TESTIMONY FOR THE JOINT HEARING OF THE SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY AND THE SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURAL RESEARCH AND ENVIRONMENT
March 15, 1984

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I should like to express my thanks for the opportunity to testify before the joint hearing and to express to these distinguished members of Congress my views about United States participation in UNESCO science. My interest in UNESCO stems from service as a member of the United States delegation to the General Conference and long involvement with the pursuit of American scientific policies in UNESCO. I have also had many years' experience working directly for UNESCO on projects of interest to the United States.

Let me start with some data taken from the report which the State Department made to Congress on February 24, 1983 (as requested in Public Law 97-241, sections 108 and 109). This report points out that the education and science sectors account for 67% of UNESCO's program operations budget while communications and the social sciences account for only 8%. The executive summary of the report states explicitly that the "highly controversial activities relate to a minority of UNESCO programs". Thus the 8% tail has been wagging the 67% dog. I want to address primarily the 28% of the total program budget which is spent on science, though my comments will have some relevance to the 39% devoted to education. In dollars, for the 1981-83 triennium, $69 million was spent on science programs from the regular assessed program funds. In addition to the regular funds, $132 million was obtained from extrabudgetary sources including UNDP

and UNEP together with direct support for selected UNESCO projects provided by the governments of member states.

Another quotation from the same State Dept. report can be used to put the relationship in more concrete terms. "UNESCO contributions which benefit the United States.....amount to about 40% of the U.S. contribution". In other words, the economic benefit to the United States is five times greater than the 8% cost of the controversial programs. In preparation for its decision on withdrawal from UNESCO, the State Dept. requested the National Science Foundation to report on the state of UNESCO science. The Foundation solicited opinions from a broad group of Federal agencies, as well as the National Academy of Science and concluded that the scientific benefits to the United States from UNESCO participation outweighed the costs. The National Science Foundation conclusion, which is supported by the figures above, indicates that United States withdrawal from UNESCO is not in the best interests of the scientific community.

There has been general concern about administrative costs of UNESCO and I share this concern. In order to make an accurate assessment of the problem, I have obtained the following figures from the secretariat of the science sector. The science budget for the 1984-85 biennium is $56.6 million. This is divided into $28.5 million in direct program expenditures, $8.4 million for staff costs in the field away from Paris and $19.7 million or 35% for headquarters costs including administration and staff travel. If the extrabudgetary funding bears the same proportion (191%) to the budgetary funding in 1984-85 as it did in 1981-83, there would be an additional $108 million from these sources, of which the secretariat estimates that 90% will be spent directly in the field, thus bringing the total program

money to $125 million. Since the headquarters staff bears some responsibility for soliciting the extrabudgetary funds and expending them, the 35% figure is an overestimate of headquarters administrative costs.

Important international aspects of interdisciplinary science can only be carried out with multilateral support both from governmental and non-governmental agencies. In fields such as oceanography and the geological sciences, UNESCO is the agency responsible for the multilateral governmental interactions, which often serve United States interests by giving us access to data from nations with which the United States government does not enjoy close diplomatic relations. The major non-governmental international scientific partner in these projects is the International Council of Scientific Unions (ICSU) which is an association of International Unions in sciences such as mathematics, physics, chemistry, biology, the geological sciences and a number of other basic and applied sciences. The national adhering bodies to ICSU are not governments, but rather, as in the United States, National Academies of Science. Other scientists will testify this afternoon about UNESCO support of international programs in biology and oceanography, but I should like to add some budgetary information. About 50% of the UNESCO direct program expenses in the science sector are devoted to the geosciences, hydrology, the ecosciences and the marine sciences. The major programs supported by these funds are: Man and the Biosphere (MAB), the International Hydrological Program (IHP), the Intergovernmental Oceanographic Commission (IOC) and the International Geophysical Correlation Program (IGCP); the amount to be expended for the 1984-85 biennium in these areas is about $14 million. The UNESCO secretariat estimates that this UNESCO expenditure will generate approximately $500 million in direct

expenditures by member states for their own activities in these programs and that approximately 20,000 scientists from all over the world will participate.

ICSU, which makes a large contribution to the essential non-governmental component of all these programs receives about 30% of its financial support from UNESCO. I am concerned about the possible loss of 25% of the ICSU subvention from UNESCO although I hope that some alternative arrangements for direct United States support of ICSU can be made. I am also concerned about the imbalance in the ICSU-UNESCO partnership after the formal United States presence is removed from UNESCO. ICSU has direct access to the most distinguished scientists, world-wide, and UNESCO has relations with the governments of both the developed and the developing nations. It is the coupling of these two approaches, governmental and non-governmental, to the solution of international, interdisciplinary scientific and technological problems that has led to the advances in the major programs discussed above. UNESCO's access to governments is particularly important in nations in which the scientific infrastructure is still so underdeveloped that there is no natural access through the scientist-to-scientist route. In these instances, the ICSU-UNESCO partnership provides a unique and effective mechanism to bring the talents of leading scientists to bear on the problems of the developing nations.

The example of this cooperation with which I am most familiar is the program for the ICSU-UNESCO Distinguished Fellowships in Science. These fellowships are awarded to young scientists of exceptional promise who have already carried out distinguished post-doctoral studies in their own countries. The fellowships are tenable for one year in a developed country and

require assurances from the fellow's home institution that a job will be waiting on his return and a promise from the fellow to return home after his fellowship is complete. The fellowships are awarded by an international committee of scientists (of which I am chairman), chosen jointly by ICSU and UNESCO. In the first year of operation we had more than 200 applications from more than 20 countries for the two places we could award. The committee hopes that we will be able to award as many as 10 fellowships a year and believes that the graduates will form an elite body of scientists in the less developed countries destined to hold positions of leadership in their respective countries. The advantage to the United States is that most of these scientists will carry out their studies in Western nations and will return home with a personal knowledge of life in a democratic society. Direct exposure to American values is a lasting benefit to the holders of those fellowships who study in the United States. One of the two fellowships already awarded is held by a Zambian biologist who is studying the Zambian tick at the University of Texas. We have hopes that the results of his research will be effective in controlling the Zambian tick which makes great inroads on agricultural productivity. He is writing a book which has been accepted for publication by the University of Texas press. On a broader scale, UNESCO awards 300 or more fellowships, primarily to younger scientists at an earlier stage of their development. The State Dept. report points out that well over half of these fellows are sent to the United States, France and the United Kingdom. In 1982, the report points out, 183 fellows came to the United States and only 19 went to the Soviet Union.

Another example of an effective UNESCO program is afforded by training courses, which last usually for a few weeks and are held in either deve-

loped or less developed countries. Typically, the staff comes from the developed nations, primarily from the Western nations and Scandinavia, and the students come from the developing countries. In 1982, there were 2637 students in training courses in the basic sciences, of which about 63% come from the developing nations. UNESCO sponsors some 80 of these courses each year, generally giving each one a modest annual subvention of about $10,000. As a rule the host country bears the bulk of the costs, usually more than 90%. As in the fellowship program, the importance of these courses to the United States lies in the interactions between the student and his mentors which lead to broad promulgation of Western values and establishment of close personal relations between United States scientists and their colleagues in the developing world.

United States Oversight of UNESCO Science Program

In 1984, the UNESCO science budget should run at a $28.8 million rate, of which the United States contribution is $7.2 million. It is my understanding that the oversight of this expenditure lies primarily in the hands of a junior officer in the I/O bureau of the State Dept. The officer has not had scientific training and can only devote half-time to science, since he is also responsible for education. In Paris, the U. S. Permanent Delegation to UNESCO includes the Science Attache, Dr. Manfred Cziesla, who has been seconded from the National Science Foundation which supports the post. Dr. Cziesla is a trained scientist and is the only individual with scientific training who exercises immediate oversight of the $7.2 million annual expenditure. Within the United States, the State Dept. can call upon the U. S. National Commission for UNESCO for advice. The Commission has several scientists among its members, including a representative of the National

Academy of Science, but it meets infrequently and can not provide day-to-day consultation. In previous years there has been a National Academy of Science subcommittee on "Science in UNESCO" which was funded by the National Science Foundation and provided advice to the State Dept. and the U. S. National Commission when requested. However, funding has now been terminated and the subcommittee has been disbanded.

At the General Conference of UNESCO, which meets biennially, the United States is represented by its delegation, appointed by the President, with the advice of the Senate. For over a decade, there has been a tradition that United States scientific interests were represented by a scientist member of the delegation, appointed from the private sector. The delegations of other member states also contain scientific representatives and much of the scientific business of the Conference is transacted, formally and informally, between these representatives. In 1983, there was no scientist on the United States delegation, so that the senior scientist representing the United States was the Science Attache of the Permanent Mission.

How Can United States Participation in UNESCO Be Strengthened?

In the executive summary of the U. S. UNESCO policy review, the State Dept. points out that it had been directed by the Administration to "reassert American leadership in multilateral affairs", and that failure with UNESCO in this respect was a contributory reason for the decision to withdraw from UNESCO. It is desirable to examine, from a scientific viewpoint, the reasons for this failure and then to put forward specific suggestions for strengthening the United States position, should the

decision to withdraw be altered.

Some years ago, when I was a member of the U. S. National Commission for UNESCO, the Soviet National Commission invited us to send a delegation to Moscow to discuss mutual interests. I was the scientific member of the four man delegation that went to Moscow. In Moscow, the Soviet delegation was led by the second in command of their Foreign Office. When we discussed education, the Minister of Education met with us and other high level officers participated in other discussions. It is widely perceived that the USSR influence in the education sector of UNESCO is greater than the American influence. Our experience in Moscow leads me to believe that the explanation is that the Soviet government cares and is prepared to work at the problem. We are fortunate that the United States is still strong in science, but we cannot expect to maintain our position in UNESCO unless the State Dept. (or some other designated agency) is prepared to mount an effort commensurate with the United States position in world science.

In the course of our discussion in Moscow it became apparent that the Soviets were as concerned about the increases in the UNESCO budget as we were. We suggested that one means of controlling the expenditures in the science sector was to institute a peer review system, similar to that used by the National Institutes of Health and the NSF. Scientific research proposals are evaluated by a jury of one's peers and financial support is determined on the basis of excellence, as evaluated by this jury. It would be more difficult to apply such a system to an international organisation such as UNESCO since the jury would be chosen internationally from representative scientists and criteria in different countries might vary. Furthe-

rmore, UNESCO projects are different from scientific research projects and standards would be difficult to determine. Nonetheless, it seems that the obstacles could be overcome; the Soviet delegation was generally in favor of such a mechanism.

About two years ago, UNESCO established an Advisory Committee on Science, Technology and Society, an international committee of scientists to advise the UNESCO secretariat on scientific matters. The committee was initially chaired by Dr. Abdus Salam, the Pakistani Nobel laureate who is Director of the International Center for Theoretical Physics at Trieste. Other members include Dr. M. G. K. Menon, scientific adviser to the Government of India, Sir John Kendrew, also a Nobel laureate, who is the President of ICSU and Academician Yuri Ovchinnikov, Vice President of the USSR Academy of Science. I was one of two United States representatives and put forward again the suggestion of peer review. There was firm support from many members of the committee, including Dr. Ovchinnikov, and the proposal has now been incorporated in the 1984 UNESCO budget, albeit in a modest form. It should be strengthened and put into effect as soon as feasible. Such a proposal has benefits for UNESCO since it would provide an independent appraisal that, if favorable, would provide convincing evidence about the quality of a project and, if unfavorable, would provide an internationally acceptable reationale for discontinuance. In this case, as in many others, American leadership is welcome and a broad consensus about sensible scientific proposals can often be attained.

The State Dept.'s Executive Summary of U. S. Policy Review speaks to the problem of UNESCO's hiring of Americans. United States representation in the science sector is reasonable, in view of the fact that we had been

promised an additional high level position (D2) once a suitable candidate could be found. In my view, the problem of recruitment in the science sector rests more on the American inability to mount a suitable recruitment program rather than on UNESCO reluctance to provide sufficient posts. Science in the United States is intensely competitive and no first class scientist of my acquaintance would be prepared to leave his research to accept a two year appointment at UNESCO. In general, preservation of a tenured position would not pose a problem since two year leaves can often be granted. But two years away from active research would provide a handicap that would be virtually impossible to overcome. If the candidate held a non-tenured position, his possibilities of reappointment would be vanishingly small. This is not the case in the Soviet Union where the government can send a scientist or a scientific administrator to UNESCO with the promise of a secure position on his return to the Soviet Union.

The problem is exacerbated in the United States because the State Dept., which is charged with recruitment, has no apparatus for the purpose. The State Dept. does not appoint search committees for these positions, as universities do, nor does it, as far as I know, advertise the positions in scientific journals. Furthermore the job description does not match that of a research scientist but is related more to scientific administration and science policy. One way to find suitable young people and to enlist their interest in international science would be to create positions as apprentices, or aides, in UNESCO, similar to training positions in the U. S. Congress, on which this suggestion is modeled.

During the course of Mr. M'Bow's visit to Harvard and MIT in July '83

there were exploratory discussions along these lines with the Harvard School of Education. Although no detailed scheme evolved, the conversations proceeded along the following lines. UNESCO would provide junior level positions in the sectors of science and education, some to be funded by UNESCO and some from American sources. These positions would be tenable for one year and would be designed to attract graduate students in education, science policy and science administration, either during their graduate training or for a post-doctoral year. The School of Education would appoint two high level committees, one in education and one in science, who would oversee the recruitment process and be responsible for the final selection. The cost of the program would be relatively small since it would only require support for the operations of the committee and a relatively small number of junior level positions. It would have the great advantage, after a few years of operation, of providing a cadre of experienced United States young men and women suitable for jobs in these fields, not only in UNESCO but also in other agencies with interests in international science.

One of the unexpected byproducts of the United States withdrawal from U.SCO is a new feeling that is abroad in Paris. I understand that there is a revived esprit de corps and that members of the secretariat are working harder and more effectively in the discharge of their duties. Also there is a new awareness in the United States about UNESCO. I daresay there has been more informed discussion about UNESCO in the past three months than in the prior three years. In Paris, a group of Western nations, led by the Dutch, have formed a committee to press for important reforms within UNESCO and I trust that the United States will share in this endeavor. The State Dept. is deploying increased staff to examine alternate methods of providing the UNESCO services, and has also begun to strengthen its relations with mem-

bers of the scientific community. Thus, whatever happens, it is clear that the role of science in international affairs has been more clearly recognized in the United States. It is my hope that these currents, and the initiative that Congressman Scheuer has taken in arranging for an independent review of the fiscal and management activities of UNESCO, will come together and lead to a renewal of United States participation, deepened and broadened by the exercise we are now going through.