SOME PRELIMINARY THOUGHTS ON THE ESTABLISHMENT OF A WORLD SPACE ORGANISATION

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EXECUTIVE SUMMARY

For any one who has followed the Law of the Sea negotiations, the 1985 Soviet proposal for the establishment of a World Space Organistion had a familiar ring. Motivation, conceptual basis, substance and proposed procedure were almost identical. While making only indirect reference to the Law of the Sea, however, the Soviet Foreign Minister, in introducing his proposal, referred explicitly to the 1946 negotiations on nuclear arms control. This author, therefore, felt the need to go back to those negotiations, particularly as reflected in the 1946 volume of the Bulletin of the Atomic Scientists which, retrospectively, makes absolutely fascinating reading.

This reading revealed astonishing similarities between the U.S. proposal for the establishment of an Atomic Development Authority and the discussions on the International Seabed Authority: similarities which had escaped commentators thus far. Both proposed institutions, in fact, are based on the concept that certain resources cannot be owned by States, companies or individuals and must be controlled and managed by the international Authority to be established. In both cases the authority was to engage directly in the exploration, mining, processing and marketing of the minerals in question: uranium and thorium, in the case of the Atomic Development Authority; nickel, cobalt, copper, and manganese, in the case of the Seabed Authority, while both could also grant licenses to States or private companies to engage in some of these activities under the control of the Authority.

This study tries to assess the main achievements and main shortcomings and failures, whether substantial or political, of both the atomic and the seabed negotiations and to draw some lessons for the forthcoming negotiations for the establishment of a World Space Organisation.

The atomic negotiations of 1946 give substantial support to a basic principle already proposed by the Soviet

Delegation: that the new organisation should serve both Development and Disarmament. On the procedural plane, this suggests a merger between the earlier French proposal for an International Satellite Monitoring Agency and the Soviet proposal. Another lesson to be drawn is avoidance of three political pitfalls: First, a new, positive approach is needed to get off the horns of the dilemma, Which comes first: Disarmament or the establishment of the Authority? Second: Any attempt should be avoided to link the establishment of the new Authority to changes in the existing structure of the United Nations, especially the Security Council, and, third, provocatory actions should be avoided while the negotiations are in course: a voluntary moratorium on military research in outer space might solve this problem.

The lessons to be learned from the Law of the Sea negotations are numerous, and partly positive, partly negative. The basic concepts can be carried over in toto: the concept of the common heritage of mankind -- already accepted for outer Space, but in need of more precise interpretation both in legal and economic terms, both in its disarmament and development aspects; the concept of the unity and indivisibility of space and the interdependence of usages, and, in this context, the multi-functional character of the Authority; the need to deal with both States and non-State entities and the need, therefore for an instrument that straddles public and private international law. Two major pitfalls are to be avoided: First, The Convention establishing the Authority must not be overburdened with detail prone to fall into quick obsolescence; some flexibiity and mechanisms for prompt adaptation and change are essential; this implies a dynamic concept of the institution as a process more than a product. Secondly, the Authority must be built in such a way as to institutionlise cooperation between industry and the Authority rather than competition and collision. The negotiations on the "parallel system should serve as a lesson as to what not to do. More positive lessons can be drawn from space law itself - the INMARSAT Convention -, from the current, adaptive

developments in the L.o.S. Preparatory Commission, and from recent developments in organising research and development in high technology, especially in the European EUREKA framework.

Drawing on documents from all these domaines, the author attempts to project a precedural scenario and to give some idea of the functions, powers, and structure of the proposed World Space Authority. Like the Law of the Sea Convention, a Convention establishing a World Space Authority has the potential to make a major contribution to the building of a new international order, to development and to disarmament, especially by providing the first institutionl framework in the United Nations system, for creating a synthesis between both.

In conclusion, the author stresses the importance of this new international undertaking for Canada, both in economic and political terms and suggests a lead role for Canada as a bridge builder between the French and the Soviet proposals.

I. INTRODUCTION

On August 15, 1985, The Soviet Foreign Minister Edward Shevardnadze sent a letter to the Secretary-General of the United Nations, requesting to have the question of the nonmilitarization of outer space included in the agenda for the Fortieth General Assembly. He also proposed that the Assembly convene an international conference to discuss setting up a world space organization to promote international cooperation in peaceful outer space activities. He pointed out that specific actions aimed at creating space strike weapons were already under way, and if the process were not stopped, the arms race would intensify and broaden in scope, consuming still more resources and creating insurmountable obstacles to joint peaceful space activities on the part of States. Annexed to his letter was a draft resolution by which the Assembly would call on States to do everything possible with regard to stopping the arms race in outer space, thereby creating conditions for wide-ranging international cooperation in the exploration and use of outer space for peaceful purposes. He suggested that the Assembly should decide to convene not later than 1987 an international conference on cooperation in the peaceful exploration of outer space. The conference would consider practical arrangements for setting up a world space organization, once agreement had been reached to ensure effectively the nonmilitarization of outer space.

In a memorandum accompanying the Foreign Minister's letter, the Soviet Union listed the advantages that would result from international cooperation to prevent an arms race in space. It said such cooperation would not only be in the interests of world peace, but would also make possible a sharing of the scientific benefits obtained from space exploration, which could be applied in biology, medicine, weather forecasting, environmental studies and communications. Remote sensing of the earth by satellites could yield global data for geology and agriculture, for exploration of seas and oceans, and for locating and rescuing disaster victims.

As envisioned in the Soviet memorandum, the new space agency would ensure the equal access of all States to the scientific and technological benefits derived from the exploration of outer space. It could promote the pooling of international resources in joint space projects for peaceful purposes and assist developing countries in that field. It could also help to monitor the observance of international agreements for the nonmilitarization of outer space. (Document A/40/192).

On September 24, in his statement to the General Assembly, the Foreign Minister formally introduced the proposal.

> Space, until recently the realm of science fiction writers, has now become an area of man's practical activity. Peaceful exploration of space holds out for mankind truly limitless prospects of utilizing scientific and technological achievements to promote the economic and social progress of the peoples and to solve the vast problems that face mankind on Earth.
>
> However, these truly cosmic dimensions -- and I am not speaking figuratively -- also present new requirements to the inhabitants of the Earth and above all to the leaders of States.
>
> There should be no repetition of the mistake made four decades ago when the States and peoples of the world were unable to prevent the great intellectual achievement of the mid-twentieth century -- the release of energy of the atom -- from becoming a means for the mass annihilation of human beings. This folly should not happen again at the end of this century when, having filled the first pages of its space history, mankind is facing a choice -- either space will help to improve the living conditions of our planet or it will become the source of a new mortal danger.
>
> Wishing to contribute to mankind's progress towards new

heights of civilization, our country has taken a new major initiative by proposing the inclusion in the agenda of the present session of the General Assembly of an item "International Cooperation in the Peaceful Exploration of Outer Space in Conditions of Its Non-Militarization."

The Soviet Union has also submitted to the General Assembly specific proposals concerning the main directions and principles of broad international cooperation in the exploration and use of outer space for peaceful purposes. Outer space is indivisible and all States should take part in its peaceful exploration.

This implies that progress should be made by joint efforts in both basic and applied areas of space exploration and that all the peoples should be able to benefit from space research. It is our view that such cooperation could best be carried out within the framework of a world space organization. But this could become a reality provided that all channels for militarizing the boundless reaches of outer space are closed off.

To counter the sinister plans of "Star Wars," the USSR is putting before the international community a concept of "Star Peace."

On October 14 the Soviet United introduced the draft resolution under the title "International co-operation in the peaceful exploitation of outer space under conditions of its non-militarization (A/C.1/40/L.1) embodying the principles proposed in the Foreign Minister's statement.

The Resolution was subsequently modified; in particular the reference to 1987 for the calling of an international conference was dropped and replaced by the much vaguer reference to "a proper stage" at which such a conference should be called.

At the request of the Soviet Union itself, no action was taken on the draft resolution. While inserting itself into a long line of previous initiatives at the General Assembly, among which the French proposal for the establishment of an international satellite monitoring agency (1978) deserves particular mentioning, the Soviet initiative remains unique in that it addresses at the same time the issues both of disarmament and development and provides for one single institution, the World Space Agency, to deal with both.

The Soviet initiative, in its turn,triggered a spate of other draft resolutions, introduced by developed and developing countries, East and West.

On November 7, China introduced Resolution A/C.1/40/L.4 which, however, was restricted to the Disarmament aspect of the Soviet proposal and addressed to the Conference on Disarmament to take action. No action was taken on this Resolution, in accordance with the sponsor's request.

The Chinese Resolution was followed, on November 12, by Draft resolution A/C.1/40/L.22 and Rev.1, co-sponsored by Belgium, Canada, Federal Republic of Germany, Italy, Japan, the Netherlands, Norway and the U.K., which, again, emphasized the Disarmament aspects and expressed "its great satisfaction at the agreement reached in 1985 in the Conference on Disarmament...on the establishment of an Ad Hoc Committe ... entitled 'Prevention of an arms race in outer space';"

In a revised version, submitted on November 20, the sponsors stressed, in a new second preambular paragraph, the importance of "the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes" and also added that outer spce "shall be the province of all mankind."

On 12 November Poland introduced a Resolution (L.45 and Rev.1, requesting the Secretary General to prepare a

comprehensive study of the various consequences of the militarization of outer space. This Draft Resolution also reaffirmed "that outer space is the common heritage of mankind and its peaceful exploration and use shall be the province of all mankind."

On that same November 12, a group of developing countries (Algeria, Bangladesh, Brazil, Cameroon, Egypt, Ethiopia, Ghana, India, Indonesia, Malaysia, Mexico, Pakistan, Romania, Sri Lanka, the Sudan and Yugoslavia, later jointed by Venezuela and Zimbabwe, introduced Draft resolution A/C.1/40/L.68 and Rev. 1, an elaborate text consisting of 18 preambular and 13 operative paragraphs, which, however, still fell short of including a recommendation to establish a World Space Agency. This suggestion was taken up in a revision of the Resolution on November 21, which now was also aponsored by the German Democratic Republic and Sweden. A new operative paragraph was added (5), which read;

> "Requests the Secretary-General to invite Member States to submit their views on the possibility of enhancing international co-operation in the field of preventing an arms race in outer space and the peaceful uses of outer space, including the desirability of establishing relevant machinery for that purpose, and to submit a report to the General Assembly at its forty-first session;"

The essence of the Polish draft resolution was incorporated in another additional operative paragraph (12), reading:

> "Invites the Member States to transmit to the Secretary-General, not later than 1 April 1986, their views on the scope and content of the UNIDIR (United Nations Institute for Disarmament Research) study being undertaken on disarmament problems relating to outer space and the consequences of extending the arms race into outer space; and requests the

Secretary-General to convey the above-mentioned views of the Member States to the Advirosy Board on Disarmament Studies for consideration in order to enable it, in its capacity of Board of Trustees of UNIDIR, to give the Institute such possible guidance with respect to the elaboration of its study as it may derive from those views;"

This resolution eventually was adopted by the First Committee of the General Assembly by a recorded vote of 131 to none, with only one abstention, the United States, which, alone, had previously voted against including the recommendation for the establishment of "machinery" (the preliminary term for "world space organisation") as well as that for the study on the consequences of militarizing outer space.

The General Assembly, finally, adopted the Resolution (40/89) on December 12, with 151 votes in favour, none against, and two abstentions (United States and Grenada).

This is where things stand at this writing: A Resolution is in place recommending the estblishment of "machinery" for the purpose both of

. facilitating the management of peaceful uses of outer space (development) with the participation and for the benefit of both developed and developing nations, and

. ensuring the demilitiariztion of outer space and its exclusion from the arms race.

Although there is a Group of Eminent Persons in the United Nations, under the leadership of Inga Thorsson of Sweden, which prepared a report on Disarmament and Development which is of utmost conceptual importance for the evolution of trends examined in the present study, there is, at this time, no institutional framework in the United Nations system to deal with development and disarmament in outer space in their interaction. Disarmament aspects are to

be dealt with by the Conference on Disarmament and UNIDIR; peaceful uses are to be dealt with by the Committee on the Peaceful Uses of Outer Space (COPUOS). Needless to say, this artificial separation of a joint issue does not facilitate the efficient preparation for the implementation of the Resolution. The time may have come for the establishment of such an institutional framework. It is now generally recognized that there can be no development without disarmament and no disarmament without development, i.e., without reducing the gap between the Haves and the Have-nots. The separation of the two issues: the failure to recognize their interactions, may have been the single most importance cause for the dishearteningly slow progress of both development and disarmament. This recognition has been gained during the past few years. The institutional implications, however, have not yet been fully realized. They point in the direction of establishing "machinery" to advance both development and disarmament. This indeed may be the most important aspect of the Soviet proposal. There have been some interesting precedents in the past. They failed: in the field of nuclear energy, as mentioned in the the Soviet Foreign Minister's statement; or they have not yet fully come to fruition, as in the case of the Law of the Sea.

The following chapters will analyse these precedents and try to draw the lessons to be learned from them for the successful implementation of this new initiative for the establishment of a World Space Organisation for both development and Disarmament.

CHAPTER I

The Rise and Fall of the Atomic Development Agency

The detonation of the nuclear bombs over Hiroshima and Nagasaki in August, 1945, generated an unprecedented kind of mood in the country that had perpetrated these acts: a feeling compounded of guilt, fear, and pride. No doubt, the application of nuclear energy to warfare was a crime against humanity: of the magnitude of those to be tried at Nueremberg. No doubt, either, that, for the first time in its history, the United States had become vulnerable. There was no way of keeping the atomic secret. Sooner or later -- rather sooner than later -- others would learn to construct the bomb: in particular, the Soviet Union, in the sinking temperatures of the Cold War, which began as the ashes of World War II were still smoldering. And there could be no defense against the bomb. Other people, in Europe, in Asia, might not care whether they were to be killed by the millions by "conventional bombs" or by nuclear bombs: For the United States, protected by wide oceans against conventional attacks, it made a huge difference. With the nuclear weaponry, they had invented their own destruction.

Guilt and fear, however, left ample room for pride, and reason for pride indeed there was: for the splitting of the atom and the unleashing of its energy was one of the proudest achievements of the human mind. A new era of science had begun, and the economic spin-off, the potential of wealth and welfare it generated, were immeasurable. Never had good and evil lain so close together: World destruction or the building of a new international and economic order could be effected through the very same instrument of nuclear energy. The implications were mind-boggling.

Scientists and Statesmen who, together, had wrought the bomb, now stayed united in their common feeling of guilt, fear, and pride, to try to resolve this fundamental problem of the period following the end of World War II.

On January 23, 1946, the Atomic Energy Commission appointed a Board of Consultants composed of David Lilienthal, Chairman of the Tennessee Valley Authority; Chester Barnard, President of the N.J. Bell Telephone Company, Robert Oppenheimer of the California Institute of Technology; Charles Allen Thomas, Vice President and Technical Director of the Monsanto Chemical Company, and Harry A Winne, Vice President in Charge of Engineering Policy, General Electric. Since February,this Board met almost continuouly and completed a Report which was transmitted to the State Department and published by the Bulletin of the Atomic Scientists on April 1, 1946 as the Report of the State Department Committee on Atomic Energy. In their letter of transmittal, the Commission (Dean Acheson, Vannevar Bush, James Conant, Leslie Groves, and John McCloy) recommended the report for the consideration of the State Department "as representing the framework within which the best prospects for both security and development of atomic energy for peaceful purposes may be found. In particular, the Commission was impressed "by the great advantages of an international agency with affirmative functions coupled with powers of inspection in contrast to any agency with merely police-like powers, attempting to cope with national agencies otherwise restrained only by a commitment to 'outlaw' the use of atomic energy for war."

The starting point for the report was the political commitment already made by the United States to bring about international arrangements to prevent the use of atomic energy for destructive purposes. "The Agreed Declaration of November 15, 1945, issued by the President of the United States and the Prime Ministers of the United Kingdon and Canada recognizes that the development of atomic energy has placed at the disposal of mankind 'means of destruction hitherto unknown;' that there can be no adequate military defense against atomic weapons and that these are weapons 'in the employment of which no single nation can have a monopoly.'" (It is worth noting that the Report made no reference to the Conference of the Foreign Ministers of the U.K. the U.S.A. and the U.S.S.R. which, on December 27, 1945

decided to propose, together with China, France, and Canada, to the General Assembly a resolution for the establishment of a Commission to deal with problems raised by the discovery of atomic energy and other related matters. the General Assembly unanimously adopted this resolution without change on January 24, 1946.)

The report is based on the recognition "that the basic science on which the release of atomic energy rests is a world-wide science; and that the industry required for the realization of atomic weapons is the same industry which plays so essential a part in man's universal striving to improve his standard of living and his control of nature.."

Given the inextricable connection between warlike and peaceful uses of atomic energy, the Commission came to the conclusion "that there is no prospect of security against atomic warfare in international agreements controlled only by inspection and similar policelike methods."

The fundamental difficulty with an agency established as an instrument of control and inspection only, the report continued, is "that it will inevitably be slow to take into account changes in the science and technology of the field. In a field as new and as subject to technical variation and change as this, the controlling agency must be at least as inventive and at least as well informed as any agency which may attempt to evade control." To the Commission, this clearly indicated that, to be effective as an instrument of control, the Agency must itself engage in research and development. "The facts suggest quite clearly a reasonable and workable system that may provide security, and even beyond security, foster beneficial uses of atomic energy...It must tend to develop the beneficial possibilities of atomic energy and encourage the growth of fundamental knowledge, stirring the constructive and imaginative impulses of men rather than merely concentrating on the defensive and negative." This constructive appliction of atomic energy must be based on a system of cooperation rather than competition. "We believe that so long as nations

or their subjects engage in competition in the field of atomic energy the hazards of atomic warfare are very great indeed."

Such a system can only be based on the legal ownership and development of uranium ore in the hands of an international agency. "If any nation may engage in prospecting for and mining uranium ore, subject to inspection as to the proper use thereof, inspection is a most difficult thing. But if the only legal ownership and development of uranium ore is in the hands of an international agency, the problem of detection of evasions is reduced tremendously. For then it would be true that not the purpose of those who mine or possess uranium ore but the mere fact of their mining or possessing it becomes illegal, and national violation is an unambiguous danger signal of warlike pupose.

We have therefore concluded that here was an additional reason, and a very practical one, why the development of atomic energy should be vested in the same agency that has also responsibility for developing and enforcing safeguards against atomic warfare. For unless the international agency was engaged in development activities itself, its personnel would not have the power of knowledge or the sensitivity to new developments that would make it a competent and useful protection to the people of the world.

We have therefore reached these two conclusions: (a) that only if the dangerous aspects of atomic energy are taken out of national hands and placed in international hands is there any reasonable prospect of devising safeguards against the use of atomic energy for bombs, and (b) only if the international agency was engaged in development and operation could it possibly discharge adequately its functions as a safeguarder of the world's future.

Section III of the Report, significantly entitled "Security

through International Cooperative Development, gives a summary of the organisational aspect of the proposal: "The international agency might take any one of several forms, such as a UNO Commission, or an international corporation or authority. We shall refer to it as Atomic Development Authority. It must have authority to own and lease property, and to carry on mining, manufacturing, research, licensing, inspecting, selling, or any other necessary operasions."

Nationl activities in the field of research (except on explosives) and the construction and operation of nondangerous power-producing piles would be subject to moderate controls by the international agency, exercised through licensing, rules and regulations, collaboration on design, and the like. The international agency would also maintain inspection facilities to assure that illicit operations were not occurring, primarily in the exploitation of raw materials....

The development agency itself would be truly international in character. Its staff would be recruited on an international basis. It would be set up as one of the subsidiary agencies of the United Nations, but it would have to be created by a convention or charter establishing its policies, functions, and authority in comprehensive terms.

In its operation the development organisation would be governed by a dual purpose, the promotion of the beneficial use of atomic energy and the maintenance of security...It also would have to establish "fair and equitable financial policies so that the contributions of nations and their receipt of benefits from the organisation will be justly apportioned.

The functions of the Atomic Development Authority would be to control world supplies of uranium and thorium. Wherever these materials are found in useful quantities, the Authority must own them or control them under effective leasing arrangements. One of its principal tasks will be to

conduct surveys so that new deposits will be found and so that the Authority will have the most complete knowledge of the world geology of these materials. It will be a further function of the agency constantly to explore new methods for recovering these materials from media in which they are found in small quantities.

All actual mining operations for uranium anad thorium would be conducted by the Authority. It would own the stockpiles of these materials and it would sell the by-products, such as vanadium and radium.

In the field of raw materials, as in other activities of the Authority, extremely diffcult policy questions, with the most serious social, economic, and political implications, will arise. As between several possible mines in different areas, which shall be operated when it is clear that the outputs of all is not presently required? How can a strategic balance be maintained between nations so that stockpiles of fissionable materials will not become unduly large in one nation and small in another? We do not suggest that these questions are simple but we believe that practical answers can be found.

The second major function of the authority would be the construction and operation of atomic reactors and separation plants.

And a third important function would be research activities.

The Authority will have to engage in a wide variety of research activities. for example, it will have to do research in atomic explosives. If it turns out, as a result of new discoveries, that other materials lend themselves to dangerous atomic developments, it is important that the Authority should be the first to know. At that time measures would have to be taken to extend the safeguards.

> While conducting its own necessary research, the Authority must give vigorous encouragement to research in national or private hands...Presumably the Authority from time to time would send its research personnel, in the dual role of research workers and inspectors, to the laboratories in which [these] reactors were used...
>
> Inspection in a wide variety of forms has its proper place in the operations of the Atomic Development Authority....We attach great weight to unifying at the planning stage the requirements of development and control. We also attach great weight to the inseparability of the two functions in the personnel of the Development Authority.
>
> Through the location of the Authority's laboratories in various parts of the world, it should become cognizant of a wide range of research and development activities in various countries. In operating mines, refineries and primary production plants in various countries, the personnel of the Authority will likewise acquire insight regarding the activities and trends in various countries.

The Report concludes with the expression of the hope that the plan, when fully in operation, can do more than provide a great measure of security. "It can establish patterns of co-operation among nations, which may contribute to the solution of the problem of war itself. When the plan is in full operation there will no longer be secrets about atomic energy. We believe that this is the firmest basis of security; for in the long term there can be no international control and no international co-operation which does not presuppose an international community of knowledge."

The proposal was embattled in the United States on two fronts: On one side were the "realists" or "nationalists," to whom it smacked of world government and an inroad on national sovereignty -- those who were "mouthing" about "narrow sovereignty, which is today' phrase for yesterday's

isolation," as Bernard Baruch put it when he presented the proposal to the First Session of the United Nations Atomic Energy Commission on June 13, 1946. On the other side were the genuine world federalists, riding at that time, the crest of their popularity and influence, for whom the American plan was far too narrow in the scope of internationalisation it proposed.

Internationally, the proposal was well received by the Allies, with a great deal of circumspection on the part of the Soviet Union. Th Soviet counterproposal, presented by Gromyko on that same June 13, was politically sound but conceptually far less mature than the American proposal.

Differences between the Soviet and the Western position narrowed down amazingly, and not much was missing for an agreement to be reached. But final success eluded the negotiators. By the end of the year the Baruch plan or Acheson Lilienthal plan as presented by Baruch, was quite dead.

The reasons for the failure were essentially three, none of which touched on the very essence of the proposal. This essence, it seems to me, was less clearly understood than we can understand it by hindsight, and in the light of lessons learned from later experiences, especially the Law of the Sea experiences.

The first reason was intrinsic in the historic situation. The United States had a monopdly of the bomb which it would maintain until after the establishment of the Atomic Development Authority. In other words, this Authority would be created under the threat of the American bomb, and this was politically unacceptable. The U.S.S.R. wanted atomic disarmament first, and then let us talk about the Authority on an equal footing -- but this was unacceptable to the Americans.

The second reason was Baruch's over-emphasis on the retaliatory powers of the Authority. In case of Treaty

violation, the Authority was to be in a position to meet out "swift and condign retaliation," and since such retaliation had to be approved by the Security Council, he demanded the abolition of the veto in the Security Council in matters relating to atomic weaponry. This was a fundamental mistake and totally unacceptable to the Soviet Union.

The third reason was that the hawks at home had their day at the very time these delicate negotiations were in course in Geneva. On July 1, a B-29 dropped another 20-kiloton bomb of the Hiroshima type on a test fleet of 73 ships anchored in a lagoon off Bikini. As Pravda commented, the test "fundamentally undermined the belief in the seriousness of American talk about atomic disarmament." The second Bikini test, on July 25, completed the job. Gromyko stated on July 24th: "...the American proposals, as they are presented now, cannot be accepted by the Soviet Union either as a whole or in parts." There could be no tampering with national sovereignty, a "cornerstone" of the U.N. The abandonment of the veto would be fatal. Elimination of the American stockpile was essential so US and USSR could proceed to practical steps toward control on a basis of equality.

That was, essentially, the death knell for the Acheson Lilienthal Plan.

Chapter II

Atoms, Oceans, Stars

Twenty-one years later, in August 1967, the Ambassador of Malta, Dr. Arvid Pardo, requested the inclusion of an item in the agenda of the following General Assembly, entitled, "Question of the peaceful uses of the Seabed and Ocean Floor, and the Subsoil thereof, beyond present limits of national jurisdiction."

On November 1, 1967, he formally introduced this item, in his now classical three-hour address to the First Committee of the General Assembly. In that address, essentially, he talked about development and the arms race as Baruch had done before him, and anticipated the arguments, and proposed the same substance and procedure with regard to the deep seabed, or "inner space" which Eduard Shevardnadze was to propose eighteen years later.

He drew the attention of the Assembly to the vast riches hidden on the deep floor of the world ocean which the technological revolution was rapidly making accessible to exploration and exploitation, and which did not belong to any nation. He pointed to the dangers of a military competition to dominate the deep seas. He saw a race developing to carve up the no-man's land of the ocean floor in the way the black continent had been carved up by the colonial powers in past centuries, which would give rise to acute conflict and pollution. He explained how the old law of the sea, based on the premises of the sovereignty of coastal states over a narrow belt of ocean along the coasts and the freedom of the seas beyond this, was being eroded. He suggested that a new concept, the common heritage of mankind, must take the place of the old freedom of the sea. He stressed the ecological unity of ocean space and the interactions between all areas and all uses of ocean space. He concluded by suggesting that the United Nations General Assembly declare the seabed and its resources beyond the present limits of national jurisdiction a common heritage of

mankind, elaborate a set of principles to govern activities relating to the seabed, and then proceed to negotiate a treaty which would both clearly define the limits of the international seabed and create a new type of international organisation to administer and manage its wealth for the benefit of all mankind. The common heritage of mankind would be used for peaceful purposes only, thus excluding the arms race from an area that comprises over two-thirds of the surface of the globe.

Pardo was of course quite familiar with the nuclear disarmment negotiations, but the analogies never crossed his mind. And yet, they are striking.

To begin with, both initiatives were based on the awareness that technological developments had taken place which required adjustments in the international order. Nuclear technology on the one hand, deep-sea exploration and exploitation technologies on the other, were still in their infancy when the respective initiatives were taken. Their full development would be 20 years in the future, but the writing on the wall was clear enough, even though the economics of the new technologies were still wrapped in mystery. Nuclear technology would either generate an arms race that would eventually destroy the world or it would lead to disarmament and make the world wealthier and happier; deep-sea technologies would either lead to a competitive struggle to carve up the oceans, enhancing the nuclear arms race, or this vast part of the earth's surface would be reserved for exclusively peaceful purposes; it would be removed from the arms race and administered for the welfare of all of mankind. The same technologies could be used for peaceful development or for mutual destruction.

To build a regime of peace, the ownership of the resources in question had to be internationalised. An international organison would have to be established to explore, to mine, to process, to market these resources: uranium and thorium, in one case, manganese nodules in the other -- or to issue licences to the private sector or to

States for these purposes; but in any case it would have to control the peaceful uses of these activities, reserving them for exclusively peaceful purposes. In both cases the international Authority would generate an independent income, not dependent on national contributions; in both cases difficult political and economic problems of production control, of distribution, of equity, would have to be faced.

How -- through what institutional structures -- the Atomic Development Authority was to discharge its vast responsibilities, was never discussed, at least not on the governmental level. There was a "Chicago Plan" and a "Carnegie Plan," published in the 1946 volume of the Bulletin of the Atomic Scientists, with some very simplistic suggestions for the institutional framework, which might have consisted of a Commission of 15 and a vast staff under it. It had a strong flavour of technocracy, and it is unlikely that the international community would have entrusted its fate -- including the possession and management of vast raw materials -- to so small an elite. But official international discussions never reached this stage.

In the case of the seabed negotiations, instead, the structure of the Authority was fully discussed and, even though with great difficulties and some reservations, finally accepted.

Far from a technocracy, the Seabed Authority is to be an embodiment of international democracy. Its principal organs are the Assembly, in which each member State has one vote; the executive Council of 36 members, selected partly on the basis of regional, partly on the basis of interest-group representation; a Secretariat composed of international civil servants, and an Enterprise, which is to engage directly in exploration, mining, transport, processing and marketing.

The fundamental weakness of the Seabed Authority, as it

emerged from the negotiations of UNCLOS III, are twofold: First, the part of the Convention that establishes this Authority -- the famous or infamous Part XI -- is overburdened with detail, which is already obsolete even before the coming into force of the Convention. This is largely due to the suspiciousness of the industrialized countries who did not want to leave any discretionary power to the Authority which, they feared would be dominated in its decision-making by the majority of the developing countries. The second fundamental flaw is the so-called parallel system of exploitation. That is, the Authority is to explore and exploit the common heritage of mankind in either one of two ways: through a system of licenses issued to private companies and States, or directly through its own Enterprise. A third modality was much discussed, but embodied in the final text only in a couple of very sketchy articles, and that is, the Authority, or the Enterprise, may enter into joint ventures with companies or states. This would have been the logical way to proceed because ocean mining, in this case, would be carried out on the basis of cooperation between the private sector, States, and the Authority, whereas the "parallel system" is a system of competition between the established industry and the Authority's Enterprise. This caused insoluble problems with regard to the financing of the Enterprise, and the transfer of technology to it, at the cost of its competitors.

In 1977, the Delegation of Austria introduced a working paper showing that another international organisation, INMARSAT, which, like the Seabed Authority, had to harmonise the activities of States, companies and the international organisation, had been far more successful in creating a system of cooperation rather than competition, but the concept of the "parallel system" had been accepted by now, after prolonged, difficult and painful negotiations, and UNCLOS III was not ready to depart from it any more.

The difficulties of the "parllel system" are continuing in the Prep.Com., and it is more than likely that what will in fact evolve is a joint venture system, advocated in the

Preparatory Commission particularly by the Delegations of Austria and Colombia. There is much to be learned from this experience for the structure of the future Spacae Organisation.

There are still further similarities between the proposed Atomic Development Authority and the Seabed Authority.

In both cases, the institutions to be created would have legal/political as well as scientific aspects; in both cases, they would, themselves, engage in scientific research while assisting and encouraging it in member States. In both cases, the institutions to be created would have the power to inspect all installations within the range of their activities. Both institutions would have to be established by an international Treaty, universally accepted. And in both cases the intention was to create new patterns of cooperation which would be capable of extension to other fields and which might make a contribution towards the gradual achievement of a greater degree of community among the peoples of the world, to use the phrase of Lilienthal and Oppenheimer.

There are, of course, important differences.

Acheson and Lilienthal proposed that the resources in question (Uranium, thorium, the concept to be extended to other resources as may be required by technological change) be declared common property: the Atomic Development Agency would own these resources on behalf of mankind. The Law of the Sea Convention establishes that the resources under its jurisdiction (the mineral resources of the deep sea-bed) are the common heritage of mankind, which, in the best available interpretation -- the interpretation of the man who proposed the concept -- means that they cannot be owned by anybody, or, as the Convention puts it, they cannot be appropriated by anybody, State, company, or individual. The latter concept, of non-ownership, is more suitable for the environmental, technological and international conditions of

today.

Another important difference is that the Atomic Development Agency was conceived "to assure that atomic energy is used for peaceful purposes and preclude its use in war" (Baruch). It was intended to serve both development and disarmament. Since both the atomic arms race and the development of nuclear energy for peaceful purposes were based on the same technology, one and the same institution was to serve both purposes. An institution with policing powers only would be inadequate.

This concept was well understood at the time. It was, incidentally, fundamental also to the concept of the Monet/Schuman plan for the European Coal and Steel Community: The internationalisation of the management of coal and steel for peaceful purposes was to prevent a recurrence of militarism in Germany, based on the use of coal and steel for military purposes.

It is amazing that so sound, simple, and basic a principle could be forgotten later on. In the case of the Law of the Sea negotiations, Disarmament and Development, though both intrinsic in the concept of the Common Heritage of Mankind, were quickly separated. Disarmament was to be dealt with by the Disarmament Committee in Geneva, and Development entrusted to the Third United Nations Conference on the Law of the Sea. Only the most fleeting consideration was given to the possibility of uniting them in one institution, the Seabed Authority, when Canada's Alan Beesley introduced a Working Paper on the International Sea-bed Regime and Machinery (A/AC.138/59) to the Sea-bed Committee in 1971 which, in para.8, reads as follows:

"The area shall be reserved exclusively for peaceful purposes, without prejudice to any measures which have been or may be agreed upon in the context of international negotiations undertaken in the field of disarmament and which may be applicable to a broader area. One or more international agreements shall be

concluded as soon as possible in order to implement effectively this principle and to constitute a step towards the exclusion of the seabed, the ocean floor and the subsoil thereof from the arms race."

This principle could be included virtually verbatim in the future seabed treaty, with appropriate modifications reflecting the endorsement by the General Assembly of the treaty prohibiting the emplacement of nuclear weapons and weapons of mass destruction on the seabed and ocean floor. A difficult question that arises here is whether the international seabed machinery should be granted at least the same powers of verification of suspect activities as are granted to states parties under the seabed arms control treaty.

The inclusion of such a provision, on preliminary consideration, would appear appropriate and desirable.

Unfortunately, this Canadian suggestion was never taken up, and the total separation between the disarmament and the development aspects of seabed activities and the lack of coordination and harmonisation between the two separate treaties covering these aspects, has weakened, and continues to weaken, both Treaties.

If the analogies between the proposed Atomic Development Authority and the International Seabed Authority are striking, those between the International Seabed Authority and the World Space Organisation are even more so, both with regard to procedure and substance.

Ambassador Pardo proposed the establishment of a Committee to examine the question; the adoption of a Resolution embodying the principle of the Common Heritage, and the calling of the Third United Nations Conference on the Law of the Sea to adopt a Convention on the Law of the Sea, which should be universally agreed upon. The United

Nations exactly followed the course of action proposed by Malta, and, in 1982, adopted the U.N. Convention on the Law of the Sea which was open for signature from December 10, 1982, when it was signed by 117 States and 2 non-State entities (Council for Namibia and Cook Islands) to December 9, 1984, by which time it had gathered 159 signatures. It now has been ratified by 31 States. Twenty-nine more ratifications are needed for the Convention to come into force, and until then a Preparatory Commission is to prepare for the setting up of the International Seabed Authority and the International Tribunal for the Law of the Sea and regulate seabed exploration through an interim regime.

The procedure initiated by the Soviet Union in 1985 is identical as shown in the Introduction to these pages. Projecting the analogy into the future, one would obtain the following sequence of possible events:

Oceans	Space
1.Placing item on GA Agenda	1. Placing item on GA Agenda
2.Introduction of item in address to GA	2. Introduction of item in address to GA
3. Creation of Ad Hoc Committee	3. Reference to Committee on Peaceful Uses of Outer Space
4. Adoption of Declaration of Principles	4. Adoption of Declaration of Principles (re-examination and further delopment of Outer Space Treaty and Moo Treaty, in consideration of new scientific and strategic developments)
5. Preparation of Agenda for UNCLOS III	5. Preparation of Agenda for U.N. Conferer on World Space Organization
6. UNCLOS III	6.UNCWSO
7. Adoption of Convention	7. Adoption of Convention; establishment

establishment of Prep.Com to set up Authority	of Prep.Com to set up World Space Organization

The way travelled by UNCLOS III was long, cumbersome and tortuous. UCNLOS III was a hard, often frustrating school for all who went through it. Many lessons were learned. Just as some fundamentally important lessons can be learned both from the merits and from the failure of the Atomic Development Authority.

In the following pages we shall try to apply some of these lessons to the negotiations that may be initiated to establish the World Space Organisation.

Chapter III

Scenario for the Establishment of a World Space Organisation

1. Declaration of Principles

A Declaration of Principles Governing the Sea-bed and the Ocean Floor, and the Subsoil thereof, Beyond the Limits of National Jurisdiction (Resolution 2749) was adopted on December 7, 1970 (see Annex 1) by 108 votes in favour, none against, and 14 abstentions..

In the style of all U.N. Resolutions, this Declaration first recalls precedents, then points out that a delimitation of the international area and areas under national jurisdiction was needed (which implied a reconsideration of the whole traditional law of the sea); then states that there is, at present, no legal regime for the exploration and exploitation of the resources of the area beyond national jurisdiction, and that such exploration and exploitation of resources shall be carried out for the benefit of mankind as a whole; that, for this purpose, appropriate international machinery should be established as soon as possible; and that the development and use of the area and its resources must be undertaken in such a manner as to foster the healthy development of the world economy and balanced growth of international trade, and to minimize any adverse economic effects caused by the fluctuation of prices of raw materials resulting from such activities.

These are the points covered by the preambular paragraphs. They are almost entirely applicable to the situation in Outer Space, the Moon and other Celestial Bodies.

The Declaration of Principles Governing Outer Space, the Moon and Other Celestial Bodies undoubtedly will make reference to Resolution 40/89, to the Outer Space Treaty, to the Moon Treaty, and some other Treaties and Resolutions. It will affirm that Outer Space is beyond the limits of

national jurisdiction, the precise limits of which are yet to be determined. It will recognize that the existing legal regime of outer space does not provide substantive rules for regulating the exploration of outer space and the exploitation of its resources. Most emphatically it will express the conviction that outer space shall be reserved exclusively for peaceful purposes and that the exploration and exploitation of its resources shall be carried out for the benefit of mankind as a whole; in particular, it should establish that knowledge acquired from Satellites is to be shared by all countries. It will state the belief that it is essential that an international regime applying to outer space and its resources, and including appropriate international machinery, be established as soon as possible.

The final preambular paragraph of the Declaration of Principles on the Seabed was inspired by concern for the problems of land-based producers of the metals expected to be produced from the sea-bed (nickel, copper, cobalt and manganese). The prospect for the exploitation of the resources in outer space does not offer any direct analogy. It is obvious, however, that such exploitation should be undertaken in such a manner as to foster the healthy development of the world economy and balanced growth of international trade.

Most of the 15 substantial paragraphs of the Declaration of Principles on the Sea-bed are applicable to Outer Space.

Outer Space, which is indivisible shall be the Common Heritage of Mankind and its peaceful exploration and use shall be the pronvince of all mankind. All States should take part in its peaceful exploration.

Outer Space and celestial bodies shall not be subject to appropriation by any means by States or persons, natural or juridical, and no State shall claim or exercise sovereigty or sovereign rights over any part thereof.

No State or person, natural or juridical, shall claim, exercise, or acquire rights with respect to outer space or its resources incompatible with the international regime to be established and the principles of this Declaration.

All activities regarding the exploration and exploitation of the resources of outer space and other related activities shall be governed by the international regime to be established.

Outer Space shall be open to use exclusively for peaceful purposes by all States, in accordance with the international regime to be established.

States shall act in outer space in accordance with the applicable principles and rules of international law, including the Charter of the United Nations and the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations, adopted by the General Assembly on 24 October 1970 [Res.2625 (XXV)], in the interest of maintaining internatinal peace and security and promoting international co-operation and mutual understanding.

The exploration of outer space and the exploitation of its resources shall be carried out for the benefit of mankind as a whole, taking into particular consideration the interests and needs of the developing countries.

Outer space shall be reserved exclusively for peaceful purposes, without prejudice to any measures which have been or may be agreed upon in the context of international negotiations undertaken in the field of general and complete disarmament. States shall do everything possible with regard to stopping the arms race in outer space, thereby creating conditions for wide-ranging international cooperation in the exploration and use for peaceful purposes.

In the Law of the Sea negotiations, the precise meaning

of "reservation exclusively for peaceful purposes" was never defined. Perhaps it could be better defined in the Declaration of Principles Governing a Regime for the Peaceful uses of Outer Space.

Just as in the case of the Law of the Sea, the Declaration might state that on the basis of these principles, an international regime applying to outer space and its resources and including appropriate international machinery to give effect to its provisions shall be established by an international treaty of universal character, generally agreed upon. The regime shall, inter alia, provide for the orderly and safe development and rational management of space exploration and the utilization of its resources and for expanding opportunities in the use thereof and ensure the equitable sharing by States in the benefits derived therefrom, taking into particular consideration the interests and needs of the developing countries.

The provisions on marine scientific research are entirely applicable to Outer Space:

States shall promote international co-operation in scientific research exclusively for peaceful purposes:

-- by participation in international progrmmes and by encouraging cooperation in scientific research by personnel of different countries;

-- through effective publication of research programmes and dissemination of the results of research through international channels;

-- by co-operation in measures to strengthen research capabilities of developing countries, including the prticipation of their nationals in research programmes.

No such activity shall form the legal basis for any claims with respect to any part of Outer Space or its

resources.

On international cooperation on technology transfer and development, a great deal of work has been done since the adoption of the L.o.S. Declaration of Principles in 1970. The Declaration of Principles for Outer Space might therefore insert the following paragraph:

States shall promote the co-operation between industry, governments and international organisations in research and development in the technologies required for the exploration and exploitation of outer space for the benefit of both developed and developing countries.

Resuming the thread of the Declaration of Principles on the Seabed, the new Declaration might conclude with a paragraph urging States to take appropriate measures for the adoption and implementation of international rules, standards and procedures for, inter alia:

(a) the prevention of pollution and contamination and other hazards to Outer Space;

(b) the protection and conservation of the natural resources of Outer Space, the Moon and other Celestial bodies.

Just as on the deep sea-bed, so in Outer Space, every State shall have the responsibility to ensure that activities, including those relating to resources, whether undertaken by governmental agencies, or nongovernmental entities or persons under its jurisdiction, or acting on its behalf, shall be carried out in conformity with the international regime to be established. The same responsibility applies to international organisations and their members for activities undertaken by such organisations or on their behalf. Damage caused by such activities shall entail liability.

And, finally, just like in the oceans, the parties to

any dispute relating to activities in outer space and its resources shall resolve such dispute by the measures mentioned in Article 33 of the Charter of the United Nations and such procedures for settling disputes as may be agreed upon in the international regime to be established.

Following the adoption of Resolution 40/89, it would appear that the international community is ready for the elaboration of a Declaration of Principles along these lines and that it might be adopted by consensus. Judging by the voting record on Resolution 40/89, it is even likely that there will be fewer abstentions than in the case of the Declaration of Principles on the Seabed.

2. Adoption of an Agenda

The next step would be the adoption of a Resolution analogous to Resolution 2750, deciding to convene a conference on space law which would deal with the establishment of an equitable international regime, including an international machinery, for international cooperation in the exploration of Outer Space and the utilization of its resources for peaceful purposes, a precise definition of this Space beyond the limits of national jurisdiction, and a broad range of related issues including those concerning the allocation of orbits, the rights of equatorial States, the preservation of the environment (including, inter alia, the prevention of pollution), scientific research and development in space technologies.

In the case of the Law of the Sea negotiations, the preparation of an Agenda for such a Conference turned out to be a task fraught with political problems which took almost three years of work by the Seabed Committee and resulted in a "List of Subjects and Issues Relating to the Law of the Sea" which was adopted by the Committee on August 16, 1972, and formed the basis for the agenda of UNCLOS III. It is likely that the negotiations leading to the adoption of an agenda for a United Nations Conference for a World Space

Organisation will be no less complex and difficult. The following items most likely will have to be taken over from the "List" prepared by the Seabed Committee:

1. International Regime for the reservation of Outer Space for exclusively peaceful purposes and co-operation in the exploration and exploitation of its resources.

    1.1 Nature and Characteristics
    1.2 International Machinery: Structure, Functions, Powers
    1.3 Economic Implications
    1.4 Equitable Sharing of Benefits Bearing in Mind the Special Interests and Needs of Developing Countries
    1.5. Delimitation
    1.6 Security implications: Use Exclusively for Peaceful Purposes
    1.7 Monitoring of Compliance with Disarmament Agreements

Items 2 through 11, on the organisation of ocean space, obviously will have to be adapted, but it is likely that there will have to be an item 2, on the Atmosphere, analogous to the item on the Territorial Sea:

2. The Atmosphere
    2.1 Nature and Characteristics
    2.2 Question of the Delimitation of the Atmosphere. Various Aspects Involved.
    2.3 Freedom of overflight.

In analogy to the item on Coastal State Preferential Rights or other non-exclusive jurisdiction over resources beyond the territorial sea, there might have to be an item on Equatorial State Preferential Rights over geostationary orbits.

The item on the Preservation of the Environment would have to be taken over; so would the items on Scientific Research, Development and Transfer of Technology. Scientific

Research would have to include consideration of the legal status of earth resource monitoring and exploration from satellites; the item on technology would have to include consideration of benefit sharing from industrial activities, such as materials processing, taking advantage of the weightlessness in Outer Space. The item on Artificial Islands and Installations would be replaced by an item on Artificial Satellites. These items might be listed as follows:

3. Preservation of the Environment
   - 3.1 Sources of Pollution and Other Hazards and measures to Combat Them
   - 3.2 Responsibility and Liability for Damage
   - 3.3 Rights and Duties of States
   - 3.4 International Co-operation.

4. Scientific Research
   - 4.1 Nature, Characteristics and Objectives of Scientific Research in Outer Space
   - 4.2 Access to Scientific Information
   - 4.3 Earth-resource monitoring and exploration from Outer Space
   - 4.4. International Co-operation

5. Development and Transfer of Technology
   - 5.1 Development of Technological Capabilities of Developing Countries
   - 5.2 Co-development of Space Technologies
   - 5.3 Training of Personnel from Developing Countries.

6. Artificial Satellites
   - 6.1 Civil and Criminal Liability on Artificial Satellites
   - 6.2 Direct Broadcasting from Satellites
   - 6.3 International Co-operation, telecommunication and communication in emergencies and disaster relief
   - 6.4 sharing of Benefits from industrial processing Activities on Artificial Satellites.

Finally, the following items could be taken over without any modification:

7. Responsibility and Liability for Damage Resulting from the Use of Outer Space (there is already a Convention on this);

8. Settlement of Disputes

9. Peaceful Uses of Outer Space

10. Enhancing the Universal Participation of States in Multilateral Conventions Relating to Air and Space Law.

Such a complex agenda would ensure that the Convention establishing the World Space Organisation would contain Parts corresponding to Parts I-X of the Law of the Sea Convention, codifying and updating all existing air and space law, which now is fragmented in a number of treaties and does not yet cover the economic uses of Space -- corresponding to the situation that existed in Sea Law prior to UNCLOS III.

3. The Functions and Powers of the World Space Organisation

We assume now, an Agenda has been adopted, and the United Nations Conference on the World Space Agency has been called. The international regime will be based on the Declaration of Principles previously adopted.

Perhaps it will be most expeditious to begin the discussion with the functions of the "machinery" to be established, since these function will determine the structure and the powers needed by the organisation.

These functions have been indicated in a number of documents, the most important of which are the statement by Eduard Shevardnadze before the General Assembly (24 September 1985); a TASS Interview with Academician Anatoly Alexandrov, President of the Academy of Science of the USSR,

of December 20, 1985, and, as far as the monitoring of disarmament agreements is concerned, in the Study on the implications of establishing an international satellite monitoring agency: Report of the Secretary General (A/AC.206/14, of 6 August 1981).

The statement by the Foreign Minister provides, so to speak, the roof. He describes the functions with a very broad sweep of the brush. The important point, however is that, as in the case of the Atomic Energy Authority and contrary to that of the Seabed Authority, these functions cover both development (peaceful uses, cooperation with developing countries) and disarmament (monitoring of compliance with disarmament and arms control agreements). The development part is spelled out in greater detail in the interview with President of the Academy of Science USSR; the disarmament part is spelled out in great detail, with all implications, in the Secretary General's Report.

These functions, culled from the three documents, are listed below.

The Soviet Foreign Minister, recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes, and aware of the fundamental contribution that space activities can make both to the economic and social progress of mankind and to international trust, to the implementation of arms control agreements, and to peace and stability, proposed the following functions:

The Organisation is

- to harmonize, co-ordinate and unite the efforts of States in respect of peaceful space activities, including the provision of assistance in that field to developing countries

- and also to facilitate the necessary monitoring of compliance with agreements which have already been concluded

or will be concluded with a view to preventing an arms race in outer space;

The functions proposed by the President of the Academy of Sciences provide the following details:

- to bring together the intellectual, technological and economic efforts of mankind and take it to an immensurably higher level of knowledge of the universe and to the practical use of world space for its own good;

- to facilitate interaction of States in their peaceful activities in space;

- to improve transmission of different forms of information and make it possible to receive television and radio broadcasts in any part of the globe;

- to give warning of such natural calamities as hurricanes, tsumani and the flooding of coastal zones by typhoon waves, save tens of thousands of lives and reduce the enormous economic damage done yearly;

- to make forecasts, including those of weather, harvests, droughts and all kinds of natural calamities;

- to obtain information from space-based studies on the structure of the earth's surface or the peculiarities of processes and phenomena occurring in the oceans (for instance, fishing operations) and watch for forst fires, air and sea accidents, and so on;

- to carry out international projects for the study of outer space and the use of space technology on the basis of scientific and economic resources of different countries;

- to coordinate the activities of other international organisations, already operating today, in the peaceful exploration of outer space;

- to assure, on terms of mutual benefit, the access of all States to the scientific and technological achievements made in the study and exploration of outer space;

- to give aid to developing countries that do not yet have sufficient scientific, technological and also economic strength for getting involved in the study and use of outer space and in the application of the obtained practical results to assist the economic, scientific, and social progress of these countries;

- to promote broader and better cooperation in this field, since it is easier to use space by collective efforts, with the help of the combined intellect of scientists;

- to affect joint launches of interplanetary spaceships;

- to create international space stations and joint expeditions to other planets.

This is a fairly comprehensive list which might well be included in the Convention establishing the World Space Organistion.

The Secretary General's report, it will be recalled, was prepared with the assistance of a group of governmental experts pursuant to resolution 33/71 J of 14 December 1978, requesting a study on the technical, legal, and financial implications of establishing an international satellite monitoring agency as proposed by the Delegation of France during the first special session of the General Assembly devoted to disarmament, held in the spring of 1978. If the tasks of the World Space Organisation include the monitoring, by satellite, of compliance with the provisions of disarmament and arms control agreements, clearly the functions proposed for the International Satellite Monitoring Agency (ISMA) will have to be taken over by the new organisation.

Document A/AC.206/14 stresses, throughout, the dual-purpose character of satellite technology: The same satellites, equipped with the same sensors, can be used for development purposes and to check violations of disarmament and arms control agreements. Para. 45 of the Report thus states that "It has been reported that the United States has plans to test nuclear explosion-detection sensors [arms control] on board a navigation satellite [peaceful uses]. Initial feasibility of this Integrated Operational Nuclear Detection System (IONDS) was conducted during early 1975."

Similarly, para. 48 points out that "Apart from considerable information obtained from Landsat on agriculture, cartography, geology, hydrology and oceanography, it has been reported that some information of a strategic nature, such as roads, railway tracks, airports, depots, etc. may be obtained."

And para 84: "In the United States there is a recent trend to incorporate sensors for both military and civilian missions on the same satellite..."

While, as para. 127 points out, existing and planned civilian remote sensing satellites do not have a capability to ensure a level of performance necessary for detailed observation of crisis areas or for the identification of armaments subject to disarmament agreements, in the future, considerable progress may be expected which could bring the performance of civilian satellites close to military ones used for area surveillance. Such a development, the Report continues, would be of great importance for the establishment of an International Satellite Monitoring Agency [or Space Organisation] since it would make available necessary data from sources other than military surveillance satellites. For this reason, the continued availability of data from civilian satellites will be of significance for future developments in the field of verification of disarmament agreements and crisis monitoring by satellites.

It will be recalled that the proponents of the Atomic Development Authority stressed the difficulty of distinguishing between peaceful and military intentions of nuclear installations, and the difficulty, therefore of monitoring compliance with the prohibition of military uses. The same difficulty would arise with regard to satellites. Who can distinguish a satellite used for peaceful purposes from a spy satellite? The only way to solve this problem is to combine both aspects, to carry out both peaceful research and monitoring of military activities with the same satellites under the control of the World Space Organisation, and to make all data available to that Organisation.

A number of useful functions of a satellite -- or space -- organisation, can be derived from the Secretary's Report.

Some of them really deal with peaceful uses and complement the list of the Soviet proposals:

- classification of geological structures according to their thermal inertia characteristics; detection of surface faults and fractures; possible location of mineral ores;

- measurement of soil moisture;

- surveillance of thawing, which is important for giving warning of flood risks and conserving water resources;

- co-operation with States in Research and Development of Space and Satellite technology and to carrying out such R&D on its own account (see below).

The others deal specifically with arms control and disarmament functions:

- monitoring of compliance with disarmament/arms control agreements; and, specifically:

the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other gases, and of Bacteriological Methods of Warfare (Geneva Protocol, 1925);

The Antarctic Treaty (1959);

the Partial Test Ban Treaty (1963);

the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1967);

the Treaty for the Prohibition of Nuclear Weapons in Latin America (Treaty of Tlatelolco) with additional Protocols I and II (1967);

the Treaty on Non-Proliferation of Nuclear Weapons (NPT) (1960);

the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Sub-Soil Thereof (Sea-Bed Treaty)(1971) (the Report points out that not much can be done with regard to this Treaty, due to the nature of the medium);

the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons and on their Destruction (Biological Convention)(1972); and

the Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques (ENMOD Convention) (1977).

- monitoring of crisis situations, and for this purpose, to provide

early warning of attacks through observation of build-up of military and para-military forces;

evidence of border violation;

cease-fire violations;

cease-fire monitoring;

Assistance to United Nations observers and peace-keeping missions;

strengthening of international confidence-building measures and observation of the use of, or threat to use, force.

This, again, is a wide range of functions and could provide a basis for elaboration in the Convention establishing the World Space Organisation. It will not be easy, however, to reach an agreement.

In the case of the Law of the Sea negotiations, which also covered a wide range of functions, there clearly were two schools of thinking: Aiming at an effective regime, many countries, especially developing ones, wanted a broad range of functions and requisite powers for the Authority. Others, mainly among the industrialized countries, basically distrusted the Authority which they feared would be dominated by developing countries, and accordingly tried to limit its functions and powers as narrowly as possible. The maritime powers, finally, with their navies plowing the world ocean, were adamant in insisting on a separation between peaceful uses, over which the Authority was to have jurisdiction, and military uses, which were to remain a prerogative of the nationl State.

It is likely that a similar alignment will emerge in

the negotiations on the World Space Orgnisation. On the other hand, the nature and characteristics of the medium is likely to force new thinking and impose another solution. The dual nature of the technology: the fact that satellites are used at one and the same time for development and for military purposes, demands a redirection of thinking, away from the seabed negotiations, and back to the essentials of arguments of the proponents of the Atomic Development Authority. In resuming these arguments, the three errors committed at that time by the proponents of the Authority, and which made the proposal unacceptable, should be avoided.

(1) The hen-and-egg argument of Which comes first: Disarmament or the establishment of the Organisation?

The historic situation itself should permit an avoidance of this dilemma. The 1946 negotiations took place in a context in which one side had a monopoly of the technology in question, and already a stockpile of weapons produced with that technology which it was unwilling to give up until the negotiations should have been completed satisfying all its own interests and perceived security needs. In the case of the negotiations on the World Space Organisation, there is no such monopoly: both major negotiators have a far advanced space technology; and "starwars" is still in a phase of research and development. The emphasis should be on <u>interntionlising this research and development</u> as quickly as possible, even on an interim basis while the negotiations for the establishment of the Authority are in course. A large degree of cooperation between the Superpowers in the development of space technology already exists and is in the economic interest of both parties. It needs to be widened and strengthened. This <u>positive</u> approach is far more promising than the <u>negative</u> emphasis on distruction of stockpiles as a condition for negotiations.

(2) Negotiations should in no way touch the basic structure of the United Nations System. The functions of the Authority will be development and control: Management and

monitoring & surveillance, not decisions on retaliatory measures in case of treaty violation. That remains the responsibility of the Security Council, and the structure of the Security Council is not to be touched. The Authority will enhance peace and security through International Cooperative Development, and this is indeed a major contribution.

(3) Obviously, provocatory maneuvres during the negotiations are to be avoided, if these negotiations are conducted in good faith. A voluntary moratorium on military tests in Space while the negotiations are in course would go a long way towards fulfilling this condition.

If these three hurdles can be cleared, it is quite conceivable that, as the Soviet Foreign Minister put it, "There should be no repetition of the mistake made four decades ago when the States and peoples of the world were unable to prevent the great intellectual achievement of the mid-twentieth century -- the release of energy of the atom -- from becoming a means for the mass annihilation of human beings. This folly should not happen again at the end of this century when, having filled the first pages of its space history, mankind is facing a choice -- either space will help to improve the living conditions of our planet or it will become the source of a new mortal danger."

4. The Structure of the World Space Organisation

The Soviet documents have little to say about the structure of the proposed World Space Organization. Perhaps it was thought premature to raise the issue at this time. The Report of the Secretary General (Study on the implications of establishing an international satellite monitoring agency) contains certain broad guide lines: Membership in the Organisation would be open to all States Members of the United Nations and its specialised agencies. There would be three types of membership: Regular Membership, Associate Membership (giving to a State all rights, including participation in the executive body except

the right to vote); and observer status (for nongovernmental or intergovernmental organisations). It migh be noted, in passing, that the Ocean Space Draft Convention submitted by Malta in 1971 provided for a very similar arrangement; a similar arrangement also exists in the Prep.Com.

The legal nature of the Organistion would be that of an independent body, established through a Convention, and responding to the General Assembly (as, for instance, UNCTAD). It would have "international legal personality," enabling it to conclude treaties, enjoy various privileges and immunities in member countries, own property, and enter into contracts with States and other entities. Its principal organs would be an Assembly of States members, with broadly policy-making and electoral responsibilities and the power to approve the budget, etc.; an executive Council, which should be small in order to be effective, and whose powers and functions should include initiation of monitoring, control over the content, format and dissemination of Reports; formulation of policies and programmes, drafting budget proposals, appointment of the Director-General and other senior officials in the Secretariat, etc.; and a Secretariat, consisting of a Director General and a staff of international civil servants.

Financing would be provided through membership fees and, additionally, through voluntary contributions and funds contributed in return for services rendered.

An interesting feature of the organisation would be its dispute-settlement machinery. This would be a panel of arbitrators nominated by Member States, appointed by the organisation's Council and approved by the Assembly, from which parties to a dispute would select the agreed number of arbitrators for each dispute (an arrangement comparable to that of the Permanent Court of Arbitration. The award of the arbitration tribunal would be final and binding, with no right of appeal.

The Secretary-General's Report contains a detailed list

of technical machinery needed by the Organisation for the effective conduct of its monitoring and surveillance activities. These include the following:

- an Image processing and interpretation centre;

a Data Processing Subsystem;

- a Data Management Subsystem

- a Data Analysis Subsystem; as well as

- a Ground segment consisting of receiving stations, mission planning facility, operations control centre, data processing facility, and tracking and command sybsystems; and

a Space Segment, with platform and payload sybsystems, the latter providing for telemetry, manoeuvrability functions, and sensors (optical and IR imaging, microwave imaging radiometers; microwave imaging radars; microwave precision altimeter; nuclear explosion detectors; radio signal receivers). The Space Segment should consist of an

-area surveillance system including one or more satellites;

- close-look satellite system;

- nuclear explosion detection system.

These systems could be developed, specifically designed and adapted for the needs of the organisation by member States; the Organisation could also have its own R&D facility, the Report points out. "An International Satellite Monitoring Agency, " the Report suggests, "might find it advantageous to carry out research to improve some of the technologies thus obtained....Qualfied bodies or industrial firms from member countries within the Agency or outside it could participate in this work, by means of contracts or

other suitable legal instruments. ISMA's technical service, for its part, should have a number of design offices and some laboratories specializing in various technical sectors..." "The results of the work carried out by ISMA on its own account (inventions, technical information, etc.) could be made available to member countries under conditions to be determined. In this matter there are numerous precedents to be found in the constituent legal instruments of international technical organisations such as the European Space Agency."

These systems, it is to be assumed, would function under the direction of the Executive Council, which would have to establish one or more Technical Commissions for this purpose, similar to those to be established by the Council of the Seabed Authority. One of these technical commissions would also be responsible for the monitoring of compliance with arm control and disarmament agreements.

The functions of the World Space Organisation are more comprehensive than those of the proposed International Satellite Monitoring Agency with its emphasis on police action even though even an ISMA would necessrily have to include some research and development functions. The focus of the World Space Organistion is both on control and development. Its institutional framework, therefore, must include the features indicated in the Secretary-General's report on the establishment of ISMA, but, beyond that it will need other institutional arrangements to be able to cope with its development functions. For these it might look for precedents both in the Atomic Development Authority and in the International Seabed Authority.

The proposal for the Atomic Development Authority is all too sketchy with regard to institutional arrangements, and, inasfar as they exist they point in the direction of a restricted technocracy, which today, forty years later, would be unacceptable to the international community. A great deal, instead, could be learned from the Law of the Sea negotiations: both as to what to do, and what not to do.

The Seabed Authority and the World Space Organisation have a number of functions in common, with similar institutionl implication. These functions are:

- the exploration of space and the exploitation of resources which are the common heritage of mankind, taking into particular consideration the needs and interests of the developing countries;

- international cooperation in scientific reseaarch exclusively for peaceful purposes;

- cooperation in measures to strengthen research capabilities of developing countries, including the participation of their nationals in research programmes;;

- the prevention of pollution and contamination and other hazards;

- the protection and conservation of the natural resources under the Authority's jurisdiction.

In performing these functions, both the Seabed Authority and the World Space Organisation will have to deal (a) with member States; (b) with intergovernmental organisations; (c) with nongovernmental, often multinational entities such as consortia or multinational companies, thus straddling the spheres of private and public international law.

Both the Seabed Authority and the World Space Organisation must combine features of a political international organisation, and of an operational business; both must have decision-making structures large enough to be representative and "participatory," small encugh tc be efficient. Both must have an operational arm, or Enterprise or Enterprise system.

Both must have the power to tax and to generate an

income independent from membership contributions.

UNCLOS III undoubtedly did some pathbreaking work in designing the structure of the International Seabed Authority for which there is no precedent in the history of international organisation. As pointed out in Chapter II, however, there are some basic flaws, which should be avoided in the negotiations for the World Space Organisation. One is the overburdening with details with built-in obsolescence; the other is to have built a structure which sets established industry and the international organisation on a course of competition and conflict rather than harmonisation and cooperation.

Not much need to be said on the first point. To avoid overburdening with details, negotiations should aim at a framework treaty, not a mass of administrative and financial rules and regulations. There must be some flexibility to adjust to an unpredictable future -- especially when dealing with so new a technology: a technology whose economic implications cannot yet be grasped.

The second point is more challenging. The international community will have to come up with an alternative to the "parallel system." There are three possible precedents which should be studied.

One comes from Space Law itself: the INMARSAT Convention. The second is the current experience of the L.o.S. Preparatory Commission in adjusting the system to get it off the ground; the third is in the emergence of new systems of organising and financing research and development in high technology in general, as exemplified by the EUREKA projects of the European Community.

Since the World Space Organisation will have to deal with exactly the same entities -- States, intergovernmental organisations, and the space industry -- as INMARSAT, it is indeed logical to look for guidance in the structure of this extremely successful organisation, with which the new World

Space Organisation will in any case have to establish a close relationship and, probably, in the longer term, a merger.

The INMARSAT Convention distinguishes between "States Parties" and "Signatories." A "Signatory" is an entity or enterprise, public or private, existing or to be established for the purpose, designated by a State Party to operate within the framework of the Convention. The relations between the State Party and its designated Signatory are regulated by applicable domestic law. The State Party provides guidance and instructions to its Signatory, but is not liable for financial obligations assumed by the Signatory except in certain cases. The INMARSAT Convention provides for an organisation consisting of an Assembly, a Council, and a Directorate. The Assembly, which is the policy-making or "legislative" organ, is composed of representatives of States Parties, each having one vote, on the basis of the sovereign equality of States. The Council, which is the executive and operational arm of the organization, is composed of Signatories.

The Council of INMARSAT is composed of eighteen representatives of those Signatories, or groups of Signatories not otherwise represented, which have agreed to be represented as a group, which have the largest investment shares in the Organisation; and four representatives of Signatories not otherwise representedon the Council, elected by the Assembly, irrespective of their investment shares, in order to ensure that the principle of just geographical representationis taken into account, with due regard to the interests of the developing countries.

The INMARSAT Convention combines in one structure aspects of a (political) intergovernmental organisation and an (economic) enterprise or business. The World Space Organisation has far broader functions and responsibilities, including those dealing with international security. Obviously, decisions on such matters cannot be entrusted to a body composed on the basis of financial interest

representation. One might suggest, therefore, that political questions be dealt with by a political body, whereas technical and economic matters be dealt with by an operational arm, or Enterprise, as was done in the case of the Seabed Authority. In this latter case, however, the separation has not been wholly successful inasmuch as representation in the political body is based on a complex combination of regional and interest-group representation, whereas the governing board of the Enterprise is composed of international civil servants, with no interest representation.

For the World Space Organisation one might suggest a model taking elements both from the Seabed Authority and INMARSAT. For instance, there might be a Council of 36 Members, as in the Seabed Authority, but they might simply be elected on the basis of regional representation, as now happens for the General Committee of the Preparatory Commission, which equally consists of 36 members elected on a regional basis and is to assume the executive functions of the Authority's Council in the interim period until the coming into force of the Convention. The Council of the World Space Organisation will be responsible for a wide range of functions, as outlined above, including those related to international security.

The Operative arm of the World Space Organisation, which is a technical Enterprise in which the aero-space industries will make investments, might be composed, not of international civil servants, but of "Signatories," and they should be represented in proportion to their investment shares. There might be established, furthermore, not one giant enterprise in charge of performing all the different operations of the World Space Organisation, but a series of decentralised enterprises or "projects," each one different from the others according to the functions entrusted to it. Each one might be directed by a board composed of members half of which would be Signatories who made the largest contribution to the project or enterprise, while the other half might be elected by the Assembly on the proposal by the

Council, in such a way as to ensure fair regional represention and full participation by developing countries. The investments also would be divided along these lines: The World Space Organisation would contribute half of the investment cost, the other half would come from States Parties and Signatories.

Which takes us to the third one of the above mentioned precedents to be looked into: The joint arrangements for research and development in high technologies in EUREKA.

Under the EUREKA scheme, industrial enterprises submit joint project proposals to their own national coordinators, which make a selection which then is discussed and refined by the meeting of all national coordinators, and, finally, through them submitted to a Conference of Ministers where the project would be finally adopted. Projects adopted by the Conference of Ministers are financed half by the industrial enterprises that made the proposal and by the Governments of participating States, and half by the EEC. Technologies resulting from projects adopted by EUREKA and developed and financed jointly are accessible to all its member States and participating industries.

Adapting this model to the requirements of the World Space Organisation, one could envisage the following scheme: Industrial enterprises submit joint project proposals to the Signatory designated by their Government, who will make the selection, which then is discussed and refined by the meeting of all Signatories and, finally, through them, submitted to the Council of the World Space Organisation where the project would be finally adopted. Projects adopted by the Council of the World Space Organisation are financed half by the industrial enterprises that made the proposal and by the Governments of participating States, and half by the World Space Organisation or, through it, by public international funding agencies.

A scheme like this provides the only possible alternative to financing by the military as in the case of

"star wars." This is the practical shape "star peace" might take. It benefits the industrialized countries, who save up to 50 percent on their investments in R&D; it benefits the developing countries who are given an opportunity to participate directly in the management of an enterprise in R&D in high technology, with beneficial spin-off effects on domestic development; and, by removing these technologies from military control and internationalising them, it enhances peace and security and benefits all people and the international community.

A scheme of this sort, under the name of JEFERAD (Joint Enterprise For Exploration, Research And Development) was introduced by the Delegation of Austria in the Preparatory Commission in 1983. It could not make much headway so long as the fundamental operational difficulties of the Prep.Com. remained unresolved. These difficulties now have been resolved, and it is quite possible that a Joint Enterprise for the exploration of the first mine site that has been allocated to the future Enterprise, and for the necessary R&D in mining and processing technology, will be established by the "Pioneer investors." This is in fact the place where ocean mining might get off the ground, since the necessary investments are too high for individual consortia or States. The only way to get the necessary R&D financed is through cooperation between the private sector, States, and the international organisation.

The negotiations for the World Space Organisation may profit greatly from studying these developments.

Chapter IV

Canada and the World Space Organisation

Space technology, comprising micro-electronics, laser, particle beams, materials technologies and others, has been developed largely under military auspices. However, it has already been commercialised to a surprising degree, and Canada is one of the leaders in the industry.

A recent article in the Toronto Star (Sunday, March 23, 1986) by Kathryn Warden, entitled "Launching Factories into Space," gives a good overview over Canadian investments and prospects in the space industry.

A USA business group, Warden reports, the Center for Space Policy, predicts that the market for space-made goods will exceed $50 billion in the year 2000. And a recent study commissioned by the Canadian government estimated that creating materials in outer space will be a $200-million-a-year business for Canadian firms by the year 2000. Production, now in the R&D stage, will include capsules of insulin-producing cells which are to be injected into diabetes patients once a year, or even less frequently, to abolish dependence on daily insulin injections: a splendid example of joint venture between bioengineering and space technology. The same company, Canadian Astronautics, has also entered an agreement with Canadian zinc mining company, Cominco Ltd. and a Canadian instrument supplier, Aptec Engineering Ltd. to develop larger and purer semi-conductor crystals, made from the zinc by-product germanium, than can be produced on earth. These would primarily be used to construct more sensitive scanners for cancer and radiation detection as well as for determining the grade of oil in pipes.

Another Toronto-based company, Honeywell Ltd., together with Noranda of Montreal, will be exploring the production of gallium arsenide semi-conductors in space. These will be used to produce faster computers.

Yet another company, BM High Tech. Inc. in Collingwood is presently engaged in research and development in space-produced ultra-pure glass for lasers.

About 30 million dollars of government funding will be spent in the Maritime Provinces over the next five years, to enable this part of the country to participate effectively in the space programme, even though at present not much is being done in this sector in the Maritimes. (Chronicle-Herald, October 8, 1986, "$30m set for space industries," by Laurent Le Pierres). However, it is expected that existing high technology in oceanography and microelectronics could be geared to the space industry, and the Maritimes, eventually, should contribute 10 percent to the over-all national space programme which will include remote sensing, space science and communications as well as participation in the construction of a space station, is expected to provide more than 100,000 person-years of employment and up to $8 billion in revenues by the year 2000.

These are just some major examples. Canadian High Technology, within which space technologies occupy a central place, has much to offer, nationally and internationally.

But it is not only the industrial aspects of space technology (development) which are of importance to Canada and in which Canada is leading. Canada's potential role in the application of space technology to peace-keeping and arms control (disarmament) is equally important.

The Globe and Mail (September 27, 1986) featured an article, "Canada emerging as nuclear-watchdog," by Stephen Strauss, reporting that several companies, with the Montreal research centre of Spar Aerospace Ltd. in the lead, are doing feasibility studies for a proposed series of verification satellites, to monitor both other satellites and troop movements or weapons build-ups on earch. A scientist at the University of Manitoba is studying how astronomical instruments could be used for weapons ban

verification. It is obvious that the development of these technologies would benefit greatly from association with a World Space Organisation and that such association would strengthen Canada in pursuing the arms control and disarmament policy in the Organisation that it has consistently pursued in the Disarmament Committee.

The difficulties facing Canadian space industries are of three kinds. One, as pointed out by Warden in conclusion of her article, is investment in research and development. Most countries recognize, she points out, that making new materials in space is such a high-risk business that government support is needed, at least initially. The United States Government spent US$35 million in 1986 for R&D in materials processing in space. of these, $14.5 was given to University centres for the commercial development of space. Grants to the University must be matched by equal amounts from industry. The European Space Agency, representing 12 countries, is spending Ca$ 30 million a year on research and development in materials processing in space ("micro-gravity research"); during the next two years this amount is projected to rise to about $80 million. The Government of Canada, instead, is only spending $800,000, and there are no centres devoted to commercial development of space.

The second difficulty is one faced by all space industries, not the Canadian only: And this is the scarcity of launching facilities. Since the failure of the American launching system, some U.S. companies have shifted from the shuttle to Europe's Ariane system (See Time, June 9, 1986) Arianespace has boosted its prices by about 30 percent, so that each launch now costs about $35 million. Besides, it is already overbooked, with only eight launches still open through 1988, and that is not enough to take care of global demand. NASA seems reluctant to re-open its facilities to other countries and to the private sector, while for the private sector, on its own, the building of launches is simply too costly.

The third problem facing he space industry as a whole

is the legal regime governing Space. This regime does not cover the economic uses of space, and there are too many uncertainties as to ownership, rights, duties, and liabilities of private parties. The industry is reluctant to make further, huge investments before the law, national and international, catches up with industrial/technological development.

"As these ventures proceed it will be essential for the men of law to read each fresh page of scientific discovery, to wait upon the replies of science to many questions still unresolved, and to be constantly mindful of the changing needs in the field of law which may be attendant on new achievements", as Manfred Lachs put it in his classic, The Law of Outer Space (Leiden: Sijthoff, 1971). The situation is very much the same as it was with regard to the deep seabed prior to UNCLOS III. Public and private entities (e.g., the American Bar Association) have established special branches or committees to study the question, and it appears there is a growing demand for space lawyers, or astrolawyers.

A great deal of attention is being given by astrolawyers to the question of dispute settlement in space.Just as in the study of the Secretary General on the International Satellite Monitoring Agency, astrolawyers favour arbitration: arbitration in space to a confrontational system. "How else can disputes be resolved when you're in space for three months? There's no court, no judge, and you can't fly back to earth. The solution is some type of arbitrator or neutral party who can make a final decision." Professor Ray Britton of the Houston Law school said, according to an article, "The New Frontier," by Eileen O'Grady, published recently in the Sky magazine (Delta Lines Inflight Magazine, January, 1986).

All three problems -- investment, launching facilities, and legal framework could best be solved by a Convention establishing a World Space Organistion.

Canada would appear to have a vital interest in such a development, from an economic, a political, and a security point of view.

Economically, a World Space Organisation, conceived along the lines here discussed, would offer the best hope for Canadian space industries to get really off the ground.

Canadian High Technology as a whole is affected by the same investment malaise. A major study, about to be published under the direction of Roy Woodbridge, president of the Canadian Advanced Technology Association, stresses the need for private/public international cooperation on the EUREKA pattern to solve this problem. Assembling the efforts of about 220 experts from industry, government and the universities, this study devotes one of its five sections to the problems of "Linking National Strengths" which means, "to look at ways of strengthening Canada's involvement in developing leading-edge technologies by building links between industry, governments and education. The idea here is to help co-ordinate R&D along the lines of projects such as Europe's EUREKA." Canada, however, is not part of the European Community, and its political orientation is somewhat different. Canadian interests would be served better if instead of "going European" or "going USA," it could find a way to include the Third World into the process. This would be in line with, and strengthen, Canadian foreign policy while, at the same time, creating new market opportunities together with alleviating the investment problem. A World Space Organisation, with an operational arm modelled after the EUREKA projects, might do just that, at least for one important branch of Canadian High Tech, including materials, lasers, micro-electronics and the bio-industries.

In assuming leadership in building a synthesis between the various proposals now before the United Nations -- especially the French and the Soviet proposals -- and moving towards the establishment of a World Space Organisation, Canada would make an important contribution towards

strengthening the United Nations system: again, a course of action entirely consistent with Canadian foreign policy and apt to strengthen that policy.

Canada has been throughout one of the leaders in the Disarmament Committee and made important contributions to the discussions on international law relevant to arms control and outer space, which, obviously, is of crucial importance for Canadian security. It may be sufficient to refer to the Canadian Working Paper (CD/618 CD/OS/WP.6) of 23 July, 1985. The task ahead would be to link the disarmament aspect with the development aspect. Canada has an equal stake in the advancement of both. In these pages we have tried to give the rationale for joining them. The forum now exists. Canada has very much to gain, and nothing to lose, from an attempt to play a major role on this forum.

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Annex 1

RESOLUTION 2749 (XXV): 17 DECEMBER 1970—Declaration of principles governing the sea-bed and the ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction

Adopted by 108 votes to none, with 14 abstentions.

The General Assembly,

Recalling its resolutions 2340 (XXII) of 18 December 1967, 2467 (XXIII) of 21 December 1968 and 2574 (XXIV) of 15 December 1969, concerning the area to which the title of the item refers,

Affirming that there is an area of the sea-bed and the ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction, the precise limits of which are yet to be determined,

Recognizing that the existing legal régime of the high seas does not provide substantive rules for regulating the exploration of the aforesaid area and the exploitation of its resources,

Convinced that the area shall be reserved exclusively for peaceful purposes and that the exploration of the area and the exploitation of its resources shall be carried out for the benefit of mankind as a whole,

Believing it essential that an international régime applying to the area and its resources and including appropriate international machinery should be established as soon as possible,

Bearing in mind that the development and use of the area and its resources shall be undertaken in such a manner as to foster the healthy development of the world economy and balanced growth of international trade, and to minimize any adverse economic effects caused by the fluctuation of prices of raw materials resulting from such activities,

Solemnly declares that:

1. The sea-bed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction (hereinafter referred to as the area), as well as the resources of the area, are the common heritage of mankind.

2. The area shall not be subject to appropriation by any means by States or persons, natural or juridical, and no State shall claim or exercise sovereignty or sovereign rights over any part thereof.

3. No State or person, natural or juridical, shall claim, exercise or acquire rights with respect to the area or its resources incompatible with the international régime to be established and the principles of this Declaration.

4. All activities regarding the exploration and exploitation of the resources of the area and other related activities shall be governed by the international régime to be established.

5. The area shall be open to use exclusively for peaceful purposes by all States, whether coastal or land-locked, without discrimination, in accordance with the international régime to be established.

6. States shall act in the area in accordance with the applicable principles and rules of international law, including the Charter of the United Nations and the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations, adopted by the General Assembly on 24 October 1970

[RES. 2625 (XXV)], in the interests of maintaining international peace and security and promoting international co-operation and mutual understanding.

7. The exploration of the area and the exploitation of its resources shall be carried out for the benefit of mankind as a whole, irrespective of the geographical location of States, whether land-locked or coastal, and taking into particular consideration the interests and needs of the developing countries.

8. The area shall be reserved exclusively for peaceful purposes, without prejudice to any measures which have been or may be agreed upon in the context of international negotiations undertaken in the field of disarmament and which may be applicable to a broader area. One or more international agreements shall be concluded as soon as possible in order to implement effectively this principle and to constitute a step towards the exclusion of the sea-bed, the ocean floor and the subsoil thereof from the arms race.

9. On the basis of the principles of this Declaration, an international régime applying to the area and its resources and including appropriate international machinery to give effect to its provisions shall be established by an international treaty of a universal character, generally agreed upon. The régime shall, *inter alia*, provide for the orderly and safe development and rational management of the area and its resources and for expanding opportunities in the use thereof and ensure the equitable sharing by States in the benefits derived therefrom, taking into particular consideration the interests and needs of the developing countries, whether land-locked or coastal.

10. States shall promote international co-operation in scientific research exclusively for peaceful purposes:

(*a*) By participation in international programmes and by encouraging co-operation in scientific research by personnel of different countries;

(*b*) Through effective publication of research programmes and dissemination of the results of research through international channels;

(*c*) By co-operation in measures to strengthen research capabilities of developing countries, including the participation of their nationals in research programmes.

No such activity shall form the legal basis for any claims with respect to any part of the area or its resources.

11. With respect to activities in the area and acting in conformity with the international régime to be established, States shall take appropriate measures for and shall co-operate in the adoption and implementation of international rules, standards and procedures for, *inter alia:*

(*a*) The prevention of pollution and contamination, and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment;

(*b*) The protection and conservation of the natural resources of the area and the prevention of damage to the flora and fauna of the marine environment.

12. In their activities in the area, including those relating to its resources, States shall pay due regard to the rights and legitimate interests of coastal States in the region of such activities, as well as of all other States, which may be affected by such activities. Consultations shall be maintained with the coastal States concerned with respect to activities relating to the exploration

of the area and the exploitation of its resources with a view to avoiding infringement of such rights and interests.

13. Nothing herein shall affect:

(*a*) The legal status of the waters superjacent to the area or that of the air space above those waters;

(*b*) The rights of coastal States with respect to measures to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat thereof or from other hazardous occurrences resulting from or caused by any activities in the area, subject to the international régime to be established.

14. Every State shall have the responsibility to ensure that activities in the area, including those relating to its resources, whether undertaken by governmental agencies, or non-governmental entities or persons under its jurisdiction, or acting on its behalf, shall be carried out in conformity with the international régime to be established. The same responsibility applies to international organizations and their members for activities undertaken by such organizations or on their behalf. Damage caused by such activities shall entail liability.

15. The parties to any dispute relating to activities in the area and its resources shall resolve such dispute by the measures mentioned in Article 33 of the Charter of the United Nations and such procedures for settling disputes as may be agreed upon in the international régime to be established.

Annex 2

STATUS OF MULTILATERAL AGREEMENTS RELATING TO OUTER SPACE

		Opened for Signature	No. of Parties as of (date)	
1.	Charter of the United Nations	1945	158	31 March 1984
2.	Antarctic Treaty	1959	32	31 December 1984
3.	Partial Test Ban Treaty	1963	111	31 December 1984
4.	Outer Space Treaty	1967	92	31 December 1984
5.	Treaty of Talatelolco	1967	29	31 December 1984
6.	Rescue & Return Agreement	1968	79	31 March 1984
7.	Non-Proliferation Treaty	1968	127	31 December 1984
8.	Seabed Treaty	1971	81	31 December 1984
9.	Convention on International Liability for Damage Caused by Space Objects	1972	72	31 March 1984
10.	Biological Weapons Convention	1972	104	31 December 1984
11.	Registration Convention	1975	32	31 December 1984
12.	Environmental Modification Convention	1977	54	31 December 1984
13.	Moon Treaty	1979	4	31 March 1984
14.	International Telecommunications Convention	(a) 1973	156	31 March 1984
		(b) 1982	8	30 June 1985

Sources:

Bowman, M.J. and D.J. Harris. Multilateral Treaties: Index and Current Status. London: 1984.

United States. Arms Control and Disarmament Agency. 1984 Annual Report. Washington: April, 1985.

Annex 3

UNITED
NATIONS

A

General Assembly

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9 October 1985
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Fortieth session
FIRST COMMITTEE
Agenda item 145

INTERNATIONAL CO-OPERATION IN THE PEACEFUL EXPLOITATION OF OUTER SPACE UNDER CONDITIONS OF ITS NON-MILITARIZATION

Letter dated 9 October 1985 from the Representative of the Union of Soviet Socialist Republics on the First Committee addressed to the Chairman of the First Committee

I have the honour to transmit to you the text of the proposals by the USSR concerning main lines and principles of international co-operation in the peaceful exploitation of outer space under conditions of its non-militarization.

I should be grateful if you would take the necessary measures for the distribution of the text of these proposals as an official document of the First Committee of the General Assembly under agenda item 145.

V. PETROVSKY
Representative of the USSR
on the First Committee

ANNEX

MAIN LINES AND PRINCIPLES OF INTERNATIONAL CO-OPERATION IN THE PEACEFUL EXPLOITATION OF OUTER SPACE UNDER CONDITIONS OF ITS NON-MILITARIZATION

(Proposals put forward by the Union of Soviet Socialist Republics)

The breakthrough into outer space and the transition to the practical utilization of that limitless expanse constitute one of mankind's most outstanding scientific and technical achievements.

During the period, short on a historical scale, that has elapsed since the Soviet Union launched the world's first artificial earth satellite in 1957 and since the VOSTOK spacecraft, manned by Yuri Gagarin, our planet's first cosmonaut, rose into orbit in 1961, a giant leap has been made in the peaceful exploitation of outer space.

Mankind has begun essentially to make circumterrestrial space habitable. There are now hundreds of satellites in orbit, and space stations in which crews of scientific and technical specialists, including some international crews, alternate and work for months at a time, are operating on a permanent basis. Interplanetary scientific stations are exploring the depths of the solar system. Space vehicles are being used for the systematic study of the Moon, Venus and Mars. Mankind's horizons in space are becoming ever broader and more majestic.

However, there is today a growing possibility that outer space may become a source of terrible military danger. Plans now being proclaimed and activities now being undertaken are aimed at developing and deploying space strike weapons to destroy objects in space and to launch attacks from space against objects in the atmosphere and on Earth, including the creation of a large-scale anti-missile system with space-based components.

The implementation of plans to militarize outer space would bring a sharp increase in the nuclear threat and would deprive the peoples of the world of any hope for the coming of a day when nuclear weapons will disappear from the face of the Earth. Moreover, the arms race would take on a radically new and even more dangerous dimension in all its aspects. Into its fires would be cast additional vast resources that could be used for the peaceful development of mankind and the solution of its urgent problems.

Militarization would strike the entire field of space activity like a severe and incurable disease and would raise insurmountable obstacles to the development of international co-operation in the peaceful exploitation of outer space.

The peoples and Governments of all countries must recognize the magnitude of the problem confronting mankind and the full measure of their historic responsibility for its solution.

We have arrived at a point in the development of civilization at which either the age of large-scale exploitation and utilization of outer space for man's benefit will begin or outer space will become a source of deadly danger to man.

The Soviet Union is resolutely opposed to competition in weapons of any kind, including space weapons. The efforts it is making today to prevent the militarization of outer space are a continuation of its consistent and purposeful policy aimed at making sure that outer space is used for the benefit of mankind. As early as 1958, when it blazed the first trails in outer space, the USSR introduced in the United Nations a proposal on banning the use of cosmic space for military purposes.

Although a radical solution of the problem of keeping space non-militarized proved impossible at that time, the 1960s and 1970s saw the conclusion of important treaties which substantially limited the possibility of its military use. These were the multilateral treaties on the prohibition of the testing of nuclear weapons in the atmosphere, in outer space and under water (1963) and on principles governing the activities of States in the exploration and use of outer space, including the Moon and other celestial bodies (1967), the Soviet-United States treaty on the limitation of anti-ballistic missile systems (1972) and a number of other agreements.

Those documents created favourable conditions for the first steps in organizing mutually beneficial co-operation between States in outer space. Even today, if a reliable barrier could be set up to prevent the placement of weapons in space, States would have an opportunity to combine their efforts and resources in making sure that the results of the space activities of all States will be used not for destruction but for creation, for the well-being of all the peoples living on our planet.

The USSR is in favour of such co-operation. It appeals to all countries and peoples with a proposal to do everything they can in order to prevent any arms race in outer space and work together for its peaceful investigation and exploitation to the advantage of all mankind.

First. The non-militarization of space - that is to say, abstention on the part of States from the production of space strike weapons (including research), their testing and their deployment - and the joining of forces by States in peaceful space activity would promote the spread of mutual understanding and co-operation between them and the effective utilization of mankind's material and intellectual resources. This would give a new impetus to the development of science and technology and would open truly limitless prospects for the utilization of space achievements to promote the economic and social progress of the world's peoples and to solve the global problems confronting mankind, including such urgent problems as the elimination of hunger and disease and the overcoming of the economic backwardness of developing countries, including assistance to those countries.

Global peaceful co-operation in space research would be set up and developed on an increasing scale, from the exchange of scientific and technical information

and simple forms of co-operation to the combining of States' capacities to solve the large-scale problems involved in the exploitation of outer space.

If that is done, it will be in mankind's power to achieve even such a long-term goal as the industrialization of circumterrestrial space, merging space complexes designed for various purposes with the terrestrial economies of States, and the operation of orbital factories set up to produce new materials and industrial goods under conditions of high vacuum and weightlessness. The inexhaustible storehouses of space, including the resources of celestial bodies and the energy of the Sun, would be placed at the service of mankind.

Second. International co-operation in the peaceful use of outer space, as the USSR sees it, could be carried out along the following fundamental lines:

1. Basic scientific research in outer space, including the Moon and other celestial bodies, and the launching of interplanetary spacecraft for those purposes.

2. The application of the results of space research and experiments and the utilization of space technology, inter alia, in such fields as biology, medicine, materials science, weather forecasting, study of climate and the natural environment, global satellite communications systems and solution of the problems involved in remote-sensing of the earth to obtain data for geology, agriculture and exploitation of the seas and oceans, and assistance in searching for, locating and rescuing victims of sea and air disasters.

3. The creation and utilization of space technology, including large international orbital scientific stations and manned spacecraft of various types.

Third. The peaceful exploitation of outer space must be carried out with scrupulous regard for previously concluded treaties aimed at preventing an arms race in outer space, as well as on the basis of the following general principles arising out of the Charter of the United Nations:

Refraining from the use or threat of force and settling disputes solely by peaceful means;

Equality of rights, respect for sovereignty and non-interference in the internal affairs of States;

Conscientious co-operation, mutual assistance and due regard for the interests of other States.

Fourth. For the organizing and implementation of co-operation between States, it would be possible to set up a world space organization dealing with international co-operation in the peaceful exploration and use of outer space under conditions of its non-militarization.

Such an organization would have the following duties:

(a) To ensure, under conditions of mutual advantage, the access of all States on a non-discriminatory basis to the results of scientific and technical achievements connected with the study and peaceful exploitation of outer space;

(b) To carry out international projects connected with the uniting of efforts and resources for the scientific investigation of outer space and the utilization of space technology;

(c) To provide assistance of every kind to developing countries in gaining access to the exploration and use of outer space and in using the practical results of such activity to speed the economic and social development of those countries, according to their needs and without any conditions limiting their sovereignty;

(d) To co-ordinate on an international scale the activities of other international organizations in connection with the peaceful utilization of outer space;

(e) To help, where necessary, in monitoring the observance of agreements which have already been concluded or will be concluded, with a view to preventing an arms race in space.

Fifth. The USSR proposes the convening of a representative international conference, with the participation, among others, of the States with major space capabilities, in order to consider in all its aspects the question of international co-operation in the peaceful exploitation of space under conditions of its non-militarization and the harmonization of the main lines and principles of such co-operation.

That conference would also consider the question of establishing a world space organization dealing with international co-operation in the peaceful exploration and use of outer space, bearing in mind that the practical establishment of such an organization will be possible only when agreements effectively ensuring the non-militarization of space have been reached.

The peaceful exploitation of space, as people already know from experience, can yield many benefits for the development and improvement of life on earth. The Soviet Union is convinced that outer space, the common property of mankind, must be placed at the service not of war, but of peace and security and of the economic and social progress of all peoples. The road to that goal leads through the collective efforts of all States on our planet.

In a spirit of goodwill and with a recognition of its responsibility for the fate of our planet, the Soviet Union appeals to all countries and peoples to set about solving this historic problem. Endeavouring to make its contribution to the common cause, it puts forward for consideration by the United Nations the present proposals concerning the main lines and principles of international co-operation in the peaceful exploitation and utilization of outer space under conditions of its non-militarization.

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INTERNATIONAL CO-OPERATION IN THE PEACEFUL EXPLOITATION OF OUTER SPACE UNDER CONDITIONS OF ITS NON-MILITARIZATION

Union of Soviet Socialist Republics: draft resolution

Determined to ensure that the exploitation and use of outer space will be an area of broad, equitable and mutually beneficial international co-operation under conditions of peace,

Recognizing the urgent need to prevent, before it is too late, an arms race in outer space, which would lead to a sharp intensification of the danger of nuclear war, undermine the prospects for limiting and reducing armaments in general and create insurmountable barriers to the development of international co-operation in the peaceful exploitation of outer space,

Guided by a desire to ensure that the exploration and use of outer space will most effectively serve the scientific, technical, economic and social progress of all peoples and the solution of the global problems facing mankind, including the tasks of development and of overcoming economic backwardness,

1. Calls upon all States, in particular those with major space capabilities, to do everything possible for the adoption of effective measures to prevent an arms race in outer space, thereby creating conditions for broad international co-operation in the exploration and use of outer space for peaceful purposes;

2. Expresses its conviction that, under conditions in which the non-militarization of outer space is effectively ensured, a major practical step in the peaceful exploitation of space and the development of international co-operation in that field would be the setting up of a world space organization to harmonize, co-ordinate and unite the efforts of States in respect of peaceful space activities, including the provision of assistance in that field to developing

countries, and also to facilitate the necessary monitoring of compliance with agreements which have already been concluded or will be concluded with a view to preventing an arms race in outer space;

3. Decides to convene not later than 1987 an international conference with the participation of States with major space capabilities and of other interested countries to consider in all its aspects the question of international co-operation in the peaceful exploration and use of outer space under conditions of its non-militarization and the harmonization of the main lines and principles of such co-operation. The conference would also consider the question of setting up a world space organization, bearing in mind that the practical establishment of such an organization will be possible when agreements which effectively ensure the non-militarization of outer space have been reached;

4. Establishes an open-ended preparatory committee with the participation of States with major space capabilities for the purpose of convening the international conference;

5. Requests the preparatory committee to submit a report on the work carried out and appropriate recommendations to the General Assembly at its forty-first session;

6. Invites all States to communicate to the Secretary-General not later than 1 March 1986, for transmittal to the preparatory committee, any views and suggestions with regard to the convening of the international conference;

7. Decides to include in the provisional agenda of its forty-first session an item entitled "International co-operation in the non-militarization and peaceful exploitation of outer space".

Annex 4

40/87. Prevention of an arms race in outer space

Date: 12 December 1985 Meeting: 113
Vote: 151-0-2 (recorded) Report: A/40/964

The General Assembly,

Inspired by the great prospects opening up before mankind as a result of man's entry into outer space,

Recognizing the common interest of all mankind in the exploration and use of outer space for peaceful purposes,

Reaffirming that the exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind,

Reaffirming further the will of all States that the exploration and use of outer space, including the Moon and other celestial bodies, shall be for peaceful purposes,

Recalling that the States parties to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 39/ have undertaken, in article III, to carry on activities in the exploration and use of outer space, including the Moon and other celestial bodies, in accordance with international law and the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding,

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* Later advised the Secretariat that it had intended to vote in favour.

39/ General Assembly resolution 2222 (XXI), annex.

Reaffirming, in particular, article IV of the above-mentioned Treaty, which stipulates that States parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies or station such weapons in outer space in any other manner,

Reaffirming also paragraph 80 of the Final Document of the Tenth Special Session of the General Assembly, 40/ the first special session devoted to disarmament, in which it is stated that, in order to prevent an arms race in outer space, further measures should be taken and appropriate international negotiations held in accordance with the spirit of the Treaty,

Recalling its resolutions 36/97 C and 36/99 of 9 December 1981, as well as resolutions 37/83 of 9 December 1982, 37/99 D of 13 December 1982, 38/70 of 15 December 1983 and 39/59 of 12 December 1984,

Gravely concerned at the danger posed to all mankind by an arms race in outer space and, in particular, by the impending threat of exacerbating the current state of insecurity by developments that could further undermine international peace and security, retard the pursuit of general and complete disarmament, and risk creating obstacles to the development of international co-operation in the peaceful uses of outer space,

Mindful of the widespread interest expressed by Member States in the course of the negotiations on and following the adoption of the above-mentioned Treaty in ensuring that the exploration and use of outer space should be for peaceful purposes, and taking note of proposals submitted to the General Assembly at its tenth special session devoted to disarmament, and at its regular sessions and to the Conference on Disarmament,

Noting the grave concern expressed by the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space over the extension of an arms race into outer space and the recommendations made to the competent organs of the United Nations, in particular the General Assembly, and also to the Committee on Disarmament, 41/

Convinced that further measures are needed for the prevention of an arms race in outer space,

Recognizing that, in the context of multilateral negotiations for preventing an arms race in outer space, bilateral negotiations between the Union of Soviet Socialist Republics and the United States of America could make a significant contribution to such an objective, in accordance with paragraph 27 of the Final Document of the Tenth Special Session of the General Assembly, 42/

Noting with satisfaction that bilateral negotiations between the Union of Soviet Socialist Republics and the United States of America have begun in 1985, on a complex of questions concerning space and nuclear arms, both strategic and intermediate range, and in their interrelationship, with the declared objective of working out effective agreements aimed, inter alia, at preventing an arms race in outer space,

Anxious that concrete results should emerge from these negotiations as soon as possible, as was urged in its resolution 39/59,

Taking note of the report of the Conference on Disarmament, 43/

Welcoming the establishment of an ad hoc committee on the prevention of an arms race in outer space during the 1985 session of the Conference on Disarmament, in the exercise of the negotiating responsibilities of this sole multilateral negotiating body on disarmament, to examine, as a first step at this stage, issues relevant to the prevention of an arms race in outer space,

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40/ General Assembly resolution S-10/2.

41/ See Report of the Second United Nations Conference on the Exploration and Peaceful Use of Outer Space, Vienna, 9-21 August 1982 (A/CONF.101/10 and Corr.1 and 2), paras. 13, 14 and 426. The Committee on Disarmament was redesignated the Conference on Disarmament as from 7 February 1984.

42/ General Assembly resolution S-10/2.

43/ Official Records of the General Assembly, Fortieth Session, Supplement No. 27 (A/40/27 and Corr.1), sect. III.E.

Mindful that consensus had not yet been reached in the Conference on Disarmament on concrete proposals for re-establishing the ad hoc committee on this question during the 1986 session of the Conference on Disarmament,

1. Recalls the obligation of all States to refrain from the threat or use of force in their space activities;

2. Reaffirms that general and complete disarmament under effective international control warrants that outer space shall be used exclusively for peaceful purposes and that it shall not become an arena for an arms race;

3. Emphasizes that further measures with appropriate and effective provisions for verification to prevent an arms race in outer space should be adopted by the international community;

4. Calls upon all States, in particular those with major space capabilities, to contribute actively to the objective of the peaceful use of outer space and to take immediate measures to prevent an arms race in outer space in the interest of maintaining international peace and security and promoting international co-operation and understanding;

5. Requests the Secretary-General to invite Member States to submit their views on the possibility of enhancing international co-operation in the field of preventing an arms race in outer space and the peaceful uses of outer space, including the desirability of establishing relevant machinery for that purpose, and to submit a report to the General Assembly at its forty-first session;

6. Reiterates that the Conference on Disarmament, as the single multilateral disarmament negotiating forum, has the primary role in the negotiation of a multilateral agreement or agreements, as appropriate, on the prevention of an arms race in outer space in all its aspects;

7. Requests the Conference on Disarmament to consider as a matter of priority the question of preventing an arms race in outer space;

8. Also requests the Conference on Disarmament to intensify its consideration of the question of the prevention of an arms race in outer space in all its aspects, taking into account all relevant proposals including those presented in the Ad Hoc Committee on the Prevention of an Arms Race in Outer Space at its 1985 session 44/ and at the fortieth session of the General Assembly;

9. Further requests the Conference on Disarmament to re-establish an ad hoc committee with an adequate mandate at the beginning of its session in 1986, with a view to undertaking negotiations for the conclusion of an agreement or agreements, as appropriate, to prevent an arms race in outer space in all its aspects;

10. Urges the Union of Soviet Socialist Republics and the United States of America to pursue intensively their bilateral negotiations in a constructive spirit aimed at reaching early agreement for preventing an arms race in outer space, and to advise the Conference on Disarmament periodically of the progress of their bilateral sessions so as to facilitate its work;

11. Calls on all States, especially those with major space capabilities, to refrain in their activities relating to outer space, from actions contrary to the observance of the relevant existing treaties or to the objective of preventing an arms race in outer space;

12. Invites Member States to transmit to the Secretary-General, not later than 1 April 1986, their views on the scope and content of the study of the United Nations Institute for Disarmament Research 45/ being undertaken on disarmament problems relating to outer space and the consequences of extending the arms race into outer space, and requests the Secretary-General to convey the views of the Member States to the Advisory Board on Disarmament Studies for consideration in order to enable it, in its capacity of Board of Trustees of the Institute, to give the Institute such possible guidance with respect to the elaboration of its study as it may derive from those views;

44/ See Official Records of the General Assembly, Fortieth Session, Supplement No. 27 (A/40/27 and Corr.1), sect. III.E.

45/ A/40/725, paras. 47-54.

13. Requests the Conference on Disarmament to report on its consideration of this subject to the General Assembly at its forty-first session;

14. Requests the Secretary-General to transmit to the Conference on Disarmament all documents relating to the consideration of this subject by the General Assembly at its fortieth session;

15. Decides to include in the provisional agenda of its forty-first session the item entitled "Prevention of an arms race in outer space".

RECORDED VOTE ON RESOLUTION 40/87:

In favour: Afghanistan, Algeria, Angola, Antigua and Barbuda, Argentina, Australia, Austria, Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Benin, Bhutan, Bolivia, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burma, Burundi, Byelorussia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Côte d'Ivoire, Cuba, Cyprus, Czechoslovakia, Democratic Kampuchea, Democratic Yemen, Denmark, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Ethiopia, Fiji, Finland, France, Gabon, German Democratic Republic, Federal Republic of Germany, Ghana, Greece, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kenya, Kuwait, Lao People's Democratic Republic, Lebanon, Lesotho, Liberia, Libya, Luxembourg, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Mauritania, Mauritius, Mexico, Mongolia, Morocco, Mozambique, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Rwanda, Saint Lucia, Saint Vincent, Samoa, Sao Tome and Principe, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Singapore, Solomon Islands, Somalia, Spain, Sri Lanka, St. Christopher and Nevis, Sudan, Suriname, Swaziland, Sweden, Syria, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, USSR, United Arab Emirates, United Kingdom, United Republic of Tanzania, Uruguay, Vanuatu, Venezuela, Viet Nam, Yemen, Yugoslavia, Zaire, Zambia, Zimbabwe.

Against: None.

Abstaining: Grenada, United States.

Absent: Albania, Belize, Costa Rica, Dominica, Gambia.

Annex 5

Canada Contributes to CD Discussions on Outer Space

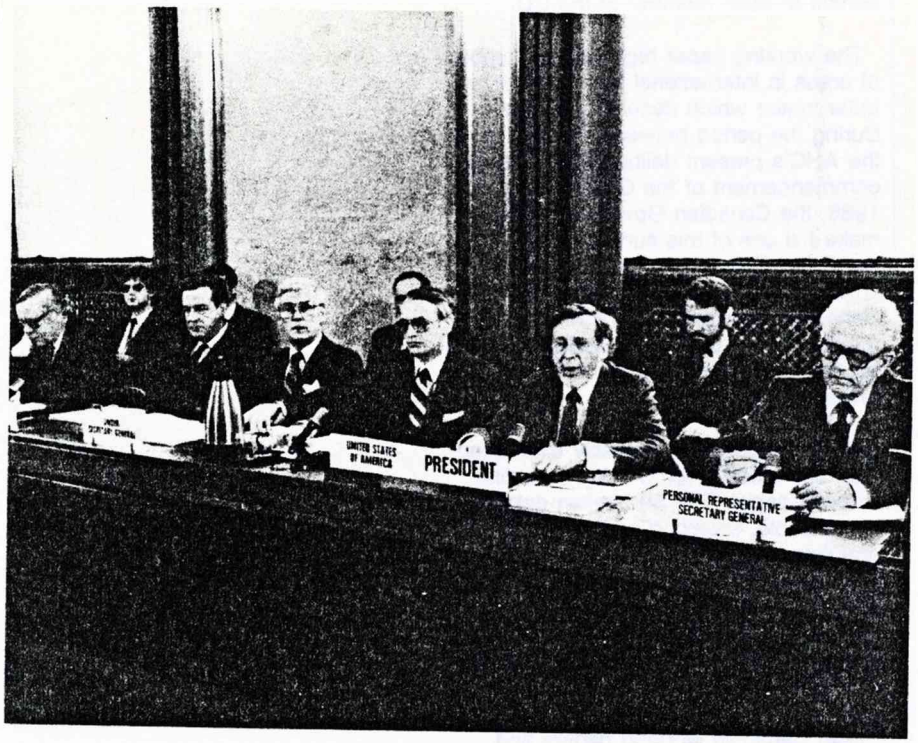
The following article was prepared by the Arms Control and Disarmament Division of the Department of External Affairs.

The Conference on Disarmament (CD) in Geneva began detailed consideration this year of the question of arms control and outer space. On March 29 the 40 members of the CD agreed on a mandate for an *Ad Hoc* Committee (AHC) on the Prevention of an Arms Race in Outer Space. This mandate called upon the AHC to examine, "through substantive and general consideration, issues relevant to the prevention of an arms race in outer space," taking into account all existing agreements, existing proposals and future initiatives.

Canada took an active role in the development of this mandate and, as in the past, participated in general discussions within the CD on the subject of arms control and outer space. For example, in 1982 Canada tabled the first substantive working paper on the issue which dealt with the possible stabilizing and destabilizing effects of systems in space. This year, with the establishment of the AHC, Canada made a significant, practical contribution to the AHC's deliberations by submitting two additional working papers.

On July 2, Canada's Ambassador to the CD, Alan Beesley, tabled a comprehensive, two-volume compendium of working papers and final records of the CD which relate to outer space (CD 606, July 4, 1985). The compendium is similar to those which Canada had previously tabled on chemical weapons and on radiological weapons. This working document had the practical aim of providing to the members of the AHC, early in their discussions, concrete documentation upon which they could draw. The size of the two-volume compendium also illustrated the extent of past work by the CD on this matter.

This Canadian contribution was very well received. The Swedish delegate, for example, speaking in the AHC on July 29, thanked Canada for this "excellent reference" source. Numerous other delegations also privately expressed their appreciation to Canada. More than 100 copies were distributed to the 40 members of the CD.



The Conference on Disarmament opened its 1985 Session in Geneva on February 5. At the presiding table are (from left to right): *Ambassador R. Ian T. Cromartie (United Kingdom), outgoing President; Erik Suy, Director-General, UN Office at Geneva; Jan Martenson, Under-Secretary-General for Disarmament Affairs; Thomas Barthelemy (United States), Deputy Representative to the Conference; Ambassador Donald Lowitz (United States), President; and Miljan Komatina, Personal Representative of the Secretary-General.* UN Photo

The second Canadian working paper was tabled on July 23 as part of Canada's participation in the AHC's review of existing agreements related to the prevention of an arms race in outer space. Canada felt that such a review was an essential step to the fulfilment of the mandate of the AHC. Not only did it help underline the full scope of the questions involved but, more importantly, it helped to ensure that what the AHC accomplished would be in conformity with, and not at cross purposes to, existing treaties and international law. It was felt that the time spent in reviewing the existing legal regime would speed up rather than delay the successful results of the AHC's deliberations.

This second working paper by Canada, entitled *Survey of International Law Relevant to Arms Control and Outer Space* (CD/618, July 23, 1985), derives in part from a study undertaken by the Institute of Air and Space Law at McGill University in Montreal at the invitation of the Department of External Affairs. The McGill study forms part of a programme by the Government of Canada to include non-governmental organizations, where possible, in the arms control and disarmament process.

The working paper identifies more than 20 international agreements, including the United Nations Charter itself, which are of significance to the process in which the AHC is engaged. The paper does *not* put forth nor represent a Canadian Government position on any issue. Rather it seeks to provide a broad interpretation of a variety of views in a

balanced, non-provocative manner, so as to provide a useful data base for the benefit of each member of the CD.

The working paper highlights a number of areas in international law relevant to outer space which deserve attention. During the period between the end of the AHC's present deliberations and the commencement of the CD session in 1986, the Canadian Government will make full use of this survey when reviewing Canadian policy relevant to arms control and outer space. It is Canada's hope that other governments might similarly use the Canadian working paper as a reference point in their own review of the subject.

Several delegations publicly expressed their appreciation for Canada's second working paper. The Sri Lankan delegate, for example, speaking on July 30, congratulated Canada for the survey paper and stated, "We are particularly impressed by the non-partisan and objective approach of the paper apart, of course, from its sound professionalism and thoroughness."

Both Canadian working papers and Canada's active participation in the deliberations of the AHC on the Prevention of an Arms Race in Outer Space demonstrate Canada's sincere commitment to the successful fulfilment of the AHC's mandate. Canada will continue its practical efforts towards a thorough examination by the CD of this important area and towards taking whatever necessary steps emerge from this examination.

The Committee on Disarmament concluded its 1985 discussions on August 30. The wide-ranging discussions, which highlighted the complexity of a number of problems, led to a better understanding of positions. The importance and urgency of arms control and outer space were recognized.

Canada believes that the exploratory work begun by the CD this year under the AHC's mandate remains incomplete and that a similar mandate next year would be relevant and realistic. It would permit a considerable amount of concrete work to be accomplished while not interfering or prejudicing the bilateral negotiations underway on this subject between the USA and USSR.

SOME PRELIMINARY THOUGHTS ON THE ESTABLISHMENT OF A WORLD SPACE ORGANISATION

by

Elisabeth Mann Borgese

EXECUTIVE SUMMARY

For any one who has followed the Law of the Sea negotiations, the 1985 Soviet proposal for the establishment of a World Space Organistion had a familiar ring. Motivation, conceptual basis, substance and proposed procedure were almost identical. While making only indirect reference to the Law of the Sea, however, the Soviet Foreign Minister, in introducing his proposal, referred explicitly to the 1946 negotiations on nuclear arms control. This author, therefore, felt the need to go back to those negotiations, particularly as reflected in the 1946 volume of the Bulletin of the Atomic Scientists which, retrospectively, makes absolutely fascinating reading.

This reading revealed astonishing similarities between the U.S. proposal for the establishment of an Atomic Development Authority and the discussions on the International Seabed Authority: similarities which had escaped commentators thus far. Both proposed institutions, in fact, are based on the concept that certain resources cannot be owned by States, companies or individuals and must be controlled and managed by the international Authority to be established. In both cases the authority was to engage directly in the exploration, mining, processing and marketing of the minerals in question: uranium and thorium, in the case of the Atomic Development Authority; nickel, cobalt, copper, and manganese, in the case of the Seabed Authority, while both could also grant licenses to States or private companies to engage in some of these activities under the control of the Authority.

This study tries to assess the main achievements and main shortcomings and failures, whether substantial or political, of both the atomic and the seabed negotiations and to draw some lessons for the forthcoming negotiations for the establishment of a World Space Organisation.

The atomic negotiations of 1946 give substantial support to a basic principle already proposed by the Soviet

Delegation: that the new organisation should serve both Development and Disarmament. On the procedural plane, this suggests a merger between the earlier French proposal for an International Satellite Monitoring Agency and the Soviet proposal. Another lesson to be drawn is avoidance of three political pitfalls: First, a new, positive approach is needed to get off the horns of the dilemma, Which comes first: Disarmament or the establishment of the Authority? Second: Any attempt should be avoided to link the establishment of the new Authority to changes in the existing structure of the United Nations, especially the Security Council, and, third, provocatory actions should be avoided while the negotiations are in course: a voluntary moratorium on military research in outer space might solve this problem.

The lessons to be learned from the Law of the Sea negotations are numerous, and partly positive, partly negative. The basic concepts can be carried over in toto: the concept of the common heritage of mankind -- already accepted for outer Space, but in need of more precise interpretation both in legal and economic terms, both in its disarmament and development aspects; the concept of the unity and indivisibility of space and the interdependence of usages, and, in this context, the multi-functional character of the Authority; the need to deal with both States and non-State entities and the need, therefore for an instrument that straddles public and private international law. Two major pitfalls are to be avoided: First, The Convention establishing the Authority must not be overburdened with detail prone to fall into quick obsolescence; some flexibiity and mechanisms for prompt adaptation and change are essential; this implies a dynamic concept of the institution as a process more than a product. Secondly, the Authority must be built in such a way as to institutionlise cooperation between industry and the Authority rather than competition and collision. The negotiations on the "parallel system should serve as a lesson as to what not to do. More positive lessons can be drawn from space law itself - the INMARSAT Convention -, from the current, adaptive

developments in the L.o.S. Preparatory Commission, and from recent developments in organising research and development in high technology, especially in the European EUREKA framework.

Drawing on documents from all these domaines, the author attempts to project a precedural scenario and to give some idea of the functions, powers, and structure of the proposed World Space Authority. Like the Law of the Sea Convention, a Convention establishing a World Space Authority has the potential to make a major contribution to the building of a new international order, to development and to disarmament, especially by providing the first institutionl framework in the United Nations system, for creating a synthesis between both.

In conclusion, the author stresses the importance of this new international undertaking for Canada, both in economic and political terms and suggests a lead role for Canada as a bridge builder between the French and the Soviet proposals.

I. INTRODUCTION

On August 15, 1985, The Soviet Foreign Minister Edward Shevardnadze sent a letter to the Secretary-General of the United Nations, requesting to have the question of the nonmilitarization of outer space included in the agenda for the Fortieth General Assembly. He also proposed that the Assembly convene an international conference to discuss setting up a world space organization to promote international cooperation in peaceful outer space activities. He pointed out that specific actions aimed at creating space strike weapons were already under way, and if the process were not stopped, the arms race would intensify and broaden in scope, consuming still more resources and creating insurmountable obstacles to joint peaceful space activities on the part of States. Annexed to his letter was a draft resolution by which the Assembly would call on States to do everything possible with regard to stopping the arms race in outer space, thereby creating conditions for wide-ranging international cooperation in the exploration and use of outer space for peaceful purposes. He suggested that the Assembly should decide to convene not later than 1987 an international conference on cooperation in the peaceful exploration of outer space. The conference would consider practical arrangements for setting up a world space organization, once agreement had been reached to ensure effectively the nonmilitarization of outer space.

In a memorandum accompanying the Foreign Minister's letter, the Soviet Union listed the advantages that would result from international cooperation to prevent an arms race in space. It said such cooperation would not only be in the interests of world peace, but would also make possible a sharing of the scientific benefits obtained from space exploration, which could be applied in biology, medicine, weather forecasting, environmental studies and communications. Remote sensing of the earth by satellites could yield global data for geology and agriculture, for exploration of seas and oceans, and for locating and rescuing disaster victims.

As envisioned in the Soviet memorandum, the new space agency would ensure the equal access of all States to the scientific and technological benefits derived from the exploration of outer space. It could promote the pooling of international resources in joint space projects for peaceful purposes and assist developing countries in that field. It could also help to monitor the observance of international agreements for the nonmilitarization of outer space. (Document A/40/192).

On September 24, in his statement to the General Assembly, the Foreign Minister formally introduced the proposal.

> Space, until recently the realm of science fiction writers, has now become an area of man's practical activity. Peaceful exploration of space holds out for mankind truly limitless prospects of utilizing scientific and technological achievements to promote the economic and social progress of the peoples and to solve the vast problems that face mankind on Earth.
>
> However, these truly cosmic dimensions -- and I am not speaking figuratively -- also present new requirements to the inhabitants of the Earth and above all to the leaders of States.
>
> There should be no repetition of the mistake made four decades ago when the States and peoples of the world were unable to prevent the great intellectual achievement of the mid-twentieth century -- the release of energy of the atom -- from becoming a means for the mass annihilation of human beings. This folly should not happen again at the end of this century when, having filled the first pages of its space history, mankind is facing a choice -- either space will help to improve the living conditions of our planet or it will become the source of a new mortal danger.
>
> Wishing to contribute to mankind's progress towards new

heights of civilization, our country has taken a new major initiative by proposing the inclusion in the agenda of the present session of the General Assembly of an item "International Cooperation in the Peaceful Exploration of Outer Space in Conditions of Its Non-Militarization."

The Soviet Union has also submitted to the General Assembly specific proposals concerning the main directions and principles of broad international cooperation in the exploration and use of outer space for peaceful purposes. Outer space is indivisible and all States should take part in its peaceful exploration.

This implies that progress should be made by joint efforts in both basic and applied areas of space exploration and that all the peoples should be able to benefit from space research. It is our view that such cooperation could best be carried out within the framework of a world space organization. But this could become a reality provided that all channels for militarizing the boundless reaches of outer space are closed off.

To counter the sinister plans of "Star Wars," the USSR is putting before the international community a concept of "Star Peace."

On October 14 the Soviet United introduced the draft resolution under the title "International co-operation in the peaceful exploitation of outer space under conditions of its non-militarization (A/C.1/40/L.1) embodying the principles proposed in the Foreign Minister's statement.

The Resolution was subsequently modified; in particular the reference to 1987 for the calling of an international conference was dropped and replaced by the much vaguer reference to "a proper stage" at which such a conference should be called.

At the request of the Soviet Union itself, no action was taken on the draft resolution. While inserting itself into a long line of previous initiatives at the General Assembly, among which the French proposal for the establishment of an international satellite monitoring agency (1978) deserves particular mentioning, the Soviet initiative remains unique in that it addresses at the same time the issues both of disarmament and development and provides for one single institution, the World Space Agency, to deal with both.

The Soviet initiative, in its turn,triggered a spate of other draft resolutions, introduced by developed and developing countries, East and West.

On November 7, China introduced Resolution A/C.1/40/L.4 which, however, was restricted to the Disarmament aspect of the Soviet proposal and addressed to the Conference on Disarmament to take action. No action was taken on this Resolution, in accordance with the sponsor's request.

The Chinese Resolution was followed, on November 12, by Draft resolution A/C.1/40/L.22 and Rev.1, co-sponsored by Belgium, Canada, Federal Republic of Germany, Italy, Japan, the Netherlands, Norway and the U.K., which, again, emphasized the Disarmament aspects and expressed "its great satisfaction at the agreement reached in 1985 in the Conference on Disarmament...on the establishment of an Ad Hoc Committe ... entitled 'Prevention of an arms race in outer space';"

In a revised version, submitted on November 20, the sponsors stressed, in a new second preambular paragraph, the importance of "the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes and also added that outer spce "shall be the province of all mankind."

On 12 November Poland introduced a Resolution (L.45 and Rev.1, requesting the Secretary General to prepare a

comprehensive study of the various consequences of the militarization of outer space. This Draft Resolution also reaffirmed "that outer space is the common heritage of mankind and its peaceful exploration and use shall be the province of all mankind."

On that same November 12, a group of developing countries (Algeria, Bangladesh, Brazil, Cameroon, Egypt, Ethiopia, Ghana, India, Indonesia, Malaysia, Mexico, Pakistan, Romania, Sri Lanka, the Sudan and Yugoslavia, later jointed by Venezuela and Zimbabwe, introduced Draft resolution A/C.1/40/L.68 and Rev. 1, an elaborate text consisting of 18 preambular and 13 operative paragraphs, which, however, still fell short of including a recommendation to establish a World Space Agency. This suggestion was taken up in a revision of the Resolution on November 21, which now was also aponsored by the German Democratic Republic and Sweden. A new operative paragraph was added (5), which read:

> "Requests the Secretary-General to invite Member States to submit their views on the possibility of enhancing international co-operation in the field of preventing an arms race in outer space and the peaceful uses of outer space, including the desirability of establishing relevant machinery for that purpose, and to submit a report to the General Assembly at its forty-first session;"

The essence of the Polish draft resolution was incorporated in another additional operative paragraph (12), reading:

> "Invites the Member States to transmit to the Secretary-General, not later than 1 April 1986, their views on the scope and content of the UNIDIR (United Nations Institute for Disarmament Research) study being undertaken on disarmament problems relating to outer space and the consequences of extending the arms race into outer space; and requests the

Secretary-General to convey the above-mentioned views of the Member States to the Advirosy Board on Disarmament Studies for consideration in order to enable it, in its capacity of Board of Trustees of UNIDIR, to give the Institute such possible guidance with respect to the elaboration of its study as it may derive from those views;"

This resolution eventually was adopted by the First Committee of the General Assembly by a recorded vote of 131 to none, with only one abstention, the United States, which, alone, had previously voted against including the recommendation for the establishment of "machinery" (the preliminary term for "world space organisation") as well as that for the study on the consequences of militarizing outer space.

The General Assembly, finally, adopted the Resolution (40/89) on December 12, with 151 votes in favour, none against, and two abstentions (United States and Grenada).

This is where things stand at this writing: A Resolution is in place recommending the estblishment of "machinery" for the purpose both of

. facilitating the management of peaceful uses of outer space (development) with the participation and for the benefit of both developed and developing nations, and

. ensuring the demilitiariztion of outer space and its exclusion from the arms race.

Although there is a Group of Eminent Persons in the United Nations, under the leadership of Inga Thorsson of Sweden, which prepared a report on Disarmament and Development which is of utmost conceptual importance for the evolution of trends examined in the present study, there is, at this time, no institutional framework in the United Nations system to deal with development and disarmament in outer space in their interaction. Disarmament aspects are to

CHAPTER I

The Rise and Fall of the Atomic Development Agency

The detonation of the nuclear bombs over Hiroshima and Nagasaki in August, 1945, generated an unprecedented kind of mood in the country that had perpetrated these acts: a feeling compounded of guilt, fear, and pride. No doubt, the application of nuclear energy to warfare was a crime against humanity: of the magnitude of those to be tried at Nueremberg. No doubt, either, that, for the first time in its history, the United States had become vulnerable. There was no way of keeping the atomic secret. Sooner or later -- rather sooner than later -- others would learn to construct the bomb: in particular, the Soviet Union, in the sinking temperatures of the Cold War, which began as the ashes of World War II were still smoldering. And there could be no defense against the bomb. Other people, in Europe, in Asia, might not care whether they were to be killed by the millions by "conventional bombs" or by nuclear bombs: For the United States, protected by wide oceans against conventional attacks, it made a huge difference. With the nuclear weaponry, they had invented their own destruction.

Guilt and fear, however, left ample room for pride, and reason for pride indeed there was: for the splitting of the atom and the unleashing of its energy was one of the proudest achievements of the human mind. A new era of science had begun, and the economic spin-off, the potential of wealth and welfare it generated, were immeasurable. Never had good and evil lain so close together: World destruction or the building of a new international and economic order could be effected through the very same instrument of nuclear energy. The implications were mind-boggling.

Scientists and Statesmen who, together, had wrought the bomb, now stayed united in their common feeling of guilt, fear, and pride, to try to resolve this fundamental problem of the period following the end of World War II.

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On January 23, 1946, the Atomic Energy Commission appointed a Board of Consultants composed of David Lilienthal, Chairman of the Tennessee Valley Authority; Chester Barnard, President of the N.J. Bell Telephone Company, Robert Oppenheimer of the California Institute of Technology; Charles Allen Thomas, Vice President and Technical Director of the Monsanto Chemical Company, and Harry A Winne, Vice President in Charge of Engineering Policy, General Electric. Since February,this Board met almost continuouly and completed a Report which was transmitted to the State Department and published by the Bulletin of the Atomic Scientists on April 1, 1946 as the Report of the State Department Committee on Atomic Energy. In their letter of transmittal, the Commission (Dean Acheson, Vannevar Bush, James Conant, Leslie Groves, and John McCloy) recommended the report for the consideration of the State Department "as representing the framework within which the best prospects for both security and development of atomic energy for peaceful purposes may be found. In particular, the Commission was impressed "by the great advantages of an international agency with affirmative functions coupled with powers of inspection in contrast to any agency with merely police-like powers, attempting to cope with national agencies otherwise restrained only by a commitment to 'outlaw' the use of atomic energy for war."

The starting point for the report was the political commitment already made by the United States to bring about international arrangements to prevent the use of atomic energy for destructive purposes. "The Agreed Declaration of November 15, 1945, issued by the President of the United States and the Prime Ministers of the United Kingdon and Canada recognizes that the development of atomic energy has placed at the disposal of mankind 'means of destruction hitherto unknown;' that there can be no adequate military defense against atomic weapons and that these are weapons 'in the employment of which no single nation can have a monopoly.'" (It is worth noting that the Report made no reference to the Conference of the Foreign Ministers of the U.K. the U.S.A. and the U.S.S.R. which, on December 27, 1945

decided to propose, together with China, France, and Canada, to the General Assembly a resolution for the establishment of a Commission to deal with problems raised by the discovery of atomic energy and other related matters. the General Assembly unanimously adopted this resolution without change on January 24, 1946.)

The report is based on the recognition "that the basic science on which the release of atomic energy rests is a world-wide science; and that the industry required for the realization of atomic weapons is the same industry which plays so essential a part in man's universal striving to improve his standard of living and his control of nature.."

Given the inextricable connection between warlike and peaceful uses of atomic energy, the Commission came to the conclusion "that there is no prospect of security against atomic warfare in international agreements controlled only by inspection and similar policelike methods."

The fundamental difficulty with an agency established as an instrument of control and inspection only, the report continued, is "that it will inevitably be slow to take into account changes in the science and technology of the field. In a field as new and as subject to technical variation and change as this, the controlling agency must be at least as inventive and at least as well informed as any agency which may attempt to evade control." To the Commission, this clearly indicated that, to be effective as an instrument of control, the Agency must itself engage in research and development. "The facts suggest quite clearly a reasonable and workable system that may provide security, and even beyond security, foster beneficial uses of atomic energy...It must tend to develop the beneficial possibilities of atomic energy and encourage the growth of fundamental knowledge, stirring the constructive and imaginative impulses of men rather than merely concentrating on the defensive and negative." This constructive appliction of atomic energy must be based on a system of cooperation rather than competition. "We believe that so long as nations

or their subjects engage in competition in the field of atomic energy the hazards of atomic warfare are very great indeed."

Such a system can only be based on the legal ownership and development of uranium ore in the hands of an international agency. "If any nation may engage in prospecting for and mining uranium ore, subject to inspection as to the proper use thereof, inspection is a most difficult thing. But if the only legal ownership and development of uranium ore is in the hands of an international agency, the problem of detection of evasions is reduced tremendously. For then it would be true that not the purpose of those who mine or possess uranium ore but the mere fact of their mining or possessing it becomes illegal, and national violation is an unambiguous danger signal of warlike pupose.

> We have therefore concluded that here was an additional reason, and a very practical one, why the development of atomic energy should be vested in the same agency that has also responsibility for developing and enforcing safeguards against atomic warfare. For unless the international agency was engaged in development activities itself, its personnel would not have the power of knowledge or the sensitivity to new developments that would make it a competent and useful protection to the people of the world.
>
> We have therefore reached these two conclusions: (a) that only if the dangerous aspects of atomic energy are taken out of national hands and placed in international hands is there any reasonable prospect of devising safeguards against the use of atomic energy for bombs, and (b) only if the international agency was engaged in development and operation could it possibly discharge adequately its functions as a safeguarder of the world's future.

Section III of the Report, significantly entitled "Security

through International Cooperative Development, gives a summary of the organisational aspect of the proposal: "The international agency might take any one of several forms, such as a UNO Commission, or an international corporation or authority. We shall refer to it as Atomic Development Authority. It must have authority to own and lease property,and to carry on mining, manufacturing, research, licensing, inspecting, selling, or any other necessary operasions."

Nationl activities in the field of research (except on explosives) and the construction and operation of nondangerous power-producing piles would be subject to moderate controls by the international agency, exercised through licensing, rules and regulations, collaboration on design, and the like. The international agency would also maintain inspection facilities to assure that illicit operations were not occurring, primarily in the exploitation of raw materials....

The development agency itself would be truly international in character. Its staff would be recruited on an international basis. It would be set up as one of the subsidiary agencies of the United Nations, but it would have to be created by a convention or charter establishing its policies, functions, and authority in comprehensive terms.

In its operation the development organisation would be governed by a dual purpose, the promotion of the beneficial use of atomic energy and the maintenance of security...It also would have to establish "fair and equitable financial policies so that the contributions of nations and their receipt of benefits from the organisation will be justly apportioned.

The functions of the Atomic Development Authority would be to control world supplies of uranium and thorium. Wherever these materials are found in useful quantities, the Authority must own them or control them under effective leasing arrangements. One of its principal tasks will be to

conduct surveys so that new deposits will be found and so that the Authority will have the most complete knowledge of the world geology of these materials. It will be a further function of the agency constantly to explore new methods for recovering these materials from media in which they are found in small quantities.

All actual mining operations for uranium anad thorium would be conducted by the Authority. It would own the stockpiles of these materials and it would sell the by-products, such as vanadium and radium.

In the field of raw materials, as in other activities of the Authority, extremely diffcult policy questions, with the most serious social, economic, and political implications, will arise. As between several possible mines in different areas, which shall be operated when it is clear that the outputs of all is not presently required? How can a strategic balance be maintained between nations so that stockpiles of fissionable materials will not become unduly large in one nation and small in another? We do not suggest that these questions are simple but we believe that practical answers can be found.

The second major function of the authority would be the construction and operation of atomic reactors and separation plants.

And a third important function would be research activities.

The Authority will have to engage in a wide variety of research activities. for example, it will have to do research in atomic explosives. If it turns out, as a result of new discoveries, that other materials lend themselves to dangerous atomic developments, it is important that the Authority should be the first to know. At that time measures would have to be taken to extend the safeguards.

> While conducting its own necessary research, the Authority must give vigorous encouragement to research in national or private hands...Presumably the Authority from time to time would send its research personnel, in the dual role of research workers and inspectors, to the laboratories in which [these] reactors were used...
>
> Inspection in a wide variety of forms has its proper place in the operations of the Atomic Development Authority....We attach great weight to unifying at the planning stage the requirements of development and control. We also attach great weight to the inseparability of the two functions in the personnel of the Development Authority.
>
> Through the location of the Authority's laboratories in various parts of the world, it should become cognizant of a wide range of research and development activities in various countries. In operating mines, refineries and primary production plants in various countries, the personnel of the Authority will likewise acquire insight regarding the activities and trends in various countries.

The Report concludes with the expression of the hope that the plan, when fully in operation, can do more than provide a great measure of security. "It can establish patterns of co-operation among nations, which may contribute to the solution of the problem of war itself. When the plan is in full operation there will no longer be secrets about atomic energy. We believe that this is the firmest basis of security; for in the long term there can be no international control and no international co-operation which does not presuppose an international community of knowledge."

The proposal was embattled in the United States on two fronts: On one side were the "realists" or "nationalists," to whom it smacked of world government and an inroad on national sovereignty -- those who were "mouthing" about "narrow sovereignty, which is today' phrase for yesterday's

isolation," as Bernard Baruch put it when he presented the proposal to the First Session of the United Nations Atomic Energy Commission on June 13, 1946. On the other side were the genuine world federalists, riding at that time, the crest of their popularity and influence, for whom the American plan was far too narrow in the scope of internationalisation it proposed.

Internationally, the proposal was well received by the Allies, with a great deal of circumspection on the part of the Soviet Union. Th Soviet counterproposal, presented by Gromyko on that same June 13, was politically sound but conceptually far less mature than the American proposal.

Differences between the Soviet and the Western position narrowed down amazingly, and not much was missing for an agreement to be reached. But final success eluded the negotiators. By the end of the year the Baruch plan or Acheson Lilienthal plan as presented by Baruch, was quite dead.

The reasons for the failure were essentially three, none of which touched on the very essence of the proposal. This essence, it seems to me, was less clearly understood than we can understand it by hindsight, and in the light of lessons learned from later experiences, especially the Law of the Sea experiences.

The first reason was intrinsic in the historic situation. The United States had a monopdly of the bomb which it would maintain until after the establishment of the Atomic Development Authority. In other words, this Authority would be created under the threat of the American bomb, and this was politically unacceptable. The U.S.S.R. wanted atomic disarmament first, and then let us talk about the Authority on an equal footing -- but this was unacceptable to the Americans.

The second reason was Baruch's over-emphasis on the retaliatory powers of the Authority. In case of Treaty

violation, the Authority was to be in a position to meet out "swift and condign retaliation," and since such retaliation had to be approved by the Security Council, he demanded the abolition of the veto in the Security Council in matters relating to atomic weaponry. This was a fundamental mistake and totally unacceptable to the Soviet Union.

The third reason was that the hawks at home had their day at the very time these delicate negotiations were in course in Geneva. On July 1, a B-29 dropped another 20-kiloton bomb of the Hiroshima type on a test fleet of 73 ships anchored in a lagoon off Bikini. As Pravda commented, the test "fundamentally undermined the belief in the seriousness of American talk about atomic disarmament." The second Bikini test, on July 25, completed the job. Gromyko stated on July 24th: "...the American proposals, as they are presented now, cannot be accepted by the Soviet Union either as a whole or in parts." There could be no tampering with national sovereignty, a "cornerstone" of the U.N. The abandonment of the veto would be fatal. Elimination of the American stockpile was essential so US and USSR could proceed to practicl steps toward control on a basis of equality.

That was, essentially, the death knell for the Acheson Lilienthal Plan.

Chapter II

Atoms, Oceans, Stars

Twenty-one years later, in August 1967, the Ambassador of Malta, Dr. Arvid Pardo, requested the inclusion of an item in the agenda of the following General Assembly, entitled, "Question of the peaceful uses of the Seabed and Ocean Floor, and the Subsoil thereof, beyond present limits of national jurisdiction."

On November 1, 1967, he formally introduced this item, in his now classical three-hour address to the First Committee of the General Assembly. In that address, essentially, he talked about development and the arms race as Baruch had done before him, and anticipated the arguments, and proposed the same substance and procedure with regard to the deep seabed, or "inner space" which Eduard Shevardnadze was to propose eighteen years later.

He drew the attention of the Assembly to the vast riches hidden on the deep floor of the world ocean which the technological revolution was rapidly making accessible to exploration and exploitation, and which did not belong to any nation. He pointed to the dangers of a military competition to dominate the deep seas. He saw a race developing to carve up the no-man's land of the ocean floor in the way the black continent had been carved up by the colonial powers in past centuries, which would give rise to acute conflict and pollution. He explained how the old law of the sea, based on the premises of the sovereignty of coastal states over a narrow belt of ocean along the coasts and the freedom of the seas beyond this, was being eroded. He suggested that a new concept, the common heritage of mankind, must take the place of the old freedom of the sea. He stressed the ecological unity of ocean space and the interactions between all areas and all uses of ocean space. He concluded by suggesting that the United Nations General Assembly declare the seabed and its resources beyond the present limits of national jurisdiction a common heritage of

mankind, elaborate a set of principles to govern activities relating to the seabed, and then proceed to negotiate a treaty which would both clearly define the limits of the international seabed and create a new type of international organisation to administer and manage its wealth for the benefit of all mankind. The common heritage of mankind would be used for peaceful purposes only, thus excluding the arms race from an area that comprises over two-thirds of the surface of the globe.

Pardo was of course quite familiar with the nuclear disarmment negotiations, but the analogies never crossed his mind. And yet, they are striking.

To begin with, both initiatives were based on the awareness that technological developments had taken place which required adjustments in the international order. Nuclear technology on the one hand, deep-sea exploration and exploitation technologies on the other, were still in their infancy when the respective initiatives were taken. Their full development would be 20 years in the future, but the writing on the wall was clear enough, even though the economics of the new technologies were still wrapped in mystery. Nuclear technology would either generate an arms race that would eventually destroy the world or it would lead to disarmament and make the world wealthier and happier; deep-sea technologies would either lead to a competitive struggle to carve up the oceans, enhancing the nuclear arms race, or this vast part of the earth's surface would be reserved for exclusively peaceful purposes; it would be removed from the arms race and administered for the welfare of all of mankind. The same technologies could be used for peaceful development or for mutual destruction.

To build a regime of peace, the ownership of the resources in question had to be internationalised. An international organison would have to be established to explore, to mine, to process, to market these resources: uranium and thorium, in one case, manganese nodules in the other -- or to issue licences to the private sector or to

States for these purposes; but in any case it would have to control the peaceful uses of these activities, reserving them for exclusively peaceful purposes. In both cases the international Authority would generate an independent income, not dependent on national contributions; in both cases difficult political and economic problems of production control, of distribution, of equity, would have to be faced.

How -- through what institutional structures -- the Atomic Development Authority was to discharge its vast responsibilities, was never discussed, at least not on the governmental level. There was a "Chicago Plan" and a "Carnegie Plan," published in the 1946 volume of the Bulletin of the Atomic Scientists, with some very simplistic suggestions for the institutional framework, which might have consisted of a Commission of 15 and a vast staff under it. It had a strong flavour of technocracy, and it is unlikely that the international community would have entrusted its fate -- including the possession and management of vast raw materials -- to so small an elite. But official international discussions never reached this stage.

In the case of the seabed negotiations, instead, the structure of the Authority was fully discussed and, even though with great difficulties and some reservations, finally accepted.

Far from a technocracy, the Seabed Authority is to be an embodiment of international democracy. Its principal organs are the Assembly, in which each member State has one vote; the executive Council of 36 members, selected partly on the basis of regional, partly on the basis of interest-group representation; a Secretariat composed of international civil servants, and an Enterprise, which is to engage directly in exploration, mining, transport, processing and marketing.

The fundamental weakness of the Seabed Authority, as it

emerged from the negotiations of UNCLOS III, are twofold: First, the part of the Convention that establishes this Authority -- the famous or infamous Part XI -- is overburdened with detail, which is already obsolete even before the coming into force of the Convention. This is largely due to the suspiciousness of the industrialized countries who did not want to leave any discretionary power to the Authority which, they feared would be dominated in its decision-making by the majority of the developing countries. The second fundamental flaw is the so-called parallel system of exploitation. That is, the Authority is to explore and exploit the common heritage of mankind in either one of two ways: through a system of licenses issued to private companies and States, or directly through its own Enterprise. A third modality was much discussed, but embodied in the final text only in a couple of very sketchy articles, and that is, the Authority, or the Enterprise, may enter into joint ventures with companies or states. This would have been the logical way to proceed because ocean mining, in this case, would be carried out on the basis of cooperation between the private sector, States, and the Authority, whereas the "parallel system" is a system of competition between the established industry and the Authority's Enterprise. This caused insoluble problems with regard to the financing of the Enterprise, and the transfer of technology to it, at the cost of its competitors.

in 1977, the Delegation of Austria introduced a working paper showing that another international organisation, INMARSAT, which, like the Seabed Authority,' had to harmonise the activities of States, companies and the international organisation, had been far more successful in creating a system of cooperation rather than competition, but the concept of the "parallel system" had been accepted by now, after prolonged, difficult and painful negotiations, and UNCLOS III was not ready to depart from it any more.

The difficulties of the "parllel system" are continuing in the Prep.Com., and it is more than likely that what will in fact evolve is a joint venture system, advocated in the

Preparatory Commission particularly by the Delegations of Austria and Colombia. There is much to be learned from this experience for the structure of the future Spacae Organisation.

There are still further similarities between the proposed Atomic Development Authority and the Seabed Authority.

In both cases, the institutions to be created would have legal/political as well as scientific aspects; in both cases, they would, themselves, engage in scientific research while assisting and encouraging it in member States. In both cases, the institutions to be created would have the power to inspect all installations within the range of their activities. Both institutions would have to be established by an international Treaty, universally accepted. And in both cases the intention was to create new patterns of cooperation which would be capable of extension to other fields and which might make a contribution towards the gradual achievement of a greater degree of community among the peoples of the world, to use the phrase of Lilienthal and Oppenheimer.

There are, of course, important differences.

Acheson and Lilienthal proposed that the resources in question (Uranium, thorium, the concept to be extended to other resources as may be required by technological change) be declared common property: the Atomic Development Agency would own these resources on behalf of mankind. The Law of the Sea Convention establishes that the resources under its jurisdiction (the mineral resources of the deep sea-bed) are the common heritage of mankind, which, in the best available interpretation -- the interpretation of the man who proposed the concept -- means that they cannot be owned by anybody, or, as the Convention puts it, they cannot be appropriated by anybody, State, company, or individual. The latter concept, of non-ownership, is more suitable for the environmental, technological and international conditions of

today.

Another important difference is that the Atomic Development Agency was conceived "to assure that atomic energy is used for peaceful purposes and preclude its use in war (Baruch). It was intended to serve both development and disarmament. Since both the atomic arms race and the development of nuclear energy for peaceful purposes were based on the same technology, one and the same institution was to serve both purposes. An institution with policing powers only would be inadequate.

This concept was well understood at the time. It was, incidentally, fundamental also to the concept of the Monet/Schuman plan for the European Coal and Steel Community: The internationalisation of the management of coal and steel for peaceful purposes was to prevent a recurrence of militarism in Germany, based on the use of coal and steel for military purposes.

It is amazing that so sound, simple, and basic a principle could be forgotten later on. In the case of the Law of the Sea negotiations, Disarmament and Development, though both intrinsic in the concept of the Common Heritage of Mankind, were quickly separated. Disarmament was to be dealt with by the Disarmament Committee in Geneva, and Development entrusted to the Third United Nations Conference on the Law of the Sea. Only the most fleeting consideration was given to the possibility of uniting them in one institution, the Seabed Authority, when Canada's Alan Beesley introduced a Working Paper on the International sea-bed Regime and Machinery (A/AC.138/59) to the Sea-bed Committee in 1971 which, in para.8, reads as follows:

> "The area shall be reserved exclusively for peaceful purposes, without prejudice to any measures which have been or may be agreed upon in the context of international negotiations undertaken in the field of disarmament and which may be applicable to a broader area. One or more international agreements shall be

concluded as soon as possible in order to implement effectively this principle and to constitute a step towards the exclusion of the seabed, the ocean floor and the subsoil thereof from the arms race."

This principle could be included virtually verbatim in the future seabed treaty, with appropriate modifications reflecting the endorsement by the General Assembly of the treaty prohibiting the emplacement of nuclear weapons and weapons of mass destruction on the seabed and ocean floor. A difficult question that arises here is whether the international seabed machinery should be granted at least the same powers of verification of suspect activities as are granted to states parties under the seabed arms control treaty.

The inclusion of such a provision, on preliminary consideration, would appear appropriate and desirable.

Unfortunately, this Canadian suggestion was never taken up, and the total separation between the disarmament and the development aspects of seabed activities and the lack of coordination and harmonisation between the two separate treaties covering these aspects, has weakened, and continues to weaken, both Treaties.

If the analogies between the proposed Atomic Development Authority and the International Seabed Authority are striking, those between the International Seabed Authority and the World Space Organisation are even more so, both with regard to procedure and substance.

Ambassador Pardo proposed the establishment of a Committee to examine the question; the adoption of a Resolution embodying the principle of the Common Heritage, and the calling of the Third United Nations Conference on the Law of the Sea to adopt a Convention on the Law of the Sea,which should be universally agreed upon. The United

Nations exactly followed the course of action proposed by Malta, and, in 1982, adopted the U.N. Convention on the Law of the Sea which was open for signature from December 10, 1982, when it was signed by 117 States and 2 non-State entities (Council for Namibia and Cook Islands) to December 9, 1984, by which time it had gathered 159 signatures. It now has been ratified by 31 States. Twenty-nine more ratifications are needed for the Convention to come into force, and until then a Preparatory Commission is to prepare for the setting up of the International Seabed Authority and the International Tribunal for the Law of the Sea and regulate seabed exploration through an interim regime.

The procedure initiated by the Soviet Union in 1985 is identical as shown in the Introduction to these pages. Projecting the analogy into the future, one would obtain the following sequence of possible events:

Oceans	Space
1. Placing item on GA Agenda	1. Placing item on GA Agenda
2. Introduction of item in address to GA	2. Introduction of item in address to GA
3. Creation of Ad Hoc Committee	3. Reference to Committee on Peaceful Uses of Outer Space
4. Adoption of Declaration of Principles	4. Adoption of Declaration of Principles (re-examination and further delopment of Outer Space Treaty and Moo Treaty, in consideration of new scien-tific and strategic developments)
5. Preparation of Agenda for UNCLOS III	5. Preparation of Agenda for U.N. Conferen on World Space Organization
6. UNCLOS III	6. UNCWSO
7. Adoption of Convention	7. Adoption of Convention; establishment

establishment of Prep.Com to set up Authority	of Prep.Com to set up World Space Organization

The way travelled by UNCLOS III was long, cumbersome and tortuous. UCNLOS III was a hard, often frustrating school for all who went through it. Many lessons were learned. Just as some fundamentally important lessons can be learned both from the merits and from the failure of the Atomic Development Authority.

In the following pages we shall try to apply some of these lessons to the negotiations that may be initiated to establish the World Space Organisation.

Chapter III

Scenario for the Establishment of a World Space Organisation

1. Declaration of Principles

A Declaration of Principles Governing the Sea-bed and the Ocean Floor, and the Subsoil thereof, Beyond the Limits of National Jurisdiction (Resolution 2749) was adopted on December 7, 1970 (see Annex 1) by 108 votes in favour, none against, and 14 abstentions..

In the style of all U.N. Resolutions, this Declaration first recalls precedents, then points out that a delimitation of the international area and areas under national jurisdiction was needed (which implied a reconsideration of the whole traditional law of the sea); then states that there is, at present, no legal regime for the exploration and exploitation of the resources of the area beyond national jurisdiction, and that such exploration and exploitation of resources shall be carried out for the benefit of mankind as a whole; that, for this purpose, appropriate international machinery should be established as soon as possible; and that the development and use of the area and its resources must be undertaken in such a manner as to foster the healthy development of the world economy and balanced growth of international trade, and to minimize any adverse economic effects caused by the fluctuation of prices of raw materials resulting from such activities.

These are the points covered by the preambular paragraphs. They are almost entirely applicable to the situation in Outer Space, the Moon and other Celestial Bodies.

The Declaration of Principles Governing Outer Space, the Moon and Other Celestial Bodies undoubtedly will make reference to Resolution 40/89, to the Outer Space Treaty, to the Moon Treaty, and some other Treaties and Resolutions. It will affirm that Outer Space is beyond the limits of

national jurisdiction, the precise limits of which are yet to be determined. It will recognize that the existing legal regime of outer space does not provide substantive rules for regulating the exploration of outer space and the exploitation of its resources. Most emphatically it will express the conviction that outer space shall be reserved exclusively for peaceful purposes and that the exploration and exploitation of its resources shall be carried out for the benefit of mankind as a whole; in particular, it should establish that knowledge acquired from Satellites is to be shared by all countries. It will state the belief that it is essential that an international regime applying to outer space and its resources, and including appropriate international machinery, be established as soon as possible.

The final preambular paragraph of the Declaration of Principles on the Seabed was inspired by concern for the problems of land-based producers of the metals expected to be produced from the sea-bed (nickel, copper, cobalt and manganese). The prospect for the exploitation of the resources in outer space does not offer any direct analogy. It is obvious, however, that such exploitation should be undertaken in such a manner as to foster the healthy development of the world economy and balanced growth of international trade.

Most of the 15 substantial paragraphs of the Declaration of Principles on the Sea-bed are applicable to Outer Space.

Outer Space, which is indivisible shall be the Common Heritage of Mankind and its peaceful exploration and use shall be the pronvince of all mankind. All States should take part in its peaceful exploration.

Outer Space and celestial bodies shall not be subject to appropriation by any means by States or persons, natural or juridical, and no State shall claim or exercise sovereigty or sovereign rights over any part thereof.

No State or person, natural or juridical, shall claim, exercise, or acquire rights with respect to outer space or its resources incompatible with the international regime to be established and the principles of this Declaration.

All activities regarding the exploration and exploitation of the resources of outer space and other related activities shall be governed by the international regime to be established.

Outer Space shall be open to use exclusively for peaceful purposes by all States, in accordance with the international regime to be established.

States shall act in outer space in accordance with the applicable principles and rules of international law, including the Charter of the United Nations and the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations, adopted by the General Assembly on 24 October 1970 [Res.2625 (XXV)], in the interest of maintaining internatinal peace and security and promoting international co-operation and mutual understanding.

The exploration of outer space and the exploitation of its resources shall be carried out for the benefit of mankind as a whole, taking into particular consideration the interests and needs of the developing countries.

Outer space shall be reserved exclusively for peaceful purposes, without prejudice to any measures which have been or may be agreed upon in the context of international negotiations undertaken in the field of general and complete disarmament. States shall do everything possible with regard to stopping the arms race in outer space, thereby creating conditions for wide-ranging international cooperation in the exploration and use for peaceful purposes.

In the Law of the Sea negotiations, the precise meaning

of "reservation exclusively for peaceful purposes" was never defined. Perhaps it could be better defined in the Declaration of Principles Governing a Regime for the Peaceful uses of Outer Space.

Just as in the case of the Law of the Sea, the Declaration might state that on the basis of these principles, an international regime applying to outer space and its resources and including appropriate international machinery to give effect to its provisions shall be established by an international treaty of universal character, generally agreed upon. The regime shall, inter alia, provide for the orderly and safe development and rational management of space exploration and the utilization of its resources and for expanding opportunities in the use thereof and ensure the equitable sharing by States in the benefits derived therefrom, taking into particular consideration the interests and needs of the developing countries.

The provisions on marine scientific research are entirely applicable to Outer Space:

States shall promote international co-operation in scientific research exclusively for peaceful purposes:

-- by participation in international progrmmes and by encouraging cooperation in scientific research by personnel of different countries;

-- through effective publication of research programmes and dissemination of the results of research through international channels;

-- by co-operation in measures to strengthen research capabilities of developing countries, including the prticipation of their nationals in research programmes.

No such activity shall form the legal basis for any claims with respect to any part of Outer Space or its

resources.

On international cooperation on technology transfer and development, a great deal of work has been done since the adoption of the L.o.S. Declaration of Principles in 1970. The Declaration of Principles for Outer Space might therefore insert the following paragraph:

States shall promote the co-operation between industry, governments and international organisations in research and development in the technologies required for the exploration and exploitation of outer space for the benefit of both developed and developing countries.

Resuming the thread of the Declaration of Principles on the Seabed, the new Declaration might conclude with a paragraph urging States to take appropriate measures for the adoption and implementation of international rules, standards and procedures for, inter alia:

(a) the prevention of pollution and contamination and other hazards to Outer Space;

(b) the protection and conservation of the natural resources of Outer Space, the Moon and other Celestial bodies.

Just as on the deep sea-bed, so in Outer Space, every State shall have the responsibility to ensure that activities, including those relating to resources, whether undertaken by governmental agencies, or nongovernmental entities or persons under its jurisdiction, or acting on its behalf, shall be carried out in conformity with the international regime to be established. The same responsibility applies to international organisations and their members for activities undertaken by such organisations or on their behalf. Damage caused by such activities shall entail liability.

And, finally, just like in the oceans, the parties to

any dispute relating to activities in outer space and its resources shall resolve such dispute by the measures mentioned in Article 33 of the Charter of the United Nations and such procedures for settling disputes as may be agreed upon in the international regime to be established.

Following the adoption of Resolution 40/89, it would appear that the international community is ready for the elaboration of a Declaration of Principles along these lines and that it might be adopted by consensus. Judging by the voting record on Resolution 40/89, it is even likely that there will be fewer abstentions than in the case of the Declaration of Principles on the Seabed.

2. Adoption of an Agenda

The next step would be the adoption of a Resolution analogous to Resolution 2750, deciding to convene a conference on space law which would deal with the establishment of an equitable international regime, including an international machinery, for international cooperation in the exploration of Outer Space and the utilization of its resources for peaceful purposes, a precise definition of this Space beyond the limits of national jurisdiction, and a broad range of related issues including those concerning the allocation of orbits, the rights of equatorial States, the preservation of the environment (including, inter alia, the prevention of pollution), scientific research and development in space technologies.

In the case of the Law of the Sea negotiations, the preparation of an Agenda for such a Conference turned out to be a task fraught with political problems which took almost three years of work by the Seabed Committee and resulted in a "List of Subjects and Issues Relating to the Law of the Sea" which was adopted by the Committee on August 16, 1972, and formed the basis for the agenda of UNCLOS III. It is likely that the negotiations leading to the adoption of an agenda for a United Nations Conference for a World Space

Organisation will be no less complex and difficult. The following items most likely will have to be taken over from the "List" prepared by the Seabed Committee:

1. International Regime for the reservation of Outer Space for exclusively peaceful purposes and co-operation in the exploration and exploitation of its resources.

    1.1 Nature and Characteristics
    1.2 International Machinery: Structure, Functions, Powers
    1.3 Economic Implications
    1.4 Equitable Sharing of Benefits Bearing in Mind the Special Interests and Needs of Developing Countries
    1.5. Delimitation
    1.6 Security implications: Use Exclusively for Peaceful Purposes
    1.7 Monitoring of Compliance with Disarmament Agreements

Items 2 through 11, on the organisation of ocean space, obviously will have to be adapted, but it is likely that there will have to be an item 2, on the Atmosphere, analogous to the item on the Territorial Sea:

2. The Atmosphere
    2.1 Nature and Characteristics
    2.2 Question of the Delimitation of the Atmosphere. Various Aspects Involved.
    2.3 Freedom of overflight.

In analogy to the item on Coastal State Preferential Rights or other non-exclusive jurisdiction over resources beyond the territorial sea, there might have to be an item on Equatorial State Preferential Rights over geostationary orbits.

The item on the Preservation of the Environment would have to be taken over; so would the items on Scientific Research, Development and Transfer of Technology. Scientific

Research would have to include consideration of the legal status of earth resource monitoring and exploration from satellites; the item on technology would have to include consideration of benefit sharing from industrial activities, such as materials processing, taking advantage of the weightlessness in Outer Space. The item on Artificial Islands and Installations would be replaced by an item on Artificial Satellites. These items might be listed as follows:

3. Preservation of the Environment
   - 3.1 Sources of Pollution and Other Hazards and measures to Combat Them
   - 3.2 Responsibility and Liability for Damage
   - 3.3 Rights and Duties of States
   - 3.4 International Co-operation.

4. Scientific Research
   - 4.1 Nature, Characteristics and Objectives of Scientific Research in Outer Space
   - 4.2 Access to Scientific Information
   - 4.3 Earth-resource monitoring and exploration from Outer Space
   - 4.4. International Co-operation

5. Development and Transfer of Technology
   - 5.1 Development of Technological Capabilities of Developing Countries
   - 5.2 Co-development of Space Technologies
   - 5.3 Training of Personnel from Developing Countries.

6. Artificial Satellites
   - 6.1 Civil and Criminal Liability on Artificial Satellites
   - 6.2 Direct Broadcasting from Satellites
   - 6.3 International Co-operation, telecommunication and communication in emergencies and disaster relief
   - 6.4 sharing of Benefits from industrial processing Activities on Artificial Satellites.

Finally, the following items could be taken over without any modification:

7. Responsibility and Liability for Damage Resulting from the Use of Outer Space (there is already a Convention on this);

8. Settlement of Disputes

9. Peaceful Uses of Outer Space

10. Enhancing the Universal Participation of States in Multilateral Conventions Relating to Air and Space Law.

Such a complex agenda would ensure that the Convention establishing the World Space Organisation would contain Parts corresponding to Parts I-X of the Law of the Sea Convention, codifying and updating all existing air and space law, which now is fragmented in a number of treaties and does not yet cover the economic uses of Space -- corresponding to the situation that existed in Sea Law prior to UNCLOS III.

3. The Functions and Powers of the World Space Organisation

We assume now, an Agenda has been adopted, and the United Nations Conference on the World Space Agency has been called. The international regime will be based on the Declaration of Principles previously adopted.

Perhaps it will be most expeditious to begin the discussion with the functions of the "machinery" to be established, since these function will determine the structure and the powers needed by the organisation.

These functions have been indicated in a number of documents, the most important of which are the statement by Eduard Shevardnadze before the General Assembly (24 September 1985); a TASS Interview with Academician Anatoly Alexandrov, President of the Academy of Science of the USSR,

of December 20, 1985, and, as far as the monitoring of disarmament agreements is concerned, in the Study on the implications of establishing an international satellite monitoring agency: Report of the Secretary General (A/AC.206/14, of 6 August 1981).

The statement by the Foreign Minister provides, so to speak, the roof. He describes the functions with a very broad sweep of the brush. The important point, however is that, as in the case of the Atomic Energy Authority and contrary to that of the Seabed Authority, these functions cover both development (peaceful uses, cooperation with developing countries) and disarmament (monitoring of compliance with disarmament and arms control agreements). The development part is spelled out in greater detail in the interview with President of the Academy of Science USSR; the disarmament part is spelled out in great detail, with all implications, in the Secretary General's Report.

These functions, culled from the three documents, are listed below.

The Soviet Foreign Minister, recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes, and aware of the fundamental contribution that space activities can make both to the economic and social progress of mankind and to international trust, to the implementation of arms control agreements, and to peace and stability, proposed the following functions:

The Organisation is

- to harmonize, co-ordinate and unite the efforts of States in respect of peaceful space activities, including the provision of assistance in that field to developing countries

- and also to facilitate the necessary monitoring of compliance with agreements which have already been concluded

or will be concluded with a view to preventing an arms race in outer space;

The functions proposed by the President of the Academy of Sciences provide the following details:

- to bring together the intellectual, technological and economic efforts of mankind and take it to an immensurably higher level of knowledge of the universe and to the practical use of world space for its own good;

- to facilitate interaction of States in their peaceful activities in space;

- to improve transmission of different forms of information and make it possible to receive television and radio broadcasts in any part of the globe;

- to give warning of such natural calamities as hurricanes, tsumani and the flooding of coastal zones by typhoon waves, save tens of thousands of lives and reduce the enormous economic damage done yearly;

- to make forecasts, including those of weather, harvests, droughts and all kinds of natural calamities;

- to obtain information from space-based studies on the structure of the earth's surface or the peculiarities of processes and phenomena occurring in the oceans (for instance, fishing operations) and watch for forst fires, air and sea accidents, and so on;

- to carry out international projects for the study of outer space and the use of space technology on the basis of scientific and economic resources of different countries;

- to coordinate the activities of other international organisations, already operating today, in the peaceful exploration of outer space;

- to assure, on terms of mutual benefit, the access of all States to the scientific and technological achievements made in the study and exploration of outer space;

- to give aid to developing countries that do not yet have sufficient scientific, technological and also economic strength for getting involved in the study and use of outer space and in the application of the obtained practical results to assist the economic, scientific, and social progress of these countries;

- to promote broader and better cooperation in this field, since it is easier to use space by collective efforts, with the help of the combined intellect of scientists;

- to affect joint launches of interplanetary spaceships;

- to create international space stations and joint expeditions to other planets.

This is a fairly comprehensive list which might well be included in the Convention establishing the World Space Organistion.

The Secretary General's report, it will be recalled, was prepared with the assistance of a group of governmental experts pursuant to resolution 33/71 J of 14 December 1978, requesting a study on the technical, legal, and financial implications of establishing an international satellite monitoring agency as proposed by the Delegation of France during the first special session of the General Assembly devoted to disarmament, held in the spring of 1978. If the tasks of the World Space Organisation include the monitoring, by satellite, of compliance with the provisions of disarmament and arms control agreements, clearly the functions proposed for the International Satellite Monitoring Agency (ISMA) will have to be taken over by the new organisation.

Document A/AC.206/14 stresses, throughout, the dual-purpose character of satellite technology: The same satellites, equipped with the same sensors, can be used for development purposes and to check violations of disarmament and arms control agreements. Para. 45 of the Report thus states that "It has been reported that the United States has plans to test nuclear explosion-detection sensors [arms control] on board a navigation satellite [peaceful uses]. Initial feasibility of this Integrated Operational Nuclear Detection System (IONDS) was conducted during early 1975.

Similarly, para. 48 points out that "Apart from considerable information obtained from Landsat on agriculture, cartography, geology, hydrology and oceanography, it has been reported that some information of a strategic nature, such as roads, railway tracks, airports, depots, etc. may be obtained."

And para 84: "In the United States there is a recent trend to incorporate sensors for both military and civilian missions on the same satellite..."

While, as para. 127 points out, existing and planned civilian remote sensing satellites do not have a capability to ensure a level of performance necessary for detailed observation of crisis areas or for the identification of armaments subject to disarmament agreements, in the future, considerable progress may be expected which could bring the performance of civilian satellites close to military ones used for area surveillance. Such a development, the Report continues, would be of great importance for the establishment of an International Satellite Monitoring Agency [or Space Organisation] since it would make available necessary data from sources other than military surveillance satellites. For this reason, the continued availability of data from civilian satellites will be of significance for future developments in the field of verification of disarmament agreements and crisis monitoring by satellites.

It will be recalled that the proponents of the Atomic Development Authority stressed the difficulty of distinguishing between peaceful and military intentions of nuclear installations, and the difficulty, therefore of monitoring compliance with the prohibition of military uses. The same difficulty would arise with regard to satellites. Who can distinguish a satellite used for peaceful purposes from a spy satellite? The only way to solve this problem is to combine both aspects, to carry out both peaceful research and monitoring of military activities with the same satellites under the control of the World Space Organisation, and to make all data available to that Organisation.

A number of useful functions of a satellite -- or space -- organisation, can be derived from the Secretary's Report.

Some of them really deal with peaceful uses and complement the list of the Soviet proposals:

- classification of geological structures according to their thermal inertia characteristics; detection of surface faults and fractures; possible location of mineral ores;

- measurement of soil moisture;

- surveillance of thawing, which is important for giving warning of flood risks and conserving water resources;

- co-operation with States in Research and Development of Space and Satellite technology and to carrying out such R&D on its own account (see below).

The others deal specifically with arms control and disarmament functions:

- monitoring of compliance with disarmament/arms control agreements; and, specifically:

the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other gases, and of Bacteriological Methods of Warfare (Geneva Protocol, 1925);

The Antarctic Treaty (1959);

the Partial Test Ban Treaty (1963);

the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1967);

the Treaty for the Prohibition of Nuclear Weapons in Latin America (Treaty of Tlatelolco) with additional Protocols I and II (1967);

the Treaty on Non-Proliferation of Nuclear Weapons (NPT) (1960);

the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Sub-Soil Thereof (Sea-Bed Treaty)(1971) (the Report points out that not much can be done with regard to this Treaty, due to the nature of the medium);

the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons and on their Destruction (Biological Convention)(1972); and

the Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques (ENMOD Convention) (1977).

- monitoring of crisis situations, and for this purpose, to provide

early warning of attacks through observation of build-up of military and para-military forces;

evidence of border violation;

cease-fire violations;

cease-fire monitoring;

Assistance to United Nations observers and peace-keeping missions;

strengthening of international confidence-building measures and observation of the use of, or threat to use, force.

This, again, is a wide range of functions and could provide a basis for elaboration in the Convention establishing the World Space Organisation. It will not be easy, however, to reach an agreement.

In the case of the Law of the Sea negotiations, which also covered a wide range of functions, there clearly were two schools of thinking: Aiming at an effective regime, many countries, especially developing ones, wanted a broad range of functions and requisite powers for the Authority. Others, mainly among the industrialized countries, basically distrusted the Authority which they feared would be dominated by developing countries, and accordingly tried to limit its functions and powers as narrowly as possible. The maritime powers, finally, with their navies plowing the world ocean, were adamant in insisting on a separation between peaceful uses, over which the Authority was to have jurisdiction, and military uses, which were to remain a prerogative of the nationl State.

It is likely that a similar alignment will emerge in

the negotiations on the World Space Orgnisation. On the other hand, the nature and characteristics of the medium is likely to force new thinking and impose another solution. The dual nature of the technology: the fact that satellites are used at one and the same time for development and for military purposes, demands a redirection of thinking, away from the seabed negotiations, and back to the essentials of arguments of the proponents of the Atomic Development Authority. In resuming these arguments, the three errors committed at that time by the proponents of the Authority, and which made the proposal unacceptable, should be avoided.

(1) The hen-and-egg argument of Which comes first: Disarmament or the establishment of the Organisation?

The historic situation itself should permit an avoidance of this dilemma. The 1946 negotiations took place in a context in which one side had a monopoly of the technology in question, and already a stockpile of weapons produced with that technology which it was unwilling to give up until the negotiations should have been completed satisfying all its own interests and perceived security needs. In the case of the negotiations on the World Space Organisation, there is no such monopoly: both major negotiators have a far advanced space technology; and "starwars" is still in a phase of research and development. The emphasis should be on interntionlising this research and development as quickly as possible, even on an interim basis while the negotiations for the establishment of the Authority are in course. A large degree of cooperation between the Superpowers in the development of space technology already exists and is in the economic interest of both parties. It needs to be widened and strengthened. This positive approach is far more promising than the negative emphasis on distruction of stockpiles as a condition for negotiations.

(2) Negotiations should in no way touch the basic structure of the United Nations System. The functions of the Authority will be development and control: Management and

monitoring & surveillance, not decisions on retaliatory measures in case of treaty violation. That remains the responsibility of the Security Council, and the structure of the Security Council is not to be touched. The Authority will enhance peace and security through International Cooperative Development, and this is indeed a major contribution.

(3) Obviously, provocatory maneuvres during the negotiations are to be avoided, if these negotiations are conducted in good faith. A voluntary moratorium on military tests in Space while the negotiations are in course would go a long way towards fulfilling this condition.

If these three hurdles can be cleared, it is quite conceivable that, as the Soviet Foreign Minister put it, "There should be no repetition of the mistake made four decades ago when the States and peoples of the world were unable to prevent the great intellectual achievement of the mid-twentieth century -- the release of energy of the atom -- from becoming a means for the mass annihilation of human beings. This folly should not happen again at the end of this century when, having filled the first pages of its space history, mankind is facing a choice -- either space will help to improve the living conditions of our planet or it will become the source of a new mortal danger."

4. The Structure of the World Space Organisation

The Soviet documents have little to say about the structure of the proposed World Space Organization. Perhaps it was thought premature to raise the issue at this time. The Report of the Secretary General (Study on the implications of establishing an international satellite monitoring agency) contains certain broad guide lines: Membership in the Organisation would be open to all States Members of the United Nations and its specialised agencies. There would be three types of membership: Regular Membership, Associate Membership (giving to a State all rights, including participation in the executive body except

the right to vote); and observer status (for nongovernmental or intergovernmental organisations). It migh be noted, in passing, that the Ocean Space Draft Convention submitted by Malta in 1971 provided for a very similar arrangement; a similar arrangement also exists in the Prep.Com.

The legal nature of the Organistion would be that of an independent body, established through a Convention, and responding to the General Assembly (as, for instance, UNCTAD). It would have "international legal personality," enabling it to conclude treaties, enjoy various privileges and immunities in member countries, own property, and enter into contracts with States and other entities. Its principal organs would be an Assembly of States members, with broadly policy-making and electoral responsibilities and the power to approve the budget, etc.; an executive Council, which should be small in order to be effective, and whose powers and functions should include initiation of monitoring, control over the content, format and dissemination of Reports; formulation of policies and programmes, drafting budget proposals, appointment of the Director-General and other senior officials in the Secretariat, etc.; and a Secretariat, consisting of a Director General and a staff of international civil servants.

Financing would be provided through membership fees and, additionally, through voluntary contributions and funds contributed in return for services rendered.

An interesting feature of the organisation would be its dispute-settlement machinery. This would be a panel of arbitrators nominated by Member States, appointed by the organisation's Council and approved by the Assembly, from which parties to a dispute would select the agreed number of arbitrators for each dispute (an arrangement comparable to that of the Permanent Court of Arbitration. The award of the arbitration tribunal would be final and binding, with no right of appeal.

The Secretary-General's Report contains a detailed list

of technical machinery needed by the Organisation for the effective conduct of its monitoring and surveillance activities. These include the following:

- an Image processing and interpretation centre;

a Data Processing Subsystem;

- a Data Management Subsystem

- a Data Analysis Subsystem; as well as

- a Ground segment consisting of receiving stations, mission planning facility, operations control centre, data processing facility, and tracking and command sybsystems; and

a Space Segment, with platform and payload sybsystems, the latter providing for telemetry, manoeuvrability functions, and sensors (optical and IR imaging, microwave imaging radiometers; microwave imaging radars; microwave precision altimeter; nuclear explosion detectors; radio signal receivers). The Space Segment should consist of an

-area surveillance system including one or more satellites;

- close-look satellite system;

- nuclear explosion detection system.

These systems could be developed, specifically designed and adapted for the needs of the organisation by member States; the Organisation could also have its own R&D facility, the Report points out. "An International Satellite Monitoring Agency, " the Report suggests, "might find it advantageous to carry out research to improve some of the technologies thus obtained....Qualfied bodies or industrial firms from member countries within the Agency or outside it could participate in this work, by means of contracts or

other suitable legal instruments. ISMA's technical service, for its part, should have a number of design offices and some laboratories specializing in various technical sectors..." "The results of the work carried out by ISMA on its own account (inventions, technical information, etc.) could be made available to member countries under conditions to be determined. In this matter there are numerous precedents to be found in the constituent legal instruments of international technical organisations such as the European Space Agency."

These systems, it is to be assumed, would function under the direction of the Executive Council, which would have to establish one or more Technical Commissions for this purpose, similar to those to be established by the Council of the Seabed Authority. One of these technical commissions would also be responsible for the monitoring of compliance with arm control and disarmament agreements.

The functions of the World Space Organisation are more comprehensive than those of the proposed International Satellite Monitoring Agency with its emphasis on police action even though even an ISMA would necessrily have to include some research and development functions. The focus of the World Space Organistion is both on control and development. Its institutional framework, therefore, must include the features indicated in the Secretary-General's report on the establishment of ISMA, but, beyond that it will need other institutional arrangements to be able to cope with its development functions. For these it might look for precedents both in the Atomic Development Authority and in the International Seabed Authority.

The proposal for the Atomic Development Authority is all too sketchy with regard to institutional arrangements, and, inasfar as they exist they point in the direction of a restricted technocracy, which today, forty years later, would be unacceptable to the international community. A great deal, instead, could be learned from the Law of the Sea negotiations: both as to what to do, and what not to do.

The Seabed Authority and the World Space Organisation have a number of functions in common, with similar institutionl implication. These functions are:

- the exploration of space and the exploitation of resources which are the common heritage of mankind, taking into particular consideration the needs and interests of the developing countries;

- international cooperation in scientific research exclusively for peaceful purposes;

- cooperation in measures to strengthen research capabilities of developing countries, including the participation of their nationals in research programmes;;

- the prevention of pollution and contamination and other hazards;

- the protection and conservation of the natural resources under the Authority's jurisdiction.

In performing these functions, both the Seabed Authority and the World Space Organisation will have to deal (a) with member States; (b) with intergovernmental organisations; (c) with nongovernmental, often multinational entities such as consortia or multinational companies, thus straddling the spheres of private and public international law.

Both the Seabed Authority and the World Space Organisation must combine features of a political international organisation, and of an operational business; both must have decision-making structures large enough to be representative and "participatory," small encugh tc be efficient. Both must have an operational arm, or Enterprise or Enterprise system.

Both must have the power to tax and to generate an

income independent from membership contributions.

UNCLOS III undoubtedly did some pathbreaking work in designing the structure of the International Seabed Authority for which there is no precedent in the history of international organisation. As pointed out in Chapter II, however, there are some basic flaws, which should be avoided in the negotiations for the World Space Organisation. One is the overburdening with details with built-in obsolescence; the other is to have built a structure which sets established industry and the international organisation on a course of competition and conflict rather than harmonisation and cooperation.

Not much need to be said on the first point. To avoid overburdening with details, negotiations should aim at a framework treaty, not a mass of administrative and financial rules and regulations. There must be some flexibility to adjust to an unpredictable future -- especially when dealing with so new a technology: a technology whose economic implications cannot yet be grasped.

The second point is more challenging. The international community will have to come up with an alternative to the "parallel system." There are three possible precedents which should be studied.

One comes from Space Law itself: the INMARSAT Convention. The second is the current experience of the L.o.S. Preparatory Commission in adjusting the system to get it off the ground; the third is in the emergence of new systems of organising and financing research and development in high technology in general, as exemplified by the EUREKA projects of the European Community.

Since the World Space Organisation will have to deal with exactly the same entities -- States, intergovernmental organisations, and the space industry -- as INMARSAT, it is indeed logical to look for guidance in the structure of this extremely successful organisation, with which the new World

Space Organisation will in any case have to establish a close relationship and, probably, in the longer term, a merger.

The INMARSAT Convention distinguishes between "States Parties" and "Signatories." A "Signatory" is an entity or enterprise, public or private, existing or to be established for the purpose, designated by a State Party to operate within the framework of the Convention. The relations between the State Party and its designated Signatory are regulated by applicable domestic law. The State Party provides guidance and instructions to its Signatory, but is not liable for financial obligations assumed by the Signatory except in certain cases. The INMARSAT Convention provides for an organisation consisting of an Assembly, a Council, and a Directorate. The Assembly, which is the policy-making or "legislative" organ, is composed of representatives of States Parties, each having one vote, on the basis of the sovereign equality of States. The Council, which is the executive and operational arm of the organization, is composed of Signatories.

The Council of INMARSAT is composed of eighteen representatives of those Signatories, or groups of Signatories not otherwise represented, which have agreed to be represented as a group, which have the largest investment shares in the Organisation; and four representatives of Signatories not otherwise representedon the Council, elected by the Assembly, irrespective of their investment shares, in order to ensure that the principle of just geographical representationis taken into account, with due regard to the interests of the developing countries.

The INMARSAT Convention combines in one structure aspects of a (political) intergovernmental organisation and an (economic) enterprise or business. The World Space Organisation has far broader functions and responsibilities, including those dealing with international security. Obviously, decisions on such matters cannot be entrusted to a body composed on the basis of financial interest

representation. One might suggest, therefore, that political questions be dealt with by a political body, whereas technical and economic matters be dealt with by an operational arm, or Enterprise, as was done in the case of the Seabed Authority. In this latter case, however, the separation has not been wholly successful inasmuch as representation in the political body is based on a complex combination of regional and interest-group representation, whereas the governing board of the Enterprise is composed of international civil servants, with no interest representation.

For the World Space Organisation one might suggest a model taking elements both from the Seabed Authority and INMARSAT. For instance, there might be a Council of 36 Members, as in the Seabed Authority, but they might simply be elected on the basis of regional representation, as now happens for the General Committee of the Preparatory Commission, which equally consists of 36 members elected on a regional basis and is to assume the executive functions of the Authority's Council in the interim period until the coming into force of the Convention. The Council of the World Space Organisation will be responsible for a wide range of functions, as outlined above, including those related to international security.

The Operative arm of the World Space Organisation, which is a technical Enterprise in which the aero-space industries will make investments, might be composed, not of international civil servants, but of "Signatories," and they should be represented in proportion to their investment shares. There might be established, furthermore, not one giant enterprise in charge of performing all the different operations of the World Space Organisation, but a series of decentralised enterprises or "projects," each one different from the others according to the functions entrusted to it. Each one might be directed by a board composed of members half of which would be Signatories who made the largest contribution to the project or enterprise, while the other half might be elected by the Assembly on the proposal by the

Council, in such a way as to ensure fair regional represention and full participation by developing countries. The investments also would be divided along these lines: The World Space Organisation would contribute half of the investment cost, the other half would come from States Parties and Signatories.

Which takes us to the third one of the above mentioned precedents to be looked into: The joint arrangements for research and development in high technologies in EUREKA.

Under the EUREKA scheme, industrial enterprises submit joint project proposals to their own national coordinators, which make a selection which then is discussed and refined by the meeting of all national coordinators, and, finally, through them submitted to a Conference of Ministers where the project would be finally adopted. Projects adopted by the Conference of Ministers are financed half by the industrial enterprises that made the proposal and by the Governments of participating States, and half by the EEC. Technologies resulting from projects adopted by EUREKA and developed and financed jointly are accessible to all its member States and participating industries.

Adapting this model to the requirements of the World Space Organisation, one could envisage the following scheme: Industrial enterprises submit joint project proposals to the Signatory designated by their Government, who will make the selection, which then is discussed and refined by the meeting of all Signatories and, finally, through them, submitted to the Council of the World Space Organisation where the project would be finally adopted. Projects adopted by the Council of the World Space Organisation are financed half by the industrial enterprises that made the proposal and by the Governments of participating States, and half by the World Space Organisation or, through it, by public international funding agencies.

A scheme like this provides the only possible alternative to financing by the military as in the case of

"star wars." This is the practical shape "star peace" might take. It benefits the industrialized countries, who save up to 50 percent on their investments in R&D; it benefits the developing countries who are given an opportunity to participate directly in the management of an enterprise in R&D in high technology, with beneficial spin-off effects on domestic development; and, by removing these technologies from military control and internationalising them, it enhances peace and security and benefits all people and the international community.

A scheme of this sort, under the name of JEFERAD (Joint Enterprise For Exploration, Research And Development) was introduced by the Delegation of Austria in the Preparatory Commission in 1983. It could not make much headway so long as the fundamental operational difficulties of the Prep.Com. remained unresolved. These difficulties now have been resolved, and it is quite possible that a Joint Enterprise for the exploration of the first mine site that has been allocated to the future Enterprise, and for the necessary R&D in mining and processing technology, will be established by the "Pioneer investors." This is in fact the place where ocean mining might get off the ground, since the necessary investments are too high for individual consortia or States. The only way to get the necessary R&D financed is through cooperation between the private sector, States, and the international organisation.

The negotiations for the World Space Organisation may profit greatly from studying these developments.

Chapter IV

Canada and the World Space Organisation

Space technology , comprising micro-electronics, laser, particle beams, materials technologies and others, has been developed largely under military auspices. However, it has already been commercialised to a surprising degree, and Canada is one of the leaders in the industry.

A recent article in the Toronto Star (Sunday, March 23, 1986) by Kathryn Warden, entitled "Launching Factories into Space," gives a good overview over Canadian investments and prospects in the space industry.

A USA business group, Warden reports, the Center for Space Policy, predicts that the market for space-made goods will exceed $50 billion in the year 2000. And a recent study commissioned by the Canadian government estimated that creating materials in outer space will be a $200-million-a-year business for Canadian firms by the year 2000. Production, now in the R&D stage, will include capsules of insulin-producing cells which are to be injected into diabetes patients once a year, or even less frequently, to abolish dependence on daily insulin injections: a splendid example of joint venture between bioengineering and space technology. The same company, Canadian Astronautics, has also entered an agreement with Canadian zinc mining company, Cominco Ltd. and a Canadian instrument supplier, Aptec Engineering Ltd. to develop larger and purer semi-conductor crystals, made from the zinc by-product germanium, than can be produced on earth. These would primarily be used to construct more sensitive scanners for cancer and radiation detection as well as for determining the grade of oil in pipes.

Another Toronto-based company, Honeywell Ltd., together with Noranda of Montreal, will be exploring the production of gallium arsenide semi-conductors in space. These will be used to produce faster computers.

Yet another company, BM High Tech. Inc. in Collingwood is presently engaged in research and development in space-produced ultra-pure glass for lasers.

These are just some major examples. Canadian High Technology, within which space technologies occupy a central place, has much to offer, nationally and internationally.

The difficulties facing Canadian space industries are of three kinds. One, as pointed out by Warden in conclusion of her article, is investment in research and development. Most countries recognize, she points out, that making new materials in space is such a high-rik business that government support is needed, at least initially. The United States Government spent US$35 million in 1986 for R&D in materials processing in space. of these, $14.5 was given to University centres for the commercial development of space. Grants to the University must be matched by equal amounts from industry. The European Space Agency, representing 12 countries, is spending Ca$ 30 million a year on research and development in materials processing in space ("micro-gravity research"); during the next two years this amount is projected to rise to about $80 million. Canada, instead, is only spending $800,000, and there are no centres devoted to commercial development of space.

The second difficulty is one faced by all space industries, not the Canadian only: And this is the scarcity of launching facilities. Since the failure of the American launching system, some U.S. companies have shifted from the shuttle to Europe's Ariane system (See Time, June 9, 1986) Arianespace has boosted its prices by about 30 percent, so that each launch now costs about $35 million. Besides, it is already overbooked, with only eight launches still open through 1988, and that is not enough to take care of global demand. NASA seems reluctant to re-open its facilities to other countries and to the private sector, while for the private sector, on its own, the building of launches is simply too costly.

The third problem facing he space industry as a whole is the legal regime governing Space. This regime does not cover the economic uses of space, and there are too many uncertainties as to ownership, rights, duties, and liabilities of private parties. The industry is reluctant to make further, huge investments before the law, national and international, catches up with industrial/technological development.

"As these ventures proceed it will be essential for the men of law to read each fresh page of scientific discovery, to wait upon the replies of science to many questions still unresolved, and to be constantly mindful of the changing needs in the field of law which may be attendant on new achievements", as Manfred Lachs put it in his classic, The Law of Outer Space (Leiden: Sijthoff, 1971). The situation is very much the same as it was with regard to the deep seabed prior to UNCLOS III. Public and private entities (e.g., the American Bar Association) have established special branches or committees to study the question, and it appears there is a growing demand for space lawyers, or astrolawyers.

A great deal of attention is being given by astrolawyers to the question of dispute settlement in space.Just as in the study of the Secretary General on the International Satellite Monitoring Agency, astrolawyers favour arbitration: arbitration in space to a confrontational system. "How else can disputes be resolved when you're in space for three months? There's no court, no judge, and you can't fly back to earth. The solution is some type of arbitrator or neutral party who can make a final decision." Professor Ray Britton of the Houston Law school said, according to an article, "The New Frontier," by Eileen O'Grady, published recently in the Sky magazine (Delta Lines Inflight Magazine, January, 1986).

All three problems -- investment, launching facilities, and legal framework could best be solved by a Convention establishing a World Space Organistion.

Canada would appear to have a vital interest in such a development, from an economic, a political, and a security point of view.

Economically, a World Space Organisation, conceived along the lines here discussed, would offer the best hope for Canadian space industries to get really off the ground.

Canadian High Technology as a whole is affected by the same investment malaise. A major study, about to be published under the direction of Roy Woodbridge, president of the Canadian Advanced Technology Association, stresses the need for private/public international cooperation on the EUREKA pattern to solve this problem. Assembling the efforts of about 220 experts from industry, government and the universities, this study devotes one of its five sections to the problems of "Linking National Strengths" which means, "to look at ways of strengthening Canada's involvement in developing leading-edge technologies by building links between industry, governments and education. The idea here is to help co-ordinate R&D along the lines of projects such as Europe's EUREKA." Canada, however, is not part of the European Community, and its political orientation is somewhat different. Canadian interests would be served better if instead of "going European" or "going USA," it could find a way to include the Third World into the process. This would be in line with, and strengthen, Canadian foreign policy while, at the same time, creating new market opportunities together with alleviating the investment problem. A World Space Organisation, with an operational arm modelled after the EUREKA projects, might do just that, at least for one important branch of Canadian High Tech, including materials, lasers, micro-electronics and the bio-industries.

In assuming leadership in building a synthesis between the various proposals now before the United Nations -- especially the French and the Soviet proposals -- and moving towards the establishment of a World Space Organisation,

Canada would make an important contribution towards strengthening the United Nations system: again, a course of action entirely consistent with Canadian foreign policy and apt to strengthen that policy.

Canada has been throughout one of the leaders in the Disarmament Committee and made important contributions to the discussions on international law relevant to arms control and outer space, which, obviously, is of crucial importance for Canadian security. It may be sufficient to refer to the Canadian Working Paper (CD/618 CD/OS/WP.6) of 23 July, 1985. The task ahead would be to link the disarmament aspect with the development aspect. Canada has an equal stake in the advancement of both. In these pages we have tried to give the rationale for joining them. The forum now exists. Canada has very much to gain, and nothing to lose, from an attempt to play a major role on this forum.

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Annex 1

RESOLUTION 2749 (XXV): 17 DECEMBER 1970—Declaration of principles governing the sea-bed and the ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction

Adopted by 108 votes to none, with 14 abstentions.

The General Assembly,

Recalling its resolutions 2340 (XXII) of 18 December 1967, 2467 (XXIII) of 21 December 1968 and 2574 (XXIV) of 15 December 1969, concerning the area to which the title of the item refers,

Affirming that there is an area of the sea-bed and the ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction, the precise limits of which are yet to be determined,

Recognizing that the existing legal régime of the high seas does not provide substantive rules for regulating the exploration of the aforesaid area and the exploitation of its resources,

Convinced that the area shall be reserved exclusively for peaceful purposes and that the exploration of the area and the exploitation of its resources shall be carried out for the benefit of mankind as a whole,

Believing it essential that an international régime applying to the area and its resources and including appropriate international machinery should be established as soon as possible,

Bearing in mind that the development and use of the area and its resources shall be undertaken in such a manner as to foster the healthy development of the world economy and balanced growth of international trade, and to minimize any adverse economic effects caused by the fluctuation of prices of raw materials resulting from such activities,

Solemnly declares that:

1. The sea-bed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction (hereinafter referred to as the area), as well as the resources of the area, are the common heritage of mankind.

2. The area shall not be subject to appropriation by any means by States or persons, natural or juridical, and no State shall claim or exercise sovereignty or sovereign rights over any part thereof.

3. No State or person, natural or juridical, shall claim, exercise or acquire rights with respect to the area or its resources incompatible with the international régime to be established and the principles of this Declaration.

4. All activities regarding the exploration and exploitation of the resources of the area and other related activities shall be governed by the international régime to be established.

5. The area shall be open to use exclusively for peaceful purposes by all States, whether coastal or land-locked, without discrimination, in accordance with the international régime to be established.

6. States shall act in the area in accordance with the applicable principles and rules of international law, including the Charter of the United Nations and the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations, adopted by the General Assembly on 24 October 1970

[RES. 2625 (XXV)], in the interests of maintaining international peace and security and promoting international co-operation and mutual understanding.

7. The exploration of the area and the exploitation of its resources shall be carried out for the benefit of mankind as a whole, irrespective of the geographical location of States, whether land-locked or coastal, and taking into particular consideration the interests and needs of the developing countries.

8. The area shall be reserved exclusively for peaceful purposes, without prejudice to any measures which have been or may be agreed upon in the context of international negotiations undertaken in the field of disarmament and which may be applicable to a broader area. One or more international agreements shall be concluded as soon as possible in order to implement effectively this principle and to constitute a step towards the exclusion of the sea-bed, the ocean floor and the subsoil thereof from the arms race.

9. On the basis of the principles of this Declaration, an international régime applying to the area and its resources and including appropriate international machinery to give effect to its provisions shall be established by an international treaty of a universal character, generally agreed upon. The régime shall, *inter alia*, provide for the orderly and safe development and rational management of the area and its resources and for expanding opportunities in the use thereof and ensure the equitable sharing by States in the benefits derived therefrom, taking into particular consideration the interests and needs of the developing countries, whether land-locked or coastal.

10. States shall promote international co-operation in scientific research exclusively for peaceful purposes:

(*a*) By participation in international programmes and by encouraging co-operation in scientific research by personnel of different countries;

(*b*) Through effective publication of research programmes and dissemination of the results of research through international channels;

(*c*) By co-operation in measures to strengthen research capabilities of developing countries, including the participation of their nationals in research programmes.

No such activity shall form the legal basis for any claims with respect to any part of the area or its resources.

11. With respect to activities in the area and acting in conformity with the international régime to be established, States shall take appropriate measures for and shall co-operate in the adoption and implementation of international rules, standards and procedures for, *inter alia:*

(*a*) The prevention of pollution and contamination, and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment;

(*b*) The protection and conservation of the natural resources of the area and the prevention of damage to the flora and fauna of the marine environment.

12. In their activities in the area, including those relating to its resources, States shall pay due regard to the rights and legitimate interests of coastal States in the region of such activities, as well as of all other States, which may be affected by such activities. Consultations shall be maintained with the coastal States concerned with respect to activities relating to the exploration

of the area and the exploitation of its resources with a view to avoiding infringement of such rights and interests.

13. Nothing herein shall affect:

(*a*) The legal status of the waters superjacent to the area or that of the air space above those waters;

(*b*) The rights of coastal States with respect to measures to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat thereof or from other hazardous occurrences resulting from or caused by any activities in the area, subject to the international régime to be established.

14. Every State shall have the responsibility to ensure that activities in the area, including those relating to its resources, whether undertaken by governmental agencies, or non-governmental entities or persons under its jurisdiction, or acting on its behalf, shall be carried out in conformity with the international régime to be established. The same responsibility applies to international organizations and their members for activities undertaken by such organizations or on their behalf. Damage caused by such activities shall entail liability.

15. The parties to any dispute relating to activities in the area and its resources shall resolve such dispute by the measures mentioned in Article 33 of the Charter of the United Nations and such procedures for settling disputes as may be agreed upon in the international régime to be established.

Annex 2

STATUS OF MULTILATERAL AGREEMENTS RELATING TO OUTER SPACE

		Opened for Signature	No. of Parties as of (date)	
1.	Charter of the United Nations	1945	158	31 March 1984
2.	Antarctic Treaty	1959	32	31 December 1984
3.	Partial Test Ban Treaty	1963	111	31 December 1984
4.	Outer Space Treaty	1967	92	31 December 1984
5.	Treaty of Talatelolco	1967	29	31 December 1984
6.	Rescue & Return Agreement	1968	79	31 March 1984
7.	Non-Proliferation Treaty	1968	127	31 December 1984
8.	Seabed Treaty	1971	81	31 December 1984
9.	Convention on International Liability for Damage Caused by Space Objects	1972	72	31 March 1984
10.	Biological Weapons Convention	1972	104	31 December 1984
11.	Registration Convention	1975	32	31 December 1984
12.	Environmental Modification Convention	1977	54	31 December 1984
13.	Moon Treaty	1979	4	31 March 1984
14.	International Telecommunications Convention	(a) 1973	156	31 March 1984
		(b) 1982	8	30 June 1985

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Comments on "Some Preliminary Thoughts on the Establishment of a World Space Organisation," by Elizabeth Mann Borgese

NOTE: The reviewers of this paper found it an interesting and insightful piece of work. In accordance with CIIPS procedure, we have appended the following detailed comments intended to improve it prior to final assessment for publication. Naturally, the author is under no obligation to incorporate all of the proposed changes, or respond to each and every one of the detailed criticisms, with some of which she may disagree. However, the comments are offered in a constructive spirit, and it is hoped that they will prove helpful in the revision of the manuscript.

Comments on Borgese Ms.

Executive Summary

1. p.i (top) - can one really judge whether the Soviet motivation in putting forth its WSO proposal was "almost identical" to the impulse behind the LOS negotiations?

2. p.i, 3rd para. - the author speaks of "forthcoming negotiations" as if they have already been agreed to, which is far from the case.

3. p.i (bottom) - how can the ADA negotiations of 1946 be said to "give substantial support to" the principle of linking disarmament and development, when those negotiations clearly failed; the "lesson" would, rather, seem to be not to join the two (except, of course, that the linkage was not the reason for their failure).

4. p.ii (top) - what, precisely, is the "new, positive approach" to the dilemma of which comes first, disarmament or the establishment of the Authority? Is the "dilemma" really as stark as is suggested here? (I.e., aren't some measures of outer space arms control already in place, and can't others short of total demilitarization be imagined to precede or coexist with the Authority?)

- the call for a "voluntary moratorium on military research in outer space" is far too all-encompassing, going well beyond what even the Soviet Union would accept.

5. p.ii, 1st full para. - there appears to be some confusion between "lessons" and "basic concepts"--many of the basic concepts may indeed be transferable, but this is not the same as "lessons" learned from experience, i.e. in the practical politics of such proposals.

Introduction

6. p.4, para.1 - simply mentions that the Soviet Union withdrew its draft resolution on a WSO; no indication of why (i.e., opposition of other states; according to DEA, the proposal "flopped," lacking support from the NNA).

7. p.4, para.2 - not true that the Soviet initiative "triggered" other resolutions; the latter were perennial ones, having to do with outer space arms control.

8. p.5 ff. - failure to distinguish among "peaceful uses," "arms race," "militarization," "weaponization," etc.—all critical terms, in the case of outer space as with the seabed.

9. p.6 - misleading characterization of GA Resln. 40/87 (mis-labelled as 40/89) as "recommending the establishment of 'machinery' for...ensuring the demilitarization of outer space and its exclusion from the arms race." The actual text only invited Members to submit views on "the desirability of establishing relevant machinery for" "preventing an arms race in outer space" (thus, it neither recommended establishment of such machinery, nor endorsed "demilitarization"--cf. note 8 above). Furthermore, 40/87 is essentially an arms control resolution recommending how the Conference on Disarmament should proceed with outer space (while, incidentally, reiterating the CD's "primary role in the negotiation of a multilateral agreement or agreements"); the reference to "enhancing international co-operation in the...peaceful uses of outer space" is almost incidental--Members are invited to submit their views on the "possibility" of doing so.

- also: exaggerates degree of consensus by failing to note that a separate vote on Op. para.5 found no fewer than 21 states (including Canada, Australia, France, West Germany, and the UK) abstaining on the call for views on "machinery" (the US and Grenada opposed it outright).

10. p.6 - presentation of UN draft resolutions quite confusing--e.g., it is unclear what Resolution 40/89 refers to in para.2; or which resolution is being referred to in para.3.

11. p.7 (top) - CD vs. COPUOS described as "artificial separation of a joint issue" which "does not facilitate the efficient preparation for the implementation of the Resolution." This is questionable, and needs more elaboration. What is the realistic alternative, given the Soviet Union's own preference for the CD and its condition that "non-militarization" must precede the WSO?

- "now generally recognized that there can be no development without disarmament and no disarmament without development": also too categorical, and open to question.

- "The separation of the two issues...may have been the single most important cause for the dishearteningly slow progress of both development and disarmament" : see comment above.

- "establishing 'machinery' to advance both development and disarmament...may be the most important aspect of the Soviet proposal": how so, given that the WSO (in Soviet eyes, at least) presupposes demilitarization?

Chapter 1--Atomic Development Agency

12. (general) - excessively long quotations, accounting for the major portion of the text; almost entirely descriptive (e.g., 7 pp. of description on Acheson-Lilienthal, with less than 2 pp. on why it failed).13. p.8, para.1 - "the application of nuclear energy to warfare was

against humanity": a matter of opinion, rather than fact; perhaps unnecessarily provocative and inflammatory.

14. p.16 (top) - need to elaborate further on why the proposed abolition of the Security Council veto was "a fundamental mistake," other than it being unacceptable to the Soviet Union.

15. p.16, 1st full para. - effect of atmospherics (Bikini nuclear tests) questionable; relies entirely on rhetoric of Pravda and Gromyko.

Chapter 2--Atoms, Oceans, Stars

16. p.18, para.2 - "Nuclear technology would either generate an arms race that would eventually destroy the world or it would lead to disarmament": too categorical.

17. p.22, para.3 - complains that Disarmament and Development were "quickly separated" in the LOS negotiations; yet that may have been the only reason the latter got as far as they did; the US made it clear from the beginning that it wouldn't countenance otherwise.

- mischaracterization of Beesley proposal for Seabed Authority to be granted arms control verification powers as "uniting them [Disarmament and Development] in one institution"; Canada always fully supported reference of arms control aspects to the CD; Beesley was only suggesting that the Authority might "be granted at least the same powers of verification...as are granted to states parties under the seabed arms control treaty." This is somewhat analogous to the paper's treatment of the Soviet WSO proposal, which speaks only of "helping" to monitor observance of arms control agreements, not to negotiate them itself or take over full verification responsibilities. There is a need for greater precision here.

18. p.23, para.3 - does not explain precisely how, in the case of the LOS Convention and Seabed Treaty, "the lack of coordination and harmonisation between the two separate treaties covering these aspects [Disarmament and Development], has weakened, and continues to weaken, both Treaties." This is questionable.

19. pp. 24-25 - need for more detail re prospects of LOS Convention, particularly in light of original objectives (to what extent have they been fulfilled? what uncertainties remain? does the Convention actually have a realistic chance of coming into force?).

Chapter 3--Scenario for the Establishment of a WSO

20. pp. 26ff - no indication of which of the proposed principles are already found (i.e., commonly accepted by the international community) in the Outer Space Treaty, Moon Treaty, etc., and which are not. This is far more important than the simple analogy to the seabed/LOS. Also useful would be a discussion of how UNCLOS has failed, insofar as it has failed (relative to Pardo's initial proposals); and what lessons can be derived from this experience (focusing on the practical politics, rather than process/procedure/principles) for the proposed WSO.

21. p.27 (top) - simply states as a given, without explaining why, that "it is essential that an international regime...including appropriate international machinery, be established as soon as possible."

22. p.31, 1st full para. - "Following the adoption of Resolution 40/89 [sic], it would appear that the international community is ready for the elaboration of a Declaration of Principles along these lines and that it might be adopted by consensus": grossly optimistic, given the vote on 40/87; cf. note 9.

23. p.35, 1st full para. - the Soviet framework, which the author apparently commends, appears modeled more after the LOS Convention than the ADA, given that the latter was to hold a monopoly over all mining and development of uranium ore (pp.11-14), while the Soviet emphasis in regard to a WSO is on "harmonizing," "coordinating," and "facilitating" the efforts of states in respect of their own national activities in space.

24. p.37 (bottom) - last sentence is a tautology.

25. p.38, para 1 - citation from UN report referring to dual-purpose (disarmament/development) character of technology is useful, but overly restrictive (e.g., nuclear explosion-detection sensors are intended as adjuncts to nuclear war-fighting, by helping gauge the success of an attack and indicating where additional weapons should be targeted, not simply to verify compliance with the PTBT; and navigation satellites such as NAVSTAR are similarly critical to nuclear war-fighting strategies, e.g. by greatly enhancing the accuracy of SLBMs for use in a counterforce strike. This raises the questions, which are at least as interesting or important, of how an arms control agreement is to be verified, and whether it is realistic--or even desirable--to speak of the "non-militarization" or "demilitarization" of space.)

26. p.39, para.1 - once again, "peaceful" and "military" are treated as mutually exclusive. In fact, the deliberations concerning the ADA made it clear that the distinction was between weapons applications of nuclear energy, and its applications for other purposes (pp. 9-11) (e.g., there does not appear to have been any objection to the use of nuclear power for warship propulsion). Hence, to speak of a "prohibition of military uses" is

wrong. There is a need for more precision here.

- The reference to the "monitoring of military activities" seems a little odd, given the apparent presupposition that all military activities are to be banned.

- Combining peaceful research and monitoring of military activities in an international satellite does not, in fact, "solve the problem" of verifying whether some other satellite is being used for "peaceful purposes" or "spying" (unless the implication is that all satellites will be under the control of the WSO, analogous to the ADA. If so: Is this realistic? Would the Soviets themselves, e.g., accept it? It clearly goes well beyond the ISMA proposal.) In any case, the distinction here between "peaceful purposes" and "spying" may be insupportable, given that satellite surveillance and reconnaissance appear to have won legitimacy in international law and are certainly considered "peaceful," at least insofar as they are (already) used to monitor arms control agreements.

27. p.40 - listing of existing arms control agreements (with formal titles) is unnecessary.

28. p.41 (bottom) - again, Western maritime powers do not accept the distinction between "peaceful uses" and "military uses"; neither does the Soviet Union, in practice.

29. p.42 (top) - again, appears to be assuming the inevitability of negotiations on a WSO; on what basis? (Surely, even just reaching the stage of negotiations would have to be considered a major accomplishment).

- suggestion that "nature and characteristics of the medium" of outer space are sufficiently different from the world ocean as to "force new thinking and impose another solution": need for elaboration here; the

differences are not all self-evident (in fact, space and the world ocean are in many respects similar; the military certainly talks of an equivalent to freedom-of-the-seas); the "dual nature of the technology" is true of much marine technology as well.

30. p.42, para.2 - the fact that neither superpower holds a monopoly on space technology is insufficient in itself to resolve the "hen-and-egg" argument of which comes first, disarmament or the establishment of the Organisation (the Soviets in their proposal make clear their own preference, but whether this would be accepted by Washington--even if the latter were favourably disposed to a WSO--is doubtful).

- The expectation of "internationalizing" "starwars" research and development, based on the already-existing "large degree of cooperation between the Superpowers in the development of space technology," may be too sanguine, given the perceived critical nature of the enterprise to national security, and needs elaboration (especially the latter point, which seems doubtful).

31. p.42 (bottom) and 43 (top) - statement re sanctity of the Security Council seems rather categorical; might not some "tampering" (or rather, recourse to another body) be considered, so as to remove or alleviate the problem of the veto power?

32. p.43, 1st full para. - call for voluntary moratorium on "military tests in space" is far too vague; what, exactly, is meant by "military tests"? (if interpreted literally, would clearly be unacceptable to the Western powers and probably others).

33. p.43, 2nd full para. - lengthy quote from Shevardnadze is a repetition from p.2.

34. p.48, 2nd full para. - points about a "framework treaty" and "flexibility" are too vague; need elaboration.

35. p.48 (bottom) - need for some explanation of what INMARSAT is (what does it do?).

36. pp. 51 (bottom) and 52 (top) - too categorical; is it really "the only possible alternative"? (What about "Eureka"?).

37. p.52 (top) - lists all the advantages of the scheme, making it appear unassailable, without attempting to anticipate possible objections, e.g. from the industrialized states who may feel that they are being overly burdened (given their likely share of the contributions to the WSO or "public international funding agencies"); need for greater balance here, if only to strengthen the argument.

- again, reference to "removing these technologies from military control and internationalising them" appears to go well beyond the mandate of even the Soviet proposal (let alone what might be acceptable to the West); whether this would actually enhance peace and security, under present international conditions (especially if it relied on a Security Council subject to Great Power veto), is also open to debate.

38. p.52, 1st full para. - reference to "fundamental operational difficulties of the Prep. Com." and to their being resolved needs elaboration.

- are the necessary investments really "too high for individual consortia or States"?

Chapter 4--Canada and the WSO

39. (general) - appears too dependent on a relatively few newspaper articles; might make better use of primary sources--government reports, etc.

40. p.53, para.1 - Is it really true that "space technology...has been developed largely under military auspices"? (certainly not in Canada or Europe; and was the Apollo program militarily-driven?)

41. p.53, para.3 - Is the Center for Space Policy estimate of $50 billion a credible one? How does it compare with other estimates?

42. p.55, para.3 - The reference to "arbitration in space" (based on an in-flight magazine article) seems a little bizarre, and is perhaps unnecessary.

43. p.56, para.3 - The argument about Canadian interests lying more with a global organization (involving the Third World) than with "Eureka" appears rather forced and unconvincing; needs strengthening.

44. p.56 (bottom) - With reference to "building a synthesis between" the French and Soviet proposals, it would be interesting to examine why the Soviet Union has so far opposed the ISMA scheme.

45. p.57 (bottom) - unclear what the reference to "the forum" is; if the UN, this is nothing new; if the WSO (or even just a preparatory conference), this is still a distant prospect at best.

- Conclusion suggests that aim of the paper has been to give a rationale for joining the disarmament and development aspects of outer space; however, aim is earlier stated as much broader and more objective, i.e., "to assess the main achievements and main shortcomings and failures,

whether substantial or political, of both the atomic and the seabed negotiations and to draw some lessons...for the establishment of a WSO"(i); need to strengthen Conclusion along these lines.

- also: rationale for joining disarmament and development aspects is hardly strengthened by the fact that your most successful example—the LOS Convention--declined to do so from the beginning. Of course, this is a question of precisely how "success" is to be defined; if in terms of "development" alone, the LOS Convention might be judged modestly successful; if in terms of development and disarmament, then it is, of course, a failure; but the one example where the two were to be combined—the ADA--was an unmitigated failure in practice (except insofar as it may have ultimately led to the IAEA, which does contribute to both disarmament and development, and which, as an example of at least limited success, is perhaps a better analogue than the ADA).

Revised Edition

46. p.54, para.2 - unnecessary to discuss role of Maritime Provinces in Canadian space programme.

47. p.54 (bottom) - should not rely on a single Globe and Mail article for information on Canadian outer space arms control verification activities; could refer to DEA materials.

48. p.55 (top) - why is it "obvious that the development of these technologies would benefit greatly from association with a WSO"? (need for elaboration); remainder of sentence is a tautology.