

## EMERGING LEGAL PROBLEMS

### OF THE DEEP SEAS AND POLAR REGIONS

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The title of this lecture reflects a profound change in the human condition. For, of all the generations of Adam, only in our own generation has man for the first time become truly capable of making the world his own.

Perhaps a Martian might see more clearly than ourselves that man's natural habitat — the environment for which we are physiologically suited — is really a humble and restricted one. Far from being monarchs of all we survey, our normal state is to crawl like crabs on the bed of a great ocean of gas — restricted, in fact, to its nonliquid and more temperate portions. The vaster portions of our planet — the seas and their depths, the deserts, the polar regions, the sky — are beyond the reach of our unaided physiological capabilities. Thus, in order to leave this narrow environmental niche we have somehow to carry our natural environment — a solid platform, air, warmth, energy sources — with us. And for most of the million years or so that scientists say man has been around, this has been impossible.

Man's conquest of his world has therefore depended on a slow mastering of the technology of artificial environments. Very long ago the first skin garments, fire, containers for carrying food and water, and primitive shelters permitted us to probe in the desert and towards the poles. With the first log raft we could, in essence, carry the land

with us onto the surface of the waters, making the waters a highway rather than a barrier. But from the time of those first great inventions to the present, a period of perhaps scores of thousands of years, much of our planet has remained denied to us.

Viewed in this context the far-reaching significance of current technological achievements becomes apparent. For today, in our own moment of time, these physiological barriers are finally crumbling. Modern technology has now made possible our development and transportation of complex artificial environments capable of sustaining us virtually wherever we wish — the polar regions, the vast new world beneath the seas, the stratosphere, or even the horizons of outer space.

Our specific concern today, however, is with the special legal implications of this development. And, surprising, perhaps unromantic, as it may seem, there *are* such legal implications. For wherever men go and interact with their fellows on a continuous basis — be it the polar regions, the deserts, the seas, their depths, or outer space — they need rules. Whether this human interaction is on the very simple level of family living or on the complex level of the relations between the organized aggregates of human beings that we call nations, men need some basis for predicting other people's behavior and for resolving controversies if they are

to rationally order their activities. The location of such interaction is irrelevant. What is important is that situations exist which raise the potentiality for human conflict and that only rules can avoid or minimize the social losses which such conflict involves. Thus, as man explores and exploits exotic environments his laws must follow him.

It is clear, then, that we need rules for the polar regions and the deep seas, and, of course, for outer space as well—rules governing access and permitted uses; rules governing exploitation of resources; rules governing personal conduct and liability; rules for the settlement of disputes; in fact, many of the great variety of rules that every domestic legal system provides. One question, of course, is what all of these various rules should be. However, in the context of our existing international legal order, with its characteristic decentralization of rulemaking authority as between states, there is an even more difficult threshold question—the question of who is to make such rules. Should it be each individual state itself, and, if so, how is such rulemaking authority to be divided and conflicts resolved? Or should specific rules be determined in advance by all interested states by international agreement? Or should interested states delegate to some international organization such rulemaking authority?

The question of who is to make the rules may sound abstract, but the stakes are real and high, for the answer to this question has much to do with what the substantive rules, in fact, turn out to be. Obviously, different states may wish different rules, and a rule which is good for one state and serves its interests best may work against the interests of another. Thus, if we decide that a particular state—for example, the Soviet Union—may legitimately make authoritative rules as to all con-

duct in a particular area of the deep seas or polar regions, it may well establish rules favoring its own activities and nationals and preventing Americans or other aliens from entering the area or exploiting its resources.

Of course, this problem of who is to make the rules governing conduct in the environments is simply one facet of the broader problem of the allocation of power and rulemaking competence among states in our present world, and solutions will necessarily draw heavily on established principles and precedents. Since you are probably familiar with these jurisdictional concepts from previous lectures, I will simply stress a few points.

First, emergent jurisdictional rules, like all international rules, tend to be a resultant of the realities of various states' interests and effective power. Whether these rules are reached by express agreement or by the growth of custom, they develop out of the pressures which each state can bring on others for acceptance of the rule it believes best serves its national policy. Various states' actions, as determined by foreign office decisions, reflect the varied strength of these pressures and may, over time, take on the aura of legitimacy. Of course, it is important to remember that a state's assessment of any proposed rule will properly weigh not only its immediate interests but its long-range interest as well. Since every rule is available also to others, decisionmakers must keep in mind the potentiality of future "mirror-image" invocations of the rule by foreign officials.

Thus, to understand the legal regimes which develop in the new environments we must look not only at legal precedents involved but also at the perceived interests of the various states concerned and their willingness and ability to exert pressure on other states for ac-

ceptance or acquiescence in proposed rules promoting those interests. The rules that emerge are often simply tentative compromises among these competing pressures.

Second, the importance of the concept of territory for our purposes is that it is, in essence, a shorthand way of allocating to a particular state predominant rulemaking authority in a geographical area. To say that a state can claim territory in the new environments is to say it can acquire such predominant jurisdiction, including the right to exclude others from the area or its uses. Conversely, to say that an environment is *res communis* — common property not subject to territorial acquisition — is to deny the possibility of such overall preclusive national jurisdiction.

But it is worth noting that it is the facts of effective rulemaking authority rather than the words we use that really count. For example, we tend to think of the doctrine that the high seas are *res communis* as a self-evident truth. However, you are aware that this concept has really had a rather ephemeral life — clearly established by British sea-power only in the 19th century and already subject to continual erosion as state interests and constellations of power have drastically changed. Thus, while all states pay lipservice to the doctrine of freedom of the seas by not claiming express territorial rights to the high seas, they accomplish close to the same result by their growing number of claims to paramount national control of many of the uses of the high seas. The many types of so-called exceptions which have developed — for example, the expansion of territorial waters, law enforcement, and fishing contiguous zones; claims to the continental shelves; claims to exclusive atomic weapons and missile testing areas; perhaps even the Cuban quarantine —

may be argued to be progressively devouring the rule. While it is true that peaceful navigation and fishing rights are thus far respected, we must still ask how free the seas really are today.

Third, in view of the jurisdictional significance of the concept of territory, it is important for our purposes to know something about the rules which are argued to govern claims by various states to previously unappropriated or unclaimed areas; the legal jargon for such unclaimed areas is *terra nullius* or “no one’s land.” Early legal doctrine tended to recognize mere discovery of such lands and symbolic acts, such as planting the flag and formal declaration, as sufficient to ground a valid title. But by the late 19th century states such as the United States were insisting that something more was needed — so-called effective occupation. Under this doctrine the validity of a state’s claim to title to *terra nullius* and to consequent rulemaking authority with respect to it was dependent upon that state’s demonstrating that it was, in fact, capable of exercising continuous governmental functions in that area. It was argued that in return for international recognition of its claim by other states, a claimant should be in a position to protect the nationals and the international rights of those other states in the area in question. However, while the general standard of effective occupation received general approval, several international decisions — notably those in the *Palmas Island*, *Clipperton Island*, and *Eastern Greenland* cases — have since suggested that where the previously unclaimed area is inhospitable and largely uninhabited quite minimal activities may meet the standard of effective occupation. Thus, the precise requirements of the effective occupation rule in differing contexts is far from clear.

Of course, since by the 20th century

most significant areas of the world were already firmly occupied and claimed. or, in the case of the high seas, considered not *terra nullius* but *res communis* — not subject to claim — the problems until recently seemed of more theoretical than practical importance. But now these doctrines and precedents are again being invoked. Are the new environments to be regarded as *res communis*, like the high seas, incapable of appropriation? Or are they *terra nullius*, subject to claim? And, if *terra nullius*, what sort and degree of activity is sufficient to legitimate such exclusive claims?

Let's now look at these different environments and the legal regimes or problems which have emerged.

**The Arctic.** The North Polar region presents the simplest problem from the standpoint of international law. It is, of course, a vast ocean almost completely surrounded by the North American, Asian, and European continents and by the Island of Greenland. Only the northern fringes of the continents, Greenland, and some scattered barren islands offer a solid platform for human habitation or exploitation. Although some one million people live within the Arctic Circle and the Arctic has considerable potential living and mineral resources, the actual exploitation of the area is presently limited. On the other hand, the geographic position of the North Polar region and its potential use as a highway makes it of great strategic and commercial significance, for the shortest air and sea routes between the world's most densely populated, economically advanced, and militarily powerful countries pass through the North Polar region. For commercial aircraft, submarines, and missiles alike, the Polar route is the quickest way between Europe and Asia and North America. The feasibility of submarine navigation beneath the

polar ice was demonstrated when the *Nautilus* reached the North Pole in 1958. It is worth noting that a submarine traveling under the polar ice from London to Tokyo needs to travel only about half the distance of present surface ships. The Soviet Union has devoted considerable effort to Arctic activities and has developed a northern sea route across the top of Asia which it announced last March would be open to foreign ships on a toll basis; however, it is reported that only one Russian commercial vessel has so far used the route and this for demonstration purposes.

As to the Arctic Ocean itself, there seems to be general agreement that the traditional law of the sea is fully applicable. This result is not surprising, in view of the clearly oceanic character of the area, the strength of the legal precedents involved, the limited possibility of exercising exclusive control, and the traditional shared interest of all neighboring countries in nonexclusive access to the region's principal use as a highway. From the time that the United States politely declined to endorse Admiral Peary's purported annexation of the North Pole until the present, there appears to have been broad agreement that neither the Arctic Ocean itself nor, in particular, the pack of floating ice upon it are capable of exclusive national appropriation. United States and Soviet aircraft, icebreakers, submarines, and United States and Soviet scientific parties based on floating ice floes have, on many occasions, transited the Arctic Ocean without protest.

A very recently reported incident both evidences this general principle and at the same time indicates the special legal problems which may nevertheless emerge. This summer two U.S. Coast Guard icebreakers, *Edisto* and *Eastwind*, undertook the first cir-

cumnavigation of the Arctic Ocean and proceeded with most of their voyage without protest from any state. Their route was planned so as to pass well outside any state's territorial waters. However, in late August the ships were blocked by heavy ice in the Kara Sea and the United States, through our Moscow Embassy, informed the Soviets that the ships would have to pass through Vilkitski Strait, which lies between the Soviet island of Severnaya Zemlya and the Chelyuskin Peninsula of Siberia and connects the Kara and Laptev Seas. The Soviet Government took the position that such passage would violate Soviet frontiers stating that, since it claims a 12-mile territorial zone, the 22-mile-wide straits are wholly Soviet waters. Faced with Soviet objections and the consequent impossibility of proceeding, the United States cancelled the expedition. However, we sent a stiff note of protest to the Soviets, pointing out that the Russian action appeared to be a violation of the innocent passage provision of the 1958 Geneva Convention on the Territorial Sea, that the ships presented no threat to the security and peace of the coastal state, and that the Russians had frustrated a useful scientific endeavor and deprived the international community of research data of considerable significance.

Let me offer a brief comment. It is true that article 16(4) of the Territorial Sea Convention provides a right of innocent passage "through straits which are used for international navigation between one part of the high seas and another part of the high seas." Moreover, the International Court in the 1949 *Corfu Channel* case had proclaimed a right of innocent passage through such straits, even as to naval vessels, as a matter of customary international law. The Court, in that case, rejected the argument that the passage

in question must be a "necessary" one and held that the convenience of the Corfu Strait for international navigation and the substantial use made of the strait for that purpose were sufficient to place it in the category of an "international highway." Scholarly debate on the Vilkitski Strait incident will probably turn on the interesting question of whether the Vilkitski Strait can really be considered one used for "international navigation" or as an "international highway" within the meaning of the Convention and *Corfu Channel* case. On the one hand, no United States vessel and few Soviet or other vessels appear to have previously transited the Strait. On the other hand, the Strait apparently is part of the Soviet-proclaimed northern sea route. Of course, Soviet sensitivity to potential espionage may well have played a part in this incident. But note that despite this unhappy occurrence the Soviet Government made no claim to restrict navigation of the vessels outside its territorial waters.

Legal problems of the Arctic have, for the most part, involved territorial claims to the various northern islands. For instance, Denmark's claim to Greenland by discovery and occupation was confirmed by the International Court in the *Eastern Greenland* case. Norway holds Spitzbergen under the terms of an interesting multilateral treaty of 1925 which, in some of its demilitarization and open-access provisions, anticipates the Antarctic Treaty. And there has been some controversy over Russian claims to Wrangel Island.

But perhaps the most interesting territorial issue concerns the so-called sector claims advanced by Canada in 1907 and the Soviet Union in 1926. Under this sector theory, these countries claim title to all Arctic islands lying between their northern continental mainlands

and the North Pole situated within the meridians of their most easterly and westerly continental boundaries. These pie-shaped sector claims are based on a rather far-reaching theory of contiguity and do not depend on actual discovery or occupation. None of the four other nations which border on the Arctic Ocean — Norway, Finland, the United States (by virtue of Alaska), and Denmark (by virtue of Greenland) — recognize the sector principle or have made claims based on that principle. However, in practice, in view of the presently limited utility of the Arctic islands involved, the sector-claim controversy, though unresolved, has been of more theoretical than practical importance.

One other recent development perhaps deserves brief mention — President Eisenhower's 1958 "open skies" proposal for the establishment of an Arctic international inspection zone to guard against surprise attack. Of course, this proposal came to naught when it was vetoed by the Soviet Union in the United Nations Security Council.

**The Antarctic.** The South Polar region is, for our purposes, much more interesting. Antarctica presents a strong contrast to the Arctic — geographically, strategically, and from the standpoint of the legal problems involved. It consists principally of a vast and desolate ice-covered continent, as large as the United States and Europe combined, surrounded on every side by thousands of miles of hazardous ocean, ice-filled and impassable in the winter months. This continent is the coldest, driest, windiest, and most barren land on earth. Antarctica itself supports virtually no native animals or plants, though the offshore waters of the Antarctic convergence teem with sea life, and penguins and other birds nest on the Antarctic coasts. Before the end of

World War II only a handful of human beings had set foot on the continent, and even fewer had stayed through the long and harrowing Antarctic winter.

The economic value of Antarctica is miniscule. No significant mineral deposits or other natural resources have thus far been discovered; in any event, costs of exploiting and transporting any discoveries would probably be prohibitive. Other uses which have been suggested — for example, tourism or use of the continent as a vast cold storage warehouse — seem unlikely to be important in the near future. Moreover, in view of the remoteness of the continent from significant population centers and the fact that the most important world powers lie in the Northern rather than the Southern Hemisphere, Antarctica appears to have little potential value as a route for transpolar air traffic and little strategic significance. Thus, it is difficult to see that Antarctica naval bases or missile sites would really be of much practical use to any country. In practice, the principal importance of the continent has been in the area of scientific research, as a vast laboratory of vital importance to a great number of scientific disciplines.

The limited usefulness of the Antarctic has strongly influenced present international treatment of the problem of territorial and jurisdictional claims. From the time that the existence of Antarctica was established in the early 1800's, a number of countries showed an interest in the area, and by 1956 seven countries had made extensive territorial claims covering altogether some 80 percent of the continent. These territorial claims, based primarily on discovery, symbolic acts, and limited temporary activities by small expeditions, were in many cases conflicting. Many of these countries refused to recognize each other's claims. The

United States, despite its own very extensive activities in the Antarctic, neither made territorial claims itself in Antarctica nor recognized such claims by others. The traditional U.S. position was that by its very nature the Antarctic was incapable of that degree of effective occupation sufficient to support such claims of territorial sovereignty. The Soviet Union, which became increasingly active in Antarctica following World War II, also refused to recognize other states' claims to territory. The result was legal chaos.

The legal questions involved became practically significant only in the middle 1950's. The International Geophysical Year 1956-58 resulted in a major invasion of the continent by thousands of scientists and supporting military and technical personnel of more than a dozen countries. This invasion has, in the last 10 years, become a conquest. By now advanced technology has made possible the construction by some 11 states of over 30 permanent stations throughout the Antarctic, including the United States McMurdo, Byrd, South Pole, and other stations, and the Soviet Vostok and Mirnyy stations. Developments in sea and airborne logistic support have made possible wide-ranging research activities and large-scale continuing supply of these installations; in fact, I understand that the United States has this season instituted scheduled winter flights between New Zealand and McMurdo station — a considerable technical achievement in view of the extreme winter conditions. A nuclear reactor is in operation at McMurdo station and others are contemplated. The total Antarctic summer population may now number over 2,000 persons and the winter population over 700 — hardly a metropolis, but certainly a community.

With developments on this scale, coupled with the needs of scientists for

free access to every part of the Antarctic for their research, the problem of national territorial claims for the first time became troublesome. A *modus vivendi* was established during the IGY itself under which claimant states avoided interfering with each other's activities even if they occurred within claimed territory. However, when it became evident after the IGY that substantial activities would be continuing indefinitely, a more stable legal arrangement became desirable.

Following U.S. initiative and careful advance preparation, a conference of the 12 countries most involved in the Antarctic activities was held in 1959 in Washington. This conference drew up the Antarctic Treaty which entered into force in 1961. The original parties were Argentina, Australia, Belgium, France, Japan, New Zealand, Norway, South Africa, the Soviet Union, the United Kingdom, the United States, and Poland. Czechoslovakia, Denmark, and the Netherlands have since acceded.

The Treaty is a remarkable international achievement representing, in my view, a sensible and practical solution to the problems countries are jointly confronted with in Antarctica. The Treaty, which is binding upon the parties for at least 30 years, is applicable to the area south of latitude 60° S., including all ice shelves; however, rights under international law respecting the high seas are *not* affected. The area is both demilitarized and made a nuclear-free zone. Military activities of any nature, nuclear explosions, and the disposal of radioactive wastes are prohibited, however, military personnel and equipment can be used to support scientific research, and nuclear reactors may be utilized. To assure observance of these provisions, there is a path-breaking article in the Treaty permitting complete freedom of inspec-

tion; any party may at any time unilaterally carry out inspections by ground or by aerial surveillance anywhere in the Treaty area. The United States, in fact, conducted such inspections, including inspections of Soviet stations, in 1964 and 1967, and various other countries followed suit — although the Soviet Union has not yet done so. While, of course, the Treaty does not bind nonparties, the parties undertake “to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity in Antarctica contrary to the principles of the Treaty.” Since the major world powers are parties, it is unlikely that nonparties would fail to respect the legal regime the Treaty creates.

A major problem for the Treaty drafters was, of course, that of territorial claims and jurisdiction. Even though the practical importance of the areas claimed was slight, the emotional significance of such claims to certain of the claimant countries was great. Consequently, proposals for complete internationalization of Antarctica, or at least the establishment of an international authority to provide rules for the area, proved impracticable. On the other hand, a final determination of the many competing positions on claims was clearly even more out of the question. The course taken by the Treaty drafters was therefore to bypass this complex issue and to deal instead with the practical aspects of sovereignty rather than its theoretical structure. Thus, the Treaty says nothing about the validity of existing claims. Instead, it freezes existing positions as they were in 1961 and establishes a moratorium on new claims while the Treaty is in force. Nothing done by any country in Antarctica while the Treaty is in force is to affect the validity of such claims one way or the other. On the

other hand, the most practically significant incident of such claims, that of allocating competence to control conduct, is handled by providing that observers carrying on inspections under the Treaty, and also exchange scientists, are to be subject only to the jurisdiction of their state of nationality. Other jurisdictional problems are to be resolved by consultation. Thus, while it remains possible for claimant states to assert the right to establish rules on the basis of territorial sovereignty, and many have enacted laws purporting to do so, most states have in practice restricted the application of such rules to their own nationals. Note that so long as jurisdictional rights are restricted by the agreement the issues of territorial claims remain largely theoretical.

While no formal international organization is established by the Treaty, it provides for extensive scientific cooperation and exchange of information and for periodic meetings of the parties. The participants in these meetings may recommend to their governments so-called agreed measures implementing Treaty purposes, and these recommendations, when unanimously approved by the parties, are internationally binding. The extent of cooperation among the parties has been remarkable. Important agreed measures have been approved covering problems of conservation, telecommunications, and scientific cooperation.

The success thus far of the Antarctic Treaty in a world of cold war and other conflicts is worth noting. A cynic might suggest that one reason the Treaty could be concluded and has worked so well is that Antarctica is rather useless except for scientific research. Scientific research is a use which by its very nature stimulates cooperation and is hostile to the concepts of exclusive rulemaking authority and restricted access implicit in territorial



sovereignty. As in the case of the common interest in free navigation of the high seas, the mutual advantages to states of common access for all to all areas clearly far outweigh those any single state can gain by unduly pressing its own separate interests. Moreover, the drafters wisely bypassed the difficult and emotional theoretical issues of territorial claims and settled instead the practical functional issues necessary to permit the work of scientific research to go on.

Thus, in terms of our concern with the question of who makes the rules, whatever the Antarctic may be in legal theory, it appears in present practice much like the high seas — a *res communis* — with each nation controlling its own expeditions and nationals. What might happen under changed circumstances where states find a real stake in exclusive claims — for example, if valuable mineral deposits are discovered — remains to be seen. Hopefully the habits of cooperation and functional solution engendered by the Treaty would engender equally sensible new ways of dealing with such developments.

As you may know, the success of the Antarctic Treaty stimulated the development of the United Nations Outer Space Treaty which was largely modeled on it. However, the Outer Space Treaty, of course, forecloses the incipient problem of territorial claims by specifically barring such claims in outer space and providing that it is to be free for the use of all.

Thus, reasonably workable solutions have emerged for handling the present legal problems of the polar regions and outer space — solutions analogous to those developed in the last century for the high seas.

**The Deep Seas.** But when we turn to the deep seas, the problems become

more troublesome. For here we are not talking about barren areas of limited practical value, areas in which national interests are primarily in the inherently common and sharable uses of transit and scientific investigation. Instead, we are dealing with an emerging world of tremendous potential wealth and significance, one in which the rewards of exclusive access and jurisdiction may appear very tempting to states. Since I understand Admiral Hearn will be discussing this subject in detail in a later lecture, I will limit myself to sketching out the outlines of the problem.

Again these questions arise from the striking developments in technology which have increasingly permitted man's penetration beneath the seas — a technology which has had to overcome the obstacles of an environment perhaps more akin to that on the surface of a neighboring planet than on the surface of our own earth — airless, wet, cold, opaque, and corrosive, with extreme pressures. You are probably familiar with many of these developments. We see broad advances in the technology of marine mining and marine structures which have permitted maintenance of fixed and semipermanent marine installations and the commercial extraction of oil and other resources from the seabed and subsoil. The nuclear submarine is a basic foundation of our modern Navy. More than 20 tethered or free-moving manned deep sea submergence systems have been developed for research, rescue, and recovery, and we are gaining new experience with remote control underwater manipulator or robot systems as that used for the recovery of the nuclear bomb off Spain. Other developments include surface and deep ocean buoy technology capable of recording and telemetering information to ship, shore, or satellite installations; im-

proved charting of the deep seas and their currents; and navigational and positional technology permitting location, identification, and relation to objects in the undersea environment. Finally, there are various technological advances permitting human beings to live and work as free swimmers underseas, as illustrated by scuba systems and saturation diving techniques, the Navy's "Man in the Sea" program and Sealab I, II, and III experiments, and still early research on "artificial gills." With these advances has come a tremendous upsurge in awareness of the potential importance and riches of the marine environment.

Thus, the development of the Polaris undersea weapons system, with its virtues of concealment, mobility, and dispersion, has clearly greatly affected strategic thinking; in fact, in June 1966 the Panel on Oceanography of the President's Science Advisory Committee stated that "the most urgent aspect of Federal involvement in ocean science and technology for the next 5 to 10 years relates to national security in the narrow, strictly military sense."

Again, in an age in which the threat of overpopulation has become a problem rivaling that of nuclear weapons and in which some observers predict a collapse of the world's food economy within 20 years, the possibility of increasing utilization of the vast and thus far largely unexploited potential food resources of the seas has acquired great significance. Some believe our ability to develop marine sources of food may be indispensable to the maintenance of long run world social, economic, and political stability.

The great mineral wealth of the sea — oil, coal, sulfur, iron, manganese, and diamonds and as a source for desalinated water — is being increasingly exploited with potentially important effects on a number of national

economics. For example, in addition to the rapid development of offshore oil and mineral extraction in the United States, important energy sources are being developed in the North Sea, and Australia, among other countries, has discovered important offshore mineral deposits.

The advantages of large cargo submarines, free of surface wind and weather, operating, for example, under the Arctic ice between Europe and Asia have been pointed out. We have begun to appreciate the potentially profound effects of our growing pollution of the oceans — a problem dramatized by the *Torre Canyon* incident and the question of disposal of radioactive waste. Finally, the possible uses of the ocean's tides for power, as in the proposed Passamaquoddy Dam project, and the great effect of the oceans on weather and the problem of weather control are being explored.

Even a brief survey of these developments suggests a science-fiction future where man's food comes largely from ocean algae farms, whale herds, and fish ranges "fenced" by bubble or sonic barriers, where national security is based on underwater submarine or missile bases, perhaps constantly shifted about the ocean floor to avoid detection; where men may ultimately even live and work in cities beneath the sea.

This new significance of the ocean is, in turn, forcing a reassessment by states of their national interests and attitudes — a reassessment perhaps symbolized in our own country by Congressional passage last year of the Marine Resources and Engineering Development Act and the fact that, by my information, over 15 intragovernmental committees are now working on ocean development problems. While the sea was principally viewed as a highway, the doctrine of freedom of the

seas, of nonexclusive use, had a broad appeal. The national interest each state had in free navigation of the seas by its own ships without interference by other countries generally outweighed the limited gains a state might hope to derive from its own assertion of exclusive control on the seas. However, where nonsharable or competing uses develop — as with the exploitation of mineral wealth or fisheries — a strong national interest in asserting paramount or exclusive control of these uses emerges. Moreover, where the potential effects of high seas activity on shore states become more significant or are more profoundly realized — as with the problem of undersea weapons systems or pollution—pressure to protect national interests by asserting authority on the high seas mounts.

One illustration of this tendency is, of course, the many attempts by states to control fishing in their offshore high seas waters, for example, our own P.L. 89-658, enacted last year, asserts the right of the United States to control fishing in a contiguous zone 9 miles out from the limits of our territorial sea. But more significant for our purpose are developments concerning the continental shelf.

The real takeoff of this development was our own Truman Declaration of 1945 which proclaimed that the United States regards the natural resources of the subsoil and seabed of the contiguous continental shelf as appertaining to the United States and subject to its jurisdiction and control. While a territorial claim to the shelf was deliberately avoided and it was made clear rights of navigation in the superjacent seas were not affected, our assertion of jurisdiction over the shelf itself was very far-reaching. The U.S. declaration was followed in short order by similar declarations by many other states with continental shelves. Finally, in 1958,

the principle of allocating virtually exclusive rights to the use of resources of the continental shelf to the contiguous shore state was, in effect, ratified by the Geneva Convention on the Continental Shelf to which some 30 states are now party.

Under the Continental Shelf Convention the coastal state exercises sovereign rights over the continental shelf for the purpose of exploring it and exploiting its natural resources. However, these rights do not affect the legal status of the superjacent waters as high seas or that of the airspace above waters. The rights to the resources of the shelf do not depend on occupation or express proclamation and are exclusive in the sense that if the coastal state does not explore the continental shelf or exploit its natural resources no one else may undertake these activities or make a claim to the continental shelf without the expressed consent of the coastal state. The coastal state may not unjustifiably interfere with navigation, fishing, or the conservation of living resources of the sea, or scientific research. However, the coastal state is entitled to install and maintain or operate on the continental shelf installations and other devices necessary for the exploration and exploitation of its natural resources and may establish safety zones around such installations, not to exceed 500 meters in breadth. The negotiating history of the Convention suggests that there is no clear bar to the placement of defense installations on the continental shelf by the shore state.

It is important to note that the definition of continental shelf given in the Convention is not what a geologist's definition might be (assuming geologists could agree) and is specifically open ended; it is defined as "the sea bed and subsoil of the submarine areas adjacent to the coast . . . to a depth of

200 meters or beyond that limit, to where the depth of the superjacent waters admit of the exploitation of the natural resources." Thus, while the Convention establishes a reasonably clear regime for the continental shelves themselves, giving rulemaking authority to the coastal state, it is left unclear precisely where that sort of regime ends. Presumably such exclusive claims are good at least some distance beyond the 200-meter line or else the "exploitability" criteria wouldn't have been added. On the other hand, a convention dealing with the continental shelf could not easily be argued to resolve questions of jurisdiction in zones having little relation to the continental shelf, particularly where the alternative 200-meter depth was provided.

Since drilling can now be done in as much as 1,000-foot depths and the United States has already leased mineral rights in areas of depths of over 4,000 feet — developments not foreseen by the drafters of the Convention — troublesome problems of interpretation are already arising. An interesting example of this problem is the reported recent attempt by some San Diego businessmen to establish the so-called new nation of Abalonia. The plan was to establish an artificial island by sinking a concrete reinforced ship in 12 feet of water on Cortes Bank, which lies 110 miles off San Diego. The issue arose whether U.S. authority under the continental shelf legislation extended to the bank, since the water between the bank and the mainland reached depths of over 1,400 meters. Unfortunately for legal scholarship, a storm drove the ship off the bank and it sank in deep water, so the question is still open. As another illustration of these developing problems, last March Denmark, Germany, and the Netherlands submitted to the World Court a dispute between them concerning the delimitation of

the continental shelf of the North Sea.

Assuming that the Continental Shelf Convention is limited to at least the more shallow areas of the seas adjacent to the continents, we are still faced with the questions of where the precise limit of the regime of the continental shelf is and who may establish rules for activities in the deep sea beyond those shallow regions. We may soon see this problem raised in a variety of practical contexts. For example:

Could the United States prohibit or control the activities of an English or some other foreign company seeking to extract minerals from the seabed or subsoil just beyond the limits of our geologically defined Atlantic continental shelf and at greater than 200 meter depths?

What about Russian construction of an undersea missile base just outside our shelf or, for that matter, its permanent stationing of a fleet of missile submarines in our offshore waters?

If a U.S. company discovers and begins exploitation of the resources of a seamount in the mid-Atlantic, is there any way it can prevent other U.S. or foreign companies from rushing in to share its find — for, clearly, if some measure of exclusivity is not possible, such exploration and development may not be commercially feasible?

What criminal and private laws will regulate the conduct of individuals on U.S. or foreign fixed installations on or under the high seas? For example, suppose a U.S. scuba diver kills a French scuba diver in the process of seeking discoveries beneath the high seas?

How will the inevitable conflicts between the traditional uses

of the sea for navigation and fishing and the various new underseas uses be resolved? For instance, can a Texas tower be built or a fixed or free-floating buoy system put in operation even though they may create hazards to ships? It is interesting to note that in the Gulf of Mexico it has proved necessary to establish Shipping Safety Fairways to avoid dangers of collision with such permanent installations.

How can a country stop another country from taking one of its buoys or extracting its information?

What about damage to fishing caused by pollution or other by-products from undersea mining activities?

Can the United States restrict trawling, the disposal of radioactive materials, or underwater explosions in the vicinity of U.S. operated subsurface installations, and can it enforce such regulations against foreign nationals?

What if a government or private individuals use modern technology to herd fish from the high seas into exclusive contiguous fishing zones?

And so on! As we have seen, there are various approaches one could take to provide solutions for these problems.

First, we could say that all of the high seas, including its depths, bed, and subsoil remain *res communis* and open to all with no possibility of unilateral claims to exclusive use; consequently, each state will typically control only its own nationals, enterprises, or installations. Obviously, assuming that such a doctrine would still legally permit unilateral exploitation to be carried on, it would still appear to furnish little protection to nations or firms initiating mining or other de-

velopmental activities; as soon as the development showed promise, poachers might come in. Rational planning of deep seas uses would be impossible without some overruling international understandings.

Second, we could extend the continental shelf principle to the ocean deeps, dividing rights on some sort of sector theory between littoral states. But such division based on accidents of geography really unrelated to real considerations of contiguity would be highly inequitable and extremely complex. States whom geography did not favor would certainly not accept it.

Third, we could say that the bed and subsoil of the deep ocean is *terra nullius* — whoever can effectively exploit and control it can claim exclusive rights. This doctrine, of course, would lead to questions as to what constituted such effective occupation and possibly a race between the United States, the Soviet Union, and the few other technologically capable states to grab the depths for themselves. President Johnson voiced this concern last year when he warned: "Under no circumstances . . . must we ever allow the prospects of rich harvest and mineral wealth to create a new form of colonial competition among the maritime nations. We must be careful to avoid a race to grasp and to hold the lands under the high seas. We must insure that the deep seas and the ocean bottoms are, and remain, the legacy of all human beings." Some Government departments may be having second thoughts about the breadth of this statement!

Fourth, we could collectively agree, as suggested by last summer's World Peace Through Law Conference at Geneva, that the resources of the deep seas "pertain" to the United Nations and let the United Nations make the applicable rules for the exploitation of such resources and allocation of their

benefits. I understand that a proposal to this effect is being placed on the current U.N. General Assembly agenda. But do we really place that much confidence in the wisdom of present U.N. General Assembly majorities? Do we want to burden deep sea development with a United Nations bureaucracy? Would there be any real incentive for development under such a system?

Fifth, we could develop any of a variety of possible types of new international organizations tailored to meet the special problems of the deep seas and with special rulemaking, administrative, registration, or licensing powers to provide for rational development. For example, a state or a private company might be granted exclusive exploitation rights to a limited area upon registering the area with such an international agency and proving its capacity to actually carry out such exploitation and comply with navigational safety and pollution standards. The grantee might be required to pay a percentage of its profits into a common international fund for economic development or other purposes. It is worth noting that there are already a great number of international organizations engaged in cooperation in the oceanographic field; for example, the International Maritime Consultative Organization is actively studying the *Torre Canyon* problem. And, of course, we already have conventions in force applicable to a few of these deep sea problems — for example, the Oil Pollution Convention or the 1963 Test Ban Treaty prohibiting nuclear tests in the sea.

Finally, we could combine various approaches, using each to solve the kinds of problems to which it was best suited — for example, letting each state provide civil and criminal law for its own installations but perhaps with

international registry of the installations themselves.

We also have an additional question to answer. Should we try to resolve these problems now by specific international agreement? Or should we instead adopt a go-slow, wait-and-see approach permitting the problems to better define themselves before attempting an overall solution, restricting ourselves to practical issues as they arise, perhaps letting answers develop by the push and pull of national interests developing into customary law?

This is the shape of the problem, and, I think, as yet no one really knows what answers will ultimately be given. As we've seen, the rules that emerge will doubtless be some sort of compromise, the resultant of the interaction of state interests weighted by the influence of the states concerned and their willingness to exert that influence. But foreign offices are not yet really sure where their interests lie in this new area, so they are reluctant to commit themselves one way or the other. For example, at the moment a legal regime based on the *terra nullius* concept of "finders keepers" might seem in the U.S. interest since our technology appears to give us an edge in any race for undersea territory. But what of the Russians? And what are the long-term costs of such an approach? Should the United States seek a rule which prevents Soviet missile subs from approaching our own coasts even if the rule restricts the flexibility of our own Polaris submarines? As naval officers, do you really have sufficient information to now say which rule you would prefer?

The complexity of these problems is such that I gladly leave a discussion of their solution in the more capable hands of Admiral Hearn. I will restrict myself to only three comments.

First, admittedly premature attempts to deal with ill-defined problems may be undesirable. However, there seems to be also a risk in letting the legal problems of the deep seas drift too long without obtaining at least some broad general international understandings as to the shape of the legal regime we contemplate. History suggests that at some point opposing national interests and commitments in such matters may become so frozen that a mutually agreeable and rational solution is no longer possible. Thus, it can be argued that we waited too long in the area of control of nuclear weapons; conversely, perhaps we acted just in time in our early formulation of the Outer Space Treaty. Against the argument that our national interest is not yet clear and does not yet permit us to decide what legal regime for the high seas will prove most advantageous must be weighed the argument that what we can get now may be better than what will be possible later on.

Second, it seems to me unlikely that the other nations of the world will acquiesce in a *de facto* division of the resources of the high seas among the few states, such as the United States and the Soviet Union, now alone capable of exploring and exploiting them. I think we will see a growing demand for some form of international regulation assuring a broader sharing of the benefits which will flow from these developments — a pressure which the United States, given the current state of international affairs, will find it hard to resist. Thus, it would not be surprising to see some broad statement soon emerge from the U.N. General Assembly reserving the seabeds and subsoil to the use of all mankind and excluding national territorial claims — a statement based on the precedent of the Outer Space Declaration and Treaty. On the other hand, I believe it

highly unlikely that the great powers would presently consent to give to the United Nations, or to any similarly constituted international agency, any substantial or meaningful operational control over their deep sea activities.

Third, the most likely development. I believe, is that we will see a functional approach leading to the use of a variety of legal techniques to handle the special legal problems of the deep seas. For example, I suspect we will have a broad Outer Space Treaty type instrument barring national territorial claims. As to practical jurisdictional questions, states will probably simply extend customary international law principles recognizing national jurisdiction over their vessels to national control of activities on their deep sea installations as well, and such jurisdiction will be generally recognized; the United States and the Netherlands have already taken steps along these lines. Perhaps international custom will also lead to a broad principle of noninterference with purely scientific deep seas research. On the other hand, special agreements may be progressively developed on an *ad hoc* basis to deal with the many other problems we have seen — an agreement giving some protection to particular types of mining activities; an agreement for the registry and regulation of permanent installations and fixed and free-floating buoys; an agreement on deep ocean pollution; possibly even an arms control agreement relating to underseas weapons systems.

Perhaps if there is one lesson in this survey it is that the provision of new law for this new environment will in itself be an adventure — a creative rather than a mechanical act. We see that law, and particularly international law, can best be viewed as simply a tool which men have developed to solve the problems which arise from group

living — a tool which is purposive and functional. Appeal to the past, to precedent, and so-called doctrine cannot alone answer the new questions we are facing. We see that, particularly in the international field where the force of rules is peculiarly dependent on the acceptance by the states to which they

are addressed, law must reflect workable compromises among various state interests and provide sensible answers to real problems if it is to be meaningful and effective. The next few years will show whether we can meet this challenge in the new worlds which are opening to us.

