, in accordance with the obligations that each State is willing to assume. However, the Commission may also recommend to the United Nations Educational, Scientific and Cultural Organization and other organizations mentioned in Article 2, paragraph 1 above, activities related to the training of oceanographers, assistance to countries in promoting oceanographic investigation, exchange of experience, and expenditure entailed in connexion with the unification and standardization of means and methods of oceanographic research. These activities, if accepted by the said organizations, shall be financed by them in accordance with their respective constitutions and regulations.

Article 10

The Commission shall submit reports on its activities to the General Conference of the United Nations Educational, Scientific and Cultural Organization and shall request the Director-General of this Organization to transmit copies of these reports to all other interested organizations mentioned in Article 2, paragraph 1 above.

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

Amendments to the Statutes of the Intergovernmental Oceanographic Commission

The General Conference,[1]

Recalling resolution 2.343 adopted at its fifteenth session,

Considering that by its resolution 2467D (XXIII) the United Nations General Assembly requested Unesco that its Intergovernmental Oceanographic Commission intensify its activities within its terms of reference and in co-operation with other interested agencies, in particular with regard to co-ordinating the scientific aspects of a long-term and expanded programme of world-wide exploration of the oceans and their resources,

Considering further that it is desirable to take further measures towards broadening the base of the Commission and to facilitate such co-operation with the interested organizations of the United Nations System, particularly through their contributing to its secretariat, sustaining its work through relevant parts of their programme, using it as appropriate for advice and review in the area of marine science and without detracting in any way from the respective present responsibilities of those organizations which would use the Commission as an instrument for discharging certain of their responsibilities relating to the ocean and its resources,

Having taken note of the report of the sixth session of the Intergovernmental Oceanographic Commission,

Being desirous of giving effect to the recommendation contained in resolution VI-3 of the Intergovernmental Oceanographic Commission,

Noting the proposals of the Director-General, set forth in document 16C/31, for amendment of the Statutes of the Intergovernmental Oceanographic Commission adopted by the General Conference at its eleventh session and amended at its thirteenth session,

Decides to replace the Statutes of the Intergovernmental Oceanographic Commission by the following revised text:

Article 1

1. The Intergovernmental Oceanographic Commission, hereafter called the Commission, is established within the United Nations Educational, Scientific and Cultural Organization.
2. The purpose of the Commission is to promote scientific investigation with a view to learning more about the nature and resources of the oceans through the concerted action of its members.
3. The Commission shall seek to collaborate with all international organizations concerned with the work of the Commission and especially closely with those organizations of the United Nations System which are prepared to contribute to the Commission's Secretariat, to sustain the work

1. Resolution adopted, on the report of the Legal Committee, at the thirty-seventh plenary meeting, on 13 November 1970.

of the Commission through the relevant parts of the programmes of such organizations, and to use the Commission for advice and review in the area of marine science.

Article 2

The functions of the Commission shall be to:

(a) define those problems the solution of which require international co-operation in the field of scientific investigation of the oceans and review the results of such investigation;

(b) develop, recommend, and co-ordinate international programmes for scientific investigation of the oceans and related services which call for concerted action by its members;

(c) develop, recommend and co-ordinate with interested international organizations, international programmes for scientific investigation of the oceans and related services which call for concerted action with interested organizations;

(d) make recommendations to international organizations concerning activities of such organizations which relate to the Commission's programme;

(e) promote and make recommendations for the exchange of oceanographic data and the publication and dissemination of results of scientific investigation of the oceans;

(f) make recommendations to strengthen education and training programmes in marine science and its technology;

(g) develop and make recommendations for assistance programmes in marine science and its technology;

(h) make recommendations and provide technical guidance as to the formulation and execution of the marine science programmes of the United Nations Educational, Scientific and Cultural Organization;

(i) promote freedom of scientific investigation of the oceans for the benefit of all mankind, taking into account all interests and rights of coastal countries concerning scientific research in the zones under their jurisdiction.

In carrying out its functions, the Commission shall bear in mind the special needs and interests of developing countries, including in particular the need to further the capabilities of these countries in marine science and technology.

Nothing in this Article shall be construed as implying the expression of a position regarding the nature or extent of the jurisdiction of coastal States in general or of any coastal State in particular.

Article 3

The Commission shall give due attention to supporting the objectives of the international organizations with which it collaborates and which may request the Commission to act, as appropriate, as an instrument for discharging certain of their responsibilities in the field of marine science. On the other hand, the Commission may request these organizations to take its requirements into account in planning and executing their own programmes.

Article 4

1. Membership of the Commission shall be open to any Member State of any one of the organizations of the United Nations System.
2. States covered by the terms of paragraph 1 above shall acquire membership of the Commission by notifying the Director-General of the United Nations Educational, Scientific and Cultural Organization, either directly or through the executive head of any organization of the United Nations System. Membership will take effect from the date of receipt by the Director-General of the United Nations Educational, Scientific and Cultural Organization of such notification.
3. Any member of the Commission may withdraw from it by giving notice of its intention to do so to the Director-General of the United Nations Educational, Scientific and Cultural Organization. Such notice shall take effect at the end of the first session of the Commission which follows the date on which notice has been given or, if notice has been given during the course of a session of the Commission, at the end of that session, unless withdrawn prior to that time.
4. The Director-General of the United Nations Educational, Scientific and Cultural Organization shall inform the Chairman of the Commission, the executive heads of the organizations of the United Nations System and Member States of the Commission of all notifications received by him under the present Article.

Article 5

1. The Commission shall consist of an Assembly, an Executive Council, a Secretariat and such subsidiary bodies as it may establish.
2. The Assembly shall be the principal organ of the Commission and, without prejudice to the provisions of paragraph 3 of this Article, shall make all decisions necessary to accomplish the purpose of the Commission.
3. The Executive Council shall exercise the responsibilities delegated to it by the Assembly and act on its behalf in the implementation of decisions of the Assembly; for these purposes the Executive Council shall provide guidance to the Secretariat of the Commission. It shall convene as is laid down in the Rules of Procedure. It shall,

in any case, convene when five of its members or the Chairman so request.

4. During the course of each ordinary session, the Assembly, taking into account the principles of geographical distribution shall elect:
   (a) a Chairman and four Vice-Chairmen who shall be the officers of the Commission, its Assembly and its Executive Council;
   (b) Member States of the Commission who shall each designate a representative of that State to serve on the Executive Council; the number of Member States to be elected to the Executive Council shall be fixed by the Rules of Procedure. This number shall not exceed one-fourth the number of the members of the Commission.
5. The Chairman, the four Vice-Chairmen and the representatives of the Member States so elected shall constitute the Executive Council.
   (a) Each member of the Executive Council shall represent his State.
   (b) Each member of the Executive Council shall have one vote.
   (c) Members of the Executive Council may by accompanied by alternates and advisers.
   (d) The Executive Council may not include among its members more than one national of a Member State.
6. The term of office of the members of the Executive Council shall commence at the end of the session of the Assembly during which they have been elected and expire at the end of the next ordinary session of the Assembly.

Article 6

The Commission may create, for the examination and execution of specific projects, committees or other subsidiary bodies composed of Member States interested in such projects, or of individual experts. Committees or other bodies composed of Member States or individual experts may also be established or convened by the Commission jointly with other organizations.

Article 7

1. The Assembly shall be convened in ordinary session every two years. Extraordinary sessions may be convened under conditions specified in the Rules of Procedure.
2. Each Member State shall have one vote and may send such representatives, alternates and advisers as it deems necessary to sessions of the Assembly.
3. The Assembly shall determine the Commission's Rules of Procedure.

Article 8

Subject to provisions in the Rules of Procedure regarding closed meetings, participation in the meetings of the Assembly, of the Executive Council and subsidiary bodies, without the right to vote, is open to:

(a) representatives of Member States of organizations in the United Nations System which are not members of the Commission;
(b) representatives of the organizations in the United Nations System;
(c) representatives of such other intergovernmental and non-governmental organizations as may be invited subject to conditions to be determined in the Rules of Procedure.

Article 9

1. With due regard to the applicable Staff Regulations and Rules of the United Nations Educational, Scientific and Cultural Organization, the Secretariat of the Commission shall consist of personnel provided by the United Nations Educational, Scientific and Cultural Organization, as well as such personnel as may be provided, at their expense, by the United Nations, the Food and Agriculture Organization of the United Nations, the World Meteorological Organization and the Intergovernmental Maritime Consultative Organization, and other organizations of the United Nations System.
2. The Secretary of the Commission shall be appointed by the Director-General of the United Nations Educational, Scientific and Cultural Organization following consultation with the Executive Council of the Commission.

Article 10

1. The programmes sponsored and co-ordinated by the Commission and recommended to its Member States for their concerted action shall be carried out with the aid of the resources of participating Member States, in accordance with the obligations that each State is willing to assume.
2. The expenditures of the Commission shall be financed from funds appropriated for this purpose by the General Conference of the United Nations Educational, Scientific and Cultural Organization as well as from such additional resources as may be made available by other organizations of the United Nations System and by Member States, and from other sources.
3. Voluntary contributions may be accepted and established as trust funds in accordance with the financial regulations of the United Nations Educational, Scientific and Cultural Organization and administered by the Director-General

of that Organization. Such contributions shall be allocated by the Commission for its programmes.

Article 11

The Commission may decide upon the mechanism through which it may obtain scientific advice.

Article 12

The Commission shall prepare regular reports on its activities, which shall be submitted to the General Conference of the United Nations Educational, Scientific and Cultural Organization. These reports shall also be addressed to the Member States of the Commission as well as to the organizations within the United Nations System covered by paragraph 3 of Article 1.

Article 13

The General Conference of Unesco may amend these Statutes following a recommendation of, or after consultation with, the Commission. Unless otherwise provided by the General Conference, an amendment to these Statutes shall enter into force on the date of its adoption by the General Conference.

Article 14

The present Statutes shall enter into force immediately following the closure of the seventh session of the Commission.

Article 15

Transitional provisions

1. An extraordinary session of the Assembly shall be held immediately following the closure of the seventh session of the Commission for the sole purpose of determining the Commission's Rules of Procedure and, notwithstanding the provisions of Article 5, paragraph 4, of proceeding with the elections provided for in the aforesaid paragraph.
2. Notwithstanding the provisions of Article 5, paragraph 6, the term of office of the members of the Executive Council elected at this extraordinary session shall commence immediately.

SUMMARY OF FUNDING FOR IOC AND THE MARINE SCIENCE ACTIVITIES OF UNESCO (DOLLARS)

Period	IOC		Office of Oceanography (changed to Division in 1972)		
	Regular Programme	staff support	Regular Programme	staff support	United Nations assistance
1959			31,950[a]	b	c
1960			27,750[a]	b	c
1961	21,015[d]	b	162,251[d]	b	38,350[d]
1962	21,048[d]	b	226,750[d]	b	43,850[d]
1963-1964	119,000[e]	b	343,000[e]	b	262,000 TA[e] 250,000 SF[e]
1965-1966	165,000[f]	b	376,458[f]	b	277,600 TA[f] 100,000 SF[f]
1967-1968	150,000[g]	b	408,000[g]	b	384,031 TA[g]
1969-1970	227,480[h]	b	454,480[h]	b	458,400 TA[h] 110,000 SF[h]
1971-1972	387,795[i]	410,935[i]	714,305[i]	87,400[i]	550,000 UNDP[i]
1973-1974	500,545[j]	490,145[j]	566,740[j]	308,890[j]	700,000 UNDP[j]

a. does not include fellowships; UNESCO, Approved Programme and Budget, 10 C/5, 1959-1960, p. 83.
b. staff support costs for UNESCO are not given for this year, but such costs were probably significant in comparison with Regular Programme funds (see 1971-1972 and 1973-1974)
c. data not available
d. does not include fellowships; UNESCO, Approved Programme and Budget, 11 C/5, 1961-1962, pp. 166-72.
e. UNESCO, Approved Programme and Budget, 12 C/5, 1963-1964.
f. UNESCO, Approved Programme and Budget, 13 C/5, 1965-1966.
g. UNESCO, Approved Programme and Budget, 14 C/5, 1967-1968.
h. UNESCO, Approved Programme and Budget, 15 C/5, 1969-1970.
i. UNESCO, Draft Programme and Budget, 17 C/5, 1973-1974.
j. UNESCO, Approved Programme and Budget, 17 C/5, 1973-1974.