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*WORLD CONFERENCE ON SCIENCE, JUNE 26-JULY 1,
1999: PURPOSE AND ISSUES*

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Abstract. The World Conference on Science, June 26-July 1, 1999, is cosponsored by the International Council for Science and the United Nations Educational, Scientific, and Cultural Organization. Over 120 mixed public/private national delegations will discuss controversial issues and will be asked to support a framework for action that focuses on doing more "ethical" and "relevant" science; rectifying gaps between developed and developing countries relating to the conduct of research technology transfer, ownership of intellectual property rights including indigenous biological resources, and compensation for brain drain, and implementing follow-up by UNESCO. The National Academy of Sciences has proposed a private InterAcademy Center for international scientific advice. The U. S. delegation is unlikely to support programs that require new funds or that conflict with U.S. policies. This report addresses issues relevant to formulating U.S. science policy and programs for developing nations.

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World Conference on Science, June 26-July 1, 1999: Purpose and Issues

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Summary

The World Conference on Science, June 26-July 1, 1999 is cosponsored by the International Council for Science and the United Nations Educational, Scientific, and Cultural Organization. Over 120 mixed public/private national delegations will discuss controversial issues and will be asked to support a framework for action that focuses on doing more “ethical” and “relevant” science; rectifying gaps between developed and developing countries relating to the conduct of research, technology transfer, ownership of intellectual property rights including indigenous biological resources, and compensation for brain drain; and implementing follow-up by UNESCO. The National Academy of Sciences has proposed a private InterAcademy Center for international scientific advice. The U. S. delegation is unlikely to support programs that require new funds or that conflict with U.S. policies. This report addresses issues relevant to formulating U.S. science policy and programs for developing nations. It will be updated after the conference.

Background. The World Conference on Science (WCS), *Science for the 21st Century—A New Commitment*, will be held from June 26-July 1, 1999, in Budapest, Hungary, co-sponsored by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the International Council for Science (ICSU), a nongovernmental organization composed of 95 national science councils or academies, formerly called the International Council of Scientific Unions. The *official goal* of WCS is to “analyze where the natural sciences stand today and where they are heading, what their social impact has been and what society expects from them. Finally, it will establish what efforts should be invested to make science advance in response to these expectations and to the challenges posed by human and social development.”¹ It will seek to establish new international guidelines for science policy and a “new social contract for science.” An *unofficial and probably more realistic goal* is to foster better networking and exchange

¹ “First Announcement World Conference on Science. Science for the Twenty-First Century: A New Commitment” [http://www.unesco.org/general/eng/programmes/science/wcs/eng/confen.htm].

of views among scientists and between scientists and policymakers. As will be discussed below, WCS discussions are likely to involve *some controversial issues*, including calls for more public input into decisions about science priorities and applications; proposals for international agencies to fund more indigenous “traditional,” as opposed to “modern,” research and development (R&D) in some developing nations;² creation of regional partnerships for cooperation with “southern,” or developing country, scientists;³ indigenous ownership of intellectual property rights (IPR) and of biological resources; more equitable ethics for research and for technology transfer; and compensation for brain drain. The *policy context* relevant to the outcome of the WCS includes failure to implement many recommendations of the 1979 United Nations (UN) conference on science and technology (S&T); U.S. withdrawal from UNESCO; U.S. arrears on dues payments to the UN; and U.S. caution about multilateral S&T development assistance.

The WCS will include plenary and panel sessions and is expected to draw between 2000 to 3000 attendees, including 120 official national delegations,⁴ and others, representing educational and research establishments, scientists, the industrial sector, intergovernmental organizations, nongovernmental organizations, the media, and the general public. Attendance is by invitation. Dr. Neal Lane, Assistant to the President for Science and Technology, will head the U.S. delegation, which also includes Dr. Bruce Alberts, president of the U.S. National Academy of Sciences, and other distinguished nongovernmental scientists. **See Table 1.** Other U.S. scientists will also speak at the meeting.⁵ Four UN technical agencies will be represented—the International Atomic Energy Agency (IAEA), the World Health Organization (WHO), the Food and Agriculture Organization (FAO) and the United Nations Industrial Development Organization (UNIDO). There will be numerous supplementary meetings held by interest groups and other organizations, and youth meetings hosted by the Hungarian Academy of Science. The Organization for Economic Cooperation and Development, which represents the advanced industrial democracies, will hold parallel sessions on international collaboration in science and on priority setting.⁶ Also, UNESCO has conducted an Internet survey of youth regarding conference issues. There are “hot links” to the conference planning documents; to national, regional (Africa, Arab States, Asia and Pacific, Europe, North

²Ehsan Masood, “African Faculties Agree to Link Hands,” *Nature*, March 11, 1999. References in this report to *Nature* without page numbers are available via an index at [<http://helix.nature.com/wcs/>].

³M.Hassan, “North-south Disparities in the Production and Use of Knowledge,” *Nature*, [<http://helix.nature.com/wcs/c00.html>]

⁴David Dickson, “‘Science Summit’ Sets Ambitious Agenda,” *Nature* 396, November 26, 1998.

⁵U.S. speakers include: Neal Lane, keynote on “The Scientist as Global Citizen;” J. Lubchenco, “A New Social Contract for Science;” B. Moore, “Disturbed Carbon cycle;” M. Frankel, “Normative Issues for Electronic Publishing in Science;” M. Teas, panel on Science Education, chaired by S. Malcolm; J.C. Field, “Open Ocean;” J.N. Galloway, “Human-induced Changes in the Global N Cycle: Implications for Land and Water Ecosystems;” M. Singer, “Advanced in Molecular Genetics and Their Application for Health;” B. Alberts, panel on “Science, Agriculture and Food Security;” J. Lubchenco, “Toward a New Social Contract;” B. Lewenstein, “Initiation of the Scientific Media;” S. Malcom, panel on “The Gender Issue;” P. Berg, “Academia: Science, Industry and Knowledge as a Public Good;” S. Rowland, panel on “Joining Forces for a Sustainable World;” T. Lowi, panel on “Science and Democracy;” C. Rogers, “Listening to Audiences for Science Information;” B. Berlin, “Ethnomedicine: Improving Health Care by Coupling Modern and Indigenous Medical Knowledge.” (Draft Programme: World Conference on Science.)

⁶“Five International Agencies Agree to Participate,” *Nature*, April 1, 1999.

America, Latin America and Caribbean), and interest group preparatory meetings⁷; to satellite events for interest groups and students; and to secondary analysis at [<http://www.unesco.org/science/wcs/>]; [<http://www.wcs.budapest.hu>]; via *Nature* at [<http://helix.nature.com/wcs/>]; and at [<http://www4.nas.edu/oia/oiahome.nsf>].

Table 1. U.S. Delegation to the World Conference on Science, June 26 - July 1, 1999, Budapest, Hungary

(Source: <http://www4.nas.edu/oia/oiahome.nsf>)

U.S. DELEGATION: **Bruce Alberts**, President, National Academy of Sciences; **Paul Berg**, Robert W. and Vivian Cahill Professor in Cancer Research and Director, Beckman Center, Stanford University School of Medicine; **M.R.C. Greenwood**, Chancellor, University of California, Santa Cruz; **Neal Lane**, Assistant to the President for Science and Technology, Executive Office of the President, Office of Science and Technology Policy;

Leon Lederman, Director Emeritus, Fermi National Accelerator Laboratory; **Jane Lubchenco**, Distinguished Professor and Wayne and Gladys Valley, Professor of Marine Biology, Department of Zoology, Oregon State University; **Shirley Malcom**, Director of the AAAS Directorate for Education and Human Resources Programs, American Association for the Advancement of Science; **F. Sherwood Rowland**, Foreign Secretary, National Academy of Sciences and Donald Bren Research Professor of Chemistry and Earth System Science, Department of Chemistry, University of California, Irvine; **Maxine Singer**, President, Carnegie Institution of Washington; **Michael Southwick**, Deputy Assistant Secretary, Bureau of International Organization Affairs, Department of State; and **Keith Winstein**, Student, IMSA.

U.S. GOVERNMENT STAFF: **Jasemine Chambers**, Senior Policy Analyst, Office of Science and Technology Policy, Executive Office of the President; **Gerald Hane**, Acting Assistant Director for International Affairs, Office of Science and Technology Policy, Executive Office of the President; **Brooke Holmes**, Director, Office of Science and Technology Cooperation, Department of State; **Ray Wanner**, International Organization Affairs, Department of State; **David E. Schindel**, Head, National Science Foundation Europe Office.

NATIONAL RESEARCH COUNCIL STAFF: **John Boright**, Executive Director, Office of International Affairs, National Research Council; **John Campbell**, Program Director, InterAcademy Programs, National Research Council; **Ken Fulton**, Executive Director, National Academy of Sciences; and **Wendy D. White**, Director, Division of International Organizations and Academy Cooperation, Office of International Affairs, National Research Council.

The last international meeting on S&T, the U.N. Conference on Science, Technology for Development, (UNCSTD), was held in 1979 in Vienna, with mixed results. It recommended establishing a large UN fund to support S&T projects in developing countries. This never occurred and accorded with U.S. policy not to contribute to a UN fund, but to use the UN and its agencies “...to play a broker role bringing together potential projects in developing countries with sources of financing and technology in the developed world, including the private sector.”⁸ Also left unresolved was the issue of a code of conduct for technology transfer between developed and developing countries. Among the more successful follow-up activities to UNCSTD was creation of a UN “Intergovernmental Committee on Science and Technology for Development,” whose projects were administered by the UN Development Program (UNDP), through UN technical agencies, such as the FAO, and through the World Bank, UNESCO, and the private sector. In 1992, the “Intergovernmental Committee” was replaced by a UN Commission on Science and Technology for Development, as part of the UN Economic and Social Council.

Planning and Agenda. The scientific community has played a significant role in WCS planning. In 1997 UNESCO set up a 509-member International Scientific Advisory Board, including the President of ICSU, “to give working scientists a greater say in a planned reform of the way the agency supports science” and to “...help prepare the agenda

⁷For instance, physicists have proposed creation of “an impartial international body...under...either the UN or UNESCO to adjudicate ‘damaging disputes’ involving scientific issues, ranging from cold fusion to ...informational issues...” (David Dickson, “Physics workshop Calls for New ‘Contract’ With Society,” *Nature*, April 15, 1999.) There have been preparatory meetings by the Leadership for Environment and Development group, by women’s groups, to ensure full participation of women in S&T and its applications, (“Draft Declaration ‘Pays Insufficient Attention to Women’s Issues,’” *Nature*, May 13, 1999), and by the “Pontifical Academy of Sciences: Science for Survival and Sustainable Development,” *Nature*.

⁸Department of State, *United States Participation in the United Nations. Report by the President to the Congress for the Year 1985*, 157.

for a UN world science conference....”⁹ In December 1997, to dispel “uncertainty about the value of the...[Conference],” a meeting was “...convened at the initiative of the U.S. National Research Council and involving senior representatives from a dozen American science NGOs and foreign embassies...in Washington, D.C. to hear the [UNESCO] Assistant-Director-general for Science, ...and the President of ICSU.”¹⁰ Also, the American Association for the Advancement of Science (AAAS) was asked to participate in WCS planning.¹¹

UNESCO press papers say the WCS will discuss and “be invited to approve” two documents—the *Draft World Declaration on Science and the Use of Scientific Knowledge* and the detailed *Draft Framework for Action*, that will “embody the new commitment that the conference calls for, as well as its implementation.” These documents incorporate the views of a background report prepared by ICSU.¹² These three documents are available on the Internet. They reflect the complex notions that S&T should be supported because of their benefits to society, but that “science is facing difficulties of confidence and investment, as well as problems of an ethical nature” and that scientists from the developing nations have less access to science than those from the developed nations.¹³

Some of the sponsors’ views may be inconsistent with prevailing views in most industrialized nations and with U.S. national interests. For example, some would disagree with the categorical statements in UNESCO press release 99-66, that says that while scientific progress has promoted development, “the general public is alarmed at both the rate and the direction of progress. The after-effects of the Chernobyl accident and new developments in genetic engineering—whether cloning sheep and cattle or breeding ‘transgenic’ pigs to provide organs for transplantation to man, or creating new strains of food crop—raise fears of ‘mad scientists’ fiddling dangerously with nature.” The press release also says that the WCS will challenge the industrialized countries to find solutions to complex issues such as climate change and adequate food, energy and water resources and to do so without “ignoring the two-thirds of humanity that lack the financial, technical and human resources—and perhaps the political commitment—to contribute.” Reportedly, UNESCO is also interested in persuading the UN General Assembly to declare the first decade of the millennium as a “Decade for Science.”¹⁴

The *Declaration* addresses “four main principles that underlie science in the 21st century:” (in paraphrase)

⁹Declan Butler, “The ‘s’ in UNESCO Seeks Out a New Role,” *Nature*, January 23, 1997, 286.

¹⁰“Not Just Another General Conference: A Look to the Future?” *Americans for the Universality of UNESCO* 14, February 1998, 10. UNESCO’s director-general, who reportedly originally conceived the idea for a conference, “made it clear that the Conference ‘will not simply be an opportunity to review the great scientific advances of the century’ but rather an occasion to promote the commitment of decision makers in the public and private sectors to strengthening scientific research and to increasing public awareness to the accomplishments and dangers of scientific advancement.” (Ibid.)

¹¹Philip W. Hemily, “Challenges for International Scientific and Engineering Cooperation,” Presented at the AAAS Consortium of Affiliates for International Programs Annual Meeting held in Seattle in conjunction with the 1997 AAAS Annual Meeting on February 16, 1997.

¹²“ICSU Paper Seeks More International Collaboration,” *Nature*, March 25, 1999.

¹³UNESCO/ICSU, “First Announcement,” *Science for the 21st Century*.

¹⁴“UNESCO Seeks a ‘Decade for Science,’” *Nature*, May 6, 1999.

- (1) sustained public funding of “science for knowledge” and use of knowledge for progress;
- (2) “science for peace,” involving research accountability, world-wide cooperation, use of S&T to address “the causes of conflict, including disregard for human rights, that lead to poverty, insufficient protection of minorities, inter-ethnic tension, inadequate education, hunger and environmental degradation;”
- (3) using “science for development,” while protecting the environment and protecting IPR;
- (4) conducting and using “science in society and science for society,” by establishing a code of ethics for “scientific professions,” and recognizing “equality in access to science” as an ethical requirement and necessary to realize “the full potential of scientific communities.”¹⁵

The *Framework for Action*, which emphasizes forming “partnerships,” has three sections: (in paraphrase)

- (1) “the new context” of science and society in the 21st century—with an end to the cold war, but a reduction in S&T funding “while inequalities of all kinds have increased...;” “public uneasiness with” some scientific progress; and the needs to share knowledge, build new relationships among scientists and between scientists and users of science, and involve the public in setting priorities and using science;
- (2) “the new commitment” for 83 specific initiatives to produce scientific knowledge, apply science, and use science for peace and development;
- (3) establishing UNESCO follow-up to review progress in implementing WCS initiatives.¹⁶

Likely to be discussed at the WCS is the U.S. National Academy of Sciences proposal to create an InterAcademy Center, modeled on the U.S. National Research Council, that would assemble international expert panels to advise the UN and the World Bank on S&T-related issues. This expands upon the collaboration in the InterAcademy Panel on International Issues, an informal information exchange network of 80 national science academies, that will meet in May 2000.¹⁷ Attention may be given to the proposed request to UNESCO from the British Science Museum/British Association for the Advancement of Science to establish an International Center for the Communication of Science for journalists, broadcasters and exhibition organizers from developing countries.¹⁸

Some Controversial Issues. There are obstacles to meeting the goals in the WCS documents and scientists and policymakers from both developed and developing countries have criticized WCS expectations.¹⁹ For instance, Sir Robert May, Britain’s chief scientist and delegate to the WCS, said it was “ ‘an extremely important event,’ but he challenged it to produce more than ‘pious platitudes’ and to agree on appropriately realistic and practical achievements.”²⁰ There are diverse perceptions about topics to be discussed. There is the conflict between allocating funds for long-term basic research and more applications-oriented research, related to the WCS emphasis on requiring science to respond more to social and environmental concerns. There will be controversy about

¹⁵UNESCO/ICSU, “The World Declaration on Science,” press release.

¹⁶UNESCO/ICSU, “A Science Agenda—Framework for Action,” press release.

¹⁷“Worldly Scientists,” *Science*, April 30, 1999, 727 and “U.S. Academy Proposes Global Science Advisory Body,” *Nature*, May 13, 1999.

¹⁸David Dickson, “International Science Communication Centre Proposed,” *Nature*, April 8, 1999.

¹⁹David Dickson, “Draft ‘Science Agenda’ Receives a Mixed Response,” *Nature*, April 15, 1999 and Ehsan Masood, “African Scientists Voice Scepticism on Conference Outcome,” *Nature*, April 29, 1999.

²⁰Natasha Loder, “UK Science Adviser Calls for Realistic Projects,” *Nature*, April 8, 1999.

balancing protection for IPR while accommodating the views of some developing countries that IPR represents “monopolistic exploitation” of information.²¹ Some countries are giving a new “spin” to this issue, declaring their ownership and a share in the profits of research that uses biological resources and genetic materials within their national boundaries—in conflict with the interests of international agribusiness companies.²² Others seek IPR rewards for indigenous knowledge that predated but was used in the scientific revolution. There is the issue raised in the UNESCO World Commission on the Ethics of Scientific Knowledge and Technology report about the developing countries’ inability to purchase information technology—widening the gap between those who have and do not have scientific knowledge.²³ Other issues include “...compensating developing countries for their ‘loss of trained scientists and technicians to the more developed countries;’ ”²⁴ deciding whether English or indigenous languages should be used to conduct science; the merits of South-South, as opposed to North-South cooperation;²⁵ the legality of U.S. embargoes on technology transfer to “terrorist” states, as discussed in the Arab states preparatory meeting; and the need for scientists “to adopt a pledge...committing themselves to high ethical standards, rigorous quality control..., communication with the public, and sharing their knowledge.”²⁶

The United States is still formulating its official position on the WCS *Declaration and Framework for Action*.²⁷ The nature of U.S. follow-up to the WCS is uncertain for several reasons. The United States withdrew from UNESCO in 1984,²⁸ but participates in selected UNESCO programs deemed in the U.S. national interest. There is debate over whether the United States should rejoin UNESCO.²⁹ In addition, the United States currently owes the UN more than \$1 billion for its assessed contributions to the UN regular budget and peacekeeping accounts. Congress has linked funding for these arrears to reforms it expects the UN to carry out. Also, Congress has limited the total U.S. funds available for contributions to all international organizations, making a U.S. return to UNESCO unlikely in the immediate future since a U.S. contribution to the UNESCO regular budget would have to come from the same limited State Department appropriations account for international organizations. Tensions could intensify if the WCS generates expectations for action, but no funding. Principal UN donors are likely to insist that any follow-up mechanism be funded through existing resources.

²¹“Science By Everyone,”*The LOKA Institute*, [loka.org/pubs.nature012899.htm] and “Moulding Intellectual Property Laws to Developing Country Needs,” *Nature*, [helix.nature.com/wcs/c11.html].

²²See also Butler, Declan, “WHO Bioethics Code Set to Stir Debate,” *Nature*, March 18, 1999.

²³Loder, Natasha, “Commission Seeks to ‘Blow the Whistle’ on Unethical Decisions,” *Nature*, May 13, 1999.

²⁴K.S. Jayaraman and Ehsan Masood, “India leads Call for Greater Protection of Indigenous Knowledge,” *Nature*, February 4, 1999.

²⁵Masood, “African Scientists Voice Scepticism on Conference Outcome,” *Nature*, April 29, 1999.

²⁶Masood, Ehsan “Arab States Seek Backing on the Ethics of Science,” *Nature*, March 25, 1999.

²⁷Interview with State Dept. official, May 1999.

²⁸The Secretary of State’s 1983 notice of intention to withdraw cited UNESCO’s politicization, hostility towards the basic institutions of a free society, and unrestrained budgetary expansion. See *UN System Funding: Congressional Issues*, CRS Issue Brief IB86116, by Vita Bite.

²⁹“Former Secretaries of State Urge Congress to Pay UN Dues,” *Washington Fax*, March 23, 1999.