from many backgrounds and many organizations within the country.

The developing nations will need help, but if the will and desire within the nation is not present, we will not be successful. The national arrangements of our committees will differ in composition and function in different countries, but their basic goals must be the same: to promote the activities of the Decade; advise their governments on priorities, programs, and projects that are most appropriate for their countries; and serve as points of contact with the international and regional elements of the Decade.

Each country will need to decide how best to structure and finance their national entity. Common to all, however, will be the pooling of resources and skills needed to develop successful and integrated disaster reduction programs, in areas such as planning, science and technology policy, research, public education, and information dissemination. Links are needed with experts in a wide range of scientific, engineering, and health disciplines as well as with investment banking, private and professional associations, voluntary agencies, the media, educational institutions, and other entities whose actions can effect disaster reduction. Links with the donor community are also important to the success of national entities.

The national entity could be within or outside a national government. Committee members could include representatives of government; academic, research, and professional organizations; and other interest groups. The latter could include the financial and insurance sectors, and voluntary associations on the community level and other nongovernmental organizations experienced in dealing with populations at high-risk locations. Official representatives could come from agencies responsible for meteorology, seismology, emergency management, land-use planning, building regulations, health services, legal affairs, civil protection, public works, and public utility policy. The national entity must be capable of interacting with the scientific and professional communities and with the public to promote and facilitate the achievement of Decade goals. Governments may wish to review the national entities already established.

"The national arrangements of our committees will differ in composition and function in different countries, but their basic goals must be the same: to promote the activities of the Decade; advise their governments on priorities, programs, and projects that are most appropriate for their countries; and serve as points of contact with the international and regional elements of the Decade."

The second essential element of a national entity is that it is linked to community-level natural disaster mitigation efforts, the Decade's organizational structure, and regional institutions associated with the Decade. In this way, the national entity would establish a framework for Decade activities at the national and local levels and would link the regional and international organizations dealing with the Decade. It would also provide a mechanism for deciding on priorities and new program initiatives, provide the means for mobilizing knowledge for natural disaster reduction and personnel training, and identify financial resources for supporting national

entity program activities and their regional and international extensions.

Whatever the organizational structure of these national entities, each should,

(i) develop a national plan for Decade activities;

(ii) coordinate policy analysis, development, and legislation regarding natural disaster reduction, monitoring, early warning and forecasting, evacuation planning, relief, and rehabilitation;

(iii) create and/or improve the awareness of the public and governmental officials of the great loss of life, property, and quality of life caused by natural disasters;

(iv) develop logistical support and a legislative framework for effective disaster reduction measures;

(v) evaluate national programs in terms of Decade goals;

(vi) bring donors and benefactors together for concerted action to support the Decade and permanent activities thereafter;

(vii) encourage preparedness through the development of localized quick-response self-help strategies; and

(viii) promote research, development, and technology transfer to fill the gaps in knowledge related to natural disasters.

A sizeable number of countries have already established their national arrangements. I cannot recall the exact number, but I believe over 20 countries have already established their arrangements. Here in the United States, the National Committee has been established within the framework of the National Academy of Sciences. We have very broad representation on it. I am confident that with the quality of the people and their breadth of knowledge and experience, we will be able to work cooperatively with the government of the United States in bringing about an effective program right down to the local community level.

We are having our first meeting of the United States National Committee on June 21 and 22. We intend to build on all of the good work that is already going on in this country. We intend to identify and find ways of translating those into an overall program. We hope to learn from other countries through the International Decade and to contribute to the IDNDR.

We are at the beginning of a journey. A journey that I hope will not go on just for the formally designated Decade, but from here on. The IDNDR will never totally reduce the suffering and misery of people from natural hazards, but we should be able to lessen the impact in a major way. The World Bank has already been active in these areas. I hope it play an even greater role in the future.

Planning for International Participation in the Decade for Natural Disaster Reduction

Philippe L. Boulle
Director of the New York Liaison Office
United Nations Office of the Disaster Relief Co-ordinator

For the past 17 years, the organization I represent, the Disaster Relief Office of the United Nations (UNDRO) has assisted governments, worldwide, in more than 2,000 disasters, large and small. We have witnessed over the years the loss of millions of lives as well as massive property damage and economic destruction resulting from earthquakes, floods, and other calamities. We know that billions of dollars have been poured into relief and reconstruction efforts.

Because we have seen so much recurrent human misery and economic damage, we firmly believe in the value and importance of disaster mitigation. The toll on human life and property can indeed be significantly reduced by improved risk assessment and early warning systems, and by increased public awareness of disasters through education and training. This is why UNDRO now has a fully fledged disaster mitigation branch in addition to its relief coordination branch. Several of UNDRO's successful programmes are now in the field of disaster mitigation, such as the Pan Caribbean Disaster Prevention and Preparedness Project, or in comprehensive prevention projects in Colombia, Peru or

"Governments would be more likely to support Decade activities if they understood that disaster mitigation is a positive approach towards protection of their own resource base and that it is part of development activities. There is ample evidence of the vulnerability of some economies to disaster situations, which can suffer damages equivalent to over 5% of their GNP in one single disaster."

Philippe L. Boulle has been the Director of the New York Liaison Office of the United Nations Office of the Disaster Relief Co-ordinator (UNDRO) since May 1988. He joined the United Nations in 1980 and was successively a Chief at the Capital Development Fund (UNCDF) and the Principal Officer at the Office of the Director-General of the United Nations for Development and International Economic Cooperation (DIEC), where he was closely involved in the launching of the U.N. Programme of Action for Africa. Prior to his U.N. appointments, Mr. Boulle was Secretary-General of the Mauritius Chamber of Commerce and Industry, and the Chief Executive of the Mauritius Commercial Bank Finance Corporation Ltd. He holds degrees from the Institut D'Etudes Politiques, the Faculte de Droit et des Sciences Economiques de Paris and the Faculte de Gestion et D'Economie Applique de Paris.

Indonesia. Activities covered by our programmes range from hazard mapping and monitoring of seismic activity to training, research, and public awareness projects.

UNDRO, therefore, welcomes the opportunities offered by the forthcoming International Decade for Natural Disaster Reduction (IDNDR). Since the adoption of Resolution 42/169 in December 1987, which gave clear objectives for the Decade, we have played a central role in the United Nations system in preparing for the Decade by running a small interim secretariat for the Decade and by operating a trust fund for that purpose.

But now is the crucial moment. At the end of this year and following preliminary discussion in the Economic and Social Council in July, the General Assembly will decide on the final shape and content of the Decade, including guidelines for international participation in the Decade.

In their deliberations, the member states of the United Nations will be guided by the report of the Ad Hoc Group of Experts, appointed by the Secretary-General to advise him on a possible framework and arrangement for the Decade. The report, which has just been presented to the Secretary-General by the Chairman of the group, Dr. Frank Press, proposes a basic approach to IDNDR. There is no compulsory programme of action for the Decade nor is there a detailed list of projects to be implemented. Rather, the report highlights basic objectives and goals to be attained, and it lists possible actions towards that end. There is even a description of some illustrative projects that could be implemented. This is indeed a wise approach for a Decade that will have to blend international, regional, and national preoccupations, associate scientists, political leaders, United Nations organizations, and NGOs, and adopt a multisectoral approach to disaster mitigation.

"We should not believe that there is already widespread acceptance of the necessity to change from an attitude of responding to disasters to one of acting to prevent their impact. Many local and United Nations system officials, NGOs and PVOs, as well as a large part of the general public are, so to speak, programmed to respond to disaster situations, and it will take a lot of effort to change their perception."

The Ad Hoc Group also made recommendations to the Secretary- General concerning organizational arrangements for the Decade. In short, recognizing the basic importance of national activities and the need for coordinated central action, the group proposed the establishment of a board of trustees (about 5 members), a programme committee (some 25 experts), a small identifiable secretariat for the Decade, and a trust fund to finance some basic activities. The intention was to stimulate, initiate, and orient action towards the Decade's objectives; to promote exchange of information; and to exercise some sort of coordination between all the different actions at the various levels. Most of the activities themselves would be carried out by governments, by organizations of the United Nations system, as well as by NGOs and scientific groups. The proposal for the Decade recognized the evolving nature of the exercise and the need not to cast in stone a programme for ten years that may need adjustment as the years go by.

It is now up to the Secretary-General of the United Nations to make his final recommendation to the General Assembly. The United Nations Steering Committee on the Decade is meeting today to finalize proposals to member states. Concerned entities of the United Nations system, including the World Bank, are represented in the Committee, which helps coordinate the inputs of the United Nations system for the Decade. It is widely expected that by and large, the Steering Committee will endorse the proposals of the Group of Experts.

Once the organizational structure of the Decade is approved by member states, international participation in the Decade will be defined with more precision. Groups such as international scientific unions, organizations of the United Nations system, and private and non-governmental organizations will have the possibility to interact on substantive and programmatic matters with the secretariat or the programme committee for the Decade. A workshop to be conducted in July by the Italian government on policy issues and scientific priorities for the Decade will also help to further clarify how the Decade will be implemented.

However, planning for international participation in the Decade is not just a question of organizational arrangements or even of the definition of goals and objectives. Planning for the Decade also means finding the correct answers to a series of issues which I will briefly outline for you.

First, Decade "officials" will have to define some broad qualitative and quantitative targets for the ten years to come against which performance can be assessed. This is an almost impossible task because there is always the danger of having a bureaucratic, account-like approach to targets. Maybe, regional or national targets can be established or targets for different professional activities, such as the building trade, can be devised. In any case, it will be important to operationalize the Decade, no matter how difficult this is.

"Governments, at the international level, will define the contents of the Decade; yet, its success will depend for a great part on activities at the national level. Progress will be achieved only if the scientific and technical world fully mobilizes their research and innovation capacities. Further, it is the general public that needs to become more aware of the virtues of disaster mitigation."

Second, we should not believe that there is already widespread acceptance of the necessity to change from an attitude of responding to disasters to one of acting to prevent their impact. Many local and United Nations system officials, NGOs and PVOs, as well as a large part of the general public are, so to speak, programmed to respond to disaster situations, and it will take a lot of effort to change their perception. In order to realize a change in mentality and governmental attitude, a large part of Decade activities will have to be devoted to public education, public awareness, and training programmes, especially at the local level in disaster-prone countries.

Third, and this point is closely related to the previous one, the will of the political world to give priority attention to disaster mitigation is not as strong as it should. The economic and social benefits of disaster mitigation are not yet fully

perceived. Resource allocations for disaster mitigation, either in national budgets or in the programmes of international organizations, are also clear evidence that a large effort still needs to be made. Governments would be more likely to support Decade activities if they understood that disaster mitigation is a positive approach towards protection of their own resource base and that it is part of development activities. There is ample evidence of the vulnerability of some economies to disaster situations, which can suffer damages equivalent to over 5% of their GNP in one single disaster.

Fourth, there will be no Decade for natural disaster reduction worthy of this name unless the scientific community is fully involved in it and unless there is tremendous progress in scientific research and the application of technology. It is by learning more about disasters that we shall be able to fight them effectively. The Decade goes beyond the drafting of civil defence preparedness measures. One important problem will be the definition of appropriate means for the transfer of technology in disaster mitigation to developing countries.

Fifth, there is a need to establish a link between Decade activities and the actual response to disasters. It is not enough to predict accurately a volcanic eruption or a windstorm; it is as important to respond effectively to a disaster when it occurs. The link is not as easy to establish as one would think: in essence, disaster mitigation is a field where high-level technology can be used. By contrast, when a disaster strikes, immediate rescue efforts have to be undertaken by local individuals unfamiliar with technology in a typically disorganized set up where even electric power is not available or telephone lines are out of order.

Sixth, the overall framework of activities to be worked out for the Decade needs to take into account the international or national environment in which governments and private agencies have to move. North/South issues, debt, and ecological and environmental matters will also occupy attention in years to come, and natural disaster mitigation must find its own niche in this whole context. It would be wrong to believe that it is naturally at the center of activities. Interrelationships with other issues, especially environment issues, will have to be examined. This is a point which has been made abundantly clear by Mr. Piddington this morning in his introduction to this seminar.

Finally, it is not easy to harness all energies into one coordinated effort for the Decade. Governments, at the international level, will define the contents of the Decade; yet, its success will depend for a great part on activities at the national level. Progress will be achieved only if the scientific and technical world fully mobilizes their research and innovation capacities. Further, it is the general public that needs to become more aware of the virtues of disaster mitigation. The danger of parallel and contradictory approaches is great. It will take a large amount of self-discipline, common sense, and goodwill from all groups concerned to make a success of IDNDR.

Note by the Panel Moderator*

Everardo Wessels
Department Director
Latin America and the Caribbean Technical Department
The World Bank

The three presentations in this session convey a sense that the International Decade for Natural Disaster Reduction presents an opportunity for the world to collaborate in an effort that could positively impact the lives of billions people and contribute to the long-term sustainability of our development activities. The numbers are staggering: Nearly three million people have died and about one billion people -- nearly one-fifth of the global population -- have been adversely impacted by disasters in the past twenty years. And physical damage, occurring on a monumental scale, has thwarted the development aspirations of many of the world's poorest countries.

"Disasters not only interrupt the development process for many countries, they set the process back. On top of the long-term cost to rebuild the economic base...are the less tangible costs: the loss to agricultural production, the growth of unemployment, or the lack of investment confidence in the future. These longer-term costs manifest themselves in depressed GNP growth rates."

When imagining a natural disaster, we usually think of the suffering of the victims and the short-term economic effects of the destruction. However, the hidden, longer-term impacts often are just as devastating, if not more so. The World Bank, which has financed many emergency reconstruction projects, is acutely aware that these hidden costs impact developing countries far more severely than developed countries. Disasters not only interrupt the development process for many countries, they set the process back. On top of the long-term cost to rebuild the economic base -- including the infrastructure, housing, industry, water supply system, health facilities, and schools -- are the less tangible costs: the loss to agricultural production, the growth of unemployment, or the lack of investment confidence in the future. These longer-term costs manifest themselves in depressed GNP growth rates.

Everardo Wessels is the Department Director for the Latin America and the Caribbean Technical Department of the World Bank. He joined the Bank in 1967 as a Young Professional and has worked in various capacities in the four World Bank regions and in the Programming and Budgeting Department. In 1979, Mr. Wessels became Assistant Director in charge of urban and water supply projects in Latin America and the Caribbean. He was promoted to his current position in 1987. Mr. Wessels holds degrees from the University of Buenos Aires and MIT.

* Prepared for this volume.

Our approach to dealing with natural disasters has been ineffective in arriving at the real solution -- preparing for and mitigating natural hazards. As with so many environmental problems requiring a long-term perspective, we have adopted a reactive stance, waiting for the crisis to strike before attention is drawn to the problem and remedial action is taken. Fortunately, this era in disaster management is ending.

The International Decade represents a milestone. For the first time, the world community has joined together and formed a consensus that a proactive stand to combat the destruction from natural hazards should be pursued. Paying the up-front costs to construct resilient buildings and development projects makes economic sense. Educating the public about natural hazards and techniques to promote invulnerability can indeed save lives. And, promoting early warning technology and preparing emergency response plans can significantly enhance our ability to mitigate disasters.

This philosophy is being embraced by the International Decade for Natural Disaster Reduction. I am encouraged by this global effort which has attracted a true diversity of specialists -- in development, engineering, the environment, government, science and technology, finance, and planning -- who are bringing their expertise to bear in this area.

I believe the international community possesses the wherewithal to reduce the impact of natural disasters. The Decade is demonstrating that the requisite commitment by individual governments also is being secured.

Panel 2.
Vulnerability: Communications and Technology

David Webster, *The Annenberg Washington Program, Northwestern University*
Charles Sykes, *CARE*
Frederick M. Cole, *Office of U.S. Foreign Disaster Assistance*
Francisco Sagasti, *The World Bank*
Alberto Harth, *The World Bank*
N. Erik A. Arrhenius, *moderator, The World Bank*

Summary of Panel Proceedings

Technology and communications are critical factors in disaster reduction strategies. With effective communications and technological capability to anticipate and prepare for an extreme event, natural hazards can be endured and large-scale disasters averted. Conversely, the lack of these resources can exacerbate the gravity of a disaster. The second panel explored the complex cultural, economic, environmental, and institutional issues associated with technology transfer and communications linkages. The session also surveyed lessons learned from the World Bank's 42 years of experience in disaster reconstruction lending.

The first speaker, **David Webster** of the Annenberg Washington Program, Northwestern University, discussed disaster communications and the barriers to the free movement of vital information before and during a calamity. He also provided a number of recommendations for overcoming these barriers and for harnessing available communications capacity.

Mr. Webster urged that institutions devote more resources to managing information critical to lowering vulnerability. He said that communications from disaster-stricken areas often are not impaired by technical inability, but by bureaucratic bottlenecks or unfamiliarity with a country's existing communications pathways during a relief operation. In addition, to overcome the lack of technical and financial resources for disaster reduction,disaster-relatedcommunications often can be utilized as "add on" applications to existing technology. In certain instances, trade laws and border checks between countries have unnecessarily delayed the movement of disaster-related information. To rectify this problem, Mr. Webster suggested the international community adopt a convention to permit the free flow of communications equipment for disaster response purposes.

Mr. Webster also regarded the military establishment's restriction on access to its vast resources and classified information as unwarranted in many cases and a serious impairment to disaster reduction efforts. According to Mr. Webster, declassifying information with great potential to lower vulnerability could be extremely beneficial.

In addition, he urged that a new, more constructive relationship be forged between broadcasters and the communities they serve. For example, in the aftermath of a calamity, broadcasters could make communications equipment accessible to disaster response organizations in exchange for their assistance and information about the event.

Mr. Webster reiterated a central theme of the Colloquium, namely, that all relevant organizations, particularly governments, give higher priority to disaster mitigation. Organizations must be sensitized to the enormous cost brought on by disasters, and how the up-front expense of mitigation is dwarfed by the cost of recovery following a calamity. Mr. Webster concluded by emphasizing that broadcasters have the unique ability to generate considerable political momentum for a cause and they could be instrumental in fostering a public campaign for disaster reduction.

Charles Sykes of CARE, the next panelist, reviewed the approach utilized by the NGO community to lower vulnerability. Two principal themes

emerged from his discussion: locally-based, low-tech solutions must be sought for effective disaster reduction at the community level and those civil conflicts which are thwarting disaster relief and recovery in grave, slow-onset disasters must be urgently resolved.

Mr. Sykes introduced his presentation by drawing an analogy between the tropical forest canopy and the NGO community. There are far more species in the canopy, and in the NGO community, with diverse yet interconnected roles than one might expect, he said. While this ecosystem of national and international NGOs does not necessarily embrace disaster reduction as its primary mission, many NGOs do abide by principles of risk reduction in their projects. These projects are commonly predicated upon the recognition that natural resource depletion and disasters are inextricably linked. The plight of ecological refugees provides a vivid reminder of this link.

Mr. Sykes pointed out that the fundamental issues in disaster reduction emerge once disasters are viewed as interruptions in the linear process of development: How can resources be allocated to minimize the duration of this interruption? And, how can resources be deployed during relief to promote reconstruction? According to the speaker, the answers to these questions lie in strengthening local capacity to cope with natural hazards and learning from traditional practice and response in the communities most likely to be affected. Outside attempts to promote disaster reduction must be accomplished in congruence with local practice; communications, training and education, and science and technology must be "vernacularized" to involve local communities in the effort.

Mr. Sykes concluded his presentation by calling on the international community to assist in ending civil strife in countries experiencing serious, slow-onset disasters.

Frederick Cole of the U.S. Office of Foreign Disaster Assistance (OFDA) moved the discussion back to communications from a disaster response perspective. He analyzed three recent case studies: the 1988 earthquake in Soviet Armenia, the 1988 flood in Bangladesh, and a conglomeration of slow-onset disasters in Sudan.

Mr. Cole described how the Armenian communications network, which was not at full capacity when the earthquake struck because equipment had previously been diverted to neighboring regions experiencing civil strife, sustained heavy damage and was unable to cope with the extraordinary demands placed upon it by relief activities. Inadequate communications undoubtedly frustrated the relief effort, he said. Mr. Cole argued that the Armenia case graphically illustrated the implications of not paying the up-front costs to ensure that essential infrastructure remains viable after a major disturbance.

The 1988 floods in Bangladesh differed significantly from the Armenian earthquake. Floods are a common event in Bangladesh and the country's communications network is underdeveloped to begin with. Despite the country's poverty, Bangladesh is resilient and able to overcome the calamities which strike. Mr. Cole contended that stiff competition for each development dollar makes overhauling the communication network an untenable option. Nonetheless, substantial improvements in the network could be made by fortifying traditional communications systems, supplanting inadequate systems at critical junctures, and ensuring that the communications network of development projects remains

as invulnerable as possible. In addition, Mr. Cole predicted that as technology continues to advance, cost-effective communication devices will become available even for the most austere economies.

In the case of Sudan, civil strife and neglect of the population have exacerbated the impact of drought, flood, and locust. Mr. Cole suggested that effective communications mechanisms for disaster relief are possible only by portable equipment less vulnerable to sabotage than larger equipment, such as radios and walkie-talkies.

Mr. Cole concluded that the best way to facilitate communications after a disaster is to base development on the principle that invulnerability creates sustainability. In addition, he reminded the audience that disasters create a unique opportunity where limited resources can be channeled into preventing the recurrence of a calamity.

Francisco Sagasti of the World Bank broadened the discussion to examine the political considerations in which decisions about technology transfer and disaster communications are made in developing countries.

Mr. Sagasti reviewed the chief obstacles developing countries must contend with in securing technology for disaster reduction. The primary impediment was the intense competition for scarce resources. Then, he discussed three sets of problems and policy consequences associated with technology transfer for disaster reduction.

The first issue concerned the appropriate use of technology and scientific knowledge. Mr. Sagasti suggested that some forms of technology transfer, agricultural chemicals for example, may exacerbate vulnerability. Moreover, in the event that available scientific knowledge could be acquired, the unpredictability of natural hazards makes technological planning and deployment extremely difficult, even in the most amenable circumstances.

Mr. Sagasti continued by echoing the earlier speakers in his insistence that the technology was available to mitigate risk and to deliver effective relief and recovery after a disaster. Bureaucratic bottlenecks presented the fundamental hurdle to mobilizing technology. Also, the intellectual tools were lacking for rational, resource allocation decisions to be made, and political interest groups were absent for pressure to be exerted on policy makers.

As the last issue, Mr. Sagasti cautioned development planners and professionals in the disaster field about placing their unquestioned faith on so-called "popular wisdom." Local populations, he asserted, often do not possess the expertise necessary to reconstruct homes, infrastructure, and private and public enterprises more resiliently. The opportunity afforded by the disaster to rebuild entire communities more prudently must not be foregone.

Mr. Sagasti concluded by commenting on issues of direct consequence to the Bank. He said the proper instruments to incorporate the vagaries of extreme events into project design and evaluation criteria still need to be developed. Also, he discussed new opportunities emerging for the Bank and professions in the disaster field as former enclaves of East-West conflict are being reconciled.

Alberto Harth, Operations Advisor at the World Bank, provided the context for future Bank activities in disaster reduction by reviewing the institution's past emergency lending practices and its

current emphasis on disaster mitigation.

Mr. Harth began by examining the factors which have led to successful Bank-financed reconstruction projects. These factors include the host government's strong commitment to disaster recovery, early Bank involvement in the reconstruction effort, and a comprehensive and multisectoral recovery program whose objectives are reasonably limited in number and scope.

According to Mr. Harth, since the Bank's first reconstruction loans in 1947 to Europe, emergency lending has evolved in four important directions. First, the scope of emergency assistance has expanded and become more flexible -- projects have shifted to encompass economic recovery rather than solely physical reconstruction. Second, special procedures have been instituted to accelerate the processing of emergency loans. Third, quick-disbursing features to finance the immediate reconstruction needs of the disaster-stricken nation have been implemented. And fourth, disaster prevention and mitigation have been given greater prominence in normal and emergency lending and as freestanding disaster reduction loans.

Despite the Bank's institutional push toward integrating disaster reduction into its lending program, it has encountered several obstacles in developing risk reduction projects. The field's infancy is reflected in the Bank's limited portfolio of risk lowering projects. Also, the complex milieu in which lending occurs has created an environment in which taking a long-term perspective for disaster mitigation is difficult. However, perhaps the most formidable barrier to implementing effective hazard reduction programs is the institutional weaknesses within borrowing countries to administer such programs. Mr. Harth suggested that the donor community could help to rectify institutional weaknesses within developing countries by providing greater support to new institutions or by strengthening existing ones.

As a conclusion to the second panel, **Erik Arrhenius**, Science and Technology Advisor at the World Bank and the moderator, commented on the ecological aspect of natural hazards and explored the relationship between extreme events in nature, environmental mismanagement, and disasters.

Mr. Arrhenius said that the extreme events which trigger disasters are integral to the natural cycles of the Earth. As a response to these extreme events and less tumultuous natural fluctuations, the relationship between the Earth and humans has undergone two phases. First, humans lacked the technological and economic wherewithal to control and subdue nature. With the advent of thriving industrialized economies, nature soon could be exploited and restrained. But, with the subjugation of nature came a cost. Mr. Arrhenius cited burgeoning population growth and its impact on the environment as an example of this cost.

As a result of our mismanagement of the environment, Mr. Arrhenius warned, the frequency of extreme events inevitably will increase. And, despite successful innovations to arrest environmental degradation, the incidence of natural disasters will multiply in the future. Mr. Arrhenius called for a proactive approach in which future disasters are anticipated, prevented, and mitigated. Integrating disaster reduction with general development theory and practice, he said, is imperative.

International Disaster Communications

David Webster
Director
International Disaster Communications Project
The Annenberg Washington Program of Northwestern University

Perhaps I should open my contribution to the discussion by saying that I am probably the only person in this room who is not a recognized expert on natural disasters, the environment, or development. Also, I am not an engineer -- so this is not going to be a technical approach. I am an editor who ended up in the management of a very large broadcasting organization. So I do know something about international communications and it is the gap between these areas of expertise that I wish to address both in technical and policy terms.

Last year I was asked by The Annenberg Washington Program to chair a small task force in Washington to look at the coming developments in the communications industry and how these might be used to help in dealing with natural disasters, both before and after the event. It was an interesting group consisting of relief workers, lawyers, editors, engineers, and communications experts. It soon became clear that there was an enormous gap between what the communications people knew were going to be the startling developments of the next decade in their business, and the ability of some disaster relief organizations to focus on these developments. Of course,

"In the last few years, we have seen dramatic changes in the scale of equipment that is needed to communicate internationally. It is now possible to rush into a stricken area with small satellite uplinks and quickly restore communications with the outside world --data, voice, and video. In fact, most of the barriers to this activity turn out not to be technical at all, but often a lack of knowledge or imagination or bureaucratic delay."

David Webster is Director of the International Disaster Communications Project and a Senior Fellow with The Annenberg Washington Program of Northwestern University, which assesses how communication technology and current governmental communications policies affect aspects of American life. Previously, Mr. Webster was an Associate at the Carnegie Endowment for International Peace, where his work centered on public policy arising from communications. He worked for more than 30 years with the British Broadcasting Corporation (BBC), including eight on its Board of Management, most recently as Director, United States. In addition to his role as a member of the Board, Mr. Webster oversaw all the BBC's activities and interests in the U.S. and assessed the impact of new communications technology.