Sixty years of UN and UNESCO

Science and technology in global cooperation: the case of the United Nations and UNESCO

Klaus-Heinrich Standke

This is on the Rise and Fall of S&T on the global agenda. The 1963 Geneva UN Conference wanted the S&T divide between rich and poor countries to be bridged by systematic international cooperation. The later North–South confrontation gave the transfer of knowledge a decisive role. Come the 1979 Vienna Conference, fewer UN agencies participated. Twenty years on, UNESCO and ICSU had a World Science Conference in Budapest; the UN and other agencies were bystanders. The focus was on S and not the T. The end of the Cold War and the ongoing globalisation led to new S&T partnerships. UN and its agencies face an increasingly critical attitude from their member states on S&T, aggravated by there now being no UN system-wide approach.

Professor Dr Klaus-Heinrich Standke is at Täubchenstrasse 1, D-14163 Berlin, Germany; Email: KHSTANDKE@aol.com; Tel: +49 30 814.99.036; Fax: +49 30 814.99.038; Tel/Fax: +33 02 31.91.64.04.

This article is a contribution to the commemoration of the 60th anniversary of the UN and of UNESCO in 2005.

THE HISTORY OF THE INTERACTION between the United Nations (UN) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in the field of science and technology (S&T) is at the same time the history of the broader issue of multilateral efforts to introduce S&T to the global agenda. It also reflects the numerous systematic efforts of the world's scientific community to have an impact on the priority-setting of programmes in the intergovernmental system, which is ultimately determined by representatives of governments; that is, by officials from ministries in member states and by diplomats accredited to the headquarters of international agencies.

On the intergovernmental level, the creation of the League of Nations in 1919 created a permanent platform for governments *inter alia* for the discussion of common problems in the field of science. In 1922 the Intellectual Cooperation Organisation, to a certain extent the predecessor of UNESCO, was created.

The terms 'science' and 'technology' are not explicitly used in the Charter of the United Nations. Article 13 of the Charter refers only to "international cooperation in the *economic, social, cultural, educational, and health fields*". Article 57, referring to the relationship between the UN and the specialised agencies, adds to this listing of subjects the term "*related fields*" under which "Science and Technology" may find its place.

The acronym UNESCO narrowly missed not having the "S" for science, because when plans were being laid for foundation of the organisation … education was the main theme. The "S" was added only in November 1945 by the preparatory commission that met in London to

Klaus-Heinrich Standke has a professional record in different intergovernmental agencies. He was Counsellor in the Directorate for Scientific Affairs, OECD, Paris. He was seconded in this function as Secretary-General of the European Industrial Research Management Association (EIRMA) which was created under OECD auspices. In the years 1974–1980 he was Director for Science and Technology, United Nations, New York. From 1980 to 1999 he was associated in various functions with UNESCO, Paris: Principal Director in the Science Sector and subsequently Special Advisor (Assistant Director-General) to the Director-General of UNESCO; Member of the International Scientific Advisory Board of UNESCO. Standke is a member of the President's Council of the New York Academy of Sciences and a member of the European Academy of Sciences and Arts.

create UNESCO. The change was made in response to pressure from scientist's groups, particularly in the United Kingdom. (UNESCO, 1985: 5)

When presenting UNESCO's budget-programme for 1948 the Director-General, Julian Huxley, had this to say:

> Ce n'est ni une université mondiale, ni un centre mondial de recherche, ni une agence mondiale d'assistance. C'est une organisation intergouvernementale dont l'objet est de contribuer à la paix et à la sécurité parmi les nations au moyen de l'éducation, de la science et de la culture. (De Lacharrière, 1961: 159)
>
> [It isn't a world university, nor a world research centre, nor a world help centre. It's an intergovernmental organisation of which the object is to contribute to peace and security among the nations by means of education, science and culture.]

These interpretations of the mandates of the UN and of UNESCO in the field of science and technology reveal quite some conceptual misunderstandings and may explain some of the tensions which have occurred from time to time between Paris and New York.

By and large, UN and UNESCO, both being intergovernmental organisations, have the same membership. And yet the United Nations, if only by the composition of the Permanent Missions accredited to the UN, is much more 'politically' oriented; even the nationality of higher officials at the secretariat and their belonging to a given group of countries has a higher impact on their professional credibility than in the more technically oriented specialised agencies such as UNESCO.

UNESCO, on the other hand, is proud to see itself as the 'intellectual organisation' and on occasions as 'the conscience' of the UN system.

> UNESCO's general mission … is to promote the development of scientific knowledge, because it has an intrinsic value … UNESCO is, *in fact,*

the only organisation in the UN system whose mandate includes *basic science.* (UNESCO, 1985: 7)

This singular role indeed gives UNESCO an important mandate, which is not contested by any other agency. In the case of technology things are different. There is a strong field of agencies — such as the International Labour Office (ILO), United Nations Industrial Development Organisation (UNIDO), United Nations Conference on Trade and Development (UNCTAD), United Nations Centre on Transnational Corporations (UNCTC) as well as the World Bank and the regional development banks — that have technology issues and technology policy as part of their work programmes. Unlike the time when the UN and most of the specialised agencies, including UNESCO, were created, 'science' — though it still has a value of its own — seems to have been gradually replaced by 'technology' as a political factor in North–South relations: "technology is a primary source of national power and diplomatic influence" (US House of Representatives, 1976: 94[1]). 'Science', however, is increasingly regarded as a "global good", and is seen as part of the common heritage of humankind (Stiglitz, 1999: 312; *UNESCO Courier*, 1999). UNESCO/International Council for Science (ICSU)[2] at the World Science Conference in Budapest: "Countries that have the necessary expertise should promote the sharing and transfer of knowledge" (UNESCO/ICSU 1999.

As will be described below in more detail, the interaction between the UN and UNESCO was very close and went smoothly during the entire period during which the UN Advisory Committee on Science and Technology for Development (UN-ACAST) was the sole advisor on issues of science and technology to the Economic and Social Council of the UN (ECOSOC). During this period, the role and competence of the specialised agencies in their fields of competence were undisputed.

The years following the first UN World Conference on Science and Technology, a joint UN system-wide exercise, held in Geneva in 1963 (see below), have led, by a request of ECOSOC to ACAST, to the preparations of an ambitious UN system-wide comprehensive 'Master Plan'; that is, a "programme of international co-operation in science and technology in which the developed and developing countries could join in a drive on problems of importance for the developing countries" (UN General Assembly resolutions 1944 [XVIII], 2318 [XXII]; ECOSOC resolutions 1083 [XXXIX], 1155 [XLI]).

In responding to this request, after many years of collective efforts, in 1971 ACAST presented its "World Plan of Action for the Application of Science and Technology to Development" (ACAST, 1971). The Plan had been prepared with the assistance of all concerned specialised organisations of the UN system, in particular with support from

UNESCO (see below). But since the request was made to ACAST to prepare such a World Plan and since its presentation in 1971 to ECOSOC, with the increasing bargaining power of the 'Group of 77', which traces its roots way back to the first session of UNCTAD in 1964, the political climate at the UN has fundamentally changed (Sauvant, 1981).

It was felt by the majority of UN member states — that is, by the 'Group of 77' — that the issue of science and technology should not be left anymore to the initiative of a rather independent expert body, such as ACAST, which had the prerogative of reporting directly to ECOSOC to provide policy advice and to make recommendations. Therefore, in the same year, 1971, an intergovernmental committee, the Committee for Science and Technology on Development (CSTD), a sub-committee of ECOSOC, was created. ACAST originally placed great hopes in the establishment of CSTD. Previously the Council had found some difficulty in dealing with questions relating to S&T. It was hoped, though in vain, that the CSTD would include more delegates qualified to form a judgement on these questions and that, being composed of government representatives, it would be able to assist the Council more readily to reach decisions on ACAST's proposals for action.

CSTD decided not to follow suit on the proposed World Plan. The World Plan of Action, carefully prepared during almost five years by UN-ACAST in close cooperation with the specialised agencies, was shelved.[3]

Instead, with special reference to the "Declaration and the Programme of Action on the Establishment of a New International Economic Order" (GA resolutions 3201 and 3202 of 1 May 1974), it was decided that a special intergovernmental conference should be convened, allowing all member states, in particular the developing countries, to elaborate on the main objectives of the North–South cooperation on science and technology for development (ECOSOC resolution 2028 [LXI]). ACAST — in cooperation with the specialised agencies — has prepared a considered statement of its views on the nature, purpose and organisation of the conference (E/C.8/WG.1/4). ACAST supported strongly the need to involve governments, the specialised agencies and representatives of the scientific community in the preparations for this conference.

When, in January 1977, the Secretary-General for the UN Conference on Science and Technology for Development (UNCSTD), was appointed, he made it clear from the outset that a new spirit — away from expert advice and from agency expertise — would govern the UNCSTD preparations:

> We must avoid bypassing Governments "from above" ("great international technological decisions", "extra-national organizations", unappealable judgements of wise men or magicians, international bureaucracies).[4]

Hidden in this — for a high UN official — rather unusual language was his personal conviction that the impact of ACAST and the scientific community at large ("wise men and magicians") as well as the role of the specialised agencies ("international bureaucracies") would henceforth differ from any of the other UN conference preparations.

The Conference Secretary-General devised instead the so-called "ascending process" for UNCSTD, a sort of worldwide referendum, in which each member state would define its own STD priorities. "Governments and Governments alone" should thus influence the UNCSTD preparations. The Conference Secretary-General, a career diplomat from Brazil, was fully aware of the risks he took when steering his proclaimed course into action. He admitted privately that if UNCSTD became a failure, "for the next 25 years it would be impossible for anyone to re-introduce again the issue of Science and Technology on the UN agenda". In a retrospective in 2005, it is obvious that this vision has proved to be correct: Since this statement was made, on 31 January 1977 at the first PrepCom session of UNCSTD, the various components of the UN system on S&T were never seen again on a joint major mission under the leadership of the UN.

UN organisational structures for S&T

During the first two decades after the UN was brought into existence, there were no formalised structures at the UN secretariat in charge of issues concerning science and technology. They were dealt with by the UN Department for Economic and Social Affairs which acted among other functions as Secretariat of ECOSOC. As a result of the first UN Conference on Science and Technology (in Geneva in 1963), institutional arrangements for the coordination of the activities of the UN system for science and technology were created, which were valid until 1993:

- An inter-agency coordinating machinery;
- An advisory body; and
- A secretariat; to which was added, eight years later, in 1971,
- An intergovernmental organ.

During the first two decades after the United Nations was brought into existence, there were no formalised structures at the UN secretariat in charge of issues concerning science and technology

However, it must be stressed from the outset of this historical overview that, for a number of reasons from the mid-1990s, all these bodies — which had a direct impact on S&T issues in the UN system as a whole — became *de facto* defunct (see below). S&T has evidently no longer the same degree of priority it used to have for the UN during its first 50 years.

But let us go back to the origins.

The period between UNCSAT and UNCSTD

The UN Office for Science and Technology (OST) was created in 1964. It was the permanent secretariat of all UN committees dealing with S&T issues and provided a focal point for continuing secretariat support of the organisation's role in this area:

The Scientific Advisory Committee (SAC) of the Secretary-General This committee was created by the UN General Assembly (GA resolution 8103 [IX] of 1954, and 1344 [XIII] of 1958) to advise and assist the Secretary-General at his request on all matters relating to the peaceful uses of atomic energy with which the UN might be concerned. Subsequently the scope of the SAC broadened to include other aspects of science. The seven members of the SAC — all nuclear physicists — were appointed by the GA from the following countries: Brazil, Canada, France, India, USSR, UK and USA. The SAC has met when convened by the Secretary-General. It was at the recommendation of the SAC that the first United Nations Conference on the Application of Science and Technology for the Less Developed Areas was convened.

The United Nations Advisory Committee on the Application of Science and Technology to Development (ACAST) The Advisory Committee was established by ECOSOC resolution 980 A (XXXVI) of 1 August 1963 following the UN Conference on the Application of Science and Technology for the Less Developed Areas (UNCSAT), held in Geneva in February 1963. The Council had decided that ACAST should consist of 18 members (later 24), to be appointed on the nomination of the Secretary-General, after consultation with governments. During the 16 years of its existence 71 individuals (men only, not a single woman), including presidents of academies of sciences, Nobel Prize winners and cabinet ministers, have served on ACAST. The Advisory Committee had a formidable mandate:

- It was to keep progress in the application of S&T under review and propose measures to ECOSOC for such application for the benefit of developing countries.
- It was to review the S&T programmes and activities of the UN and its specialised agencies, and propose to the Council measures for their improvement, including the establishment of priorities and the elimination of duplication.

- It was to consider specific questions referred to it by the Council, or by the Secretary-General or by the executive heads of the specialised agencies. The working relations between ACAST and the specialised agencies were cordial and so close that UNESCO, for example, had refrained from setting-up its own advisory committee[5] until ACAST in its original form ceased to exist in 1980 as a result of a number of far-reaching institutional changes after the second UN World Conference (UNCSTD) held in August 1979 in Vienna.
- To these terms of reference must be added any other tasks assigned to ACAST by the GA (Standke, 1979:2).

In addition to its plenary sessions, ACAST has operated in regional groups and in this capacity has closely cooperated with the Regional Economic Commissions of the UN. The regional ACAST groups have furthermore been instrumental in the intellectual preparations of the series of Regional Science Conferences of UNESCO (CASTs).

The Administrative Subcommittee on Coordination (ACC) Subcommittee on Science and Technology The ACC subcommittee was established in 1963, following the Geneva Conference, to ensure "positive interagency co-operation in the field of science and technology". The subcommittee's purpose was basically to provide a forum for continuing interagency consultation and to act as a source of advice to the ACC on matters related to S&T, particularly in relation to development, which involve the secretariats of the organisations of the UN system (see document COORDINATION/R.1014, para.56). The subcommittee reported through the preparatory committee to the ACC, composed of the executive heads of the specialised agencies and chaired by the Secretary-General. The membership of the subcommittee was open to all interested agencies. The Director of the OST acted *ex officio* as chairman.

The United Nations Committee on Science and Technology for Development (CSTD) The Committee was created by ECOSOC resolution 1621 (LI) of 30 July 1971 as an intergovernmental committee to provide policy guidance and make recommendations to ECOSOC on matters relating to the application of S&T to development. This body was composed of 54 member-states, elected by the Council in accordance with the geographical distribution of seats in the Council itself. In 1977 CSTD met as a preparatory committee for the 2nd UN Conference on Science and Technology for Development (E/C.8/L.57).

In addition to its secretariat functions serving the four above-mentioned committees, the OST had the following functions:

- To collect, maintain up-to-date and disseminate information on the activities of the various

components of the UN system in the field of S&T; identify gaps and duplications in these activities; delineate the grounds for cooperation between the specialised agencies or other organs within the system, and help bring them together on common tasks.

- To ensure substantive coordination of multi-sectoral or inter-agency studies, through the mechanism of the ACC Subcommittee for Science and Technology.
- To follow the activities of the UN system in the field of S&T with a view to their harmonisation and their possible integration within a UN general policy for S&T.
- To examine and emphasise, where appropriate, the relationship between activities of the UN system in S&T, and activities carried out by the system in other fields.
- To keep abreast of the developments, trends and progress in S&T and their applications to development; in this framework; suggest, initiate or when appropriate undertake special studies of an exploratory nature, in consultation with the relevant substantive divisions or agencies, and present adequate recommendations concerning their follow-up within the system.
- To review, appraise and support the implementation of the World and Regional Plans of Action for the Application of Science and Technology to Development, and assist the regional commissions in this regard.
- To play an advisory role within the UN Secretariat on all matters relating to S&T; to maintain permanent links with the S&T community, and with the various governmental and non-governmental institutions dealing with S&T.[6]

During the preparatory period of UNCSTD (1977–1979) the CSTD — open to all member states — served as preparatory committee of the conference. The ACC Subcommittee for Science and Technology served as an inter-agency task force for the coordination of inputs of the specialised agencies for UNCSTD. The conference secretariat consisted of staff members recruited for the occasion, in addition to OST staff and staff members seconded from the specialised agencies (UNESCO: C Nones Sucre).

The period after UNCSTD (1980–1992)

As a consequence of the new institutional arrangements for the S&T 'machinery' within the UN system, the infrastructure created after UNCSAT, outlined above, was abolished in accordance with recommendations made at UNCSTD (GA resolution 34/218 of 19 December 1979). They were replaced — with modified terms of reference — by:

- The UN Intergovernmental Committee on Science and Technology for Development (IGCSTD), a committee 'open to all member states' reporting *through* ECOSOC to the GA;
- The UN Advisory Committee on Science and Technology for Development (ACSTD);
- The Inter-Agency Task Force on Science and Technology;
- The UN Centre for Science and Technology for Development (UNCSTD) to be headed by a high official (Assistant Secretary-General) from a developing country, reporting no longer to the UN Department for International Economic and Social Affairs but directly to the Director-General for Development and International Economic Cooperation;
- In addition, a special secretariat unit was created within United Nations Development Programme (UNDP) for the administration of the Interim Fund on Science and Technology for Development.

The new organisational machinery was almost exclusively geared towards the implementation of the Vienna Programme of Action (VPA),[7] in which the specialised agencies had only a marginal role to play. From the outset, member states, in particular those from the developed countries, were critical on the usefulness of the new secretariat arrangements.

At that time, the political interest of the VPA appeared to be priority-setting for the use and distribution of the new funds that were expected as the major outcome of the Vienna Conference: An 'interim fund' for the years 1980–1981, which was expected to mobilise at least US$250 million, was followed by a long-term 'financing system' in the order of magnitude of annually US$1 billion or even US$2 billion.

Since 1993 and the present institutional situation

During the post-UNCSTD decade it became gradually evident that the Vienna Programme of Action, in particular as far as the financing system was concerned, would not materialise. The expected new funds finally mobilised no more than some US$25–30 million.[8]

As a consequence, the UN has practically abolished the entire machinery on S&T it had built up at headquarters in New York,[9] which had served the UN system for some 40 years. Although judging from the formal UN structure, one might get the impression that with some modifications the basic structure on S&T has not been harmed, in reality the visibility which S&T had enjoyed at the UN in New York since UNCSAT in 1963 has disappeared. The delegation of the complex issues of S&T to UNCTAD in Geneva, at a time in which for example the European Commission and the Organisation for Economic Cooperation and Development (OECD) were giving even higher priority to such issues, is difficult to explain.

The UN Fund for Science and Technology had already much earlier ceased to exist as a special entity within UNDP. Officially this bold decision was a

consequence of the GA resolution 46/235 of 13 April 1992 on "restructuring and revitalization of the United Nations in the economic, social and related fields". The ACC Subcommittee for Science and Technology (the inter-agency task force created for that purpose) in charge of inter-agency coordination was abolished as part of the transformation of the former ACC into the Chief Executive Board for Co-ordination (CEB).

In its decision 1992/218 of 30 April 1992, ECOSOC established the Commission on Science and Technology for Development as successor to the Intergovernmental Committee on Science and Technology for Development and its subsidiary body, the Advisory Committee on Science and Technology for Development (ACSTD, formerly ACAST). The terms of reference from 1992 continue to refer to the VPA of 1979.

It is an organisational innovation that an intergovernmental committee, such as the new Commission on Science and Technology for Development, acts simultaneously as its own advisory committee. The Commission was established:

> to provide the General Assembly and ECOSOC with high-level expert advice on relevant issues through analysis and appropriate policy recommendations or options in order to enable those organs to guide the future work of the United Nations, develop common policies and agree on appropriate action.

Whereas at UNCSTD, it had been seen as one of the great achievements of the conference that the newly established intergovernmental committee (IGCSTD) was not confined to the membership of 54 of ECOSOC, but open to all member states, the new Commission, which reports *to* ECOSOC (and no longer *through* the Council directly to the GA), is much smaller in size: It has only 33 members; that is, 22 less than ECOSOC itself.

Functionally, the Commission is no longer attached to the UN in New York, but instead to UNCTAD in Geneva. Since July 1993 it has met in Geneva and is being serviced by UNCTAD's Investment, Enterprise Development and Technology Division (earlier: Division for Science and Technology). The Commission meets annually for a period of one week (ECOSOC resolution 2002/37, reaffirmed in ECOSOC resolution 2003/31 of 4 June 2003).

The Commission has a similar far-reaching mandate to that of the earlier CSTD (1971–1979). It is seen by ECOSOC "as a '*global forum*' for:

- the examination of S&T questions and their implications for development,
- the advancement of understanding on S&T policy issues, particularly in respect of developing countries,
- the formulation of recommendations and guidelines on S&T matters within the UN system,

- all in relation to development" (ECOSOC resolution 1995/4).

Taking into account the staff situation and in view of the modest budget resources available, it will be difficult for the Commission to live up to the expectations which its ambitious mandate suggests.

As in earlier years in the context of the International Development Decades and the International Development Strategy, the General Assembly of the UN has proclaimed that science and technology are critical elements in meeting the development goals contained in the United Nations Millennium Declaration of 2000. The Seventh Session of the ECOSOC Commission on Science and Technology for Development (Geneva, 24–28 April 2004) recommended international and national policies that should be pursued to ensure that S&T contribute effectively to achieving the millennium development goals (MDGs). The Commission identified specific measures and actions needed to integrate S&T in national development strategies (UN ECOSOC, 2004a).

At this session, furthermore, participants reaffirmed the unique role and mandate of the Commission:

> as the only high-level United Nations entity established to provide high-quality advice to ECOSOC and the GA on science and technology for development. The primary role of the Commission remains that of a "think-tank", which studies the role of science and technology for development. (UN ECOSOC, 2004b)

Among the specialised agencies, UNESCO was not represented at the meeting of the Commission. The apparent lack of involvement of UNESCO in the work of the Commission can also be noticed from the absence of UNESCO's name from the official United Nations Website list of "UN system partnerships on science and technology in UN Programmes", which gives a summary account of UNCTAD, UN Food and Agriculture Organisation (FAO), UNIDO, International Atomic Energy Agency (IAEA), UN Environment Programme (UNEP), Office of the High Commissioner on Human Rights (OHCHR) and the World Intellectual Property Organisation (WIPO), but without any reference to the activities of the science sector of UNESCO.

UNESCO and UN on S&T (1945–2005)

During the first years after the inception of the United Nations, UNESCO, as the other specialised agencies, contributed to the work of the GA and of ECOSOC in the field of S&T on an *ad hoc* basis. When in 1964 UN-ACAST was created to deal on behalf of ECOSOC with all issues regarding S&T, UNESCO's contributions to the UN were channelled through ACAST.

UNESCO contribution to UN-ACAST activities[10]

- 1968: ACAST requested UNESCO to undertake a closer evaluation on *The Problem of Emigration of Scientists and Technologists* (Document UNESCO/NS/ROU/158 or UNESCO/SC.WS.57). Since that time, UNESCO has continued to study this question under its regular programme and, as a result, an international recommendation on the status of scientific researchers was adopted by the General Conference at its 18th session in 1974.

- ACAST stated that UNESCO, in particular, has a vital role to play in assisting in the development of institutions for the formulation of *science policy* for the conduct of research at national level (Second Report to ECOSOC, E/4026, para 156).

- ACAST stated in the Third Report to ECOSOC the need to establish in the regions "institutes or other establishments for the following activities: tropical medicine and public health; scientific information and documentation; training scientific administrators".

- UNESCO has taken action by establishing a strong "study and observation fellowship programme" in the field of *training scientific administrators*, and by launching a feasibility study on the establishment of an *international institute for the planning of scientific and technological development*.

- While preparing for the 'World Plan of Action for the Application of Science and Technology to Development',[11] ACAST also began more actively to collaborate with UNESCO, which had requested it to act as *its* advisory committee. In its plenary session in 1972, the Advisory Committee suggested that a review should be undertaken of the work programme of UNESCO in the area of *science policy*. It was pointed out that UNESCO's work had considerable significance for most of the matters with which the Advisory Committee was dealing, and it was agreed that the Director-General of UNESCO should be asked if he would be agreeable to the establishment of a small ACAST working group to study the programmes being undertaken by UNESCO. The Director-General welcomed this offer, and the working group was held at UNESCO Headquarters, 11–14 December 1972. In its conclusions, presented to the Advisory Committee, the working group stressed the large measure of common concern and motivation between members of the Advisory Committee and the science policy programme of UNESCO. It suggested that its visit to UNESCO might be regarded as the beginning of a dialogue that could be developed into a regular biennial visit. The Working Group was also pleased to note the progress being made by UNESCO in conducting a survey of institutional needs in S&T that had been originally suggested by ACAST. ACAST requested UNESCO to undertake a detailed, country-by-country survey of institutional

Even more than 25 years later, there is no such a policy involving all actors within the United Nations system dealing with science and technology

needs in S&T. UNESCO gradually elaborated, over a period of years through a series of field experiments in developing countries, a method for priority determination in S&T. The methodology was published as No. 40 in the UNESCO series "Science Policy Studies and Documents", under the title *Method for Priority Determination in Science and Technology.*

- UNESCO has responded to ACAST's concern on integrated information for policy makers, managers and development workers in the field of S&T application by developing a pilot programme known under the acronym "SPINES": an *international information exchange system for the application of science and technology to development*.

- The ACAST Working Group on *Harmonizing Science and Technology Policy in the United Nations System* held its third session at UNESCO headquarters in Paris in May 1978 and proposed several possible institutional alternatives for harmonising S&T policy in the various agencies. In view of possible far-reaching consequences for the institutional balance within the various elements in the UN system, the earlier notion of a "unified science and technology policy" was abandoned in favour of the more neutral term "harmonized system-wide policy". In any event, even this concept was too ambitious. Even more than 25 years later, there is no such a policy involving all actors within the UN system dealing with S&T.

- On the issue of *science education* ACAST and UNESCO have worked closely together. In its first report on science education, which was submitted to ECOSOC in 1968, ACAST included four specific recommendations:

  1. That means should be found by UNESCO to augment the staff and facilities of its Division of Science Teaching so that the new techniques and materials in its pilot projects for teacher training could be continuously developed and applied on an extensive scale in a number of different regions.

  2. That in order to obtain an early reappraisal and representative views on the forward planning of science-teaching activities, an interchange of ideas and experience should be arranged … by means of a working party organised under the joint auspices of the UN and UNESCO.

  3. That, as one means of strengthening the

development and diffusion of innovations in science teaching *via* national science-teaching centres, there should be created an international centre for science-teaching development and demonstration, either with UNESCO or closely affiliated with it.

4. That, to overcome the lack of awareness on the part of many teachers, scientists, administrators and others of the great advances already made in pre-university science education, steps should be taken to ensure the wider production and circulation of certain publications by UNESCO.

The working party recommended under (2) was convened in 1969 under the joint sponsorship of the UN and UNESCO. The results were published in a book for a wider audience than reached by the report (Baez, 1976). Also, as a result of the UN/UNESCO working party, ACAST decided to prepare its own second report on science education, which was submitted to ECOSOC in 1970. This report reviewed the progress that had been made regarding the implementation of recommendations in its first report on the subject, and it continued with a number of additional recommendations.

- As part of ACAST efforts to insert the concept of *science and technology policy* into the Second Development Strategy of the United Nations and into the comprehensive "World Plan of Action for the Application of Science and Technology to Development", at the request of ACAST, UNESCO has undertaken a worldwide survey and analytical study of bilateral institutional links between scientific institutions in developed countries and similar institutions in developing countries. The study was subsequently published as No. 13 in the UNESCO series "Science Policy Studies and Documents" and — as a result — the Governing Council of UNDP has agreed to assist in the establishment of inter-institutional links in S&T.

Preparing the "World Plan"

Having reviewed the results of the Geneva Conference, ECOSOC decided that it needed further advice on the issues dealt with in Geneva on a quasi-permanent basis. Therefore, in 1964 it set up an independent Advisory Committee for the Application of Science and Technology to Development (ACAST). One of ACASTS's main achievements has been to establish a fairly clear philosophy or strategy for the role of S&T in the development process in order to give the application of S&T a new and greater impetus in the programmes and activities of all appropriate UN bodies, and to promote the effective combination of their efforts in this field.

At one time, there was hope that ECOSOC itself would initiate, on the basis of initiatives of ACAST, the launching of an immediate "world-wide attack" on a limited number of especially important problems of research and application. The Advisory Committee suggested that a short list of problems might be drawn to meet the following criteria:

- A solution would offer unusually great benefits by application in developing countries; and
- The state of science and technology is such that a breakthrough may be realised if a massive world-wide attack on the problem is made.

It was not before 1969 that ECOSOC formally requested that the various UN organisations prepare, within the ensuing 18 months, "detailed statements indicating the extent to which their current or planned activities were designed to intensify or accelerate the accomplishment of the proposed plan". After receiving and studying these statements, ACAST should "define and elaborate in greater detail the content" of the proposed World Plan of Action (UN, 1971). The report of the World Plan of Action was issued at the beginning of 1971; that is, exactly eight years after UNCSAT and eight years before UNCSTD.

The World Plan consisted of two parts:

Part One was prepared by the Advisory Committee itself. It listed priority areas selected as being particularly important and in which S&T could make a resounding impact. It also outlined ACAST's proposals for the implementation and financing of the plan:

- Target I: Developing countries increase their outlays on research and technical development to 1% of their GDP by the end of the decade. (The target of 1% was reaffirmed in the Millennium Developments Goals of the UN in 2000.)
- Target II: That developed countries should increase their S&T aid to developing countries to the extent of 0.05% of their GDP; this equalled approximately US$1,250 billion.
- Target III: That developed countries should devote 5% of their non-military R&D outlays to the S&T needs of the developing nations.

In addition, it was proposed that UNDP would earmark substantial amounts from its expected budget increase during the 1970s for the purposes of S&T and education (UN, 1971: 39–40).

Part Two was compiled by the UN Office for Science and Technology. It consisted in essence of material prepared by the specialised agencies and by some experts. It was reviewed by the ACC Subcommittee on Science and Technology in which all organisations concerned of the UN system are represented. No other UN agency has made more substantive contributions towards the World Plan than UNESCO:

- UNESCO has elaborated one of the cornerstones of the World Plan of Action; that is, the conceptual basis for "desirable targets and foreseeable enrolment rates of R%D scientists". The *World Directory of National Science Policy Bodies*, prepared by UNESCO, has given a clear picture of the situation (p. 33).

- In the chapter "The need for a strong indigenous scientific base", UNESCO has supplied the argumentation for the ideal mix of fundamental and applied research (p. 53) (UNESCO, 1970).

- In the chapter "Links with world science and technology", UNESCO has supplied the argumentation for closer links to this effect (p. 54) (UNESCO, 1969).

- In the chapter "Quantified targets for the Second UN Development Decade", UNESCO has supplied the definition and the methodology (pp. 55, 60) (UNESCO, 1968a).

- In the chapter "Educational requirements for science and technology", UNESCO has made available the experience of its intergovernmental conferences for education (p. 61).

- In the same chapter, reference was made to the "evaluation of the Director-General of the results of the First Development Decade in UNESCO's fields of competence and draft programme of the Organization for the Second Decade"(p. 63).[11]

- In the chapter "National institutions for science and technology" the results of the institutional surveys conducted by UNESCO during the First Development Decade were highlighted (p. 65).

- In the chapter "Need for institutions at the various functional levels", the results of the study of needs for governmental science-policy-making bodies conducted by UNESCO between 1965 and 1970 on a country-by-country basis were incorporated (p. 67) (UNESCO, 1966, 1968b, 1968c).

- In the same chapter, ACAST acknowledged specifically the "vital role" of UNESCO in assisting the institutions for the formulation of science policies for the conduct of research at the national level (p. 68).

- In the same chapter, reference was made to UNESCO's survey of the situation in developing countries regarding the existence of national policy-making bodies in S&T (p. 69).

- In the chapter "Institutions concerned with education, research, public services and extension work" the list prepared by UNESCO, identifying 400 such institutions worldwide, was mentioned (p. 69) (UNESCO, 1969).

- In the same chapter, ACAST recapitulated its request to UNESCO to proceed with a detailed survey of institutional needs in the field of S&T on a country-by-country basis. The survey would be undertaken by UNESCO in close cooperation with the UN regional economic commissions, but all other UN agencies were encouraged to speed up programmes on their field of competence of institutional build-up for S&T in developing countries (pp. 71–72).

- In the chapter "The need for appropriate technology" ACAST recommended strengthening of the current research and operational activities of the UN agencies; examples would be, *inter alia*, UNESCO's orientation towards the promotion of indigenous S&T within developing countries (p. 75).

- In the chapter "The scientific community", reference was made to ACAST's earlier request to UNESCO to prepare a study on "the problem of emigration of scientists and technologists".[12] Furthermore, mention was made of a UNESCO study on the build-up of scientific communities in developing countries (p. 85).[13]

- In the chapter "Mobilization of the world scientific community", annotated summaries prepared by UNESCO were reproduced, which covered the creation of new institutions and/or strengthening of existing ones (pp. 89–94).

- In the chapter "International and regional cooperation", reference was made to the establishment of a UNESCO–Organisation of African Unity (OAU)-sponsored network of centres of excellence in Africa (p. 110).[14]

In practically all other chapters of the World Plan, in one or another form, reference was made to UNESCO's expertise: natural resources (p. 138), agricultural research (p. 163), industrial research (pp. 168, 177), telecommunications (pp. 199, 200, 202), health (p. 259), peaceful nuclear energy (pp. 272, 274), computer technology (p. 285).

As already mentioned in the introduction, when the World Plan was presented to ECOSOC in 1971, it was decided not to endorse the actions proposed by ACAST and the UN agencies, but rather let a conference "open to all member states" decide on which priorities they would like to see for the intended worldwide new initiative on Science and Technology for Development.

The World Plan of Action has been 'translated' from the global level into regional plans and has been used*, inter alia*, as a conceptual background document for the organisation of the series of Regional Science Conferences of UNESCO (CASTs); for example: African Regional Plan for the Application of Science and Technology for Development (UN, ECOSOC, 1972).

World conferences on science and technology[15]

The UN took the initiative in launching the first UN World Conference with a considerable scientific content as early as 1948, already three years after its creation: The UN Conference on the Conservation and Utilisation of Resources. Other scientific conferences initiated by the UN Scientific Advisory Committee (SAC) under United Nations auspices followed: in 1955 and 1958 to discuss the

Peaceful Uses of Atomic Energy, in 1961 on New Sources of Energy.

Other UN World Science and Technology Conferences (or worldwide initiatives, such as the World Plan of Action) with the involvement of all specialised agencies dealing with S&T issues, in particular UNESCO, followed. The UN and UNESCO have so far organised three world conferences dealing with S&T, but each with a different conceptual approach. Two of them have been organised by the UN (Table 1).

1. The United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas (UNCSAT), Geneva, 4–20 February 1963, was mainly prepared as a collective effort by the UN itself, by the specialised agencies and by the scientific community.
2. The United Nations Conference on Science and Technology for Development (UNCSTD), Vienna, 20–31 August 1979, preceded by the UN-ACAST Colloquium on Science and Technology and Society: Needs, Challenges and Limitations, Vienna, 13–17 August 1979. The second was mainly prepared as a governmental effort to which the specialised agencies of the UN system submitted only background documents and the scientific community submitted their collective thinking by way of background reports prepared for the occasion.
3. The UNESCO/ICSU World Conference on Science, Science for the Twenty-First Century — A New Commitment, Budapest, 26 June–1 July 1999 was the first systematic effort of an international governmental organisation and of an international non-governmental organisation in joining their forces to organise a world conference.

In hindsight it can be said that all three Conferences may be regarded as milestones in the complicated process to introduce S&T notions into the political arena. Although all three World Conferences had their merits, as is to be expected, their critics are hesitant to label them as 'success stories'. All three Conferences have dealt by and large with the same topics, but they have had distinct different features.

The United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas (UNCSAT), Geneva, 1963 (UN, 1963) Although the decision of who was authorised to attend the Geneva Conference was left entirely to the participating governments, the conference was organised similarly to a scientific congress. Governments, international organisations and others were invited to submit papers. UNCSAT was attended by 1,665 participants and 96 governments were represented; 1,839 papers were distributed for discussion at the conference. Provision was also made for the projection of 250 documentary films and for an exhibition of 6,000 books and periodicals on S&T.

UNCSAT had a major flaw: only about 16% of the scientists attending the conference were from developing countries. This is partly to be explained by the fact that the conference took place before the process of decolonisation was completed.

UNCSAT was not empowered by ECOSOC to make recommendations to governments or to take decisions regarding policy. It was expected instead that the records of the proceedings at the Conference should "reflect any significant weight of opinion expressed in the discussions as summarised by the rapporteurs of the given proceedings". It was the responsibility of ECOSOC to decide what action should be taken within the UN to provide a practical follow-up.

The major achievement of UNCSAT was probably its pioneering effort for the acceptance of *science and technology policy* as part of the overall policies of developing countries: "Since Science and Technology are essential tools for accelerating development, they have become the subject of political decisions and to that extent fall within normal government responsibility" (UN, 1963: Vol. I, p. 185). Even the OECD, the platform of the Western industrialised countries, did not organise its first Ministerial Meeting on Science until one year after UNCSAT — in 1964 in Paris.

The preparations for UNCSAT were a joint enterprise of the UN, ILO, FAO, UNESCO, the World Health Organisation (WHO), International Telecommunications Union (ITU), the World Meteorological Organisation (WMO) and the IAEA. Each of the agencies had prepared the agenda items within their field of responsibility.

Table 1. World conferences on science and technology

	UNCSAT 4–20 Feb. 1963	ACAST/ UNCSTD 13–17 Aug. 1979	UNCSTD 20–31 Aug. 1979	UNESCO/ICSU 26 June–1 July 1999
Countries	96*	87	142	155
Participants	1,665	383	1,856 (1,271**)	1,800
UN System	108 participants	102 participants		28 IGOs
NGOs	90		366	60

Notes: * out of 110 UN member states in 1963
          ** participants from NGOs

UNESCO's involvement was manifold: The intellectual foundation of UNCSAT had been laid by the report of UNESCO's former Director of the Department of Natural Sciences (1948–1959), Pierre V. Auger "Current Trends in Scientific Research", undertaken under the auspices of ECOSOC in the years 1958–1960. His successor at UNESCO, V. Kovda, was a member of the Editorial Advisory Committee of UNCSAT to which three agency representatives belonged (UN, FAO and UNESCO). The UNESCO Director-General, René Maheu — together with the UN Secretary-General, the UNCSAT President and Secretary-General, and the heads of the other mentioned agencies — was on the platform and addressed the opening session of UNCSAT (in contrast to UNCSTD, where only the UN Secretary-General and senior conference staff were at the platform of the opening session in Vienna).

In the eight-volume conference report, numerous references were made to the UNESCO activities on various fields (for example, science and technology policy, mass media in developing countries, UNESCO's literacy plan, UNESCO Latin America centres for mathematics and physics, the UNESCO Multination Indian Ocean Project, science teaching programmes, hydrological decade, migrants' integration).

The United Nations Conference on Science and Technology for Development (UNCSTD), Vienna, 1979[16] UNCSTD took place in Vienna from 20 to 31 August 1979. It was preceded by an international colloquium on Science, Technology and Society — Needs, Challenges and Limitations, organised under the auspices of ACAST in Vienna from 13 to 17 August 1979 (Standke and Anandakrishnan, 1980).

The substantive groundwork of UNCSTD was prepared by ACAST, by a consultant's report (King, 1974), by an *ad-hoc* panel of experts appointed by the Secretary-General (Geneva, 23–28 October 1974), and by an intergovernmental Working Group (New York, 21 April–2 May 1975). Representatives of the specialised agencies, including UNESCO, participated in the various stages of these preparations.

UNCSTD was conceived:

> to be entirely different from the 1963 Conference and other conferences on science and technology and development in that it would attempt to examine the role of science and technology not as isolated instruments of action in the development process but as components of the overall system. In particular it would examine why the expectations of the benefits that science and technology might have conferred on development in the past have not been realized. (UN, 1974: 6)

UNCSTD was thus meant from the outset to be:

> an integral part of the efforts for the establishment of the NIEO [New International Economic Order] through the adoption of decision and the provisions of concrete and action-oriented recommendations aimed at the use of science and technology for the development of all countries, and particularly of the developing countries. (UN, 1979a: 1)

UNCSTD was really not on science and technology at all, nor on how specific technologies could be selected out of the world pool of science and technology for use by the developing countries, nor on which technologies need to be developed for the use of LDCs [less-developed countries]. Rather, the conference was oriented to the system within which science and technology are generated and implemented — namely the politics of both developed and developing countries towards R&D institutions and technology transfers, as well as the institutional structure and role of the United Nations and transnational corporations.

Consequently, many delegates who were oriented towards specific science and technology applications to development problems were somewhat frustrated. (Jack Behrman, University of North Carolina)

In line with the famous "ascending process" of UNCSTD all participating states were asked to prepare "National Papers"; subsequently two rounds of regional meetings took place in addition to the five sessions of the preparatory committee of the conference. All in all delegates preparing UNCSTD spent 80 session days in regional meetings, 69 days in sessions of the preparatory committee and 12 days at the Vienna Conference itself.

UNESCO attended all preparatory sessions and regional meetings of various kinds. At UNCSTD itself, UNESCO had the largest delegation from all specialised agencies, led by the Director-General. Furthermore, UNESCO gave financial support to a number of individual experts attached to national delegations from developing countries.

UNCSTD turned out to be more controversial than the other UN World Conferences:

- *Politically*: UNCSTD, as a milestone on the road to create a NIEO, has to a large extent focused on institutional changes within the UN system and

All in all delegates preparing UNCSTD spent 80 session days in regional meetings, 69 days in sessions of the preparatory committee and 12 days at the Vienna Conference itself

less — if at all — on the substance of S&T for development.[17]

- *Substantively:* UNCSTD deliberately left out those constituents that ultimately would have to carry out to a large extent the implementation of the Vienna Programme of Action; that is, the specialised agencies and the scientific community.[18, 19]
- *Organisationally*: UNCSTD was characterised by two special features; that is, the idea of the "ascending process" and the idea of the running of the Conference essentially by an independent 'ad hoc secretariat without any ties to the past and thus unable to capitalise on the experience gained by the UN system and the NGOs throughout the world on the field out S&T.[20]

For UNESCO the strong bias of UNCSTD on institutional arrangements had possibly serious consequences. The UNESCO Director-General, Amadou Mahtar M'Bow, who had personally sensed in Vienna the mood of the Conference, was deeply disturbed about the real danger that proposals made by some members of the Group of 77 would become a political reality, namely to transfer the scientific elements of UNESCO to New York.[21] The idea was to concentrate most of the available expertise in the UN system on S&T at one single location, ideally near the political centre of the UN system; that is, in New York. Obviously for the Director-General a UNESCO without an "S" was out of the question.

When replying to observations by members of the Executive Board, concerning the outcome of UNCSTD, the Director-General stated that:

> the Conference as you know, adopted a programme of action, the Vienna Programme which, as many members of the Executive Board pointed out, only reproduced in other terms — and if I may add a personal reflection, less clearly and less systematically — the main lines of emphasis defined in the resolutions of the General Conference of UNESCO, in the medium-term plan … and the programmes and budgets adopted by the General Conference. (UNESCO, 1979: i)

The tense atmosphere after the Vienna Conference between the UN Secretary-General Kurt Waldheim, and the Director-General for Development and International Economic Cooperation, Ken Dadzie, who was commissioned to oversee the implementation of the Vienna Programme of Action, on one side, and the Director-General of UNESCO, on the other side, can be exemplified by the following incident: The UNESCO Director-General felt that the UN Director-General was fostering unduly a UN–New York-centred formula concerning the institutional arrangements decided at the Vienna Conference in the field of S&T in the UN system. He had openly complained about that to the UN Secretary-General. According to Mr Dadzie the contrary was true. He was

accused by the Group of 77 of "slavishly following an ACC decision which could not be supported by the developing countries".[22] This unusual 'heads-on-collision' between the two highest ranking officials from Africa in the UN system was widely noticed as an example of how much the Vienna Conference results had upset the delicate balance between the UN und its specialised agencies.

It is known, that the UNESCO's Director-General M'Bow has managed to keep the situation — which even after 25 years is still being remembered by UNESCO staff members as 'traumatic' — under control. Nobody at that time could expect that things would go in a completely different direction:

- The UN in New York was not strengthened through UNCSTD as had originally been intended by some of the political actors, but on the contrary has abandoned its entire institutional machinery as well as its earlier secretariat competence on issues concerning S&T and is instead relying to a large extent on the expertise of external consultants.
- UNESCO has not benefited either from this shift of emphasis and, in continuing to focus on 'science issues' (as opposed to 'S&T issues'), is no longer seen as playing a leading role in the UN system on the broad field of S&T for development. UNESCO, if the analogy is allowed, seems to share its fate with the reduced role of the large central laboratories of the major research-intensive industrial corporations which since the 1970s have shifted their R&D efforts increasingly to specialised branch operations.

The most visible result of UNCSTD was the agreement that a new *financing system for science and technology for development* should be established by the General Assembly of the United Nations. The 'Group of 77' expressed the hope at UNCSTD that US$2 billion could be raised by 1985 and US$4 billion by 1990; that is, at least two to four times the amount of the annual budget of UNDP.

At UNCSTD the donor countries agreed, however, only to the establishment of an interim fund for the years 1980–1981 to be sustained by voluntary contributions, for which the Conference agreed that 'the target' should be no less than US$250 million. UNCSTD thus reiterated in Vienna the estimation made by ACAST eight years earlier, when suggesting that, as tentative targets for the World Plan of Action fund or account, US$125 million a year should be allotted for initiating or accelerating the programmes outlined by the Advisory Committee.

Although the Interim Fund was finally called 'operational' by the administrator of UNDP, a series of pledging conferences mobilised altogether only funds in the order of magnitude of US$50 million. That is to say that the UNCSTD preparations and later the costs to administer the fund exceeded by far the financial contributions mobilised through the UNCSTD exercise. The Financing System for

Science and Technology created by UNCSTD was formally terminated in 1986.

To commemorate the tenth anniversary of UNCSTD and as a contribution to the end-of-decade review of the VPA the Director-General of UNESCO, Féderico Mayor, convened on 14–16 June 1989 in Paris a high-level colloquium, "Science and Technology for the Future: A Fresh Look at International Co-operation" (Standke, 1990). The meeting was attended by 85 participants, including: the UN Director-General for Development and International Economic Affairs; the Executive Director of UNCSTD; the Director of the UN Fund for Science and Technology; senior representatives from UNIDO, UNEP, the World Bank, the OECD and the European Union; the French Minister of Research and Technology; the ICSU President; numerous presidents of academies of science, including the NAS, the Soviet Academy, the Indian Academy, the French Academy and the French National Centre for Scientific Research; the Nobel Committee; the Federation of German Scientists; the World Academy; the Third World Academy; the European Academy; the African Academy; the Club of Rome and the Chairmen of UNESCO's various intergovernmental scientific programmes. Furthermore, there were R&D directors from private industrial companies and the Secretary-General from EIRMA in attendance.

The UNESCO Colloquium called for a new interaction in the 1990s in the field of S&T between multilateral and bilateral relations, in which the regional intergovernmental organisations would, in addition to the worldwide-operating specialised agencies of the UN system, emerge as important new actors. The Colloquium furthermore predicted that in international cooperation the role of scientific non-governmental organisations, as well as that of the private sector, will — on a world scale — rapidly increase.

ACAST Colloquium on the Application of Science and Technology to Development One of the most major contributions that ACAST has made to the UNCSTD preparations was to serve as a liaison between the UN system and the international, non-governmental scientific and technological communities. The Advisory Committee has repeatedly stressed that:

> in the context of the Conference the instruments of action are science and technology and it is therefore equally essential to ensure that the scientific community of all the countries taking part is intimately and actively involved in all phases of the preparations and in the Conference itself. Such a close association between governmental decision makers and scientists is in any event a *sine qua non* at the national level for the successful application of science and technology to development.[23]

Consequently, ACAST has attempted to integrate the inputs from the international S&T communities as well as from the UN system through a special forum prior to the Conference. The Colloquium provided thus an opportunity to scientists, technologists and social and economic planners to consider the role of S&T in relationship to the issues to be discussed by the governments at UNCSTD.

In addition, ACAST decided that instead of organising the Colloquium as a self-generating event, it would take advantage of and draw upon a series of symposia that were being sponsored by other organisations as their contributions to the non-governmental scientific and technological aspects of the Vienna Conference: Global Problems (Tallin), Issues of Development: Towards a New Role for Science and Technology (Singapore), Views from the Developing World (Kuala Lumpur), Science and Technology in Development Planning (Mexico).

It is worth mentioning that the ACAST Colloquium not only received strong professional support from all concerned UN agencies (for example, through commissioned position papers), but it was also one of the rare UN system-wide manifestations in which more than 100 senior staff members from 23 different organisations have actively participated as experts in all deliberations and working groups. UNESCO was represented by its ADG for Science, Abdul-Razzak Kaddoura, as well as by several other staff members from the science sector.

UNESCO and the UN Millennium Project 2005

Thirty years after the presentation of ACAST's "World Plan of Action for the Application of Science and Technology to Development" to ECOSOC, and 20 years after the adoption of the "Vienna Programme of Action for the Application of Science and Technology to Development" by the General Assembly, the UN has developed a similar comprehensive global plan for S&T for development. As part of the Millennium Initiative of the UN (UN, 2005a) a special task force has prepared a report, Millennium Project "Task Force on Science, Technology and Innovation" (UN, 2005c). The Millennium Project is an independent advisory body commissioned by the UN Secretary-General to propose the best strategies for meeting the millennium development goals (MDGs). All 191 UN member states have pledged to meet these goals by the year 2015 (UN, 2005b).

In the exhaustive list of references concerning material used in the preparation of the UN Global Plan, a number of agencies are being specifically mentioned (UN, UNCTAD, UNDP, United Nations Economic Commission for Europe (UN-ECE), United Nations Economic and Social Commission for Western Asia (UN-ESCWA), United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP), FAO, Inter-American Development Bank (IDB), UNIDO, ITU, OECD), but no reference to any UNESCO input has been made.

In the list of references used as background material for the Millennium Project published in 2005, among some 300 references the only UNESCO report mentioned is five years old: "UNESCO Dakar Framework for Action 2000" (UN 2005b: 320).

In the Commission's report on how to meet the MDGs the only reference to UNESCO is a Toolkit on Gender Indicators in Engineering, Science and Technology by the UNESCO Gender Advisory Board.

As outcome of the 2005 World Summit (High-Level Plenary Meeting, New York, 14–16 September 2005) besides the reiteration of the commitment for achieving the Millennium Development Goals by 2015, "action on a range global challenges" with S&T content were mentioned only under the headings "Environment" (UN Framework Convention on Climate Change) and "International Health" with reference to the WHO (UNDPI, 2005).

Priority-setting and worldwide initiatives

As Table 2 — covering within a time-span of four decades seven UN system-wide conferences and global initiatives on science and technology — reveals, most dealt, not surprisingly, with more or less identical problem areas. There are, however, differences in the emphasis given to the various clusters. There is a clear trend from 'Science' to 'Science and technology for development' and more recently, as already earlier at the European Union and at the OECD but also in UN agencies, to 'Science and technology and innovation'. The Millennium Report, unheard of during the heated debates around UNCSTD, speaks even of "Promoting business activities in science, technology and innovation".

Against this development, UNESCO continues, in line with its original mandate, to concentrate on the notion of 'science' and 'science policy' and in launching "pilot projects aimed at building science policy forums in various regions of the world

Table 2. Priorities on the agendas of UN- and UNESCO-related worldwide initiatives on science and technology, 1963–2005

	UNCSAT Geneva 1963	ACAST World Plan of Action 1971	ACAST Colloquium Vienna 1979	UNCSTD Vienna Programme of Action 1979	UNESCO Colloquium 10 years after UNCSTD 1989	UNESCO/ ICSU WSC 1999	UN Millennium Project S&T and Innovation 2005
Natural resources: energy, water, sanitation	✓	✓	✓		✓		✓
Human resources	✓		✓	✓	✓		•
Food and agriculture	✓	✓	✓				✓
Industrial development	✓	✓	✓			✓	✓
Transport	✓	✓	✓				
Health	✓	✓	✓				✓
Urbanisation, human settlements	✓	✓	✓				
Economic development	✓		✓		✓		✓
Organisation and planning of S&T policies	✓	✓	✓	✓	✓	✓	✓
Technology acquisition, transfer and adaptation	✓	✓	✓	✓			✓
Training of S&T personnel	✓						
Communication, information systems	✓	✓	✓	✓	✓	✓	
S&T education		✓				✓	✓
Population			✓				
Environment and sustainable development		✓	✓		✓	✓	
Restructuring of international S&T relations				✓			
Strengthening the role and funding of the UN system in S&T				✓	✓		
Basic sciences					✓	✓	
Biotechnology					✓		
Peace, ethics, human dignity, Basic human needs						✓	✓
Widening participation in science						✓	
Innovation and business activities							✓
Governance of global technology							✓
Advisory role to governments							✓

(Africa; Arab countries, the Balkans, Caucasia, Latin America, South Asia, Western-Central Asia)".

UN–UNESCO relations on S&T

When reviewing the history of the interaction between the United Nations and UNESCO on the field of science and technology, three distinct phases of varying intensity can be identified:

1. From 1945 to 1977: "Balanced partnership and mutual trust".
2. From 1977 to the early 1990s: "Tensions and rivalries".
3. From the early 1990s to date: "Mounting indifference".

The three periods, in hindsight, also reflect almost completely different approaches to how to insert the relatively abstract notion of 'science and technology' into the world agenda.

1945–1977: Balanced partnership and mutual trust

The first 20 years after WWII can be described as a period of euphoria for science in the developed countries, of an almost uncritical belief in the might of *homo faber*. The assumption was that, since science can provide a decisive dynamic element to solve the problems of contemporary society and to yield economic development, more scientific research would necessarily yield more economic growth. Member states would thus require a rapid, balanced and sustained growth in the strength and quality of their scientific activity. The mystique of 'black box' science and technology seems to be today unwithered.[24]

The notion of 'science policy' was coined as a concept to convert the promise of S&T into a reality within a country's general plan of development.

UNESCO's interaction with the UN — more specifically with the UN-ACAST and with its permanent secretariat, the UN Office for Science and Technology — was in comparison with other specialised agencies very close. This became evident, for example, by UNESCO's intensive involvement during the five-year preparation of the World Plan of Action for the Application of Science and Technology for Development.

The notion of 'science policy' was coined as a concept to convert the promise of science and technology into a reality within a country's general plan of development

This exposure given to UNESCO's expertise was politically of great importance, since UNESCO was able to use the ECOSOC and GA platforms of the United Nations in New York for many years to demonstrate its competence on a wide range of key issues. In addition to its genuine own network of Paris-based national delegations, of the UNESCO National Commissions and of its many close links with the scientific community, such as ICSU and others, this mechanism has allowed UNESCO to add a scientific-professional dimension to the politically dominated deliberations in the UN forums.

1977–early 1990s Tensions and rivalries

This period has seen an increasingly political approach in the North–South dialogue on all issues concerning development. Science and technology became an important feature in these often emotional diplomatic negotiations. The politicisation of this process has had as a consequence that the substance of the complex scientific and technological issues became a sort of side track. It led finally almost to the exclusion of S&T expertise provided by independent experts and also to a certain extent to the exclusion of the technical expertise provided by the specialised agencies. The UNCSTD formula of the "ascending process" ("governments and governments only") was symptomatic of this approach.

The specialised agencies expressed concern that not only might their contribution to UNCSTD be reduced to a minimal extent, but also as a consequence of the Conference the institutional arrangements could result in a lasting reduction of their roles within the UN system in the field of S&T.[25] UNESCO in particular was concerned about the threat of losing an important part of its constitutional mandate and, furthermore, there was the danger that the expertise of the scientific community would be marginalised. The UNESCO Director-General, Amadou Mahtar M'Bow:

> The negotiating groups [at UNCSTD] were composed of politicians and diplomats, and scientists were on the whole left out. The fact that a large number of eminent scientists whose work has been instrumental in ensuring that the progress of science and technology should have been relegated to the fringes of debates on issues which they know better than anybody else is perhaps one of the most striking aspects of the conference. (UNESCO, 1979: 3)

Early 1990s to date: Mounting indifference

Developments in the field of S&T advice to UN and to UNESCO For some 35 years the UN used to have a single advisory committee (1964–1980: ACAST, since 1980: ACSTD) which served the UN/ECOSOC and simultaneously was used as advisory committee to specialised agencies, such as

UNESCO. The advisory committee was abolished and the newly created UN Commission for Science and Technology, a functional commission of ECOSOC, has taken its place. In addition to its function as a substantive Committee of the Council, the Commission is serving the double role as Advisory Committee on issues of Science and Technology to the Council. The new entity (originally 52 and later 34 members) is composed of government appointees, who were mostly scientific civil servants. Unlike the earlier advisory committees, within its members there is no longer a cross-section of stakeholders or representatives of the private sector. In any event, all concerned UN agencies — apparently with the exception of UNESCO — are cooperating with the Commission: UNESCO — unlike other UN organisations such as FAO, UNIDO, WIPO; IAEA, UNDP, UNEP, UN High Commissioner for Refugees as well as the UN Regional Economic Commissions — is surprisingly not mentioned at all among the "Key UN System Offices" with which the UN Commission on Science and Technology for Development reports to entertain close working relations.[26]

In 1997 UNESCO created its own advisory mechanism; that is, the International Scientific Advisory Board (ISAB), chaired by the ICSU President. In a later phase, ISAB served simultaneously as Scientific Advisory Committee to the UNESCO/ICSU World Science Conference (WSC). Since advisory committees as such and their composition are to a high degree dependent on the profile and on the personal interest which the head of the agency takes in their deliberations, doubts are allowed to what extent the present constellation of factors within UNESCO are beneficial to the *raison d'être* of an formulised high-level advisory structure such as ISAB.

Non-governmental organisations of the scientific community of the world such as the International Council of Science (ICSU) or the more recently created InterAcademy Council (IAC), are increasingly filling on an *ad-hoc* basis the advisory role formerly played by officially appointed advisory mechanisms such as ACAST/ACSTD. The reports provided by these organisations on science, technology, health and related issues commissioned on occasions by the UN Secretary-General or by other heads of agencies, seem to provide the most effective analysis and/or recommendations to deal with the great global challenges of our time.

The UNESCO/ICSU World Science Conference (Budapest 1999) In sharp contrast to the strict intergovernmental UNCSTD of 1979, the WSC was the first global conference jointly organised by an intergovernmental organisation, UNESCO, and by an independent scientific non-governmental organisation, ICSU.

The WSC has attempted to define a strategy that would ensure that science responds better to society's needs and aspirations (UNESCO/ICSU, 1999). The UN and the other specialised agencies of the UN system had no special role to play at the WSC.

Developments in the field of national science and technology policy advice In 1991 the series of science policy studies, undertaken since 1965 by UNESCO's division for Science and Technology Policy (STP), was phased out. Earlier, the series of regional S&T policy conferences (CASTs and MINESPOL) had been discontinued.

In 1995 the UN Commission on Science and Technology for Development started a series of national country reviews on Science, Technology and Innovation Policy, an activity which for 35 years was not undertaken by the UN, but used to be a domain of UNESCO.

As part of its new Strategic Plan covering the period 2006–2011, ICSU intends to strengthen its visibility in major parts of the world by establishing regional offices and furthermore in organising regional meetings of its national member organisations.

In response to one of the recommendations of the WSC, UNESCO is attempting to recuperate some of the tasks which had been given up earlier, has re-established a small division on Science Analysis and Policies (SC/AP) within the sector for natural sciences. The division sees as its mandate: "to develop and provide decision-making tools, methodologies and norms for *science policy-making*".

In having omitted the technology notion in the name of the new division, the Science Sector has deliberately parted from the concept of its predecessor, the "Science *and Technology* Policy Division (STP)", which has for decades brought international recognition to UNESCO. Perhaps by this programmatic decision it meant to highlight UNESCO's special experience in the field of natural sciences. Nowadays not only the industrialised countries are devoting their S&T policy efforts predominantly to concerns of innovation and to methods aiming to maintain high employment and to ensure the international competitiveness of countries or of a given region. These issues are, however, of equal if not even greater importance to developing countries.

Developments on global reports dealing with S&T issues The comprehensive World Science Reports of UNESCO, published three times (1993, 1996 and 1998), which restored a certain intellectual leadership to UNESCO in drawing a comprehensive stocktaking analysis on S&T policy issues and which have given a high visibility to the organisation, have for seven years ceased to be published. The UNESCO *Science Report*, published in 2005, takes up the earlier tradition to review in a regular manner the state of science around the world.

As part of its efforts to commit the decision-makers of the world to attain the Millennium Development Goals, as part of the UN Millennium Project,

the UN has set up a special Task Force on Science, Technology and Innovation, which has just published a comprehensive report, *Spreading the Benefits of Technology and Innovation*, in which title the word 'science' does not appear at all (UN, 2005c: Preface).

In contrast to this, in the "Science Agenda — Framework for Action" of the UNESCO/ICSU Budapest Conference, the terms 'Technology' and 'Innovation' — keywords in the development process of developed and developing countries alike — are hardly used (UNESCO/ICSU, 1999: para 1(6)).

Conclusions

The UN Commission on Science and Technology for Development sees "its primary role as a 'think tank', which studies the role of S&T for development" (UN, ECOSOC 2004b: V). In earlier decades, it was UNESCO that claimed to be the "intellectual organisation of the UN system" and thus as a sort of "institutionalised think tank" of the UN system.

Whereas UNESCO is concentrating almost exclusively on science and its applications, the UN — as most other specialised agencies in their fields of competence and as other intergovernmental organisations such as OECD, EU, the World Bank — are following more and more the sequence Science — Technology — Innovation — Industry.

The role of UNESCO's Natural Science Sector is to be seen within the framework of the organisation's medium-term strategy, which is formulated around a single unifying theme: UNESCO's contribution to peace and human development in an era of globalisation. The Science Sector sees thus its explicit mission "as Promoter and Broker of Science" with the overall vision of "Creative Science for the Benefit of Society" (UNESCO, 2003). There can be no question about the validity and importance of these noble and worthy tasks which have been approved by all member states of the organisation. And yet it becomes obvious from a screening of publications, internal reports and working methods of the UN Commission on Science and Technology for Development that the main inputs for UN work on S&T issues no longer come, as in earlier years, from UNESCO, but almost exclusively from a large pool of experts and consultants. The Millennium Report, for example, constituting at present the main framework for UN activities — which can be compared to the "Development Decades" in the 1960s and 1970s — was prepared "by more than 250 of the world's leading practitioners" and no longer, as in the past, by a close interaction between the United Nations, the specialised agencies — in particular UNESCO — and standing advisory committees such as UN-ACAST. Apparently neither the need to safeguard through a core group of high-level experts some sort of 'institutionalised memory' nor the long-time cherished need for the geographical balance in the

membership of groups providing expert advice seem to be any longer of particular importance.[27]

Instead, independent external expert bodies — such as the InterAcademy Council (IAC), launched in 2000, which represents over 90 national academies — seem for the UN to be the preferred linkage with the world scientific community. In the IAC's own words, it is capable of mobilising: "the world's best scientific advice". In 2004 the IAC produced a widely acclaimed report: "Inventing a Better Future: A Strategy for Building World-Wide Capacities in Science and Technology."

It is striking that, in the 213-page Task Force Report on "Science, Technology, and Innovation 2005" of the UN Millennium Project, UNESCO played only a marginal role and no single reference was made to ICSU.

On the eve of its 75th birthday in 2006, in order to define its role within this changing environment, ICSU is responding swiftly to the new challenges. For the first time since it was founded in 1931, ICSU has launched a comprehensive strategic plan covering 2006–2011: "Strengthening International Science for the Benefit of Society".

It is perhaps no exaggeration to believe that the changes which occurred at the United Nations in the field of inter-agency cooperation in S&T issues during the last 25 years have had a more lasting negative impact for UNESCO than for any of the other specialised technical agencies of the UN system. A number of reasons for this development come to mind:

- Most of the major issues calling for worldwide initiatives fall within the sectoral responsibility of national ministries and — on an international scale — of specialised agencies with a mandate for a specific sector.
- If it comes to 'cross-the-border' issues of a multi-disciplinary nature, the interest of the world community seems to be increasingly on the inter-relationship among the political, scientific and technological components of socio-economic development. The main focus of UNESCO's mission as a "Promoter and Broker of Science" is a noble and important target, but it seems to have difficulties — outside the highly appreciated national UNESCO Commissions — in maintaining the necessary constituency. More than 30 years ago the ministries of science in the industrialised countries were transformed into ministries for S&T, and practically all developing countries have been transformed in the same direction. The platform for the world's science is provided — judged alone by the number of initiatives — by prominent non-governmental organisations such as ICSU, IAC and the Third World Academy of Sciences (TWAS). To this challenge, the "S" in UNESCO in the 60th year of its existence as an intergovernmental organisation may yet have to find the proper response. Appropriately, the

General Conference of UNESCO, when meeting in Fall 2005, commissioned a review panel to undertake an external evaluation of UNESCO's activities in the fields of natural sciences and of social sciences.

- The World Science Conference held in 1999 in Budapest — not organised by UNESCO as an intergovernmental conference following standard procedures within the UN system, but as a joint exercise *sui generis* between UNESCO and the International Council of Scientific Unions (ICSU), a non-governmental organisation — broke new ground on the organisation of world conferences. In view of the fact that its outcome was not the result of negotiations among governmental delegations of member states, it has to be seen as a series of worthy declarations among the participants which are not binding on UNESCO's traditional constituents; that is, member states. This fine line may illustrate the difference between world gatherings of intergovernmental organisations and non-governmental organisations. This observation is not meant to belittle the outcome of WSC in any way, but it rather demonstrates that, in entering this association with ICSU as a co-organiser, UNESCO had to give up its valuable prerogative as an intergovernmental organisation; that is, to reach negotiated positions among the different interests of its member states. Along the same line of thought, the question may occur what the real impact of the work performed by the Science Sector on member states is and furthermore if such work — given the similarity of UNESCO's Medium-Term Strategy in the Natural Sciences and ICSU's new Strategic Plan 2006–2011 — could not be efficiently be carried out by a strengthened ICSU?

- The fate of the UN-ACAST's 'World plan of Action' as well as the 'Vienna Programme of Action for the Application of Science and Technology for Development' shows clearly that the time for 'UN Master Plans', equally valid for each individual member state, is over. UNCSTD in Vienna was perhaps the last UN manifestation in which ultimately the Group of 77, on one side, and the group of Western industrialised countries, on the other side, was able to negotiate an UN-wide programme on a broad range of S&T policy issues and their financial implications. It soon became obvious that the interests of the new large 'global players', such as China, India, Brazil, and the smaller newly industrialising countries in South-East Asia were different from the majority of other developing countries. The present world pattern of globalisation with its uneven distribution of S&T know-how makes the traditional distinction between developed and developing nations rather meaningless. UN and UNESCO, although both having a universal membership, are primarily being perceived as platforms for North–South issues and for the debate of global concerns. The industrialised

countries and increasingly the economically more advanced countries of the still so-called Third World have a tendency not to use the UN and/or UNESCO as appropriate platforms for the deliberation of their development strategies and of their S&T policies.

The role of S&T within the UN structure has followed cyclical patterns. As in the organisations restricted to the Western industrialised countries, such as the OECD, the Council of Europe and the European Union, the UN has made strong efforts during the 1960s, 1970s and 1980s to give the field of S&T a highly visible role in its deliberations. Whereas the traditional industrialised countries (for example, the 'Lisbon Strategy' of the EU) as well as the new global players on the world scene (China, India, Brazil and others) continue to see in S&T the prime mover within the national and regional development process, the UN is no longer seen as a prime actor in this field.

UNESCO has apparently not been motivated to fill the vacuum left by the UN. Reasons may be lack of funds and thus of capacity, and perhaps also the strong focus on science issues.

The last major effort of UNESCO — together with its partner ICSU — to mobilise world opinion through the WSC provided a valuable forum for the much-needed debate between the scientific community and society. The wider, more economic-driven, notion of the role of S&T as prime development factor was not the main focus of the Conference. Neither the UN nor any other worldwide-operating agency seems at present to provide such a platform. This is of tragic consequence in particular for a high number of poorer countries for which the gap in their capability to apply S&T to their own development process is widening. Perhaps the ongoing review process of the Science Sectors of UNESCO will address this question. A new effort is certainly needed. The Committee set up on a request from the Executive Board by the UNESCO Director-General on 28 February 2006 to review both the natural and socialscience activities of UNESCO identified in its rather negative interim report some key issues calling for a drastic change of direction, for example:

- UNESCO is missing the opportunity to design and manage its (science) programmes in a manner which reflects the inherent nature of all today's major global problems.
- The science programmes lack visibility in the international arena, and reflect both their current limited impact and UNESCO's ineffective coordination and cooperation with other international science organisations, such as the International Council for Sciences (UNESCO, 2006).

For the UN system as a whole, it seems to be high time to reassess the role of S&T advice in world affairs. The UN as well as the specialised agencies

have still the potential to attract some of the best representatives of the world's scientific and technological community to give counsel and advice.

Notes

1. "Without establishing a dichotomy between science and technology, it is evident that technology policy rather than science policy commands the attention of planners, policy formulaters, budget officers and decision makers in the great majority of countries" (UNESCO, Advisory Panel on Science, Technology and Society, 1981: 37).
2. International Council for Science (ICSU), Paris, groups 104 national science bodies as well as 29 international scientific unions (January 2006). See <www.icsu.org>.
3. Although ECOSOC did not formally adopt ACAST's proposals for the implementation of the World Plan, some specialised agencies — for example, WHO, UNESCO, UNEP — have initiated actions in line with the World Plan.
4. UN, ECOSOC 1977. First special session, 75th meeting. Press release: Committee opens first session of preparations for Science Conference, TEC/303, 31. January. Summary of the statement made by Mr Joao da Costa.
5. The first meeting of the newly established Advisory Panel to UNESCO on Science, Technology and Society, which included some of the former ACAST members, took place in Paris on 19–21 May 1981. The UNESCO Director-General Fédérico Mayor set up the International Scientific Advisory Board (ISAB), chaired by the ICSU President Werner Arber. ISAB held its first session in Paris on 20–21 January 1997.
6. Taken from the job description for the Director of the UN Office for Science and Technology (OST) and terms of reference of the OST; inter-office memorandum by Gabriel van Laethem, Under-Secretary for Economic and Social Affairs, New York, 6 January 1976.
7. UN, the Vienna Programme of Action on Science and Technology for Development, New York, 1979.
8. In a letter to the UN on 16 February 1979, the UN Food and Agricultural Organisation had assumed half a year before UNCSTD: "It seems doubtful whether the Conference will lead to any significant increase at all in resources available to the system for substantive activities in which science and technology are important components."
9. In the early 1990s, the Economic Commission for Europe of the United Nations abolished its Committee for Senior Advisors on Science and Technology Policy Issues, which was the only committee during the 'Cold War' in which the industrialised countries from East and West met to discuss S&T issues of common concern.
10. Standke (1979).
11. UNESCO, evaluation by the Director-General of the results of the First Development Decade in UNESCO's Fields of Competence and Draft Programme of the Organization for the Second Decade. UNESCO 16/13.
12. UNESCO document SC/WS/57 of 28 February 1968.
13. UNESCO document UNESCO/NS/ROU/210 of 15 January 1971.
14. UNESCO-OAU conference on Education and Scientific Technical Training in Relation to Development in Africa, resolution 11 (IX). 16–17 July 1968.
15. See also Standke (1997).
16. UN (1979b); Standke (1980: 353–386).
17. After having listened to the presentation by the UNCSTD Secretary-General of the conference concept at an ACAST meeting in Geneva, in which concrete subject areas were only meant for "illustrative purposes" and would have no standing on their own at UNCSTD, H B G Casimir, a member of the Advisory Committee, President of the Royal Dutch Academy of Sciences and for many years Member of the Board of Management in charge of Research and Development of Philips, Eindhoven, responded sarcastically: "If this concept becomes reality, than the United Nations Conference on Science and Technology for Development will be known in history as a Conference without Science, without Technology, without Development: Let us called it simply 'the Conference'."
18. "In fact, no action targets on international, regional and national scale were agreed upon in Vienna; no concrete commitments were made either by the developed or developing countries; preparation of an operational plan for carrying out the Program was left for the future, and the same was decided in respect to science and technology activities within the United Nations system. Thus, while technically the UNCSTD cannot be described as a failure, its contribution to the international mobilisation of science and technology for development is close to nil. This judgement may sound harsh, but it reflects much better the reality than the painfully negotiated final agreement known as the Vienna Program." (Newsletter of the Pugwash Conferences on Science and World Affairs. 1980, **17**(3), 65)
19. Even two years after UNCSTD the specialised agencies, such as UNESCO, felt themselves to be left out of the conference follow-up process: *"On constate avec regret que l'attitude très réservée du groupe des 77 continue a être très génante. Prèsque tous les projets de resolutions présentés par le groupe des 77 ne portaient aucune ou seulement faibles références aux contributions que l'on entend de l'ensemble des organisations du système des Nations Unies."* [One notes with regret that the very reserved attitude of the Group of 77 continues to be very embarrassing. Almost all the projects on resolutions presented by the Group of 77 carry no or only faint reference to contributions that one had heard among the organisations of the UN system.] (Rapport de la Troisième session du Comité intergouvernmental, New York, 26 May–5 June 1981. Memo SC/UCE/3774, 9 June 1981)
20. On 18 December 1979, the Canadian delegate to the Fifth Committee of the GA suggested ironically, at the session voting on the budget for the new enlarged secretariat structure, that in his opinion UNCSTD should be more appropriately called "the United Nations Conference on Science and Technology for *Staff Development*". The US delegate was so upset about the breach of the "carefully negotiated agreements" on the staff arrangements that he regarded this outcome as an "ominous omen" for the position of the USA towards the expected funding mechanism.
21. Five years prior to UNCSTD, ECOSOC had already expressed political interest in the establishment of a "United Nations science and technology programme" (ECOSOC resolution 1905 [LVII], Institutional arrangements for science and technology) and had requested that to this effect a feasibility study would be undertaken. See Rittberger (1979). In a letter to the UN dated 15 February 1979, the ILO expressed serious concern that the impression was given after UNCSTD of creating another specialised agency for science and technology.
22. Note on discussions with Mr K Dadzie, New York, 12 September 1979.
23. Twelfth Report of ACAST to ECOSOC, E/C.8/30.
24. European Communities 2004. Facing the Challenge: The Lisbon Strategy for Growth and Employment. Report from the High Level Group chaired by Wim Kok, Luxembourg, November.
25. Indeed the inter-agency forum for the deliberation of S&T issues of concern for all members of the UN system — that is, the ACC Sub-Committee for Science and Technology — has ceased to exist as a special entity.
26. Science and Technology, The UN system at work, <www.un.org/issues/m-sci-tech.html>.
27. In contrast to this development, the European Union, for example, has recently announced the creation of an independent scientific council, whose primary function is to determine the strategic strategy of the European Research Council and to ensure that its operations are conducted in accordance with the requirements of scientific excellence. European Commission, Scientific Council of European Research Council, Press Release IP/05/956.

References

ACAST, UN Advisory Committee on Science and Technology for Development 1971. World Plan of Action for the Application of Science and Technology to Development, New York.

Baez, Albert V 1976. *Innovation in Science Education: World Wide*. Paris: UNESCO.

De Lacharrière, Guy U.N.E.S.C.O. 1961. In *Les Institutions Internationales et Transnationales*, ed. Fernand L'Huillier. Paris: Presses Universitaires de France.

King, Alexander 1974. *The proposed United Nations Conference on Science and Technology*, ESA/S&T/AC.4/2, 30. September.

Petitjean, P, V Zharov, G Glaser, J Richardson, B de Padirac and G Archibald, (Editors), 2006. *Sixty Years of Science at UNESCO 1945-2005*. Paris: UNESCO.

Rittberger, Volker 1979. Options for an institutional follow-up to UNCSTD. UN Institute for Training and Research, February.

Sauvant, Karl 1981. *The Group of 77: Evolution, Structure, Organization*. New York: Oceana Publications.

Standke, Klaus-Heinrich ed. 1979. *Science and Technology and Global Problems: The United Nations Advisory Committee on the Application of Science and Technology for Development*. New York/Oxford: Pergamon Press.

Standke, Klaus-Heinrich 1980. The prospects and retrospects of the United Nations Conference on Science and Technology for Development. In: *Technology and Society*, Vol.1. Pergamon Press.

Standke, Klaus-Heinrich ed. 1990. *Science and Technology for the Future: A Fresh Look at International Co-operation*, 2nd edn. Paris: UNESCO.

Standke, Klaus-Heinrich 1997. Overview of Past Multilateral Conferences on Science and Technology. Report prepared for the Third Meeting of the Steering Committee of the International Scientific Advisory Board of UNESCO. Paris, 17 March.

Standke, Klaus-Heinrich and Anandakrishnan, M eds. 1980. *Science, Technology and Society: Needs, Challenges and Limitations*. Proceedings of the International Colloquium, Vienna, Austria. New York/Oxford: Pergamon Press. On behalf of the United Nations.

Stiglitz, Joseph 1979. Knowledge as a global public good. In *Global Public Goods: International Cooperation in the 21st Century*, eds. Inge Kaul *et al*. New York/Oxford.

UN 1963. Report of the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas, Vols. I–VIII. New York.

UN 1971. World Plan of Action for the Application of Science and Technology for Development, UN Sales No. E.71.II.A.18. New York.

UN 1974. Report of the 'Ad-hoc Panel of experts to the Secretary-General on the proposed United Nations Conference on Science and Technology'. Geneva, 28 October.

UN 1979a. Preamble to the 'Vienna Programme of Action on Science and Technology for Development'. New York.

UN 1979b. Report of the United Nations Conference on Science and Technology for Development, A/CONF.81/16. New York.

UN 2005a. UN Millennium Project, Global Plan: *Achieving the Millennium Development Goals*. New York.

UN 2005b. UN Millennium Project, Investing in Development: *A Practical Plan to Achieve the Millennium Development Goals*. A Report to the UN Secretary-General (with a special chapter on "Science, Technology and Innovation: Building National Capacities"). New York.

UN 2005c. UN Millennium Project, Task Force on Science, Technology and Innovation, *Spreading the Benefits of Technology and Innovation*. New York.

UN, ECOSOC 1972. African Regional Plan, E/CN.14/L. 407. New York. 28 June.

UN, ECOSOC 2004a. Commission on Science and Technology for Development, Promoting the application of science and technology to meet the Development Goals contained in the Millennium Declaration, E/CN.16/2004/2, 7 April.

UN, ECOSOC 2004b. Commission on Science and Technology for Development, Report of the Seventh Session, E/CN.16/2004/4, Geneva, 24–28 May.

UNDPI, United Nations Department of Public Information, 2005. World Summit Outcome. New York. September.

UNESCO 1966. *World Directory of National Science Policy-Making Bodies, Vol. I: Europe and North America*. Paris: UNESCO.

UNESCO 1968a. Provisional guide to the collection of science statistics, UNESCO/COM/MD/3, Paris.

UNESCO 1968b. *World Directory of National Science Policy-Making Bodies, Vol. II: Asia and Oceania*. Paris: UNESCO.

UNESCO 1968c. *World Directory of National Science Policy-Making Bodies, Vol. III: Latin America*. Paris: UNESCO.

UNESCO 1969. Bilateral institutional links in science and technology, UNESCO series Science Policy Studies and Documents, No.13, Paris.

UNESCO 1970. National aspects of fundamental research in Europe, Working Document of Minespol. Paris.

UNESCO 1979. Executive Board, 108th session, 108 EX/INF.5. 1 October.

UNESCO 1981. Advisory Panel on Science, Technology and Society. Science, Technology and Society: Interactions (Working Document), 19–22 May.

UNESCO 1985. *Why the "S"?* Paris: UNESCO.

UNESCO 2003. UNESCO's Natural Sciences Sector, Its Structure, Mission and Vision for the Future. Paris.

UNESCO 2006. Report on the activities of the Overall Review Committee for Major Programmes II (Natural Sciences) and III (Social and Human Sciences), 175 EX/INF.12, Paris, 1 September.

UNESCO Courier 1999. Science: public good or commercial commodity? **5**.

UNESCO/ICSU 1999. World Science Conference, Science Agenda — Framework for Action, Budapest.

US House of Representatives 1976. Subcommittee on International Security and Scientific Affairs, Science, Technology, and Diplomacy in the Age of Interdependence. Washington DC: US Government Printing Office.