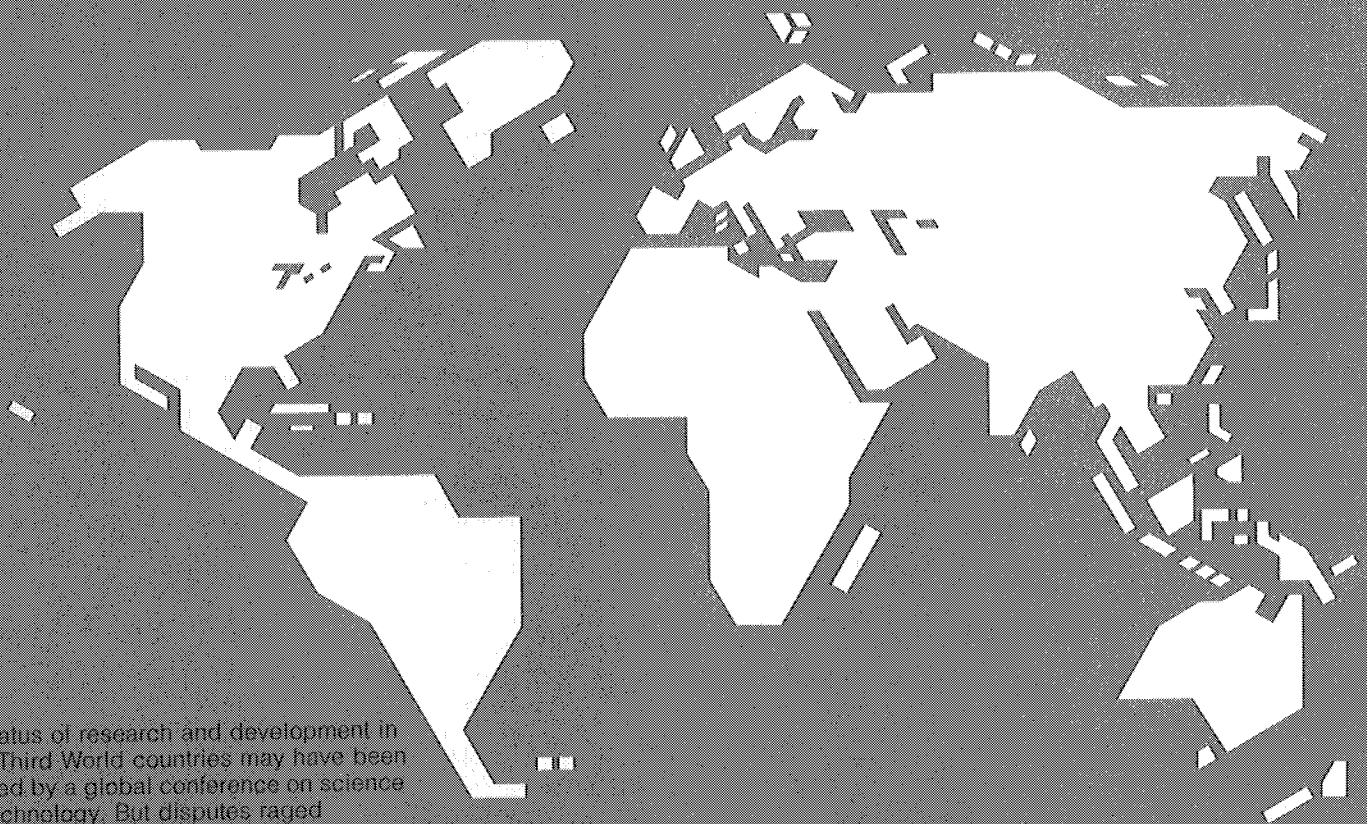# The United Nations Conference on Science and Technology for Development

by Elizabeth Crump Hanson

The status of research and development in
some Third World countries may have been
elevated by a global conference on science
and technology. But disputes raged
unresolved over the terms under which
technology is transferred from developed to
developing and particularly over the role of
transnational corporations in this process.

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THE AUTHOR

ELIZABETH CRUMP HANSON has been Assistant Professor of Political Science at the University of Connecticut since 1976. After receiving the M.A. and Ph.D. degrees from Columbia University, she worked as research associate for the World Data Analysis Program at Yale University and held a lectureship in the Political Science Department. . She has written articles on international political economy and has co-authored *Interest and Ideology: the Foreign Policy Beliefs of American Businessmen and Multi-nationals in Contention: Responses of Governmental and International Levels.*

1980/No. 10
General

by Elizabeth Crump Hanson
[ECH-1-'80]

THE UNITED NATIONS
CONFERENCE ON SCIENCE
AND TECHNOLOGY FOR
DEVELOPMENT

We inhabit a planet with finite resources, one ecosphere, and one common destiny. In his interdependent world, we are all developing countries. The differences between the North and the South, between the East and the West, are minimal in contrast to the enormity of the common tasks facing mankind... We need collaboration, not confrontation.

Ambassador Theodore Hesburgh, Chairman, U.S. delegation, Plenary speech

Nothing less than the establishment of a New International Economic Order is the objective of the Group of 77. International Relations in science and technology must be restructured. The restructuring will make North-South relations much better.

Mr. Abdel Aziz Ben Dhia, Chairman Group of 77 at UNCSTD

The strains of Beethoven's Fidelio that opened the last of the decade's global problem-solving mega-conferences suggested that a momentous event was about to occur. Indeed the United Nations Conference on Science and Technology for Development (UNCSTD) was larger and more expensive than any of its predecessors—and, perhaps, the most ambitious. Its goal, as stated in the Preamble to the Programme of Action eventually adopted, was to reach some decisions and to provide some "concrete and action-oriented recommendations" that would mobilize the world's science and technology resources for the purpose of "eliminating the under-development of developing countries and for improving the well-being of humanity as a whole"[1]

The conference could be viewed as the culmination of the developing countries' efforts to achieve a more just world order, for the capacity to develop, absorb, and use science and technology was recognized as both crucial and fundamental to the development process. The problem as stated repeatedly throughout the conference was the glaring asymmetry of science and technology capacity between developing and developed countries and the unequal access of the former to the benefits of science and technology. Almost every delegate invoked the familiar statistic that 95 percent of all research and development (R&D) is conducted by the developed countries, while the developing countries, which represent 70 percent of the world's population, have only about 5 percent of the world's R&D capacity.

How to redress this imbalance—by national and international means—was the central question of the deliberations. That the Conference proceedings were considerably less inspired than the dramatic introduction and that the outcome was exceedingly modest surely came as no surprise to veteran global conferees.

The occasion (and, no doubt, the setting in historic, scenic Vienna) attracted an assortment of about 5,000 people and produced a smorgasbord of activities parallel to the conference. There were official delegates from 142 countries and 2 liberation groups, as well as representatives from various UN secretariats, bodies, and programs.

In addition, about 1,400 persons from 51 countries, representing 336 nongovernmental organizations (NGOs), attended the "NGO Forum on Science and Technology for Development." This was held simultaneously but separately from the official conference. A third center of action during the two-week conference (August 19-31) was the "Forum Alternative," a symposium, exhibition, and array of activities sponsored by "Community Action in Europe." An international colloquium of scientists was also held in conjunction with UNCSTD, but it met the preceding week. It was sponsored by the UN's Advisory Committee on the Application of Science and Technology (ACAST).

Nongovernmental Participation in UNCSTD

Although UNCSTD and the preparations for it involved primarily officials of governments and intergovernmental organizations, many nongovernmental organizations also participated— albeit on the periphery. NGO participation in UNCSTD—both the conference proceedings and the advance preparations—was composed of two different groups.[2] One category consisted of various scientific and professional associations connected with the hard sciences. These organizations tended to be more interested in the substance of science and technology, in the delineation of priority problem areas, and in the search for specific programs and mechanisms to address these problems. The other category included a wide range of organizations that sought to focus on the broader issues of

development. A group of these organizations formed the "NGO Committee for UNCSTD," which prepared their own Draft Programme of Action, in order to influence the conference in its preparatory stages. This committee also organized the NGO Forum on Science and Technology, held concurrently with UNCSTD.

There was some, but very little, overlap between the groups, and they generally operated independently from each other. Only one scientific association, the World Federation of Scientific Workers, was on the Planning Board of the NGO committee; one of the most significant and active scientific associations, the International Council of Scientific Unions (ICSU), declined an invitation to join. The NGO Committee, in turn, had the disconcerting tendency (to scientists) to lump "expert professionals" together with the other exploitative elites in the developing countries. Few enjoyed being called the "new technocratic priesthood," which allegedly seldom listened to the public's point of view and exercised an "inordinate influence in decision making."[3]

The Nongovernmental Scientific Community

Although the nongovernmental scientific community participated in UNCSTD in a variety of ways, its role was limited by the nature of the conference, as it was conceived by its organizers. From the outset the UNCSTD Secretariat and other bureaucratic organizers insisted that this must be a very different sort of conference from the first major UN effort—the U.N. Conference on the Application of Science and Technology for the Benefit of Less Developed Areas, held in 1963. That conference, primarily a meeting of scientists, was widely perceived to have been a failure, in the sense that so little progress in science and technology among developing countries had been made subsequently. The explanation was clear to the Secretary General of UNCSTD, João Frank da Costa. Throughout the preparations he

repeatedly emphasized that the obstacles to the application of science and technology in developing countries tended to be political or economic, rather than scientific or technological. Hence, the conference must bring together government representatives to make political decisions to remove these obstacles, not scientists to talk about the substance of science and technology. Science was much too important to be left to the scientists.

In order to give scientists an opportunity to provide the conference some of their expert advice on scientific and technical issues affecting development, a special colloquium was planned for the week before the conference. The officially stated objective was to assemble a group of eminent scientists to assess the potentialities and limitations of science and technology in the development process by critically examining evidence of successes and failures in selected areas. In fact, the discussion centered on the working papers that had been prepared in advance by certain UN agencies. The report did not reach the hands of the conference delegates until shortly after the end. And many of the "eminent scientists" were in the words of one observer, "far removed not only from day-to-day problems of development but from innovative research in their fields as well."[4]

Perhaps more significant in a long-term sense were the various symposia that were held during the two-year preparatory period for the purpose of bringing together scientists from developing and developed countries to contribute ideas and suggestions for UNCSTD.[5] Most of the symposia, as well as the pre-UNCSTD colloquium, were sponsored by ACAST, a group of 28 independent experts in various fields of the natural and social sciences. Their function was to advise the Committee on Science and Technology, which became the Preparatory Committee for

UNCSTD. The Singapore symposium, the Jamaica symposium, and the Pugwash Workshops were all organized independently.

The Singapore symposium, which was organized by the International Council of Scientific Unions (ICSU) and a consortium of 19 nongovernmental scientific organizations, assembled 140 participants from 40 nations to help crystallize options from the scientific community to UNCSTD. One result of this meeting was the establishment of a permanent steering committee, charged with the responsibility of identifying global problem areas in which scientific research efforts were needed. Half the members were to be from developing countries, and the committee was to be coordinated by the ICSU. Their action proposals stressed joint projects between scientists from developed and developing countries, as well as pilot projects in certain crucial areas such as rural industry. Plans were made for following up whatever recommendations emerged from UNCSTD and to continue the cooperative efforts among the 19 organizations represented.

The Jamaica symposium also recommended the establishment of a permanent, independent commission of nongovernmental experts, "both thinkers and doers," to define priority areas and new programs of research and development. This was a relatively small meeting but a broad range of expertise was represented. The 25 participants included business executives, development economists, bankers, political and social leaders, as well as scientists. A major focus of attention at this symposium, which was sponsored by the International Institute for Environment and Development and presided over by Barbara Ward, was the importance of using appropriate technology in considering tools for development.

The Pugwash Conference on Science and World Affairs, a permanent international group of scientists with a strong disarmament focus, held a series of international workshops to generate suggestions for UNCSTD. These workshops, with the help of a drafting committee, produced the Pugwash Guidelines for International Cooperation and Development for submission to UNCSTD. The guidelines provided recommendations to strengthen international scientific cooperation in order to "surmount the problems of poverty and dependence" and to "build bridges between societies of different social, economic and political systems."[6] The General orientation and content of this document corresponded closely to the views expressed by the coalition of developing countries in the preparatory sessions leading up to UNCSTD.

In addition to these international activities, contributions to UNCSTD were also made by nongovernmental scientific organizations at the national levels. In the United States for example, a group of 50 scientists formed the Council of Science and Technology for Development for the purpose of advising policymakers on UNCSTD. The American Association for the Advancement of Science sponsored four workshops, provided reports, and helped to keep the American scientific and engineering community informed about UNCSTD preparations. In a similar manner nongovernmental as well as governmental scientific organizations in other countries contributed to their respective government's "national paper." These papers were used by the UNCSTD Preparatory Committee in its efforts to draw up the draft plan of action to be discussed at UNCSTD.

Hofburg Palace provides elegant setting for reception for delegates by the President of UNCSTD, Dr. Hertha Firnberg (Federal Minister for Science and Research and Head of Austrian Delegation). Photo credit: Foto Schikola, Vienna.

It is difficult to estimate the significance of these activities of the nongovernmental scientific community prior to the conference. They produced a multitude of reports and papers and cost a great deal in travel expenses. Their impact on the UNCSTD proceedings and outcome was probably minimal. On the other hand, the linkages that were established between scientists from developed and developing countries may lead to more concrete results in the future than the conference deliberations themselves.

The NGO Forum in Vienna
A standard feature of each recent global conference organized by the UN has been a concurrent meeting of nongovernmental groups. This "forum" provides opportunities for representatives of interested organizations to become better informed on the issues under discussion, to monitor the conference proceedings, and to make contacts with other people and groups with similar objectives and concerns. By organizing and coordinating their efforts, NGOs may also seek to influence the conference and its outcome — especially regarding the problems that are highlighted and the recommendations for action. This type of "counter-conference" has

also been described as serving a safety valve function by giving interest groups a platform on which to criticize the official intergovernmental meeting.

The NGO Forum in Vienna was a unique gathering of nongovernmental organizations from all regions of the world with different interests, capabilities, and constituencies. They included scientific and professional associations; national and international groups concerned with development; cultural, educational, and religious organizations; and a large variety of public interest organizations, such as environmental, consumer, and youth groups.

As envisaged by the organizers, the main purpose of the NGO Forum was to provide information and opportunities for contact and cooperation among individuals and groups with common concerns. A variety of panels, symposia, and workshops devoted attention to the areas for action that had been outlined in the NGO Draft Programme of Action, which had emerged from earlier preparatory sessions.[7] These topics included national development and regional cooperation in the Third World; technology assessment and

development; roles of women in development; disarmament, technology, and development; employment, poverty, and industrialization; population, consumption, and development; children, the elderly, and development. A special building was allocated for more informal discussion, and NGO representatives were encouraged to organize other "workshops" for the purpose of exchanging information and bringing together persons with similar interests.

The Forum was undoubtedly successful in strengthening networks and creating new ones among individuals and groups. Thus armed with new information, ideas, and contacts, NGO representatives were to return home as vigilant watchdogs and active lobbyists to promote the implementation of the UNCSTD Programme of Action and insure that governments did what they had promised to do at the conference.

Some NGO representatives were disappointed with the modest aspirations of the organizers, believing that the forum should be a political force exerting a direct influence on the outcome of the conference. According to this view, the focus of NGO activities should be on the preparation of a unified NGO statement to present to the conference and on lobbying to influence the decisions and recommendations. A number of groups did work actively to engage official delegates in conversation and to influence their positions in the conference deliberations. This game of hunt, track, and capture the delegate was facilitated by the seating arrangements on the floor of the plenary debate, which placed no barriers between government delegates and accredited NGO observers. In addition, representatives of 15 NGOs made statements in the plenary debate. One statement, made by a Sierra Club representative, was also signed by 14 other environmental groups, one-third of which were from developing countries. This

statement posed a set of "principles and mechanisms that would assist all countries toward adopting environmentally viable technologies." Basically, it urged more careful development planning by improving the knowledge base in developing countries about available technologies and their social, cultural, and ecological impacts and by strengthening institutional capacities for assessing these impacts.

Although the NGO Forum participants represented a broad spectrum of personal philosophies and political persuasions, there was widespread interest in alternative technologies and community development. Panelists tended to be opposed to nuclear energy, arms expenditures, and multinational corporations. Many stressed the virtues of low and intermediate level technologies, which could make full use of local resources while minimizing social dislocation. A group called "Transnational Network for Appropriate/Alternative Technologies" organized an extensive series of "New Age" workshops, which emphasized grassroots community action, small-scale agriculture and alternative-energy approaches. Testimonial reports made the discussions more convincing as well as entertaining.

On the fringes of the conference on the outskirts of Vienna another set of activities was organized to demonstrate not only alternative construction and energy technologies but also new, more democratic, forms of social and political organization. Before UNCSTD convened, 300 members of "Community Action in Europe" constructed "Okodorf" (Eco-Village), which consisted of a set of houses ranging from a *yurt* (Mongolian tent) to a dome. An alternative energy house was equipped with solar panels and a biogas system. This exposition was intended to be a strong and vivid statement that "not all Europeans want high technology solutions." But it was also intended to further experimentation in new forms of

self-government, using such models as the ancient Scandinavian *ting*. As summed up by one of the organizers, their purpose was to "develop non-hierarchical, ecologically sound, de-centralized communities, to find creative solutions to basic needs."[8]

This "Forum Alternative," as it was called, also organized for the edification of the conference visitors and Vienna residents workshops, panels, and a variety of colorful and thought-provoking activities. The exhibit of medicinal herbs and the "energy ballet" by the Mullkraft (molepower) Energy Theater were notably successful efforts. The latter artistic event told the story of 5,000 years of the misuse of technology from the time that "men first stole fire from women."[9]

Each in its own way, NGO representatives generally were concerned about the broader political, social, economic, and ecological implications of scientific and technological progress in developing countries. Who stood to gain and to lose from alternative technological choices? In particular, what were the consequences for those too poor and powerless to make their views known and felt? Many believed that NGOs could act on behalf of "grassroots people," to "give voice to their demands," and to protect their interests. As modestly expressed in the NGO-sponsored newspaper, NGOs "can and must act as the collective conscience of mankind."[10]

All these nongovernmental activities would have gone unrecorded and unnoticed by most official delegates to the conference had it not been for *Retort*. This irreverent newspaper—the Secretary-General of the conference called the editors anarchists—was sponsored by the NGO Forum and produced by a "team of independent journalists." It was not clear from whom or what they were independent other than their sponsor, which they roundly criticized at the end of the conference as a failure. Although generally favorable to the Third

World coalition's position, it spared no one from its barbs.

Despite the unofficial status of *Retort*, it provided the only blow-by-blow account of events at the conference, as well as NGO activities.[11] It was the first thing most delegates read each morning, eager as they were to see how their remarks (public and private) had been amplified or otherwise distorted and how other delegates had reacted to them. Delegates from small countries were kept abreast of closed negotiations and other inside information. Big powers and coalitions were careful to get the right statement reported at the right time for maximum effect. Just how significantly *Retort* affected the course of the negotiations would be difficult to estimate, but it certainly enlivened the proceedings.

The Road to Vienna
The most important aspect of any global problem-solving conference is the way in which the problem becomes structured and defined during the course of the preparations, the proceedings, and the implementation. The shape and form that the conference assumes and the particular issues that become the focus of attention and debate are determined by a combination of personal, institutional, and national interests and influences.

The two-year preparatory process was intended to be "an integral and fundamental component of the Conference itself."[12] The Preparatory Committee, which was open to the participation of all countries, held five meetings over the course of the two years to develop the agenda for the conference and a draft Programme of Action. The delineation of issues, the formulation of the conference agenda, and recommendations for action were to be the product of an "ascending process" from the subnational to the international level.

Opening session of the Plenary Debate. (Note Austrian Radio Symphony Orchestra in upper right corner.) Photo credit: Foto Schikola, Vienna.

Every government was requested to prepare a "national review paper," analyzing — in the light of its own experience — the social and economic problems that might be solved with the help of science and technology. Developing countries were asked to evaluate their progress in science and technology, and to assess their needs and resources. The developed countries were to identify from their own experience policies on technology that might be appropriate for developing countries and to specify opportunities for expanding cooperation with them. In the preparation of these papers discussion and debate among relevant groups within nations was envisaged — government officials, scientists, development specialists, academics, businessmen, and community groups. The expectation was that these discussions would not only generate ideas for the conference but also help to develop some political consensus and commitment at the national level for actions to be taken at UNCSTD.

Similar requests to help generate agenda items were made to UN agencies, regional and subregional groups of countries, as well as nongovernmental organizations. Approximately 159 intergovernmental conferences and

seminars were held and 17 international nongovernmental meetings.[13] Two rounds of regional meetings, organized by the regional economic commissions, produced papers intended to serve as an inventory of needs and resources at the regional level and to recommend subject areas for the consideration of the Preparatory Committee.

By the third Preparatory Committee meeting, held in New York in January 1979, a draft plan of action had been prepared by the UNCSTD secretariat summarizing conclusions and recommendations of national papers and regional reports. The draft was not well-received by the Preparatory Committee, but no clear alternative emerged. The Group of 77, the coalition of 120 developing nations, had not yet developed a consistent and well-defined negotiating position. Demands were diffuse; the first draft Programme of Action contained over 200 recommendations.

By the fourth preparatory meeting, however, the Group of 77 had been welded into a formidable negotiating unit with a clearcut position and revised Programme of Action. Two contrasting perspectives began to emerge on the science and technology problem and the task of the conference in
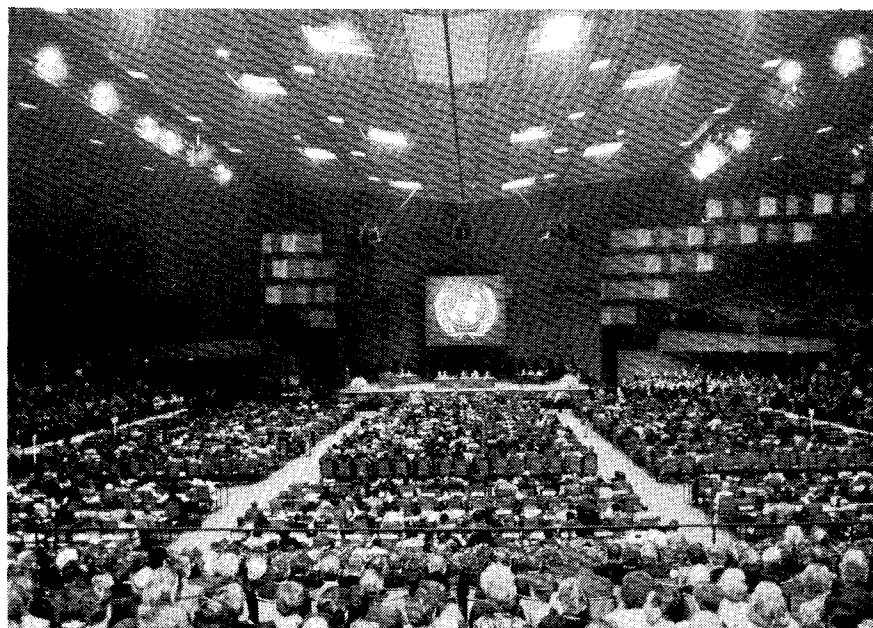
addressing it. Opposing views about the nature and goals of the conference proceeded from different philosophical views about the most significant obstacles to development.

From the perspective of the United States and other Western industrial countries, the main obstacle to development was the lack of infrastructure for science and technology in the developing countries. This view is expressed in the U.S. version of the introduction to the proposed agenda:

Lack of science and technology infrastructure, such as appropriate educational systems, science and technology institutions, mechanisms for popular participation, science and technology experiences, and a capacity to assess technology, constitutes the most serious obstacle for developing countries in achieving a self-sustained and autonomous development.[14]

According to this view, the conference should mobilize efforts at the national, regional, and international levels to ascertain needs in certain specific areas of science and technology—such as food, energy, health—and to initiate policies to meet those needs. In particular the conference should provide the impetus for new programs of international scientific cooperation and for efforts to improve the capacity of UN machinery to promote the application of science and technology to development.

For the Group of 77, the main problem was the monopolistic control that developed countries, their transnational corporations in particular, exercised over the generation and application of science and technology. From this perspective, the concentration of science and technology was another—and perhaps the most serious—manifestation of the fundamental structural bias in the international system that perpetuates gross disparities in wealth and power. For the
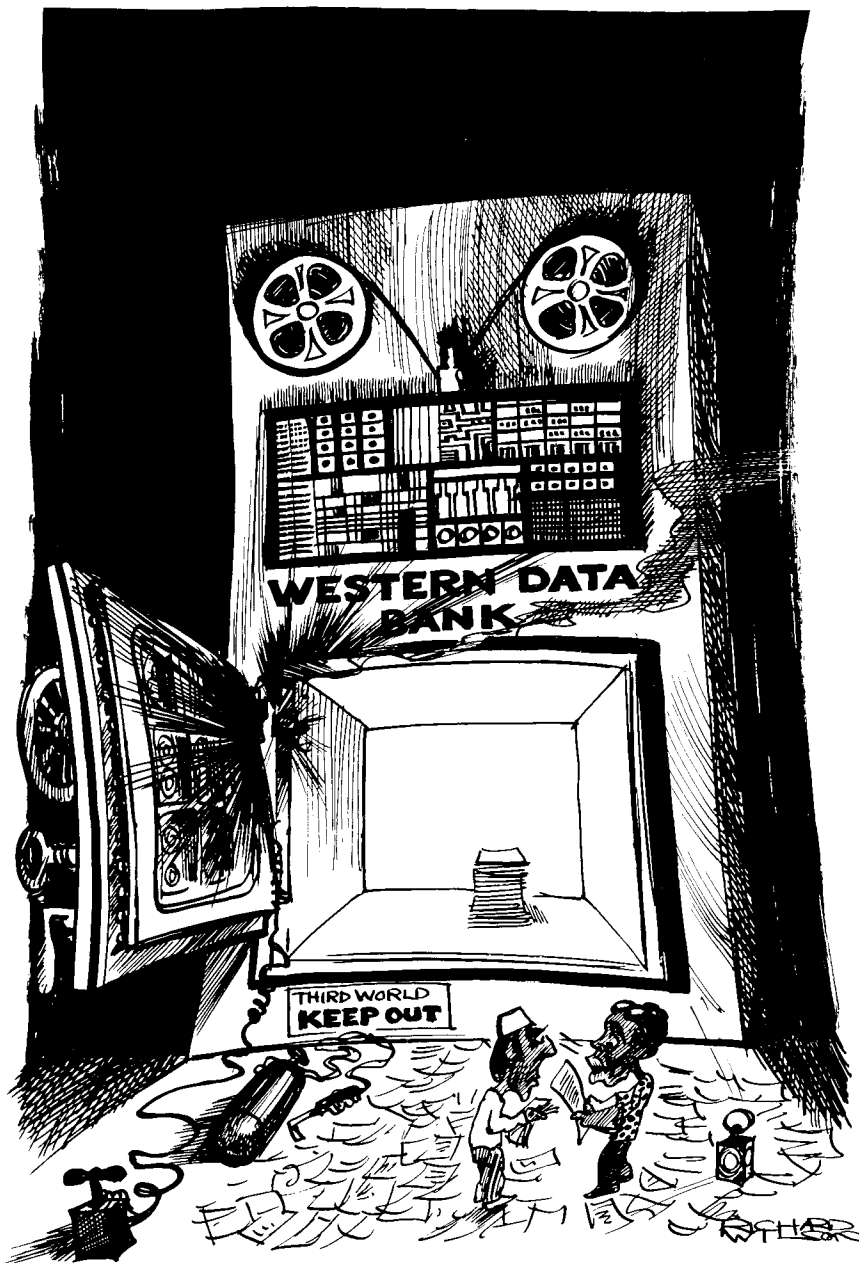
"*It says, for instructions on the mneumonics of hydrocataleptic turdrocytes in leuconetomy, apply to the World Bank...*"

Cartoon by Richard Wilson, in *Retort.*

developing countries holding this view, the main purpose of the conference should be to take steps to begin a restructuring of international processes, procedures, and institutions for the ownership and control of science and technology.

In operational terms this clarion call for a new international scientific order translated into demands for

Cartoon by Richard Wilson in *Retort*.

easier and cheaper access to technology; strong formal international arrangements to guarantee such access, and a new fund that would help to increase the developing world's share of the world's research and development expenditures.

Although a unified stance among the members of the Group of 77 was maintained throughout the last two preparatory sessions, considerable differences of opinion did exist. Some of the least-developed countries were more interested in practical and specific measures to improve their capacity to meet urgent domestic needs in areas such as food, housing, energy, and health, than they were in restructuring ownership and control of intellectual property and technologies. These countries with a very low level of industrialization tended to favor a conference action plan that would provide new commitments for expanded programs of cooperation and assistance in these specific areas and in the task of building their science and technology infrastructure. Thus the concerns of

the poorest countries were more appropriately addressed in the United States position than in that of the more industrialized developing countries.

Public expression of this "Fourth World" perspective was muted, however, particularly as the time for the conference drew near. This may have been attributable in part to an underrepresentation of Fourth World countries at the regional meetings. Because the developed countries had declined to vote extra money for travel to conference preparations, attendance on the part of the poorer countries was limited. The general determination of members of the Group of 77 to maintain group solidarity, in order to enhance negotiating strength vis-à-vis the developed nations, also helps to explain the submergence of these dissenting views. Finally, the perspective of the wealthier, more industrialized countries prevailed in the Group of 77 because of the influence of certain forceful personalities.

More than any other group the Latin American countries set the rhetorical tone and influenced the position of the Group of 77. They were the most vocal about the negative effects of their experience with American and European transnational corporations. They were the most adamant in insisting on international controls.[15] It was a Latin American team of negotiators, led by Beatrice Tangel of Venezuela, that played a major role in defining a clearcut negotiating position for the Group of 77 after the indecisive third Preparatory Meeting and in mobilizing the support of the developing nations behind it. They played a dominant role in drafting the revised Programme of Action that became the basis of discussion during the last two (fourth and fifth) Preparatory Committee meetings and the conference itself.

Latin American influence was also enhanced by the fact that the Secretary General of the conference, whose task was to coordinate and direct the preparatory activities, was a Brazilian, João Frank da Costa. Da Costa was a key personality molding the shape and content of UNCSTD. His insistence that the conference should be a meeting of high-level policymakers to make political decisions, rather than an assemblage of scientific experts to discuss the substance of science and technology, had important implications for the participation of the scientific community. His perception of the problems to be addressed at the conference and the kinds of policies that should emanate from its decisions significantly influenced the conference agenda. And his perspective was that of a representative from a rapidly developing country.

By the fourth Preparatory Committee meeting in April 1979, the proposed agenda had been arranged into three target areas:

A. Strengthening the science and technology capacities of developing countries;

B. Restructuring the existing pattern of international scientific and technological relations;

C. Strengthening the role of the UN system in the field of science and technology and the provision of increased financial resources.

Implicit in this structuring of the subject matter was a focus on the issues of greatest concern to the wealthier developing countries— technology transfer, codes of conduct for transnational corporations, information sharing, and restructuring the UN as a means of redistributing the world's research and development resources. This focus on political issues relating to the structure of international scientific relations and to the ownership of science and technology minimized consideration at UNCSTD on specific new programmatic initiatives, on the *application* of science and technology in certain problem areas, and on other practical, substantive issues. The Group of 77, dominated by the Latin Americans, had structured the agenda for UNCSTD.

Much of the draft Programme of Action was relatively noncontroversial, describing the kinds of measures that developing countries might take to develop their own scientific and technological infrastructures. However, differences arose over proposals concerning transfer of technology and new financial and institutional arrangements for the support of science and technology for development within the UN system. Efforts to reconcile some of the differences between the developing and developed countries filled the last two Preparatory Committee meetings; but substantial differences remained when the fifth and last session ended in July. These were reflected in the text by a plentitude of brackets indicating amendments, qualifications, and alternative versions.

The Politics of Science and Technology for Development

The task of the delegates who congregated in Vienna on August 20, 1979 was to reach an agreement on a Programme of Action, including institutional and financial arrangements for its implementation. Hopes were modest, as two years of preparatory discussions had clarified positions and revealed too many fundamental differences to be resolved in the span of two weeks. The final document was bound to be heavy with broad generalizations, as agreements had to be reached through consensus. What and how much would the developed countries concede? How unified would the developed and developing countries be in their respective negotiating positions? Negotiations were conducted by bloc, as is customary at UN conferences.

The solidarity of the Group of 77 was remarkable, in view of the differences of interests and diversity of needs represented among the developing countries. Certain African members had felt earlier some regret that they had not been adequately consulted during the

preparations of the draft plan of action and had expressed hopes for more discussion on specific areas of science and technology. The general lack of enthusiasm of certain conservative Arab countries on the technology transfer issue was also generally known. Whatever centrifugal tendencies there were in the Group of 77 were brought into check the week before the conference at a ministerial-level meeting in Bucharest, where all members pledged "total adherence" to their proposed Programme of Action. The adherence of some of the doubtful African states was apparently obtained by a promise by the Group to set up a working group to look at proposals for action in specific areas.

The other two major blocs were the group of Eastern European countries with centrally planned economies and the Western industrialized countries. The former, which had little difficulty maintaining unity, generally shared the rhetoric of the Group of 77 but aligned themselves with the developed countries on most specific issues. The latter, as might be expected, had the most difficulty in maintaining a public united position. In fact, the outcome of the conference hinged as much upon the negotiations among the Western industrialized countries as it did on the compromises reached between that bloc as a whole and the Group of 77.

The conflicting interests of individual nations and of blocs were focused upon three operational issues that dominated the conference agenda.

1. The nature of the funding mechanism needed to raise new resources to increase scientific and technological capabilities in the developing countries and to launch programs meeting their needs;

2. The type of institutional arrangements needed to govern the new financing system and to oversee UN science and technology activities;

3. The establishment of a global information system and governing principles for the transfer of technology which would provide technical know-how to developing countries on an unrestricted basis.

The various positions and opinions were expressed throughout the course of the plenary debates and especially the committees and their working groups. The negotiations, which were directed at producing a Programme of Action, were conducted in two separate committees. In the conference lingo, Committee I dealt with Target areas A and B (strengthening the science and technology capacities of the developing countries and restructuring of the existing pattern of international scientific and technological relations). Committee II dealt with Target Area C (strengthening the role of the UN system in science and technology and the provision of financial resources).

Institutional and Financial Arrangements

The major tangible results that the Group of 77 sought from the conference were a new funding mechanism to finance science and technology activities in developing countries and a new intergovernmental policy-making committee to administer the fund and to oversee science and technology activities in the UN system. The original target proposed by the Group of 77 was the sum of $2 billion to be raised by 1985 and $4 billion by 1990. The developed countries considered these sums rather steep. Doubts were expressed about the value of any new fund for science and technology. Some countries, most notably Britain, claimed they were not in any position to increase their aid contribution. This issue seriously threatened the unity of the European Economic Community, as member countries were deeply divided over the extent to which they should commit themselves to provide additional resources.

Most of the developed countries were united, however, in opposition

to the manner in which the Group of 77 wanted the money to be raised, namely by means of "automatic" assessed contributions, based on such factors as the balance of trade in manufactured goods. According to the proposal pushed most strongly by the developing countries, a certain percentage of the surplus generated by the developed countries in their manufactured goods with the Third World would be set aside automatically for an international science and technology fund. This approach suggested a kind of international tax, a radical departure from traditional means of funding, which have relied entirely on voluntary contributions.

The East Europeans joined the opposition to this idea and in no uncertain terms declared in a joint position paper that "the delegations of socialistic countries are strictly against any attempt to include in the Programme of Action provisions on international taxation and on other fiscal measures requiring an automatic flow of financial resources."[16]

Only Sweden among the developed countries accepted the idea of automatic contributions, but even this enlightened Nordic nation had objections to the proposed mechanism. A levy on trade balances would force the smaller developed nations who rely on foreign trade to pay disproportionate amounts, the Swedish delegates explained.

The second specific program demand of the Group of 77 was for a new high-level intergovernmental body which would not only administer the new funds and decide how they were to be allocated but also provide general direction and coordination for all UN activities relating to science and technology. They wanted this committee to operate with its own high-level secretariat under the Director General for Development and International Economic Cooperation and to report directly to the General Assembly. They insisted that membership on the committee

be open to all states, thus assuring the domination of the developing countries.

The East European bloc, the United States, and other developed countries were not very enthusiastic about the "proliferation of bureaucracies" in the UN and preferred a policy of streamlining and making more effective use of existing machinery. If there must be a new committee on science and technology, the American preference was for one created by and subordinated to the Economic and Social Council (ECOSOC). Clearly, ECOSOC, with 54 members, was a much safer bet from the U.S. perspective than a committee in which the developing countries constituted an absolute majority. And for that very reason the American proposal was antithetical to the interests of the developing countries, who were eager to increase their decision-making power over research and development resources.

Technology Transfer and a Global Information System

A more amorphous goal of the Group of 77 — and the motivation for all their proposals and positions — was the "restructuring of the existing pattern of international scientific and technological relations." The discussion on this subject centered on two issues, technology transfer and a global information system.

The committee meetings, and especially the plenary speeches, were pervaded by the claim that the international technology market suffered from distortions and imbalances. The system was dominated by transnational corporations, it was repeatedly stated, because of their monopolistic control of patents, methods of manufacture, channels of distribution, and industrial processes. Through their network of subsidiaries and affiliates, many developing countries pointed out, transnational corporations determined the development and direction of technologies. According to these representatives, most
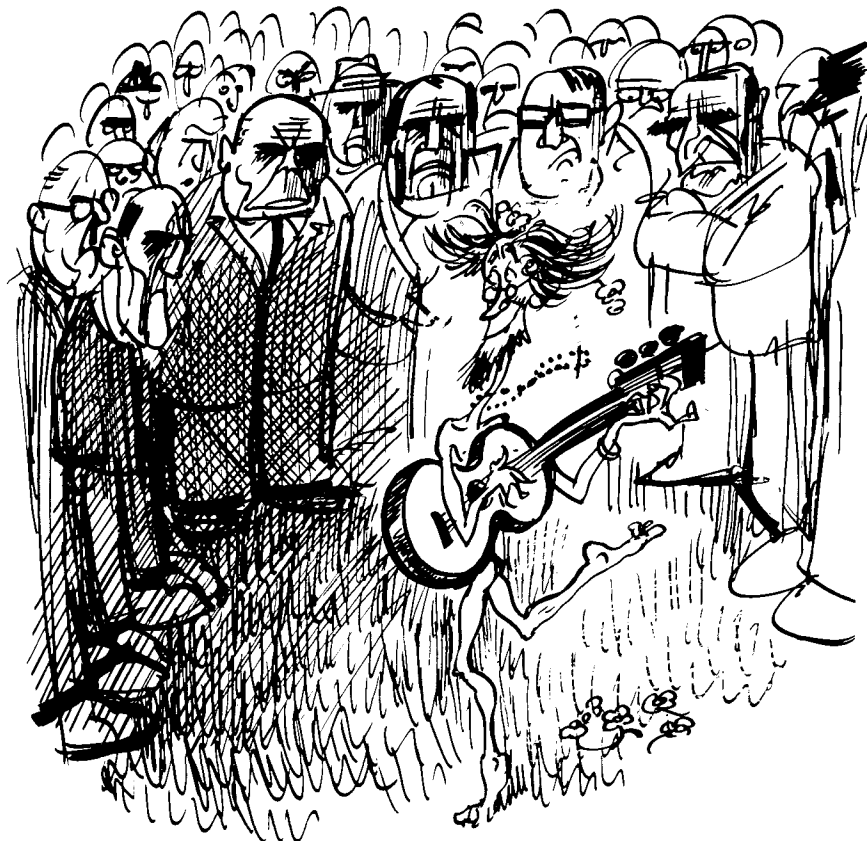
Cartoon by Richard Wilson in *Retort.*

research and development of transnational corporations took place in the home countries with little consideration for the interests of the developing countries in which they operated. Not only were developing countries forced to pay "exorbitant" prices for technologies imported, they insisted, but at the same time they were deprived of opportunities to build up their own R&D infrastructures.

The Group of 77 also provided a formula for restructuring international scientific and technological processes and reducing the technological dependence of developing countries. This formula included the much-reiterated demand for a mandatory code of conduct for transnational corporations and another code to govern all international transactions involving the transfer of technology. Revision of the Paris Convention on Industrial Property Rights (patents) was also considered essential. A variety of

other measures was urged by the Group of 77 as a means of improving their access to technology and their bargaining capacity vis-à-vis transnational corporations.

One concrete way in which the Group of 77 tried to tackle the problems of technology transfer was to recommend the establishment of a new global information system, tailored for developing countries and managed by the United Nations. An industrial data bank was also suggested for obtaining information from commercial firms on such matters as licensing, identification of experts, and a list of engineering and consulting services.

This issue and the demands of the Group of 77 associated with it proved to be the most intractable at the conference. Developed market economy countries viewed science and technology not as part of the "common heritage of mankind" but as intellectual property to be offered the same protection as other forms

of property. They tended to stress the "confidentiality" of scientific, technological, and business-related information and insisted that the Programme of Action should reflect the rights of companies involved in the exchange and dissemination of confidential information. They pointed out that contracts relating to the transfer of technology and licensing agreements for the use of know-how were for the most part the subject of negotiation between private persons and firms. Furthermore, they insisted that any schemes for international regulation of the transfer of technology had to take into account the fact that governments of market economy countries did not normally interfere in the private sector and did not control the operations of their firms abroad. The recommendations from the developed countries focused on specific measures to improve the *capacity of developing countries to* utilize technology. They generally resisted the idea of a global information system on the grounds that such an endeavor would be much too complicated.

The Programme of Action "Clamour, Claims, and Crumbs"[17]

The conference ended September 1 after an all-night session that sent the groggy delegates home with a Programme of Action consisting of 65 diplomatically worded resolutions. Theodore Hesburgh, head of the U.S. delegation, declared that "We have taken the first step to overcome the worst aspects of poverty and to create a better world for mankind by the year 2000." But this small step for mankind was a very modest one indeed. Three specific recommendations emerged from the compromises in the major issue areas.

1. Institutional Arrangements—The conference recommended that the General Assembly establish a new, high-level "Intergovernmental Committee on Science and Technology for Development" to set policy guidelines for the implementation of the Programme of Action, for the "harmonization"

of science and technology activities in the UN system, and for the new fund (see # 2 below).

It was agreed that the committee should be open to all nations and should report to the General Assembly *through* ECOSOC, which could make additional comments but no changes. This represented a concession from the United States and other developed countries who preferred a more significant role for ECOSOC, where they exercised greater influence. In accordance with the desires of the Group of 77, the Director General for Development and International Economic Co-operation was given the responsibility for the overall coordination of UN *science and* technology activities at the secretariat level. However, the developing countries did concede on the idea of a new secretariat to assist him in these efforts and agreed to assign this task to the existing Office of Science and Technology.

2. Financial Arrangements—The conference also recommended that the General Assembly create a new fund to strengthen the "endogenous" scientific and technological capacities of developing countries. As agreement could not be reached on the method of assessment and other details, an interim arrangement was proposed for the 1980-81 period. The target for an "interim fund" was set at $250 million to be raised through voluntary contributions. The decision was made to create a committee of experts to study during this two-year period various alternatives for raising funds from 1982 onward.

Thus the Group of 77 obtained their special, new fund for science and technology for development but a much smaller commitment than the $2 billion they had wanted by 1985. They did succeed in establishing the principle that the developing countries should have a significant role in determining how the funds were allocated, that is, through the policy directives of the new

Committee on Science and Technology for Development, in which they will hold an absolute majority. But they did not obtain the desired assurance of a "predictable, continuous, and automatic" flow of resources into that fund. The selection of the United Nations Development Programme (UNDP) to administer the fund was also a concession to the preferred position of the United States and other industrial countries.

3. Global Information System—One of the most significant bargaining victories for the Group of 77 was the agreement in principle to set up a global information system for the benefit of developing countries. Each country is to have a "national focal point" for its subnetworks, in order to facilitate contact between suppliers and users of information on development-related activities. The national focal point is to perform both retrieval and referral functions, that is, to provide information as well as information about where information may be obtained. There will also be a "global central focal point," which will perform only the referral function. In the ambitious prose of the Programme of Action, it will provide information on information for the world. It will also act as a "complaints bureau" for users who have difficulty getting information from the national focal point.

Third World countries committed themselves to develop and improve their national information systems. Developed countries agreed to extend their information facilities for use by developing countries and to provide "the fullest possible access to available information on technologies, terms and conditions of supply, local technical and management requirements, and activities of transnational corporations and enterprises in the fields of science and technology."

In addition to the 3 major agreements just discussed, a multitude of other, more generalized recommendations helped to extend the Programme of Action text to 40

pages. Recommendations were made for action to be taken by developed and developing countries at the national, regional, and international levels in the three target areas. The introduction acknowledged that the primary responsibility for development rested with the developing countries themselves but pointed out that effective action at the international level was essential to provide an environment fully supportive to the national efforts.

Each developing country is enjoined to establish one or more science and technology policy-making bodies and to formulate a national policy of scientific and technological development. This policy is to be directed at specific targets and priorities. An integral part of this policy is to be a policy on the transfer and acquisition of technology. Developing countries are to strengthen their capacities for the assessment, selection, acquisition, and adaptation of technologies so that optimum choices can be made among alternatives. In this connection they are to develop the capacity to unpackage technologies to be acquired, although the precise nature in which this is to be done was a source of disagreement between the United States and the developing countries. As part of the necessary development of human resources in science and technology, developing countries are also urged to promote education, training and research; extension services in rural areas; media reporting of science, and professional associations. They must set up information networks and provide the necessary facilities for participation in the global information network. All these efforts are to be coordinated at the regional and international levels.

An important set of general policy recommendations for developing countries concerns their cooperation with each other

Accredited delegates from Non-governmental Organizations observe the plenary debate. Photo credit: Foto Schikola, Vienna.

("collective self-reliance"), in order to strengthen their respective scientific and technological capacities. Initiation of joint scientific and industrial projects and sharing of information, experience, technological and managerial skills are some of the courses of action recommended for this purpose.

Developed countries promised to make available in a systematic manner the results of their R&D relevant to the social and economic development of developing countries. However, a qualifying clause, "in accordance with their national laws and regulations," plus the omission of any criteria for relevance, substantially weakened the force of this commitment.

Developed countries also agreed to increase their research in the problems of developing countries, especially joint research projects, and to increase their efforts in education and training of scientists in the Third World. This education and training is to emphasize those areas which the developing countries themselves identify as the most useful. Discussions on the brain drain problem are to be "intensified."

In addition to the Programme of Action the conference delegates also adopted a strongly worded resolution on "Women, Science,

and Technology." This resolution called for equal access of women and men to training and careers in science and technology. It also called for greater involvement of women in development planning and greater understanding of the role of women in the economic and social structures of developing countries. The resolution was something more than a platitude, as it required the new committee to include in its annual report an assessment of progress made in the implementation of these recommendations.

Still another text appended to the Programme of Action was the Report of a Working Group on Science and Technology for the Future. This was a hastily prepared text by an ad hoc group consisting mainly of scientists-delegates to the conference. The lack of attention given to the item in the preparatory sessions and the time constraints in Vienna made it very difficult for this group to draft a resolution on the future. As a result, many important long-range issues relating to science, technology, and social change were not adequately considered.

Although all the above recommendations represent considerable intra- as well as inter-bloc pulling, hauling, horse-trading,

and compromising, substantial disagreements remained. The issues and textual wordings that could not be resolved at the conference were appended to the report. The disputed texts relate in large part to the terms under which technology is transferred from the developed to the developing world and particularly the role of transnational corporations in this process. The industrialized countries insisted that these difficult issues were under negotiation in other fora and could not be resolved during the two-week conference. The revision of the Paris Convention for the Protection of Industrial Property and the drafting of codes of conduct to regulate technology transfer and other activities of transnational corporations were cited as prime examples. Hence, the Programme of Action provides few indications that the existing pattern of international scientific and technological relations will be significantly restructured any time soon.

Furthermore, the decisions reached at UNCSTD may have a minimal effect on the pace of development. The great compromise on new institutional and financial arrangements may not prove to be a very effective means for strengthening the endogenous science and technology capacities in developing countries. The much-vaunted Intergovernmental Committee on Science and Technology for Development, including everybody, will doubtless be an unwieldy body for providing policy guidance regarding the allocation of funds, not to mention the harmonization of science and technology policies within the United Nations. The fact that the committee is to meet only once a year will not enhance its effectiveness at devising and implementing long term R&D policies.

Other uncertainties abound. How will the interim fund be allocated and how will new resources be raised when the initial, voluntary pledges have been spent? How will the highly complex global

information system work? The details are sparse; the difficulties staggering to contemplate. How generous can the developed countries be in sharing technology, when this translates into a loss of comparative advantage? How will uncertainties among the advanced industrial nations regarding their future economic growth affect their willingness to contribute to the progress of science and technology in developing countries?

Any evaluation of the conference must consider not merely the decisions taken in Vienna but also the whole range of activities associated with UNCSTD—the national discussions, the regional conferences, the involvement of nongovernmental organizations, the preconference negotiations. The importance of science and technology for development was given world attention, and quite a few people around the world were forced to give the matter serious thought.

One of the more significant effects of the conference may prove to be the interest generated within the international scientific community on the problems of development. The imagination and expertise of scientists around the world could have been much more effectively mobilized and utilized; but interest was aroused despite this neglect. Thomas F. Malone, Foreign Secretary of the National Academy of Sciences, sees the various meetings among scientists from the developed and developing countries that were held in connection with UNCSTD as a step toward broader involvement. In a report on UNSTD to *The Bulletin* he asserts his conviction that "the stage is now set for more direct involvement of the world science and technology

communities in assisting the less developed countries with practical measures to enhance their capacity to generate, select and absorb technology...."[18]

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The status of R&D in many Third World countries may have been elevated by a global conference on science and technology. The various national and regional inventories of needs and resources may have given some governments of developing countries impetus to move forward more rapidly in developing their scientific and technological infrastructures—education, research, and science policy institutions—and may also have given them a better sense of direction in these efforts. Furthermore, UNCSTD may have provided a catalyst for future cooperation in science and technology among the developing countries.

One of the few memorable statements made in the plenary sessions was the quotation from the old Chinese proverb that "it is better to give charcoal in snowy weather than to add more flowers to the bouquet." It remains to be seen whether UNCSTD will be remembered merely for its verbal bouquets—or for launching new, practical efforts to "help eradicate the worst aspects of poverty by the year 2000."

(March 1980)

NOTES

1. United Nations, *Report of the United Nations Conference on Science and Technology for Development*, Vienna (August 20-31, 1979) New York, United Nations, 1979, p. 48. Hereafter cited UN Report.

2. For a discussion of these two groups see Robert S. Jordan, "International Scientific and Professional Associations and Their Role in the UN Conference on Science and Technology for Development," *International Studies Notes,* 6, 2 (Summer, 1979), pp. 8-12.

3. NGO Forum—Science and Technology for Development, NGO Report on the Draft Outline Programme of Action on Science and Technology for Development (Preliminary Draft), New York, 1979. Hereafter cited NGO Report.

4. *Retort, #*1, August 20, 1979, p. 2.

5. A very useful summary of these meetings, as well as other international events leading up to UNCSTD and especially the U.S. preparations is: U.S., House of Representatives, Subcommittee on Science, Research, and Technology. U.S. Background Preparations and Policy Formulation for the United Nations Conference on Science and Technology for Development, Washington, U.S. Government Printing Office, 1979. This report was prepared by Genevieve J. Knezo. It is hereafter cited as *U.S. Background Preparations.*

6. These Guidelines are reprinted in *Interciencia* 4,5 (September-October 1979), pp. 288-293.

7. *NGO Report*

8. *Retort, #*3, August 22, 1979, p. 8.

9. *Ibid.*

10. *Ibid.,* UNCSTD Post-Conference issue, Autumn 1979, p. 5.

11. Another newspaper, *Eco,* was published by Friends of the Earth, International, but it was more narrowly focused on environmental issues. It was also somewhat more sedate and less irreverent. Hence, *Retort* was much more widely read.

12. UNCSTD. *Meetings Contributing to the Preparation of the United Nations Conference on Science and Technology for Development.* New York, March 27, 1979. (A/CONF.81/INF.3/Rev.1), p. 1.

13. Computed from listing of meetings in *Ibid.*

14. *U.S. Background Preparations*, p. 44.

15. John Walsh, "U.N. Meeting in Vienna Unlikely to Be a Waltz," *Science*, 2 (June 1, 1979), pp. 926-27.

16. A/CONF.81/PC/CRP.21.

17. The final Programme of Action is contained in *U.N. Report*, "Clamour, Claims, and Crumbs," were the banner headlines of *Retort's* post-conference issue.

18. "UNCSTD: A First Step in a Long Journey, *The Bulletin* (November 1979), p. 1.