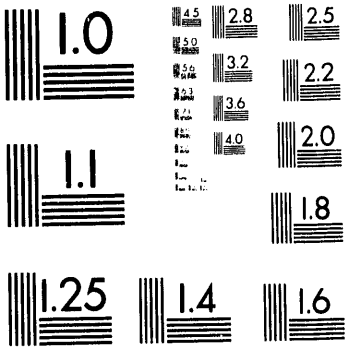

1.0
2.8
2.5
3.2
2.2
3.6
2.0
4.0
1.1
1.8
1.25
1.4
1.6

1 of 2

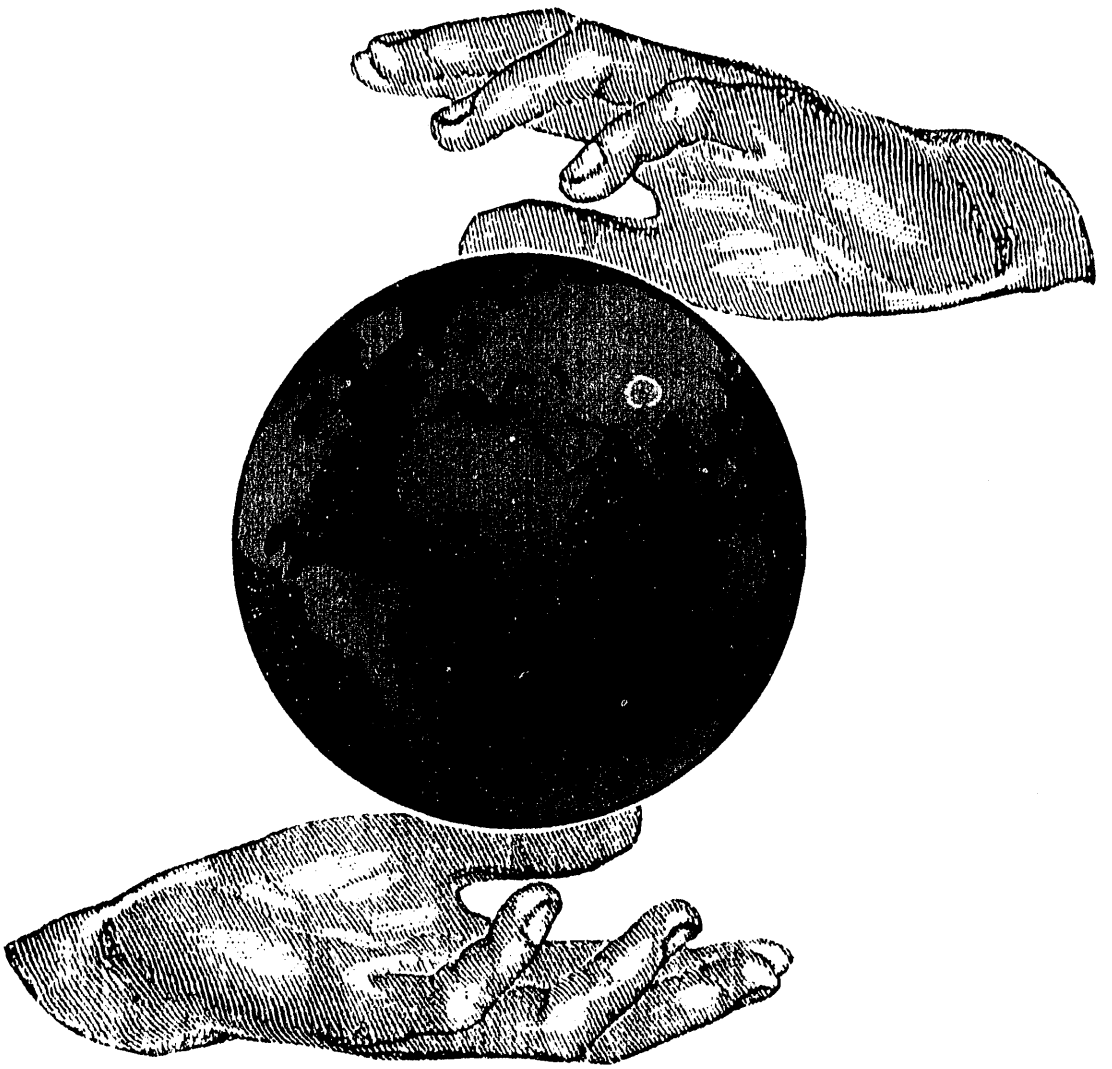
CONF-9206415--

Student Pugwash USA's 1992 International Conference

VISIONS FOR A SUSTAINABLE WORLD

A Conference on Science, Technology and Social Responsibility

Emory University, Atlanta, Georgia
June 14 - 20, 1992



CONFERENCE REPORT

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

Student Pugwash USA's Seventh Biennial International Conference

VISIONS FOR A SUSTAINABLE WORLD:
A Conference on Science, Technology and Social Responsibility

Emory University, Atlanta, Georgia, USA
June 14 - 20, 1992

CONFERENCE REPORT

Table of Contents

Attached: Conference Agenda
Conference Financial Report

Conference Report

Appendices:

A. Student Recruitment

B. Student Participants

C. Senior Participants

D. Conference Participant "Facebook"

E. Pre-Conference Materials

F. Student Research Paper Titles

G. Working Group Reports

H. Personal Plan of Action

I. Publicity, Press, and Media

J. Evaluations and Participant Feedback

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

Student Pugwash USA's Seventh Biennial International Conference

VISIONS FOR A SUSTAINABLE WORLD:
A Conference on Science, Technology and Social Responsibility

Emory University, Atlanta, Georgia, USA
June 14 - 20, 1992

CONFERENCE REPORT

I: EXECUTIVE SUMMARY

This Report summarizes the organization, activities, and outcomes of Student Pugwash USA's 1992 International Conference, ***Visions for a Sustainable World: A Conference on Science, Technology and Social Responsibility***. The Conference was held June 14 - 20, 1992 at Emory University in Atlanta, Georgia, and brought together 94 students and over 65 experts from industry, academe, and government. On the heels of the United Nations Conference on Environment and Development (UNCED), Student Pugwash USA's Conference addressed issues ranging from global environmental cooperation to the social impacts of the Human Genome Project to minority concerns in the sciences.

Student Pugwash USA's International Conference provided a valuable forum for talented students and professionals to engage in critical dialogue on many interdisciplinary issues at the juncture of science, technology and society. The 1992 International Conference challenged students--the world's future scientists, engineers, and political leaders--to think broadly about global problems and to devise policy options that are viable and innovative. The success of the Conference in stimulating interest, understanding, and enthusiasm about interdisciplinary global issues is clearly evident from both the participants' feedback and their continued involvement in Student Pugwash USA programs.

The International Conference was structured to address many diverse, yet inter-related global issues. In addition to afternoon and evening plenary sessions, six working groups met each morning of the Conference week. The working group themes included:

- Environmental Challenges for Developing Countries
- Energy Options: Their Social and Environmental Impact
- Health Care in Developing Countries
- Changing Dynamics of Peace and Global Security
- Educating for the Socially Responsible Use of Technology
- Ethics and the Use of Genetic Information

The International Conference was specifically designed to include mechanisms for ensuring its long-term impact. Throughout the Conference, participants were encouraged to focus on their individual role in helping resolve global issues. This was achieved through each participant's development of a Personal Plan of Action, a plan which mapped out activities the student could undertake after the Conference to continue the dialogue and work towards the resolution of global and local problems. This focus culminated on the last day, when the Conference explicitly addressed individual responsibility, and provided a forum for students to share ideas on ways to extend the "Conference experience" to their home communities. As a result, a wide array of far-reaching initiatives and actions have grown out of the 1992 International Conference.

II: ORGANIZATIONAL AND CONFERENCE BACKGROUND

Student Pugwash USA

Student Pugwash USA is a national, educational, non-profit organization dedicated to building a commitment among young people to solve critical global problems through the responsible use of science and technology. Through interactive, international and interdisciplinary programs, Student Pugwash USA educates young people on the relevance of science and technology to their own lives, and on its ability to shape the future of the global community.

Our programs stress individual responsibility in the analysis and resolution of critical issues. Through instructional events including international, national, and regional seminars and workshops, young people are encouraged to strengthen their leadership skills and explore meaningful avenues of involvement in the resolution of pressing social dilemmas. Student Pugwash USA recognizes the necessity of assisting students--who will soon move into positions of professional responsibility as the world's future decision-makers--to understand the social impacts of science and technological advancement if we are to realize a more stable, sustainable world.

Student Pugwash USA programs unite students and professionals from a variety of national, academic and ideological backgrounds for analysis and greater understanding of pressing global issues. Our interactive programs examine the role of technology as it relates to management of the environment and energy resources, peace and security, bioethics and biotechnology, population and development issues, computer and information technologies, and science education reform. The unique educational experience afforded through Student Pugwash USA programs changes lives by empowering young people to integrate global and social concerns into their academic, professional and personal endeavors.

Site Selection and Conference Planning

Planning for the 1992 International Conference was initiated in March 1991 by Betsy Fader, Executive Director of Student Pugwash USA. Emory University in Atlanta, Georgia, was selected as the Conference location due to the high level of administrative, faculty, and financial support which the university could offer. Emory's strong science and liberal arts programs, including the Human and Natural Ecology Program and the Center for the Study of Ethics in the Professions, provided beneficial resources to the multidisciplinary Conference. In addition, Atlanta proved to be an ideal site due to the large number of colleges and universities in the area. The presence of these institutions offered the potential to tap local speaker resources and expand Student Pugwash USA's Chapter Program into Georgia and the Southeast region. Emory's attractive campus and its proximity to institutions such as the Carter Presidential Center and the Centers for Disease Control contributed to the final selection of Emory University as the 1992 Conference site.

Timothy Larson was employed as Conference Coordinator in August of 1991. After operating out of the National Office of Student Pugwash USA (in Washington, D.C.) for five months, Tim established an office at Emory University. Once on site, he assembled a staff of six students who assisted with the final stages of organizing. Throughout the planning process, Tim and Betsy received advice and assistance from a wide range of individuals, including an advisory group of experts and professionals; foundation contacts; International (senior) Pugwash Council members; current and previous student chapter members; SPUSA board members; and staff.

Fundraising

Several months of staff time went into securing the financial assistance necessary to hold the Conference. Supporters of the 1992 International Conference included:

Ciba-Geigy Corporation
Ciba-Geigy Limited
Emory University
Georgia Power
The John D. and Catherine T. MacArthur Foundation
National Institutes of Health
National Science Foundation
Pfizer Corporation
Ploughshares Fund
Public Welfare Foundation
Rockefeller Family Associates
Rockefeller Foundation
Samuel Rubin Foundation
Trust for Mutual Understanding
U.S. Department of Energy
The Winston Foundation for World Peace
Individual Contributors

Student Pugwash USA encouraged students to secure travel assistance from their universities or other local sources and assisted in their efforts. Where necessary, limited travel assistance was provided to supplement the students' efforts, especially in the case of international student participants. Speakers and senior participants were also encouraged to cover their travel costs to Atlanta. Once in Atlanta, all food, housing, and programmatic expenses were covered by Student Pugwash USA.

Student Recruitment

Student Pugwash USA began to solicit interest and applications for the International Conference in September 1991. Any undergraduate, graduate, or professional (eg. law, medical) student was eligible to apply, regardless of discipline, institution, nation, or age. (Only students who had previously attended a Student Pugwash USA International Conference were ineligible to apply.) In October, nearly 10,000 conference posters, information sheets, and application forms were mailed to college and university departments, foreign student advisors, and academic programs across the United States and abroad. The Student Pugwash USA chapter network, along with the Student/Young Pugwash organizations in other countries, greatly assisted in the publicity and recruitment process. Mailings were also sent to individuals and organizations who could be of special assistance in identifying women and minority applicants. In order to expand our outreach effort, a mailing was sent to the newsletter editors of 150 organizations. This effort resulted in numerous pro bono advertisements and "ad swaps." As a result of the Conference recruitment efforts, Student Pugwash USA received over one hundred requests for information on our other programs from university professors and students. Thus, the recruitment process not only succeeded in attracting a high quality pool of Conference applicants, but also helped to involve new people in our Chapter and New Careers Programs. (Information on the recruitment process is presented in Appendix A.)

III. CONFERENCE PARTICIPANTS

Student Participants and the Selection Process

Student participation in the International Conference was based on a competitive application process. Each student applicant was required to submit an abstract of a paper to be presented in the Conference working group of his/her choice; a summary of relevant academic, extracurricular, and work experience; two faculty letters of recommendation; and a short essay describing his/her interest in the Conference. Nearly 150 applications from thirty countries were received by the February 15th application deadline, making the 1992 Conference applicant pool one of our largest and most diverse ever.

For each of the six working groups, two experts were selected to review the student applications. The twelve application readers were chosen for their knowledge of the working group topic area and their familiarity with Student Pugwash USA and the International Conference experience. The reviewers evaluated the students' research and academic abilities, their commitment to issues at the juncture of science and society, and their potential for contributing to and gaining from the Conference. With the rigorous application process acting as a screening tool, the overall quality of the applicant pool was extremely high, making selections difficult. Without compromising the quality of the students chosen, we endeavored to balance the working groups with respect to academic discipline, gender, race, nationality, graduate and undergraduate representation, and ideological perspective.

A total of 94 undergraduate and graduate students representing 71 colleges and universities and twenty countries were invited to attend the week-long Conference. Students' academic backgrounds were quite varied, with 30% from the sciences, 28% from interdisciplinary programs, 20% from the social sciences, and 14% from medicine and public health. About forty percent of the delegates were women, and 13% of the American participants were minorities. (Additional details on the student participants can be found in Appendix B.)

Senior Participants

Sixty-three professionals and experts from seven countries joined the student delegates during the Conference week to participate in the working groups, panel discussions and special events. Senior participants represented a broad range of prominent organizations, including the National Science Foundation, U.S. Office of Technology Assessment, World Resources Institute, Centers for Disease Control, CNN, Rockwell International, and The Coca-Cola Company. (A complete listing of senior participants and their affiliations is included in appendix C. Additional biographical information is provided in the Conference "Facebook" in Appendix D.) In selecting senior participants for the Conference, substantial efforts were made to ensure sectoral, ideological, gender, and racial diversity in the panels and working groups. Senior participants represented the following sectors:

25 academe
18 non-governmental organization / non-profit organization
8 business
8 government
4 media

One-third of the senior participants were women, while 15% hailed from countries other than the United States. Nine percent of the senior participants were minorities.

IV: THE CONFERENCE PROGRAM

Through a varied format of interdisciplinary sessions, Student Pugwash USA's 1992 International Conference proved a powerful educational event that examined challenging issues at the juncture of technology and society while linking them to the larger global context. (An agenda for the week-long Conference is attached to this report.) The following section describes the various components of the International Conference.

Working Groups

During each morning of the International Conference, six working groups met simultaneously for in-depth explorations of the defined themes. Each working group consisted of about fifteen students and six to ten experts and professionals. The week's agenda for each group was determined by its members, based on the students' papers and prepared questions (included in Appendices E and F).

Prior to arriving at the International Conference, participants received "background packets" which contained various articles and preparatory information for their working group. These resources were designed to provide each participant with a common base of knowledge and to help guide and focus the working group's discussion. (See Appendix E for further details on working group preparation and pre-Conference materials.) In addition, each working group included a trained facilitator to moderate and focus the dialogue. Within each working group, experts served as "senior resource people," providing insight and posing challenging questions, while allowing students to participate actively in the discussions. Senior participants were housed and fed in the same facilities as the students, providing ample opportunity for informal interaction and discussion throughout the Conference week. Conference working groups included:

- Environmental Challenges for Developing Countries
- Energy Options: Their Social and Environmental Impact
- Health Care in Developing Countries
- Changing Dynamics of Peace and Global Security
- Educating for the Socially Responsible Use of Technology
- Ethics and the Use of Genetic Information

On the last day of the Conference, each working group was called upon to make a fifteen minute presentation to the Conference community on the main themes, concepts, or problem solutions which they discussed throughout the week. This session was quite lively and informative, with presentations ranging from a skit on village-based public health to a participatory declaration on ethics and genetic research. In addition, a brief report was prepared that summarizes each working group's proceedings. (See Appendix G for the working group reports, as well as Appendix I for the special Conference edition of Student Pugwash USA's quarterly newsletter, *Tough Questions*.)

Plenary Sessions and Special Events

Plenary sessions and special events were scheduled during the afternoons and evenings of the Conference week. These sessions were designed to complement and integrate many of the topics and themes addressed in the working groups. Conference plenary sessions included:

- *International Security in the World of the 21st Century*
- *Communicating Science and Technology to the Public*
- *Redirecting R&D for the Post-Cold War World*
- *Weapons Development Under a New World Order*
- *The Environmental Legacy of the Soviet Union*

- *The Human Genome Initiative: Disease Prevention at What Cost?*
- *Minority Leadership in Science and Technology? Issues of Access and Equity*
- *Public Health and International Development: An Agenda for the 1990s*
- *The Road from Rio: Prospects for Global Environmental Cooperation*
- *Social Change and Individual Responsibility*

Each session was followed by a question and answer period, allowing for extensive audience interaction and discussion. All plenary sessions and special events were open to the public, free of charge, and were advertised to the public and press. Several local radio stations and newspapers assisted Student Pugwash USA's efforts to inform individuals in the Atlanta area of the Conference and, as a result, the events enjoyed significant public participation. In addition, all plenary sessions were videotaped, and are available from Student Pugwash USA. (Refer to the attached agenda for further details.)

Special Events

Special events included an afternoon session addressing international health care issues at the Carter Presidential Center in Atlanta, and a World Game Workshop in which Conference delegates explored global issues related to resource allocation through an interactive, multimedia format. A traditional country barbecue in Emory's Lullwater Park provided student and senior participants with time to interact informally. Following the "Road from Rio" plenary session on Thursday evening, Emory University hosted an open reception which enabled Conference participants to meet with members of the Emory community and the general public.

Press and Media

Press and media coverage of the International Conference was outstanding. Information on the Conference was included on the Associated Press wire service and on Paul Harvey's program on the ABC Radio Network. CNN covered the Conference with a short feature on *Earth Matters*, which aired repeatedly in the United States and on CNN International. Several Conference participants were also interviewed for CNN's *Futurewatch,* which was broadcast on June 20. A local affiliate of National Public Radio (WABE) carried daily updates of the Conference and broadcast the plenary session, "The Road from Rio: Prospects for Global Environmental Cooperation" on its weekly program, *Atlanta Forum.* On June 17 and 18, WAFS Radio conducted live interviews with two senior participants of the Student Pugwash USA Conference. In addition, numerous other Georgia radio stations ran public service announcements and news briefs about the International Conference.

In the print media, over 15 articles appeared in local and regional newspapers, including the *Atlanta Journal-Constitution*, the *DeKalb News/Sun*, *Creative Loafing*, the *Deluth Daily News*, the *Statesboro Herald*, the *Jonesboro Daily News*, the *Brunswick News*, the *Daily Tribune News*, the *Columbus Ledger-Enquirer*, the *Sandy Springs Neighbor*, and the *Daily Citizen-News*. The scope and quality of media coverage of the Conference has helped to bring public attention to the role of technology in many global challenges. As a result, numerous organizations and individuals have contacted Student Pugwash USA to receive additional information and become involved in our activities. (Refer to Appendix I for a media overview and press clippings.)

V: CONFERENCE OUTCOMES

Student Pugwash USA's International Conferences serve as a *catalyst* for generating discussion and involvement in science, technology and society issues long after the week-long Conference has ended. Indeed, the actual Conference serves as the focal point for

activity and discussion that begins before and continues well after the Conference week. The success of the International Conferences in fulfilling this role is powerfully illustrated by Student Pugwash USA's Chapter, Mentorship, and New Careers Programs, all of which have grown out of the ideas and enthusiasm produced by these biennial week-long events. The following section describes several of the exciting outcomes of the 1992 International Conference.

Personal Plans of Action

During the Conference week, each student prepared a Personal Plan of Action (PPA) detailing how they would bring the benefits of the Conference experience to their home communities. For some participants, this involved starting a Student Pugwash chapter, while for others the PPA entailed speaking to other students in their communities about the Conference and issues at the juncture of science, technology and society. The Personal Plans of Action afforded students a forum to share their creative ideas, enabling others to utilize their suggestions to raise public awareness and affect progress in dealing with the problems discussed at the Conference. Through the Personal Plan of Action, Student Pugwash USA has attempted to document and assist student efforts to follow-through on ideas generated during the Conference. (See Appendix H for information on the results of students' Personal Plans of Action.)

Conference Community

Some of the most important outcomes of the Conference include the personal and professional relationships that developed during the week. Sustained and lively informal interaction between and among student and senior participants occurred throughout the week, and many of these relationships have continued after the week's end. These relationships have already led to jobs and internships, paper collaboration opportunities, and even an international business venture involving students and seniors from Russia, England and the United States. These interactions also enabled students and professionals from numerous disciplines and institutions to exchange information and broaden perspectives on many important science and technology issues. Conference evaluations indicated that many students left the week with a sharpened understanding of their academic and career interests, while senior participants enjoyed the opportunity to hear student perspectives and engage in thoughtful and critical analysis.

Chapter Initiatives

One of the primary motivations for holding the International Conference in Atlanta was the opportunity to bring exposure to Student Pugwash USA in the South East, and to spur chapter growth in a previously "untapped" geographic region. On Friday afternoon of the Conference, Student Pugwash USA's National Chapter Coordinator led a session on chapter organizing. As a result of the International Conference, Student Pugwash chapters are currently being formed at Delta College (Michigan), Georgia Institute of Technology, Holyoke Community College (Massachusetts), Indiana University of Ohio, Louisiana State University, Ohio State University, Pennsylvania State University, University of Maryland at College Park, University of Wisconsin, Villa Julie College (Maryland), and Virginia Institute of Technology. (A complete Student Pugwash USA chapter list is included in Appendix H.) In order to further capitalize on the interest sparked in the Southeast region, Student Pugwash USA held its National Chapter Conference, *Creating a Secure 21st Century: Global Security in Our Changing World*, at Georgia Institute of Technology in January 1993.

Publications

As of early 1993, three academic journals have accepted student papers from the 1992 International Conference for publication. These journals include *Interciencia; Science, Technology and Development;* and a journal on the Human Genome Project. Several other

academic and scientific journals, including *Appropriate Technology; Chapter One; Environment; Science, Technology & Human Values;* and *Technology in Society,* are currently reviewing student Conference papers for possible publication. In addition, copies of student papers have been requested by individuals at several organizations, including two environmental consulting firms and the World Bank. Copies of student papers are available upon request. (See Appendix F for a complete listing of student research papers.)

Organizational Development

The momentum and exposure gained through the International Conference will enable Student Pugwash USA to further develop several of the organization's other programs, including Professional Pugwash, and the New Careers and Mentorship Programs. Nearly all of the student and senior Conference participants have expressed a desire to become active in these other Student Pugwash USA programs, and many have involved other individuals and organizations with whom they have contact. The International Conference has served an essential function of broadening Student Pugwash USA's efforts to educate people about the social and ethical implications of science and technology.

VI: EVALUATION AND FOLLOW-UP

Student Pugwash USA has conducted evaluations of the 1992 International Conference using several different sets of criteria and feedback. Written evaluation forms were given to student participants to be completed at the close of the Conference. Sixty-nine percent of the students fully completed and returned the surveys. In addition, many student and senior participants sent letters to Student Pugwash USA which evaluated their experience at the International Conference. (Please refer to Appendix J for more detailed information of the evaluation process and results.) A special "open-microphone" session was held on the last day of the Conference to allow participants to reflect on their Conference experience. This session proved highly successful in eliciting participants' feelings and reactions towards the various components of the Conference and its impact on them. Finally, follow-up phone conversations and meetings were conducted during the summer and fall of 1992 with over 50% of the student and senior participants. These interactions provided participants the opportunity to discuss the aspects of the Conference which they enjoyed and to offer suggestions for those components which they thought could be improved.

Conference evaluations indicated that *Visions for a Sustainable World* had a significant impact on both student and senior participants. Student written and verbal evaluations revealed that the intensive, interdisciplinary experience was unlike any event they had ever attended. Nearly ninety-five percent of the students wrote that the Conference surpassed their initial expectations. Ninety percent of the students indicated that the Conference helped them to make decisions about their future academic or career plans. In comparing evaluations of the 1992 Conference with those of the 1989 International Conference, it was evident that the quality of Conference plenary sessions had greatly improved. Over ninety-two percent of the evaluations rate the 1992 Conference plenary sessions as "good" to "excellent." These participants found the plenary sessions to be "interesting, informative, and effective in linking the diverse conference themes."

The evaluation forms revealed several aspects of the 1992 International Conference that the student participants enjoyed most. These include:

- the Conference working groups which provided over 15 hours for intensive discussion in a small group setting;
- the stimulating, free exchange of ideas and sharing of knowledge;
- the interactive, multi-media World Game Workshop;

- the opportunity to meet students from different countries, cultures, and ethnic backgrounds;
- the opportunity to interact one-on-one and in small group discussions with distinguished experts.

The 1992 International Conference also received positive evaluations from senior participants. Over 80% of the senior participants expressed that the Conference experience surpassed their initial expectations. Seniors commonly remarked that they very much enjoyed the opportunity to interact with bright, motivated students and other renowned experts. Many seniors also claimed that the week-long Conference provided them with a refreshing opportunity to intensively discuss and reflect upon many critical global issues that they do not normally have time to delve into. Nearly every senior participant said that they were extremely impressed with high quality of the students' research and discussion, and that they would welcome to opportunity to participate in any upcoming Student Pugwash USA conferences. In addition, several experts went so far as to indicate that Student Pugwash USA's 1992 International Conference was the best organized conference they had ever attended.

VII: CONCLUSION

By all our measures Student Pugwash USA's 1992 International Conference, *Visions for a Sustainable World: A Conference on Science, Technology and Social Responsibility* was successful in educating, empowering, and uniting a highly talented group of young leaders. The effects of the Conference continue to be felt as participants carry out their Personal Plans of Action and continue their involvement in Student Pugwash USA's Chapter Program and other initiatives. The generous assistance of the foundations, corporations, and individuals who supported the 1992 International Conference has enabled Student Pugwash USA to affect the lives of hundreds of students, educating and empowering young people to work towards the realization of a safe, secure, and sustainable world.

Appendix A

Student Recruitment

STUDENT RECRUITMENT

Publicity and Student Recruitment:
In order to inform students in the U.S. and abroad about the 1992 International Conference, Student Pugwash USA utilized many organizations, newsletters, and networks for publicity. Below is a partial listing of such organizations and outreach resources:

- Programs listed in the NSF's EVS Resource Directory;
  ACCESS Security Information Service;
- American Association for the Advancement of Science (AAAS);
- American Institute of Chemical Engineers/Chapter One;
- American Medical Students Association (AMSA);
- National Association for Science, Technology and Society (NASTS);
  National Association of Foreign Student Advisors (NAFSA);
- National Association of Graduate-Professional Students (NAGPS);
  National Science Teachers Association (NSTA);
- Student Environmental Action Coalition (SEAC);
  Campus Outreach Opportunity League (COOL);
- National Wildlife Federation (NWF);
  LEAD USA;
- Global Tomorrow Coalition;
- Institute for Global Ethics;
- Commission on Communication Ethics;
- International Development Exchange (IDEX);
  Coolidge Center on Environmental Leadership;
- Peacework;
- World Resources Institute;
- Professional organizations and their student networks in engineering, health, math, and science;
- Student Pugwash USA chapters;
- Past International Conference participants and their faculty advisors;
- *Tough Questions*, the Student Pugwash USA newsletter (circulation 5,000);
- *Pugwatch*, our chapter newsletter (circulation 500);
- Electronic mail and bulletin board systems, including Peacenet;
- Student / Young Pugwash Groups in 16 other countries.

In addition, 10,000 Conference posters and recruitment packets were distributed during the Fall of 1991 to science and engineering departments, as well as some social science and humanities departments, on 1000 U.S. and foreign college and university campuses. As in past years, Student Pugwash USA communicated with many other non-governmental and not-for-profit organizations who address issues relevant to the Conference, so that they could inform their constituencies. Student Pugwash USA conducted advertisement swaps with many of these groups.

Minority Student Recruitment:
Diversity of participant perspectives and background was an important factor in the success and uniqueness of Student Pugwash USA's 1992 International Conference. Much time and effort was invested to insure international, ethnic, gender, and racial diversity among student and senior participants. To ensure substantial participation of women and minorities, Student Pugwash USA worked with the following organizations and networks:

- American Association for the Advancement of Science minority programs;
- American Indian Science and Engineering Society (AISES);
- Association for Women in Science (AWIS);
- Hispanic Association of Colleges and Universities (HACU);
- Historically Black Colleges and Universities, including Howard, Clark-Atlanta, Spelman, and Morehouse universities;
- National Action Council for Minorities in Engineering (NACME);
- National Science Foundation minority programs (such as Career Access, Alliances for Minority Participation, and Research Careers for Minority Scholars);
- National Society of Black Engineers (NSBE);
- Quality Education for Minorities Network (QEM);
- Society for the Advancement of Chicanos and Native Americans in Science;
- Society of Women Engineers (SWE);
- Women in International Security (WIIS).

STUDENT PUGWASH USA

Application Form

STUDENT PUGWASH USA'S
SEVENTH BIENNIAL INTERNATIONAL CONFERENCE
"Visions for a Sustainable World:
A Conference on Science, Technology, and Social Responsibility"
June 14-20, 1992
Emory University, Atlanta, Georgia, USA

Undergraduate, graduate, and professional students from all disciplines are eligible; women, minorities, and international students are especially encouraged to apply. Roughly one hundred conference delegates will be selected on the basis of merit, and there is no application fee. Student Pugwash USA will cover room and board costs for the conference week. Delegates selected for the conference must pay for domestic (U.S.) travel, though most of our participants have had great success in raising travel costs from their universities or host departments. Student Pugwash USA will make every effort to assist delegates in raising international and domestic travel costs.

Please type or print legibly the following information:

Name: _____

Mailing address: _____

_____

Phone: _____ Telex or Fax: _____

This address will be good through: _____

Permanent address: _____

_____

Phone: _____ Telex or Fax: _____

Status (circle one): Undergraduate Graduate Other: _____

University: _____ Major: _____

Country of Citizenship: _____

Ethnic Background (optional): _____

Do you have any disability which would require special facilities or treatment? _____

_____

Please note any special dietary requirements (vegetarian, Kosher, etc.): _____

_____

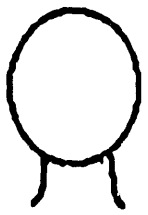
How did you learn about the conference? _____

FOREIGN STUDENTS PLEASE NOTE:

In the past, student delegates applying from countries outside the U.S. have found it useful to begin efforts to obtain a passport from their host country and a visa from the U.S. embassy as soon as possible, usually concurrent with the application process.

Although we cannot commit to accepting student delegates before March 15, we can deliver by cable an early estimate of the likelihood of admission. To facilitate communication and assistance in making necessary arrangements, please give a telex or facsimile number where messages can reach you, and notify us of your intention to apply as soon as possible.

The conference will be conducted in English.



Please attach a photograph

The photograph is for use in the directory of conference participants.

Application Deadline: February 15, 1992

For additional information, please contact the Coordinator at (202) 328-6555.

recycled paper

Working Groups:
The central activity of the Conference is the daily working group meeting. Each working group includes about fifteen students and five senior participants, and each group is given autonomy in selecting the manner in which they will address their issues. Each student is expected to write a paper (about 10 pages in length) for discussion in their working group, although an actual reading of the paper at the conference is not expected. The paper can address any aspect of the group's topic, and the body of student papers will set the agenda for discussions in which the participants contribute insights from their research and personal experience. The best of the papers will be revised and published after the conference. As noted below, a brief abstract of the paper must be submitted with this application. Students accepted to the conference must complete their papers a month in advance of the event.

Please place a "1" by the working group in which you would most like to participate, and also note your second and third choices:

____Environmental Challenges for Developing Countries
____Energy Options, Their Social and Environmental Impact
____Health Care in Developing Countries
____The Changing Dynamics of Peace and Global Security
____Educating for the Socially Responsible Use of Technology
____Ethics and the Use of Genetic Information

Letters of Recommendation:

Please arrange to have two confidential letters of recommendation sent to us by faculty members familiar with your work. Due date: February 15, 1992. Please list name, title, address, and phone number of these two persons:

1. _____

_____

2. _____

_____

On separate sheets, please enclose the following:

1) An academic transcript.

2) A resume or brief discussion of all academic coursework, extracurricular activities, and other experiences relevant to the conference theme or working group.

3) An abstract (no more than 500 words) of a paper to be presented in the working group of your highest choice (see above).

4) A short essay describing your interest in attending the Conference. What can you contribute, and what do you hope to gain? (no more than 500 words, please)

All materials should be sent to:

Timothy Larson
Conference Coordinator
Student Pugwash USA
1638 R Street NW, Suite 32
Washington, D.C. 20009
USA

STUDENT PUGWASH USA SEVENTH BIENNIAL CONFERENCE ON SCIENCE, TECHNOLOGY, AND SOCIAL RESPONSIBILITY

STUDENT PUGWASH USA

VISIONS FOR A SUSTAINABLE WORLD

The Student Pugwash USA Biennial Conference assembles ninety students from around the world for a week-long conference to address the impact of science and technology on society. The students will join accomplished men and women from science, government, industry, and academe for an intensive week of discussion and interaction focusing on the following issues:

- **Environmental Challenges for Developing Countries**
- **Energy Options: Their Social and Environmental Impact**
- **Health Care in Developing Countries**
- **Changing Dynamics of Peace and Global Security**
- **Educating for the Socially Responsible Use of Technology**
- **Ethics and the Use of Genetic Information**

For each of the above topics, student and senior participants form small working groups in which they will meet every morning throughout the conference week to discuss areas of mutual interest and expertise. These intensive discussions offer an invaluable opportunity for students to explore the ethical and value questions posed by advances in science and technology with forward-thinking professionals. Senior Participants will be present from the U.S. Congress, National Institutes of Health, National Academy of Sciences, Carter Center, Centers for Disease Control, Brookings Institution, Emory University, and many other prominent institutions. Several special events will also be held, including a day at the Carter Presidential Center in Atlanta and an interactive, multi-media World Game Workshop.

The separate working group meetings are complemented by afternoon and evening plenary sessions for the full conference. Plenaries will address issues which cut across disciplinary boundaries such as ethical conduct in scientific research, race and gender in science, technology and global responsibility, and religion and science. All participants, both student and senior, live and dine together on campus.

ADDITIONAL INFORMATION

- Undergraduate, graduate, and professional students in all disciplines are eligible to apply. (Freshmen and Sophomores welcome)
- Women, minorities, and international students are encouraged to apply.
- Participants will be chosen through a competitive, merit-based process.
- All on-site costs covered by Student Pugwash USA; applicants should secure their own travel expenses. (some travel assistance is available)

Student Pugwash USA is committed to representing a broad spectrum of political, international, and disciplinary perspectives. Previous conferences have attracted participants from over thirty nations. We are striving for even greater international, intergenerational, and interdisciplinary representation at the 1992 conference.

June 14-20, 1992
Emory University
Atlanta, Georgia
USA

For an application, please contact:

Conference Coordinator
Student Pugwash USA
1638 R Street NW, Suite 32
Washington, D.C. 20009
(202) 328-6555

APPLICATION DEADLINE:
FEBRUARY 15, 1992

Sample Newsletter Advertisements*

June 14-20, 1992. **The 1992 Student Pugwash USA 7th Biennial International Conference.** ***Visions for a Sustainable World: A Conference on Science, Technology, and Social Responsibility***, Emory University, Atlanta, Georgia. Working group topics include: environmental challenges for developing countries, energy options: their social and environmental impact, health care in developing countries, the changing dynamics of peace and global security, educating for the socially responsible use of technology, and ethics and the use of genetic information. Application deadline: February 15, 1992. All students are encouraged to apply. All on-site conference costs will be covered, limited travel assistance is available. For more information, contact Conference Coordinator, Student Pugwash USA, 1638 R Street NW, Suite 32, Washington, D.C. 20009. phone (202) 328-6555. fax (202) 797-4664.

STUDENT PUGWASH USA SEVENTH BIENNIAL CONFERENCE
ON SCIENCE, TECHNOLOGY, AND SOCIAL RESPONSIBILITY

"VISIONS FOR A SUSTAINABLE WORLD"

EMORY UNIVERSITY, ATLANTA, GEORGIA, USA

June 14-20, 1992

The Student Pugwash USA International Conference assembles ninety students from around the world to explore the social and ethical implications of science and technological advancement. The students will join leaders from science, industry, government, and academe for a week of intensive discussion focusing on the following topics:

- **Environmental Challenges for Developing Countries**
- **Energy Options: Their Social and Environmental Impact**
- **Health Care in Developing Countries**
- **Changing Dynamics of Peace and Global Security**
- **Educating for Socially Responsible Use of Technology**
- **Ethics and the Use of Genetic Information**

STUDENT PUGWASH USA

Please inform students of this unique opportunity and encourage them to apply! For an application, contact:

Conference Coordinator
Student Pugwash USA
1638 R Street NW, #32
Washington, D.C.
20009
202.328.6555

*Student Pugwash USA can adjust these ads to fit different size dimensions if necessary, please contact us at (202) 328-6555 if you need more information or a "tailored" ad. Thank you!

*Sample recruitment letter mailed with Conference poster.

STUDENT PUGWASH USA'S 1992 INTERNATIONAL CONFERENCE

VISIONS FOR A SUSTAINABLE WORLD:
A Conference on Science, Technology, and Social Responsibility

Dear WIIS Member,

Student Pugwash USA is a national, educational, non-profit organization dedicated to building a commitment among young people to solve critical global problems through the responsible use of science and technology. Through interactive, international, and interdisciplinary programs, Student Pugwash USA educates young people on the relevance of science and technology in their own lives, and on its ability to shape the future of the global community.

The Seventh Biennial Student Pugwash USA International Conference, entitled, **Visions for a Sustainable World: A Conference on Science, Technology, and Social Responsibility,** will take place June 14-20, 1992, at Emory University in Atlanta, Georgia. The Conference will assemble 100 undergraduate and graduate students and 50 eminent men and women in government, industry, and academe. "Senior" participants will be present from the U.S. Congress, National Institutes of Health, National Academy of Sciences, Carter Presidential Center, Centers for Disease Control, Brookings Institution, Emory University, and many other prestigious institutions. The interactive nature of the Conference will allow for intensive discussion on such critical global issues as energy and environment, peace and security, science education, health and bioethics, and population and development. All on-site conference costs will be covered by Student Pugwash USA.

The Conference presents a unique opportunity for students of diverse national, racial, and academic backgrounds to discuss global issues with leading professionals in the fields mentioned above. As a resource for women in science, your organization can help by informing interested female students about the Conference and encouraging them to apply.

Enclosed please find a poster and an application form. We would greatly appreciate your displaying the enclosed poster in a prominent location. We also suggest that you enter your name and number in the space designated "Local Contact: _____," so that interested students may receive a photocopy of the application directly from you. If necessary, students may contact the Student Pugwash USA National Office for information. As noted on the poster, the application deadline is February 15, 1992, so it is crucial for students to begin their application process as soon as possible.

Thank you for posting the poster and encouraging students to apply. Should you require any further information, please call the National Office at (202) 328-6555.

I'm interested in receiving additional information! (please tear here)
Please send me.

__ General information on Student Pugwash USA.
__ Information on Student Pugwash USA's campus-based Chapter Program.
__ Information on the New Careers and Mentorship Programs.

Name and Address_____

_____

_____

Please return to: Student Pugwash USA, 1638 R Street NW, Suite 32, Washington, DC 20009

STUDENT PUGWASH USA

BOARD OF DIRECTORS

David C. Leifer, Chair
Taft Broome
Anne Cahn
Peter Carpenter
Rosemary Chalk
Charles Chung
Takeshi Kurt Eto
Kathy Harrison
Sally Lilienthal
Indira Nair
Nancy Pfund
Jeff Porten
Nicholas H. Steneck

Jeffrey R. Leifer, Founder

BOARD OF ADVISORS

Siesela Bok
Honorable George Brown
Audna England
Richard Graham
Hal Harvey
Walter Kohn
Shirley Malcom
Richard Nelson
Linus Pauling
Victor Rabinowitch
Roger Revelle
Jonas Salk
Frank von Hippel
Victor Weisskopf
Herbert York

NATIONAL STAFF

Betsy L. Feder
Executive Director

Timothy J. Larson
Conference Coordinator

Michael H. Smith
Management Director

Justine Thompson
Chapter Coordinator

1638 R Street, NW Suite 32
Washington, D.C. 20009
Tel: 202 328-6555
Fax: 202 797-4664

recycled paper

The Seventh Student Pugwash USA International Conference

VISIONS

For A Sustainable World

A Conference on Science, Technology, and Social Responsibility

Emory University, Atlanta, Georgia
June 14-20, 1992

Working Groups:

Environmental Challenges for Developing Countries

●

Energy Options: Their Social and Environmental Impact

●

Health Care in Developing Countries

●

Changing Dynamics of Peace and Global Security

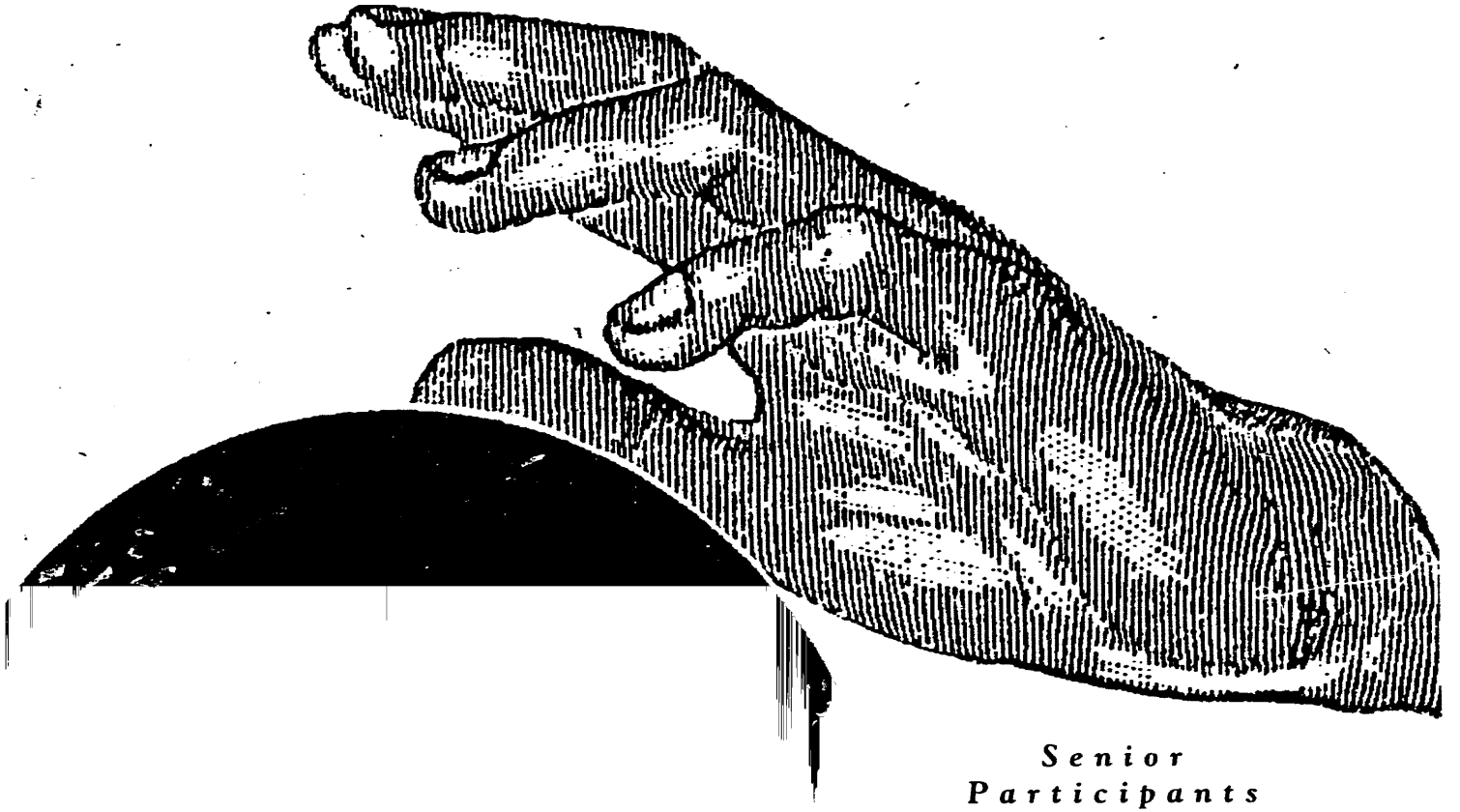
●

Educating for the Socially Responsible Use of Technology

Ethics and the Use of Genetic Information

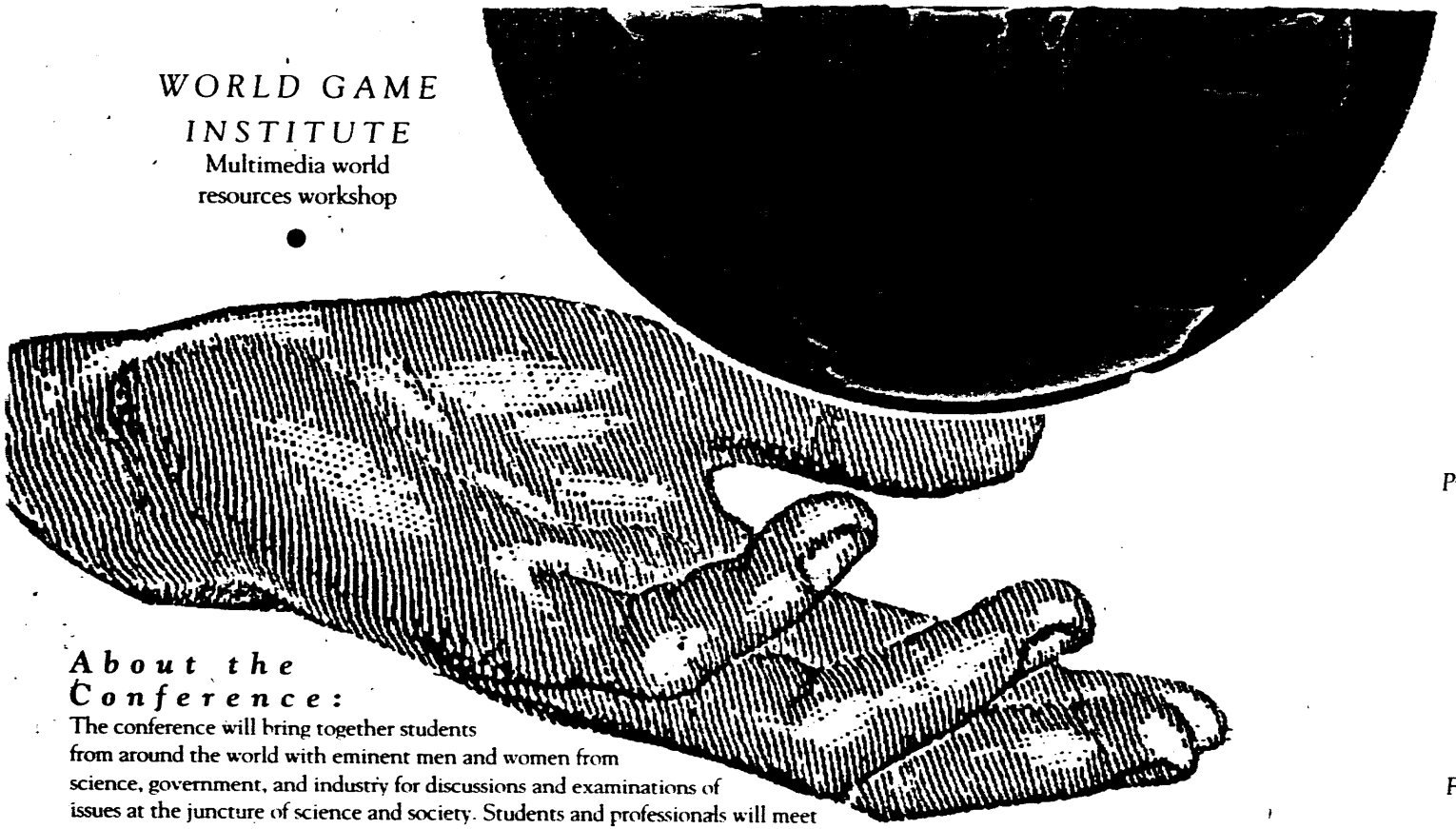
●

Special Events Include:



Senior Participants

WORLD GAME
INSTITUTE
Multimedia world
resources workshop



About the Conference:

The conference will bring together students from around the world with eminent men and women from science, government, and industry for discussions and examinations of issues at the juncture of science and society. Students and professionals will meet every morning in small working groups to discuss social and ethical issues arising from science and technology. Afternoon and evening plenary sessions provide a forum to discuss broader themes in science, ethics, and world affairs. All participants, both students and seniors, will live and dine together on campus.

Student Pugwash USA takes its name from Pugwash, Nova Scotia, where a select group of the world's leading scientists and humanists met in 1957 to discuss their role in world affairs. Bertrand Russell's and Albert Einstein's Pugwash Manifesto inspired that original meeting, which has been followed by annual Pugwash conferences. In this spirit, Student Pugwash USA conferences generate interdisciplinary, intergenerational, and international dialogue about ethical issues posed by science and technology.

Student Pugwash USA organizes biennial International Conferences, coordinates a nationwide network of campus chapters, and publishes several informational resources including *The New Careers Directory of Jobs and Internships in Technology and Society*; *The Mentorship Guide: A Directory of Resource People and Advisors in Social Change*; *Chapter Organizing Guide*; and *Tough Questions*, a quarterly newsletter.

Applicati n Deadline: February 15, 1992

For an application, or further information, ask your local contact or write:

Timothy Larson, Conference Coordinator
Student Pugwash USA
1638 R Street NW, Suite 32
Washington, D.C. 20009
Tel. (202) 328-6555

Senior MacArthur Fellow
International Security Studies

Rosemary Chalk
Science, Engineering, and Public Policy
Cmte., National Academy of Sciences

Robert DeHaan
Director, Ethics Center, Emory University

Papa Nalla Fall
United Nations Development Program

John Holdren
Director, Energy and Resources Group
University of California/Berkeley

Rachelle Hollander
Program Director, Ethics and Values Studies in Science, National Science Foundation

Donald Hopkins
Senior Consultant, Global 2000

Catherine Kelleher
Visiting Fellow, Brookings Institution

Robert Murray
Professor of Pediatrics, Medicine, Genetics, Howard University
Fellow, Hastings Center, AAAS, IOM/NAS

Indira Nair
Engineering and Public Policy
Carnegie Mellon University

Charles Ziegler
Vice President, Ciba-Geigy Corporation

Application Information:

- Undergraduate, graduate, and professional students in all disciplines are encouraged to apply. (Freshmen and Sophomores welcome.)
- Women, minorities, and international students are encouraged to apply.
- Participants will be chosen through a competitive, merit-based process.
- All on-site costs are covered by Student Pugwash USA. Applicants should secure their own travel expenses. (Some travel assistance is available.)

STUDENT PUGWASH USA

Local Contact: _____
Please leave posted throughout the academic year.

Appendix B

Student Participants

DISTRIBUTIONS OF STUDENT PARTICIPANTS

Ninety-four students from 71 academic institutions attended the 1992 International Conference. The composition of the student group is detailed in this section, along with a list of students' home countries and academic institutions.

By Discipline:
Conference delegates included 43 graduate and professional students and 51 undergraduate students from the following fields:

- **28 science students** (biology, chemistry, computer science, physics, geology, engineering, evironmental science)
- **26 interdisciplinary students** (conflict and peace studies, environmental policy, history of science, science and technology policy, double majors in science / non-science fields)
- **19 social science students** (anthropology, development studies, economics, political science, psychology, sociology, urban planning)
- **13 medical students** (medicine, public health)
- **5 humanities students** (english, history, language, liberal arts, philosophy)
- **1 business student** (business administration, public management)
- **1 law student**
- **1 architecture student**

By Gender:
Thirty-six (or 39%) of the student participants were women.

By Race:
Seven students (or 13% of the American delegates) were minorities from the U.S.

STUDENT LIST (by working group)

Environmental Challenges
1.Abikok Riak - Jamaica
2.Pamela Salpoglou - U.S.
3.Christopher Gan - Malaysia
4.Scott Haase - U.S.
5.Andrew Martz - U.S.
6.Christopher Elmendorf - U.S.
7.Eric Jay Dolin - U.S.
8.David O'Brien - U.S.
9.Aditi Dutt - India
10.Mizanur Khan - Bangladesh
11.Katie Kroehle - U.S.
12.Jill Florio - U.S.
13.Alexander Shestakov - Russia
14.Msmaku Asrat - Ethiopia
15.Babajide Alade - Nigeria
16.Ione Voss - Brazil

Health Care
1.Kristin Loerzel - U.S.
2.Rafael Hernandez - El Salvador
3.Ada Igwebuike - Nigeria
4.Abdalla Shehata - Egypt
5.Lyta Hamm - U.S.
6.Jina Shah - U.S.
7.Jim Vierengel - U.S.
8.Liesl Copper - U.S.
9.Morris Reid - U.S.
10.Adebambo Olajitan - Nigeria
11.Mark Johnson - U.S.
12.Ferdinand Guevara - Philippines
13.Agesin Olusegun Olawale - Nigeria
14.Danny Toub - U.S.
15.Karen Brown - Canada
16.Kwaku Frederick Sarfo - Ghana

Educating for Soc. Resp. Technology
1.Robin May - U.S.
2.Jose Camberos - U.S.
3.Russell Hamilton - U.S.
4.Jean Heller-Hendrick - U.S.
5.S. Jean Simmons - U.S.
6.Jeff Porten - U.S.
7.Scott Wanner - U.S.
8.Christa Torrens - U.S.
9.Leanna Bennett - U.S.
10.Annie VanDusen - U.S.
11.Christina Chociolko - Canada
12.Dann Sklarew - U.S.
13.Illya Davis - U.S.
14.Imann Muzirman - Indonesia
15.Sherry Gasper - U.S.
16.Simson Nutsugbodo - Ghana

Energy Options
1.Nicola Short - U.S.
2.Daniel O'Connor - U.S.
3.Ashok Sarkar - India
4.Spencer Geswein - U.S.
5.Gulnara Ishkuzina - Russia
6.Michael Urbanas - U.S.
7.Peter Wold - U.S.
8.Dave Blecker - U.S.
9.Nikolai Kukharkin - Russia
10.Anna Orlova - Russia
11.Maria Selvaggio - U.S.
12.Julie Neff - U.S.
13.Andrew Young - U.S.
14.Charles Scott - U.S.
15.Dominic Brefo - Ghana

Peace & Global Security
1.Tim Heath - U.S.
2.Michael Purugganan - Philippines
3.Matthew Udziela - U.S.
4.Kim Holley - U.S.
5.Irma Lehtonen - Finland
6.Julia Shelton - U.S.
7.Rajesh Rajagopalan - India
8.Kerem Durdag - Turkey
9.Laura McLeod - U.S.
10.John Bertland - U.S.
11.Tatyana Matiyasevich - Russia
12.Jaroslaw Jazwinski - Poland
13.Stanley Ahorlu - Ghana
14.Todd Trafford - U.S.

Ethics & Genetic Information
1.Colleen Cebulla - U.S.
2.Kristen Testa - U.S.
3.Melise Huggins - Trinidad & Tobago
4.Gowthami Arepally - India
5.Lita Hegemier - U.S.
6.Eric Whitaker - U.S.
7.Lorelei Brown - U.S.
8.Chuck Chung - U.S.
9.Jan Heller - U.S.
10.David Perlman - U.S.
11.Stephen Burri - Canada
12.Tarik Walker - U.S.
13.Alan Bean - U.S.
14.Denise Armond DeOliveira - Brazil
15.Aristotelis Tympas - Greece
16.Kristina Sinemus - Germany
17.Nicolai Hinds - U.S.

STUDENT PARTICIPANTS' COLLEGES AND UNIVERSITIES
Student Pugwash USA's 1992 International Conference
(Numbers in parentheses indicate institutions with more than one delegate)

Blufton College
Boston University
Brown University
Carnegie-Mellon University (2)
Clark University
College of William and Mary (2)
Columbia University
Dartmouth College
Delta College
Duke University (2)
Emory University (4)
George Mason University
Georgetown University
Georgia Institute of Technology (2)
Harvey Mudd College
Holyoke Community College
Hunter College, City University of New York (2)
Indiana University of Ohio
Johns Hopkins University
Kent State University
Lewis and Clark College
Louisiana State University
Macalester College
Massachusetts Institute of Technology
Michigan State University
Morehouse College (3)
Moscow Institute of Physics and Technology, Russia
Moscow State University, Russia (2)
Oberlin College
Occidental College
Ogun State Teaching Hospital, Nigeria
Ohio State University
Pennsylvania State University (2)
Pomona College
Prescott College
Rensselaer Polytechnic Institute (2)
Rose-Hulman Institute of Technology
Saint Olaf College
Saint Petersburg State University, Russia
San Francisco State University (2)
School for International Training
Simon Fraser University, Vancouver
Spokane Falls Community College
Stanford University
State University of New York - Buffalo
State University of New York - Syracuse
Tulane University
Tuskegee University
University of Akron
University of British Columbia, Vancouver

University of California at Berkeley
University of Cape Coast, Ghana
University of Chicago
University of Darmstadt, Germany
University of Georgia at Athens (2)
University of Ghana (3)
University of Helsinki, Finland
University of Illinois
University of Lagos, Nigeria
University of Maryland at College Park (3)
University of New Hampshire
University of Pennsylvania (2)
University of Phillipines
University of Pittsburgh
University of Victoria, Canada
University of Wisconsin (2)
Villa Julie College
Virginia Tech
Warsaw University, Poland
Washington University
Yale University

STUDENT PARTICIPANTS' HOME COUNTRIES

(Numbers in parentheses indicate countries with more than one delegate)

Bangladesh

Brazil (2)

Canada (3)

Egypt

El Salvador

Ethiopia

Finland

Germany

Ghana (4)

Greece

India (5)

Indonesia

Jamaica

Malaysia

Nigeria (3)

Phillipines (2)

Poland

Russia (5)

Trinidad and Tobago

Turkey

United States (57)

Appendix C

Senior Participants

SENIOR PARTICIPANTS

Special Guests
Elizabeth Bowen - President, Physicians for Social Responsibility
Laura-Lee Davidson - Quality Education for Minorities Network
Malcolm Gladwell - Science Writer, *The Washington Post*
Carolyn Hatcher - President, The Georgia Conservancy
Jeffrey Leifer - Founder of Student Pugwash USA; President, Leifer Capital
George Page - Director of Science Programming, WNET-NY; Producer of PBS series *NATURE*
John Reid - Director of Corporate Environmental Affairs, The Coca-Cola Company
Rhonda Rowland - Medical News Producer, Cable News Network
Colonel (ret.) David Tanks - Senior Staff Member, Institute for Foreign Policy Analysis, Inc.
William Watson, Jr. - Taskforce for Child Survival, Carter Center

Environmental Challenges for Developing Countries
Carl Brown - Director, Center for Change Management
Anne Ehrlich - Center for Conservation Biology, Stanford University
Stephen Gasteyer - Committee for Sustainable Agriculture in Dev. Countries, World Resources Institute
Peter Gleick - Director, Global Environment Program, Pacific Institute
Kathy Harrison - Department of Political Science, University of British Columbia
Ruben Mnatsakanyan - Environmental Economist, Russian Institute for Natural and Cultural Heritage
Indira Nair - Engineering and Public Policy Program, Carnegie Mellon University
Larry Ragsdale - Director, Human and Natural Ecology Department, Emory University

Energy Options: Their Social and Environmental Impact
Barry Abramson - Vice President, Engineering, Servidyne Inc.
Gary Breece - Nuclear Engineer, Georgia Power Company
Howard Brown - President, Resource Planning and Management Systems Inc.
Steven Ewald - Environmental Affairs, Georgia Power Company
Ashok Gadgil - International Energy Expert, Lawrence Berkeley Laboratory
Bill Keepin - Consultant, The Energy Foundation
Scott Peters - Media Services Manager, U.S. Council for Energy Awareness
Terry Sabonis-Chafee - Wilson School of Public Policy, Princeton University
Loretta Smith - Research Associate, American Council for an Energy Efficient Economy
Tony Speller - Member of Parliament, England (1979-92)

Health Care in Developing Countries
Eugene Gangarosa - Emory School of Public Health; former Dean, American University in Beirut
Evvy Hay - Program Director, MAP International
Carol Hogue - Epidemiologist and Expert in Reproductive Health, Centers for Disease Control
Donald Hopkins - Senior Consultant, Global 2000, Carter Center
Troy Jacobs - Researcher, Emory School of Public Health
Edward Maibach - Professor, Emory School of Public Health
Deborah McFarland - International Health Care Division, Emory School of Public Health
Josephat NGaira - Primary Care Physician, MAP International (Nairobi, Kenya)
Andrew Vernon - Director of Technical Support, International Health Program, Centers for Disease Control
Belmont Williams - Visiting Professor, Morehouse College of Medicine (Sierra Leone)

Peace and Global Security
Alexi Bykov - Russian Peace Foundation (Moscow)
Anne Cahn - Senior MacArthur Scholar, University of Maryland
Todd LaPorte - Analyst, U.S. Office of Technology Assessment
Herbert Leifer - Senior Defense Scientist (ret.), Rockwell International
Ambassador (ret.) James Leonard - Executive Director, Washington Council on Non-Proliferation
Joyce Neu - Associate Director, Conflict Resolution Program, Carter Center
Chris Smith - Senior Fellow, Centre for Defense Studies, Kings College (England)
Theodore Taylor - Physicist (ret.), Los Alamos National Lab

Educating for the Socially Responsible Use of Technology
Bailey Barash - Science News Producer, Cable News Network
Taft Broome - Professor of Engineering, Howard University
Gary Chapman - Director, Computer Professionals for Social Responsibility
Rachelle Hollander - Program Director, Ethics and Values Studies, National Science Foundation
Willie Pearson - Professor of Sociology, Wake Forest University
Barbara Sabonis-Chafee - Free-lance Education Writer
Nicholas Steneck - Director, Historical Center for Health Sciences, University of Michigan-Ann Arbor
Joel Yudken - Program on Regional and Industrial Economics, Rutgers University

Ethics and the Use of Genetic Information
John Brown - National DNA Identification Program Manager, Federal Bureau of Investigation
Peter Carpenter - Visiting Scholar, Center for Biomedical Ethics, Stanford University
Lee Crandall - Professor, Human Genome Insurance Project, University of Florida
Robert DeHaan - Director, Ethics Center; Professor of Anatomy and Cell Biology; Emory University
Robert Murray - Professor of Pediatrics and Genetics, Howard University; NAS/IOM/NIH Fellow
Jim Murtagh - Emory V.A. Hospital; formerly at National Institutes of Health
Ralph Trottier - lawyer, Morehouse College of Medicine
Douglas Wallace - Director, Center for Molecular Genetics, Emory University
Nachama Wilker - Executive Director, Council for Responsible Genetics

SENIOR PARTICIPANTS' HOME COUNTRIES

Canada
India
Kenya
Russia
Sierra Leone
United Kingdom
United States

Appendix D

Conference Participant "Facebook"

STUDENT PUGWASH USA

Seventh Biennial
International Conference on
Science, Technology, and
Social Responsibility

VISIONS FOR A SUSTAINABLE WORLD

EMORY UNIVERSITY
Atlanta, Georgia

JUNE 14-20, 1992

Table of Contents

President Carter's Welcome Letter	2
Pugwash Welcome Letter	3
Student Pugwash USA	4
History of Student Pugwash USA	5
Student Pugwash USA Programs	6
Introduction to the Pugwash Movement	7
Pugwash Manifesto	8
Environmental Challenges for Developing Countries	10
Energy Options: Their Social & Environmental Impacts	16
Health Care in Developing Countries	22
The Changing Dynamics of Peace & Global Security	28
Educating for the Socially Responsible Use of Technology	34
Ethics & The Use of Genetic Information	40
Special Guests	46
Emory Conference Staff	48
Student Pugwash USA Board of Directors	49
Student Pugwash Supporters	50

JIMMY CARTER

June, 1992

To Student Pugwash USA Conference Participants

Welcome to Atlanta and to The Carter Center. I congratulate you on being selected to participate in Student Pugwash USA's Seventh International Conference, Visions for a Sustainable World: A Conference on Science, Technology, and Social Responsibility. I am sure the coming week will offer you a rare opportunity to challenge assumptions, broaden your perspectives, and explore many of the critical issues which face our world.

The Student Pugwash USA International Conference brings together gifted students from around the world and gives them an opportunity to meet with leaders from government, industry and academe for a week of intensive discussion on issues at the juncture of science and society. The conference provides an invaluable forum to prepare you--the world's future leaders--to utilize and manage science and technology for the benefit of society. It is only through such free and open dialogue among people of diverse nationalities, disciplines, and generations that we can begin to adequately address these issues.

I hope that after this week you will return to your universities and communities and share what you have learned, and work diligently toward the realization of a safe, healthy and prosperous world.

Sincerely,

Jimmy Carter

Welcome

June 14, 1992

Dear 1992 International Conference Participants:

It is our pleasure to welcome you to Emory University for Student Pugwash USA's 1992 International Conference, ***Visions for a Sustainable World: A Conference on Science, Technology, and Social Responsibility.*** *The Conference week promises to be a challenging, exciting and intensive experience for all involved. In bringing together nearly 100 outstanding student leaders and scholars from 25 countries, with eminent professionals from a variety of disciplines and nations, the Conference generates the creativity and energy that Albert Einstein and Bertrand Russell called for in their plea to citizens to "think in a new way" about global issues and the safety of humanity.*

All citizens must be encouraged to discuss and envision the type of world in which they want to live, and to determine if and how our scientific and technological know-how can help to create such a world. The failure to envision a viable, livable future for our world is itself a threat to our survivability. In light of recent global events and accelerating technological advancement, individuals are being forced to act, or react, ever more quickly to meet the challenges of societal, economic, and environmental change. The complexities and inter-relatedness of global problems increasingly calls for individuals who are able to see and work across traditional disciplinary boundaries, and individuals who are sensitive to the long-term impacts of their work on all aspects of society.

During the course of the week, you will have many opportunities to intensively explore a variety of pressing challenges affecting global sustainability. You will also have the opportunity to ask questions; to challenge your assumptions; to learn about cultures different from your own; and to form lasting friendships that span the globe. This Conference now belongs to you, and its success will be determined by your enthusiasm and participation.

As the Conference commences and the energy level intensifies, we wish to recognize the efforts of several individuals without whose support, encouragement and good counsel this Conference would not be possible. We wish to thank Provost Billy E. Frye and the administration, faculty, and staff of Emory University for all of their support and assistance in making this Conference a reality. Marcy Alexander deserves special recognition for her time, attention, and keen ability to make things happen without delay. Special thanks is also due to those who have provided invaluable advice. These individuals include Dr. Robert DeHaan and Dr. Harvey Ragsdale, our Emory faculty advisors; the Student Pugwash USA Board of Directors, and Dr. Nicholas Steneck (Board Chair), who served as a primary advisor; former Student Pugwash USA staff members such as Ben Austin, Michael Berger, Katy Janda, and Patty Rose; and many others who have given generously of their time and insight.

We could never forget the tireless and invaluable efforts of each member of the National Office and Emory Conference staffs. Special thanks go to Rachel Segall for the many hours she spent corresponding, calling, recruiting and securing all of those individuals who now comprise the 1992 International Conference community; and to Mike Smith for his willing and able assistance with much of the proposal writing that was necessary to make this Conference financially possible. You are all amazing, and we could not have done it without you.

Now the introductions are over, the week is yours. We're glad to have you here, and hope the impact of the experience you have this week will last for a lifetime.

Sincerely,

Betsy L. Fader

Betsy L. Fader
Executive Director

Timothy J. Larson

Timothy J. Larson
Conference Coordinator

Student Pugwash USA

Student Pugwash USA is a national, educational, nonprofit organization dedicated to building a commitment among young people to solve critical global problems through the responsible use of science and technology. Through interactive, international and interdisciplinary programs, Student Pugwash USA educates young people on the relevance of science and technology to their own lives, and on its ability to shape the future of the global community.

Our programs stress individual responsibility in the analysis and resolution of critical issues. Through instructional events including international, national, and regional seminars and workshops, young people are encouraged to strengthen their leadership skills and explore meaningful avenues of involvement in the resolution of pressing social dilemmas. Student Pugwash USA recognizes the necessity of assisting students—who will soon move into positions of professional responsibility as the world's future decision-makers—to understand the social impacts of science and technological advancement if we are to realize a more stable, sustainable world.

Student Pugwash USA programs unite students and professionals from a variety of national, academic and ideological backgrounds for analysis and greater understanding of critical global issues. Our interactive programs examine the role of technology as it relates to management of the environment and energy resources, peace and security, bioethics and biotechnology, population and development issues, computer and information technologies, and science education reform. The unique educational experience afforded through Student Pugwash USA programs changes lives by empowering young people to integrate global and social concerns into their academic, professional and personal endeavors.

History of Student Pugwash USA

Student Pugwash USA draws its name from Pugwash, Nova Scotia, where in 1957 several of the world's leading scientists gathered at the behest of Albert Einstein and Bertrand Russell to address pressing issues at the forefront of peace and global security. The subsequent "Pugwash Conferences on Science and World Affairs" provided a forum where scientists, and later policy-makers, UN officials, ambassadors, and members of academe, could meet to discuss the social and ethical implications of science and technology. Student Pugwash USA was initiated [in 1979] to provide a forum where students could join with leaders to engage in a similar dialogue in addressing global problems and their possible resolutions.

The flagship of our interactive, educational programs is our International Conference on science, technology and ethical responsibility, the first of which was organized in 1979 by Jeffrey Leifer, then a student at the University of California-San Diego. In that year, Jeff organized the first Student Pugwash USA International Conference, an intensive educational forum that was structured around small discussion-oriented working groups, with all student and professional participants living together on campus during the week-long initiative. The success of this model in affording a unique and valuable educational experience has led us to organize a series of similar Conferences, taking place approximately every two years. Past International Conferences, held at UCSD, Yale, Michigan, Princeton, Stanford, and the University of Colorado at Boulder, have served as the catalyst for the formation and initiation of Student/Young Pugwash organizations in 18 countries around the world, including Nigeria, Egypt, the (former) Soviet Union, and four Eastern European nations.

The 1992 International Conference, ***Visions for a Sustainable World***, marks Student Pugwash USA's seventh International Conference. Held June 14-20, 1992, at Emory University in Atlanta, Georgia, the Conference focuses on the following themes:

- *Environmental Challenges for Developing Countries*
- *Energy Options: Their Social and Environmental Impact*
- *Health Care in Developing Countries*
- *The Changing Dynamics of Peace and Global Security*
- *Educating for the Socially Responsible Use of Technology*
- *Ethics and the Use of Genetic Information*

Student Pugwash USA Programs

Over the past thirteen years, our programs have broadened in scope to include support for a network of chapters on over 100 university, college and select high school campuses nationwide, and a New Careers program to introduce students to career opportunities that emphasize social and ethical responsibility. As young people become increasingly concerned about critical environmental and social problems, Student Pugwash USA programs provide an excellent means for channeling that concern into energetic, responsible action.

The Student Pugwash USA Chapter Network

Developed as a direct result of our International Conferences, the Chapter Program extends to thousands of students on over 100 college, university, and select high school campuses across the nation. Through Student Pugwash USA chapters, students organize events ranging from alternative jobs fairs, to lecture series and seminars on issues at the juncture of science, technology and society, to recycling and environmental programs. Since the inception of the Student Pugwash USA Chapter Program in 1983, student chapter members have organized more than 600 local and regional events, exploring such issues as access and equity in the sciences, new perspectives on global security, and sustainable economic development.

Student Pugwash USA's national office supports this growing program with an annual Chapter Organizing Workshop (held each year in August) and a National Chapter Conference (held in January) that allow students to strengthen their leadership skills, learn chapter management techniques, and further their understanding of pressing global and social issues. Other services provided by the National Office through the Chapter Program include the publication of a monthly chapter newsletter (called "PUGWATCH"), a comprehensive, 150-page *Chapter Organizing Guide*, a toll-free number for students, and a full-time National Chapter Coordinator. The National Office also provides assistance in the coordination of various local and regional activities.

The New Careers and Mentorship Initiatives

Student Pugwash USA's New Careers Program helps young people pursue innovative career directions that integrate their academic backgrounds with social and humanitarian issues. We publish *New Careers: A Directory of Jobs and Internships in Technology and Society*, an extensive listing of over 150 organizations across the country offering entry-level opportunities that address social and global concerns, and *The Mentorship Guide: A Directory of Resource People and Advisors in Social Change*. In the coming year, we plan to publish updated, expanded editions of both publications.

We are also developing an Internship Placement Program that will enable students to discover for themselves dynamic career options through professional opportunities that provide close interaction with Student Pugwash USA alumni.

Professional Pugwash

While student Pugwash USA has long recognized the necessity for young people to understand and address the impacts of science and technological development on society, a similar and equally pressing need is present within the professional community, where decisions affecting society are made. A developing Professional Pugwash program for non-students will provide a means through which Student Pugwash USA "alumni" and other interested individuals can continue or commence their involvement with the organization. A Professional Pugwash network, similar in design to our existing Chapter Program, will expand our audience beyond the academic community and will further facilitate the dialogue between socially committed students and professionals. All interested individuals regardless of age or professional background are encouraged to join and participate in this exciting initiative, and to take advantage of the variety of services and benefits it offers. Further information on membership in Professional Pugwash may be obtained by contacting the Student Pugwash USA National Office.

Introduction to the Pugwash Movement

On July 9, 1955, eleven eminent scientists and scholars, led by Albert Einstein and Bertrand Russell, called on scientists and the public to abandon the obsolete notion of international violence as a political tool. The document they signed, now known as the Pugwash Manifesto, has not lost its relevance. Indeed, a broad interpretation of the Manifesto as a call to scientists, engineers, and the public to recognize the social and ethical implications of science and technological advancement has been taken up around the globe. Senior scientists, meeting annually at the Pugwash Conferences on Science and World Affairs, and students, participating in international, national, and local activities under the auspices of several Student Pugwash organizations, have strengthened the force and expanded the scope of the Manifesto.

International Pugwash and Student Pugwash both begin with assumptions made by Russell and Einstein: that science and technology play a significant role in world problems and that this significance imposes special obligations upon people involved in scientific research and technological development. Although military issues, particularly the threat of nuclear war, remain of paramount concern, other problems with important technological aspects have become part of the Pugwash agenda, including environmental degradation and international economic and social development. These problems require careful consideration which transcends narrow disciplinary, national, and generational viewpoints.

Pugwash Manifesto

The Russell-Einstein Manifesto
Issued in London, July 9th, 1955

In the tragic situation which confronts humanity, we feel that scientists should assemble in conference to appraise the perils that have arisen as a result of the development of the weapons of mass destruction, and to discuss a resolution in the spirit of the appended draft.

We are speaking on this occasion, not as members of this or that nation, continent, or creed, but as human beings, members of the species Man, whose continued existence is in doubt. The world is full of conflicts; and, over-shadowing all minor conflicts, the titanic struggle between Communism and anti-Communism.

Almost everybody who is politically conscious has strong feelings about one or more of these issues; but we want you, if you can, to set aside such feelings and consider yourselves only as members of a biological species which has had a remarkable history, and whose disappearance none of us desire.

We shall try to say no single word which should appeal to one group rather than to another. All, equally, are in peril, and, if the peril is understood, there is hope that they may collectively avert it.

We have to learn to think in a new way. We have to learn to ask ourselves, not what steps can be taken to give military victory to whatever group we prefer, for there no longer are such steps; the question we have to ask ourselves is: what steps can be taken to prevent a military contest of which the issue must be disastrous to all parties?

The general public, and even many men in positions of authority, have not realized what would be involved in a war with nuclear bombs. The general public still thinks in terms of the obliteration of cities. It is understood that the new bombs are more powerful than the old, and that, while one A-bomb could obliterate Hiroshima, one H-bomb could obliterate the largest cities, such as London, New York, and Moscow.

No doubt in an H-bomb war cities would be obliterated. But this is one of the minor disasters that would have to be faced. If everybody in London, New York, and Moscow were exterminated, the world might, in the course of a few centuries, recover from the blow. But we know, especially since the Bikini test, that nuclear bombs can gradually spread destruction over a very much wider area that had been supposed.

It is stated on very good authority that a bomb can now be manufactured which will be 2,500 times as powerful as that which destroyed Hiroshima. Such a bomb, if exploded near the ground or under water, sends radio-active particles into the upper air. They sink gradually and reach the surface of the earth in the form of a deadly dust or rain. It was this dust which infected the Japanese fisherman and their catch of fish.

No one knows how widely such lethal radio-active particles might be diffused, but the best authorities are unanimous in saying that a war with H-bombs might possibly put an end to the human race. It is feared that if many H-bombs are used there will be universal death, suddenly only for a minority, but for the majority a slow torture of disease and disintegration.

Many warnings have been uttered by eminent men of science and by authorities in military strategy. None of them will say that the worst results are certain. What they do say is that these results are possible, and no one can be sure that they will not be realized. We have not yet found that the views of experts on this question depend in any degree upon their politics or prejudices. They depend only, so far as our researchers have revealed, upon the extent of the particular expert's knowledge. We have found that the men who know most are the most gloomy.

Here, then, is the problem which we present to you, stark and dreadful and inescapable: Shall we put an end to the human race; or shall mankind renounce war? People will not face this alternative because it is so difficult to abolish war.

The abolition of war will demand distasteful limitations of national sovereignty. But what perhaps impedes understanding of the situation more than anything else is that the term "mankind" feels vague and abstract. People scarcely realize in imagination that the danger is to themselves and their children and their grandchildren, and not only to a dimly apprehended humanity. They can scarcely bring themselves to grasp that they, individually, and those whom they love are in imminent danger of perishing agonizingly. And so they hope that perhaps war may be allowed to continue provided modern weapons are prohibited.

This hope is illusory. Whatever agreements not to use H-bombs had been reached in time of peace, they would no longer be considered binding in time of war, and both sides would set to work to manufacture H-bombs as soon as war broke out, for, if one side manufactured the bombs and the other did not, the side that manufactured them would inevitably be victorious.

Although an agreement to renounce nuclear weapons as part of a general reduction of armaments would not afford an ultimate solution, it would serve important purposes. First: any agreement between East and West is to the good so far as it tends to diminish tension. Second: the abolition of thermo-nuclear weapons, if each side had believed that the other had carried it out sincerely, would lessen the fear of a sudden attack in the style of Pearl Harbour, which at present keeps both sides in a state of nervous apprehension. We should, therefore, welcome such an agreement, though only as a first step.

Most of us are not neutral in feeling, but, as human beings, we have to remember that, if the issues between East and West are to be decided in any manner that can give any possible satisfaction to anybody, whether Communist or anti-Communist, whether Asian or European or American, whether White or Black, then these issues must not be decided by war. We should wish this to be understood, both in the East and West.

There lies before us, if we choose, continual progress in happiness, knowledge, and wisdom. Shall we, instead, choose death, because we cannot forget our quarrels? We appeal as human beings: Remember your humanity, and forget the rest. If you can do so, the way lies open to new Paradise; if you cannot, there lies before you the risk of universal death.

Resolution

We invite this Congress, and through it the scientists of the world and the general public, to subscribe to the following resolution:

> *"In view of the fact that in any future world war nuclear weapons will certainly be employed, and that such weapons threaten the continued existence of mankind, we urge the Governments of the world to realize, and to acknowledge publicly, that their purpose cannot be furthered by a world war, and we urge them, consequently, to find peaceful means for the settlement of all matters of dispute between them."*

MAX BORN
PERCY W. BRIDGMAN
ALBERT EINSTEIN
LEOPOLD INFELD
FREDERIC JOLIOT-CURIE
HERMAN J. MULLER
LINUS PAULING
CECIL F. POWELL
JOSEPH ROTBLAT
BERTRAND RUSSELL
HIDEKI YUKAWA

Environmental Challenges for Developing Countries

Working Group 1

In recent years, the environmental crisis has become acute in many developing countries throughout the world. Global problems such as acid rain and ozone depletion have combined with severe pressures on local ecosystems to greatly disrupt the sustainable life-support capacity of certain regions. Deforestation, topsoil erosion, and overuse have strained the food productivity of the land in many developing countries. In many areas, population pressures are forcing people to farm increasingly marginal lands, leading to the further deterioration of the environment. The group will identify important global and local environmental challenges facing developing countries. Focus will then shift to examining different technologies, policies, and programs which can alleviate stresses on the environment in areas such as energy, population, agriculture, transportation, housing, and industry. Participants will also discuss the concept of environmental sustainability both in theory and in practice.

Several issues to be examined:

- *the relationship between population and environmental problems*
- *strategies for achieving growth/development without environmental degradation*
- *sustainable energy options for developing countries (technologies, programs)*
- *sustainable agricultural practices (technologies, land use, policies)*
- *North-South relations and cooperation in resolving global environmental problems (deforestation, biodiversity, climate change, ozone depletion, acid deposition)*
- *UNCED ("The Earth Summit") and the future of global environmental cooperation*

Senior Participants

Carl Brown is currently the Director of the Center for Change Management in Atlanta. He has worked as a consultant and writer in resource management and organization strategy since 1972. Mr. Brown has served on the boards of The Nature Conservancy, The National Association of Realtors, and the USDA Soil Conservation Districts. He has been a member of the faculty at Boise State and Emory Universities. He has received fellowships from the National Science Foundation and the National Institutes of Health, the Laurel Award from the National Observer, and recognition in the U.S. Congressional Record.

Anne Ehrlich is the Associate Director of the Center for Conservation Biology at Stanford University. She has written or coauthored many articles and books on population biology, including *The Population Explosion*. She has served as consultant to the White House Council on Environmental Quality's *Global 2000 Report*. She now serves on the boards of the Pacific Institute and The Rocky Mountain Biological Laboratory.

Ana Cecilia Escalante Herrera is the Dean of the College of Social Science at the University of Costa Rica. A specialist in international trade, she has been for the last three years Costa Rica's delegate to the United Nations Commission on the Status of Women. She also has been working in the Center for Peace and Reconciliation of the Arias Foundation for Peace and Human Progress.

Steven Gasteyer is currently the Program Associate for the Committee on Agricultural Sustainability for Developing Countries at the World Resources Institute. He was previously a research consultant for the Refugee Policy Group, a center for in-depth policy analysis on refugee and humanitarian assistance issues. He has also served as an agricultural volunteer for the United States Peace Corps in Mali.

Kathy Harrison received her Ph.D. in Political Science at the University of British Columbia, Vancouver. She will begin teaching at the University of Washington as an Assistant Professor in the Graduate School of Public Affairs in September 1992. She has served on the Board of Directors of Student Pugwash U.S.A. since 1987.

Indira Nair is the Associate Department Head and Senior Lecturer in the Department of Engineering and Public Policy at Carnegie Mellon University. She has done extensive research and published many articles in the areas of Engineering and Public Policy, and Science and Technology education. She serves on the Advisory Board of the Pittsburgh Regional Center for Science Teachers, Carnegie Museum of Natural History, and the Advisory Board of the Pittsburgh Science Institute.

Larry Ragsdale is the Director of Emory University's interdisciplinary program in Human and Natural Ecology, which he initiated in 1988. As a Fellow of the Carter Center, he is contributing to the development of a global forestry program for the Carter Center and Global 2000. Dr. Ragsdale received his Ph.D. and M.S. degrees from the University of Tennessee as an Oak Ridge Associated Universities Fellow.

Environmental Challenges for Developing Countries

Student Participants

BABAJIDE ALADE
Ibadan, Nigeria
Currently studying Architecture at the University of Lagos, Nigeria

"The health conditions of people in a given urban centre is an important environmental indicator."

MSMAKU ASRAT
Ethiopia
Graduate student in Science and Technology Studies at Rensselaer Polytechnic Institute, Albany, New York

"Desertification resulting from natural forces and uncontrolled human action has led to deforestation and permanent loss of cultivable and pastoral land, particularly in the north of Ethiopia, which consequently was the severest hit by drought and famine."

GABRIELLE COADY
Buffalo, New York, USA
Graduate student in Urban Planning at SUNY, Buffalo, New York

"By thoroughly examining potential factors affecting the acceptance of sustainable development, planners and policy-makers can best explore the proper course of action to ensure the public well-being."

ERIC JAY DOLIN
Stamford, Connecticut, USA
Graduate student in Environmental Policy at Massachusetts Institute of Technology

"Whereas developed countries often have the technological capabilities, management structures, and financial means to maintain compliance, developing countries, just as often, do not. Thus, the issues of technology transfer, the diffusion of management expertise, and financial support, as they relate to developing countries, must be addressed before truly international environmental initiatives can be successful."

Student Participants

ADITI DUTT
India
Graduate student in Ecology at University of Georgia, Athens, Georgia

"...Responsible use of organic fertilizers in land application can result in increased grain production, thereby increasing the profitability of a country's agriculture. A self-sustaining biogeochemical cycling system can also be generated in that the nutrients being depleted from the soil to produce the food resources for a country's people and farm animals can be regenerated by the responsible use of human and animal manure as fertilizer."

CHRISTOPHER ELMENDORF
Washington, D.C., USA
Currently studying Economics/ Environmental Studies at Oberlin College, Oberlin, Ohio

"While most people affirm the concept of sustainable development, there is no received wisdom about how to achieve it, or precisely what it means. I favor a simple, practical definition: sustainability is ensuring that future generations are no worse off than the current one."

JILL FLORIO
San Diego, California, USA
Currently studying Environmental Studies at Prescott College, Prescott, Arizona

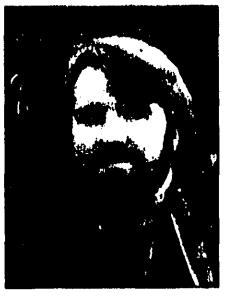
"...Movement away from growth indicators of economics towards humanistic, sustainable long-range goals must be encouraged."

CHRISTOPHER GAN
Malaysia
Currently studying Agriculture Economics at Louisiana State University

"Environmental economics can play an important role in promoting sustainable development by ensuring that preferences for the environmental, and proper values for environmental goods and services can be incorporated into the measurement of utility."

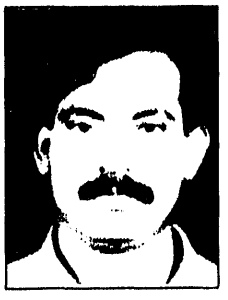
Environmental Challenges for Developing Countries

Student Participants



SCOTT HAASE
Raleigh, North Carolina, USA
M.S. Technology and Human Affairs, Washington University, St. Louis, Missouri

"This paper evaluates the potential for 'rootfuel' to serve as a solution to the pressing fuelwood crisis in arid and semi-arid regions of Africa."



MIZANUR KAHN
Faridabad, Bangladesh
Graduate student at University of Maryland

"Unless the dictates of geography and environment override the primacy of politics in interstate relations, there can be no real peace and security in South Asia, a region inhabited by one-fifth of mankind and one of the poorest on earth."

KATHRYN KROEHLE
Rocky River, Ohio, USA
Master's in Public Management and Policy, Carnegie Mellon, Pittsburgh, Pennsylvania

"The nature of the interaction between economics and the environment is complicated. It is especially so for developing nations who so often have resource-based economies. The natural resource base of the economies is the main thing supporting their growing populations. If these nations do not maintain their natural resource bases, common sense indicates that they will not be able to grow out of the absolute poverty they experience now."

ANDREW MARTZ
Indianapolis, Indiana, USA
Currently studying Biology at Lewis and Clark College, Portland, Oregon

"I would like to explore the methods which Costa Rica has used to effectively preserve 45% of its native rainforest in national parks, and in private and biological reserves. I will focus on three factors which have allowed for preservation and should prove to be sustainable over time: Eco-Tourism, Sustainable Utilization of Rainforest Products, and Ecological and Community Based Agriculture Projects."

Student Participants

DAVID O'BRIEN
Kenmore, New York, USA
Community Services Coordinator, Dartmouth College, Hanover, New Hampshire

"The relationship between hunger and environmental degradation in the rural areas of developing nations has become increasingly apparent over the past few decades. However, not until the United Nations designated 1975 as International Women's Year have developed and developing nations begun to realize the importance of women's roles in combating such malnutrition and environmental damage."

ABIKOK RIAK
Nairobe, Kenya
Currently studying Economics and History, Blufton College, Blufton, Ohio

"Rapid population growth and unsustainable high input agriculture that relies heavily on petro-chemical based fertilizers has ravaged the developing world leaving a horde of environmental problems that include soil erosion, pollution, deforestation, over-cultivation and over-grazing, to mention a few."

EFPRAXIA "PAMELA" SALPOGLOU
East Falmouth, Massachusetts, USA
Graduate student in Environment, Technology, and Society, Clark University, Worcester, Massachusetts

"A decrease in military budgets and a recycling of surpluses would fund the Revised International Economic and Environmental Order. However, pluralistic world order is necessary and concessions are going to have to be made by the First World. Only then can narrow and short term interests be subordinated to long term global interests."

ALEXANDER SHESTAKOV
Moscow, Russia
Currently studying Geography at Moscow State University

"Many environment control methods worked out at industrial countries of temperate zone are not useful in developing countries because of great differences in natural and socio-economic conditions."

Energy Options: Their Social & Environmental Impacts

Working Group 2

Energy production and consumption lies at the heart of many global environmental, social, and economic issues. The burning of fossil fuels during the 20th century has contributed to substantial environmental dislocation, ranging from acid rain to global warming and climate change. At the same time, nuclear power has generated substantial debate due to questions of safety, cost-effectiveness, and disposal of radioactive wastes. Resource constraints and environmental externalities are increasingly forcing experts to re-examine the methods in which we will meet global energy needs in the next century. In the past three decades, increasing attention has focused on demand-side management techniques and renewable energy options, as options to traditional fossil fuel and nuclear power generating stations. Effective strategies for meeting global energy needs, which minimize social and environmental costs, become all the more urgent in light of the economic development paths facing developing countries.

Several issues to be examined:

- *energy and its relationship to security, environment, and development*
- *assessment of global energy needs and trends*
- *the attributes of energy options and technologies:*
  nuclear, fossil fuels, renewables, conservation, hydrogen, other sources
- *the environmental impacts of various energy technologies*
- *redefining the role of the energy utility (demand-side management issues)*
- *the concept of integrated resource planning*
- *blueprint/strategy for a sustainable energy future*

Senior Participants

Barry Abramson is the Vice President of Servidyne Systems, Inc. He manages a professional engineering staff which provides technical consulting services for commercial, institutional and industrial facilities to improve the energy efficiency, environmental impact and economic performance of buildings.

Howard Brown is currently the President of RPM Systems, Inc. He is a founding member of the Board of Directors of the World Game Institute. He was formerly a Professor at Wesleyan University: Science, Technology, and Society Program. He has written articles and conducted research on the relationship between economic growth and the environment, and he has lectured at 15 universities.

Ogunlade Davidson, from Sierra Leone, received his Ph.D in Heat Transfer and Fluid Mechanics from the University of Salford. He is currently a MacArthur Fellow of International Energy Studies at the Lawrence Berkeley Laboratory. He is also Associate Professor of the Department of Mechanical Engineering and Director of University Research and Development Services for the University of Sierra Leone.

Ashok Gadgil, a native of India, is a physicist by training. He has worked in the U.S. and India on problems of renewable energy, electric power systems, barriers to promotion of energy efficiency in developing countries and ways of overcoming these barriers. He received the Pew Scholar's Award in Conservation and the Environment in 1991.

Bill Keepin is a consultant to The Energy Foundation and is an expert on renewable energy and global warming. He was formerly a research scholar at the Rocky Mountain Institute where he visited the Soviet Union to consult on energy efficiency and alternative international security. He has published numerous articles on energy and environmental policy and has conducted lectures, presentations and seminars around the world.

Terry Sabonis-Chafee recently finished her MPA in Public Affairs at Princeton University. She was formerly a research associate at Rocky Mountain Institute and a leading researcher at the World Laboratory, Moscow USSR Office and Tbilisi GSSR Office.

Loretta Smith is an Energy Analyst and Market Manager of Government Services at RPM Systems, Inc. She is a certified Connecticut Commercial and Industrial Energy Auditor and has coordinated preparation of the Connecticut Energy Advisory Board's report to the Governor.

Tony Speller is a Member of Parliament for North Devon in the U.K. He is a Member of the Select Committee for Energy, U.K. Parliament, and Chairman of the All-Party Alternative Energy Committee.

Energy Options: Their Social & Environmental Impacts

Student Participants

DAVID BLECKER
Troy, New Jersey, USA
Currently studying Electrical Engineering at Rensselaer Polytechnic Institute

"The paths that developing nations choose to further their domestic energy agendas will undoubtedly influence the rest of the world at least as much as the current industrialized nations have previously affected them."

DOMINIC BREFO
Ghana
Currently studying Geography at University of Ghana

"In a developing country, safety systems, the ability to respond swiftly to a disaster, and economic pressures to cut corners, all make nuclear power even more a hazardous technology than in the developed world."

SPENCER GESWEIN
Fowler, Indiana, USA
Currently studying Mechanical Engineering at Rose-Hulman Institute of Technology

"Traditional methods of energy production must be compared with recently developed alternative methods."

GULNARA ISHKUZINA
St. Petersburg, Russia
Currently studying Environmental Studies/Geography at Brown University, Providence, Rhode Island

"The scale of Central and Eastern Europe's environmental destruction requires an overall agenda which rationally analyzes environmental problems in the wide, practical context of the current political and economic situation."

Student Participants

NIKOLAI KUKHARKIN
Moscow, Russia
Graduate student in Physics at Moscow Institute of Physics and Technology

"Aggravated ecological problems connected with fossil fuel use, unsolved problems of safe nuclear power, and radioactive wastes raise the question of safe basic energy of the future."

JULIE ANN NEFF
Spokane, Washington, USA
Currently studying Environmental Science at Spokane Falls Community College, Spokane, Washington

"We should plan our energy future without the carbon-based fuels that have energized ages of development without thought of future generations. I believe we can develop a sane strategy for the future by gravitating away from this dangerous and damaging energy base and using alternatives in renewable sources."

DANIEL O'CONNER
San Francisco, California, USA
Currently studying Urban Studies at San Francisco State University

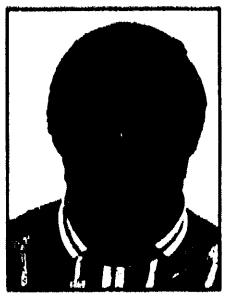
"I propose a strategy to utilize San Francisco's politically progressive population and ideal environmental conditions to improve the environment, help the economy, and address the social ills of San Francisco."

ANNA ORLOVA
Moscow, Russia
Received her Ph.D in Geological-mineralogical Sciences from Moscow State University and is currently working in the Information Department of "Ecology and Industrial Wastes" Company

"The absence of ecological monitoring systems in our cities and in the territory of the whole country results in impossibility to control the environmental situation even in the areas of ecological crisis and the ability to estimate the consequences of ecological damage."

Energy Options: Their Social & Environmental Impacts

Student Participants



ASHOK SARKAR
New Delhi, India
Graduate student in Land Resources, University of Wisconsin

"By 2010, another 2 billion people will have joined the human race, and energy use will have grown by another 50-60 percent. But the world cannot continue to rely so heavily on fossil fuels without placing the environment at risk."

CHARLES SCOTT
Columbia, Maryland, USA
Currently studying Natural Resource Management at University of Maryland

"In addition to having a chicken in every pot, a sign of American prosperity is having a car (if not two or three) in every garage. This fixation with the automobile increases the dependence on foreign oil while contributing to the degradation of the local and global environment."

MARIALENA SELVAGGIO
Lowell, Massachusetts, USA
Graduate Student in Rural Sociology at Pennsylvania State University

"Energy options to each region are primarily dependent upon resource factors. The social and environmental impact of energy options include the loss of indigenous cultures and sustainable lifestyles, along with the exploitation of pristine environments."

NICOLA SHORT
St. Louis, Missouri, USA
Currently studying Science, Technology and International Affairs at Georgetown University

"The optimistic assumption that all conservation measures be fully employed where available still led the World Bank to the conclusion that 20-25 million hectares of trees should be planted (worldwide) by the year 2000. This represents only one tenth of what current programs will achieve by that date."

Student Participants

MICHAEL URBANAS
Wilkes-Barre, Pennsylvania, USA
Currently studying Earth Science at Penn State

"...The survival of the human race and of the planet as a whole depends upon whether we change the policies of the human population towards the environment."

PETER WOLD
Zumbrota, Minnesota, USA
Currently studying Physics at St. Olaf College, Northfield, Minnesota

"If utilities were charged with meeting energy needs in the most efficient manner possible, rather than simply supplying adequate power to meet increasing demand, the transition to sustainable sources of energy could begin"

ANDREW YOUNG
Davis, California, USA
Currently studying Mechanical Engineering at University of California at Berkeley

"Utilities in developing nations are failing to meet the growing electric needs of the regions they serve. However, capital intensive ventures to match need for utility services with installed generating capacity are beyond the means of nearly all developing countries."

Health Care in Developing Countries

Working Group 3

As global human population approaches 5.5 billion, health care systems throughout the world are coming under increased pressure. Limited financial resources, deteriorating infrastructure, environmental degradation, and conflict have combined with other forces to adversely affect public health. Infectious diseases, including the AIDS pandemic, threaten many individuals in developing countries. Yet larger problems may lay in the absence of safe drinking water and chronic malnutrition. This working group will explore many of these challenges to achieving healthy populations. Various options will be examined for alleviating these problems with constrained resources, including community-based care, vaccination campaigns and disease eradication, social marketing and education, and economic and social development. Participants will evaluate public health programs that are currently underway around the world and debate the merits of innovative, new approaches.

Several issues to be examined:

- *attributes of various health care delivery systems (i.e., village-based programs, regional clinics, hospitals)*
- *strategies and methods for health education (i.e., mass media, social marketing)*
- *immunization strategies and disease eradication*
- *nutritional impacts on public health*
- *access and equity issues in international public health*
- *the global AIDS problem and strategies for its control*
- *primary health care vs. secondary and tertiary care (priorities for programming and funding)*
- *programs addressing child and maternal health care*
- *relationships between health and security, environment, and economic and social development*

Senior Participants

Eugene Gangarosa is currently a Professor at the International Health Center at the School of Public Health, Emory University, where he was formerly the Director of the Master of Public Health Program and the Dean for the Faculty of Health Sciences. He also has been the Director for the Enteric Diseases Control Activities and the Pakistan Medical Center. He has been awarded the CDC Medal of Excellence and a Fellowship in the American College of Physicians.

Carol Hogue currently works at the Centers for Disease Control, where she continues her many years of research in epidemiology and reproductive health. Dr. Hougue formed and co-chaired the Society for Epidemiologic Research (SER); APHA Joint Committee on Governmental Affairs and served on the Epidemiology and Disease Control Study Section, National Institutes of Health. Dr. Hogue is also a founding member of the World Health Organization, Programme on Research in Human Reproduction. She has taught in various universities, has received substantial recognition for her scientific/research contributions and has published extensively.

Donald Hopkins is the Senior Consultant for Global 2000 at the Carter Center in Atlanta. He is currently a member of the CDC Advisory Committee on the Prevention of HIV Infection and is the Chairman of the AIDS Initiative National Advisory Committee for the National Medical Fellowships. He is the Clinical Professor of Pediatrics at the University of Chicago as well as a visiting lecturer at Harvard School of Public Health and Emory University School of Medicine.

Edward Maibach is an Assistant Professor of Behavioral Science at Emory University School of Public Health. He is a communication scientist with research interests in the use of mass and interpersonal communication campaigns to promote health enhancement and environmental preservation. He is actively involved in HIV-prevention research and is currently conducting research studies on effective AIDS prevention communication strategies.

Deborah McFarland is an Assistant Professor in the Division of Health Policy and Management at the Emory School of Public Health. She is also a health economist on the staff of the International Health Program Office at the Centers for Disease Control and has worked in over 15 developing countries on health service programs. As a Robert Wood Johnson Fellow in Health Finance, Dr. McFarland has worked in Washington D.C. on Capitol Hill on policy issues regarding national health reform.

Josephat Ngaira is a Kenyan nurse and Assistant Training Director with MAP International working in Nairobi, Kenya. He has broad experience with government institutions and community and church based health programs in areas of clinical practice and training. His present position involves organizing and facilitating community health and development workshops at the grass roots level throughout East Africa.

Belmont Williams, from Sierra Leone, is currently a Visiting Professor in the Allied Health Department at Clark Atlanta University, and Assistant Clinical Professor in the Department of Obstetrics and Gynecology at Morehouse School of Medicine. She has served as Chief Medical Officer in Sierra Leone and has been a short-term consultant to various projects in Maternal and Child Health, both in Sierra Leone and Swaziland.

Health Care in Developing Countries

Student Participants

KAREN BROWN
Guelph, Ontario, Canada
Graduate student in Public Health, Columbia University, New York, New York

"I would like to explore the challenges of providing development aid in the health sector and the innovative strategies that are necessary to bring about positive changes in developing countries. Key elements include the role of education, women, and the integration of traditional medicines in reaching all people."

LIESL COPPER
Lexington, Ohio, USA
Currently studying Science Education/Music at Ohio State University

"By nature, medical care is very personal and individualized—both for the patient and the health care worker—and if we are to begin to better understand the problems of health care in developing countries, we must search for human concerns which are encountered and shared by health care workers worldwide."

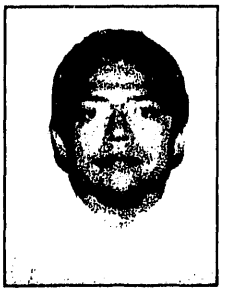
FERDINAND GUEVARA
Kubao, Quezon City, Philippines
Cancer Researcher at University of Philippines

"The increased number of patients seeking medical attention on an outpatient basis does sometimes make it quite impossible to spend more than enough time or even the required time for every patient that comes in the outpatient clinic . . . This happens not only to developing countries but other countries as well."

LYTA HAMM
Corte Madera, California, USA
Currently studying Health Science at San Francisco State University

"The paper surveys the health care structure of each country or state, and the social, cultural, and policy factors affecting the spread of AIDS. The natural history of the disease and its distribution in each country or state are compared and prevention and treatment strategies are examined."

Student Participants



PEDRO RAFAEL HERNANDEZ
El Salvador
Graduate student in Sociology/Biology at Hunter College, CUNY

"The Nicaraguan experience of national health care has left us with a great deal of material to study as we continue to try to conceive the possibility of providing adequate health care in countries with scarce resources."

ADA IGWEBUIKE
Nigeria
Currently studying Premedicine at Kent University, Kent, Ohio

"I introduce then that in order for medical institutions to succeed within developing countries, health care advocates must promote strategies that will generate the confidence and, possibly, admiration of social members—confidence, which, in order to be effective, must establish Western medicine as a more reliable and accessible practice than those of existing medical interventions."

MARK JOHNSON
Blacksburg, Virginia, USA
Majoring in Agricultural Engineering at Virginia Tech

KRISTIN LOERZEL
Centreville, Virginia, USA
Currently studying Government at William and Mary College, Williamsburg, Virginia

"The situation of a declining resource base due to increasing numbers of consumers means more labor for women of the third world."

Health Care in Developing Countries

Student Participants

ADEBAMBO OLAJITAN
Lagos, Nigeria
Doctor

"If it is true, according to the UNICEF report of 1976 that vaccine preventable diseases claim a total of 216,000 lives of children under five years of age in Nigeria each year, then one can imagine the enormous loss of human resources and waste of potential economic productivity that has been with us for years. Therefore a program designed to prevent this loss is a worthy and economically rewarding venture."

AGESIN OLUSEGUN OLAWALE
Ogun State, Nigeria
Currently a Medical Student at Ogun State University Teaching Hospital, Nigeria

"Attempts to persuade doctors to serve in the disadvantaged areas of Nigeria have so far failed largely because of a medical education that does not equip doctors with the skills to work with a community."

MORRIS REID
Akron, Ohio, USA
Currently studying Economics at University of Akron

"The essence of the paper, *The ABCs and 123s of Health Care in Developing Countries: Let's Get Back to the Basics*, will concentrate on education and basic programs and projects needed. Each section will highlight the socio-economic conditions that have led us to our current health problem, as well as, offer answers to the questions: what's the problem, why does it still exist, can it be solved, and what are the costs?"

KWAKU FREDERICK SARFO
Ghana
Currently studying Environmental Psychology, University of Ghana

"In Ghana and other developing countries, there is a lot of population pressure on the land and this has resulted in land or environmental degradation such as soil erosion, long periods of drought, and so on. There is the urgent need to do something about the situation before it gets out of hand."

Student Participants

JINA SHAH
North Brunswick, New Jersey, USA
Graduate student at SUNY Health Science Center, Syracuse, New York

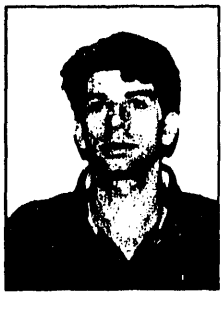
"The issues of Indian health care challenge many of the terms of medical ethics debate of other countries. How do the discussions on the utilization of high-tech medicine relate to the majority of people in the world who will never have access to it? How does one frame reproductive rights to address the situation of women in developing and modern countries?"

ABDALLA SHEHATA
Alexandria, Egypt
Currently studying Hospital Management at Tulane University, New Orleans, Louisiana

"Over the last three decades, obstetric practice has changed dramatically towards technology-oriented care. As a reaction, alternative birth centers were established where low-risk mothers, usually attended by midwives, are allowed natural childbirth. Units of this kind can provide safe, satisfying, and economic obstetric care to women who elect this form of childbirth experience."

DANNY TOUB
Atlanta, Georgia, USA
Graduated from Duke University with a Bachelor's Degree in English and will begin Medical School at Emory in September

"Right now relatively little effort is being aimed at individuals who suffer from AIDS in Africa; the sole objective is to prevent further spread of the virus. Because there is no technological cure of AIDS at this time, education-based prevention must take place to negotiate behaviorial change."



JAMES VIERENGEL
Melrose, New York, USA
Currently studying Civil Engineering/Engineering and Public Policy, and German at Carnegie Mellon University, Pittsburgh, Pennsylvania

"The root of the problems of the Green Revolution lies with the belief that humankind will continually expand and bring more of nature under its control. This drive for greater resource extraction and greater growth in the human population is on a collision course with the global ecological system, possibly ending in the destruction of both humankind and nature."

The Changing Dynamics of Peace & Global Security

Working Group 4

The tearing down of the Berlin Wall and the disintegration of the Soviet Union have ushered in a new era of viewing and promoting international security. The destructive impact of the military on the social fabric and physical environment in many countries has prompted many people to question the ability of force and violence to effectively resolve conflict. Governments are beginning to realize that economic competitiveness, environmental quality, and adequate levels of health care, education, and nutrition are crucial components of security. The working group will examine this "redefinition" of international security, taking into consideration issues of economic development, social needs, and environmental sustainability. Current threats to security, such as weapons proliferation, conventional arms trade, and nuclear security after the breakup of the Soviet Union will also be addressed. Finally, the group will discuss various post-Cold War visions for the international system, and their structures, institutions, and methods for maintaining international security.

Issues to be examined:

- *the role and utility of violence and force in resolving conflict*
- *economic and environmental links to security*
- *proliferation of weapons of mass destruction (nuclear, chemical, and biological)*
- *expansion of the conventional arms trade*
- *the disintegration of the Soviet Union and controlling ethnic turmoil*
- *the role of international and regional institutions in mediating and resolving conflict*
- *the future of arms control and conflict resolution (regimes, structures, methods)*
- *vision for a New World Order and the role of the United States*

Senior Participants

Alexi Bykov graduated from Moscow Institute of Chemical Technology and is currently a Vice-Chairman of the Russian Peace Foundation. The main goal of the Peace Foundation is to contribute to the creation of a universal system of international security, shaping political and moral prerequisites for the survival of mankind and solutions to the global problems on the basis of values which are common to all mankind.

Anne Cahn is currently a Senior MacArthur Scholar at the Center for International Security Studies, University of Maryland, as well as Vice resident of the Herbert Scoville Jr. Peace Fellowship. She serves on the Board of Directors of the *Bulletin of The Atomic Scientists* and National Security Archives. Anne was previously President and Executive Director of the Committee for National Security.

Peter Gleick is the Director of the Global Environment Program of the Pacific Institute for Studies in Development, Environment, and Security. Dr. Gleick received his M.S. and Ph.D. degrees from the Energy and Resources Group at UC Berkeley. He has participated as co-chair of Working Group 2 of the Advisory Group on Greenhouse Gases sponsored by the United Nations Environment Program. He received a MacArthur Foundation Research and Writing Fellowship in 1988 to look at the implications of climate changes for international water resources and international security.

Todd LaPorte works as an Analyst for the U.S. Office of Technology Assessment. He was a project team member of the report "Global Arms Trade" and is currently working as a project team member on the forthcoming report "Telecommunications in Central and Eastern Europe." He received his Ph.D. in Political Science from Yale University.

Ambassador (ret.) James Leonard is currently the Executive Director of the Washington Council on Non-Proliferation. He is also the Chairman of the American Council for the UN University. He has served as Ambassador and Deputy Special Negotiatior at Middle East Peace Negotiations 1979-1981 and has been Ambassador to the U.S. Mission to the United Nations from 1977 to 1979.

Joyce Neu is the Associate Director of Conflict Resolution Programs at The Carter Center of Emory University. She researches and publishes articles on negotiations and conflict resolution focusing on how language use and culture affect negotiation outcomes. Dr. Neu was Assistant Professor of Speech Communication at Penn State University and was also an Associate Faculty member of the Hewlett-funded Center for Research in Conflict and Negotiation.

Chris Smith is a senior fellow at the Center for Defense Studies at Kings College, University of London, England. Previously he worked as a Research Fellow at the Programme on Peace and Global Transformation, United Nations University, and at the Institute of Development Studies, University of Sussex.

Theodore Taylor is a retired physicist who worked on the Manhattan Project and helped to "miniaturize" the bomb. He worked at the Pentagon under Robert McNamara. He now is the President of Southern Tier Environmental Protection Society and is a Consultant for the Federation of American Scientists. He has been a Visiting Professor at UC Santa Cruz and a Full Professor at Princeton University. He currently writes, lectures, and testifies about nuclear arms control and disarmament, ethical and moral issues facing scientists and engineers, environmental issues, and space technology for peaceful uses.

The Changing Dynamics of Peace & Global Security

Student Participants

STANLEY AHORLU
Ghana
Undergraduate studying classics at the University of Cape Coast, Ghana

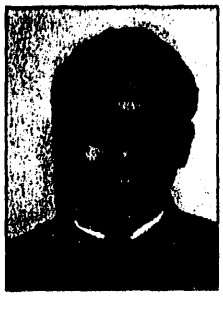
"Let us look confidently into the future by improving and extending science and technology, emphasizing agriculture and disarmament, enhancing and maintaining regional and international economic and political cooperation, ensuring proper terms of trade, and respecting human rights by means of the rule of law and democracy."

ANNA BERSHIDSKI
Moscow, Russia
Currently studying at Drexel University, Philadelphia, Pennsylvania

"The willingness of forty-seven countries, that were military and economic rivalries not long ago, to provide help and support to these new countries proves that the laws of the Cold War are being replaced by the ideas of peaceful coexistence."

JOHN BERTLAND
Philadelphia, Pennsylvania, USA
Currently studying European History at the University of Pennsylvania, Philadelphia, Pennsylvania

"As less developed countries achieve successful economic development, they naturally alter the existing security relations within a region. The challenge is to develop a framework for incorporating these 'newly industrialized countries' into an international system in which older powers are reluctant to give up economic dominance."



GEORGE DOUPSAS
Thessaloniki, Greece
Undergraduate in Economics at Middlebury College, Middlebury, Vermont

"In this constantly changing world order, no state should be able to claim that the way it treats its citizens is its sovereign right if this treatment is likely to create international tensions. But since the U.N. is just an assembly of governments today, will it be able to take some collective action when human rights violations occur in countries whose position, resources, or leaders create risks for international peace and global security?"

Student Participants

KEREM DURDAG
Kehkeshan-Karachi, Pakistan
A graduate student studying mechanical engineering at the University of New Hampshire, Durham, New Hampshire

"Politics and peace are a bold combination of a diverse unity, an armed conciliation, a natural artifice, a creative compromise and a serious game on which free civilization depends."

TIM HEATH
Springfield, Virginia, USA
Undergraduate studying philosophy at the College of William and Mary, Williamsburg, Virginia

" 'Peace' and 'global security' are indeed dynamic concepts whose meanings have altered considerably in recent times and throughout history. Today, with the conclusion of the Cold War, the world stands poised to advance one step closer towards shaping those ideals in unprecedented terms "

KIM HOLLEY
Brunswick, Ohio, USA
Graduate student in Government/International Relations at the University of Maryland, College Park, Maryland

"Democracy may be a very promising path to reducing the level of violent conflict between nations and put us on the road to cooperating to the degree necessary for us to build a sustainable world."

JAROSLAW JAZWINSKI
Warsaw, Poland
Currently studying International Relations at Warsaw University

"There is a great role for the U.N. to improve capabilities for preventing conflicts and the establishment of a global emergency system. Nuclear weapons should be totally under control of the U.N."

The Changing Dynamics of Peace & Global Security

Student Participants

IRMA LEHTONEN
Helsinki, Finland
Undergraduate in law at The University of Helsinki

"My paper handles the possibility of trial on the basis of natural law for persons who are suspected of being guilty of violating the basic human rights."

TATYANA MATIYASEVICH
Moscow, Russia
M.S. in Mathematics at St. Petersburg State University

"My paper describes a new approach to a more precise quantitative assessment of two-states strategic forces balance and its application to the balance of power between the USA and the former USSR."

VANESSA McMAHON
Aspendale Victoria, Australia
Graduate student in Environmental Studies at Brown University, Providence, Rhode Island

"The future is not some place we are going to, but one we are creating. The paths to it are not found, but made."

MICHAEL PURUGGANAN
Manila, Philippines
Graduate student in Botany/Global Policy Studies at University of Georgia, Athens, Georgia

"The deterioration in environment and resource sustainability is particularly acute in developing countries, where one finds numerous examples of massive species extinctions, ecosystem destruction, increased pollution and land marginalization. All this poses a dilemma for developing countries: how can economic growth be attained while preserving environmental sustainability?"

Student Participants

RAJESH RAJAGOPALAN
India
Graduate student in International Relations at The City University of New York

"Are realist assertions of a stable bi-polar Cold War world giving way to an unstable multi-polar post-Cold War world valid?"

IVO SARGES
Germany
Vordiplom, University of Constance, FRG

"The question facing the current generation of Pugwashites (young students of the physical and social sciences) is how to deconstruct and eliminate the nuclear threat forever. This means paying attention to ways in which both vertical and horizontal proliferation of weapons can be averted, but, more importantly, it involves some awareness of how to move the world into a post-nuclear era."

JULIA SHELTON
Richmond, Virginia, USA
Undergraduate in International Studies/German at George Mason University, Fairfax, Virginia

"Lying in the heart of the European continent, Germany is both the physical and economical focal point of Europe. Straddling the old east-west border the new united Germany faces the problems of both the east and the west."

MATTHEW UDZIELA
Beaverton, Oregon, USA
Undergraduate in Geography/Environmental Science at The University of British Columbia, Vancouver, BC, Canada

"Environmental damage itself is a symptom of the current condition of global disunity, and the fact that environmental problems reinforce the disunity that causes them is an indication of the absolute urgency of the situation."

Educating for the Socially Responsible Use of Technology

Working Group 5

As the pace of technological advancement continues to accelerate, increasing demand is placed upon the global educational systems to prepare individuals for an information-based economy and world. The challenge remains to create innovative methods for educating a rapidly expanding global citizenry with constrained resources, while fostering values, ethics, and social responsibility. To acheive such goals education must encourage students to ask questions and to constantly examine their assumptions. Such a thinking process is imperative in order to foster responsible and ethical decision making about the use of scientitic knowledge and technological know-how. With an eye toward the future, the working group will explore various modes of educational communication, as well as strategies and structures that will be most effective for the educational systems. There will also be discussions on strategies and methods for making education a more universal opportunity rather than a regional, racial, generational or gender-oriented privilege.

Several issues to be addressed include:

- *science and technological literacy (what it means, how to acheive it)*
- *women and minorities in science and technology: issues of access and equity*
- *professional responsibility: how to teach ethics and values*
- *curricilum planning to incorporate ethics, values, and the responsible use of technology*
- *funding for science education*
- *the role of the media in informing the public about science and technology issues*
- *the role of the government in educating the public about science and technology issues*

Senior Participants

Bailey Barash is the Senior Producer for science news at the Cable News Network (CNN). She is responsible for "Science and Technology Today," a report airing three times each weekday, and "Science and Technology Week," a review of science news airing each weekend. She received her M.S. degree in Genetics from the University of Melbourne, Australia, which she attended as a Fulbright Scholar.

Taft Broome is a Professor of Civil Engineering and Chairman of the University Senate at Howard University. He currently chairs the Large Space Structures sessions of the Pacific Basin International Conferences on Space Sciences and has been active on the Advisory Panel of the Ethics and Values Program at the National Science Foundation, and the Scientific Freedom and Responsibility Committee of the American Association for the Advancement of Science.

Rosemary Chalk is the study director for the panel on Scientific Responsibility and the Conduct of Research, a project of the National Academy of Sciences. She has directed earlier studies and committee activities in integrity in science, conflict of interest, and health and human rights issues for the Institute of Medicine. Rosemary has held elected offices in the AAAS and the Federation of American Scientists, and she has served on the advisory board of the Advisory Committee on Ethics and Values Studies of the NSF.

Gary Chapman is the Executive Director of Computer Professionals for Social Responsibility. He is currently coordinating The 21st Century Project, which is a national effort to redirect U.S. science and technology policy toward solving pressing problems of human need.

Papa Nalla Fall, from Senegal, West Africa, is the founder and Director of the Institute for the Development of Entrepreneurial Education (IDEE) in Dakar. He has served as an educational and program consultant for the United Nations Development Program and USAID. He also worked at the World Bank in Washington, D.C. for several years. Papa is an expert on entrepreneurship, education, and development issues, and has lived in several African countries.

Rachelle Hollander coordinates Ethics and Values Studies (EVS) at the National Science Foundation. She is currently an associate editor of *Science, Technology and Human Values*, the journal of the Society for Social Studies of Science, a Fellow of the American Association for the Advancement of Science, and a member of the Governing Board of the National Institute for Engineering Ethics.

Nicholas Steneck is the Director of the Historical Center for Health Sciences at the University of Michigan, where he is also a Professor of History. He was previously the Director at the Collegiate Institute for Values and Science. He has published extensively on issues of Science, Technology, and Ethics. Dr. Steneck is currently Chairman of the Board of Directors of Student Pugwash USA.

Joel Yudken is a Postdoctoral Research Fellow at the Program on Regional and Industrial Economics, Center for Urban Policy Research, Rutgers University. Dr. Yudken is currently conducting research on science, technology, and industrial policy, and economic adjustment and conversion. Joel recently coauthored a book with Ann Markusen, entitled *Dismantling the Cold War Economy*.

Educating for the Socially Responsible Use of Technology

Student Participants

MICHAEL ADELEKE
Akure, Ondo State, Nigeria
Graduate student in Finance at The University of Lagos

"Good tools are bad tools in the hands of bad men. The most potent in its impact for good or evil is television."

LEANNA BENNETT
Madison, Wisconsin, USA
Graduate student in Rural Sociology/International Relations at the University of Wisconsin

"My ethnic heritage of being Prussian, Mennonite, and American Indian, experiences I have had in living with a semi-nomadic tribal group in the mountain regions of Turkey, and the knowledge I have gained in realizing the different values in multidisciplinary research, will assist me in working cooperatively within the contrasting value systems of competing resource co-users."

JOSE CAMBEROS
Los Altos, California, USA
Graduate student seeking Ph.D. in Aeronautics & Astronomy, M.A. History & Philosophy of Science at Stanford University

"Many fields of science and engineering remain a bastion of masculine dominance, steeped in traditional stereotypes which define and restrict the roles of women and men. Science, as a profession, must then be balanced according to gender and race."

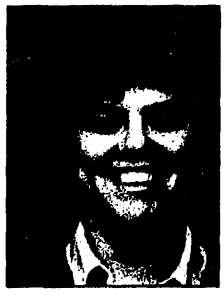
CHRISTINA CHOCIOLKO
Vancouver, British Columbia, Canada
Graduate studying Communication at Simon Fraser University, Vancouver, BC, Canada

"The role of science and scientists in the making of public policy alters the relationship between science, values, and public policy in significant ways. All parties should be involved in the decision-making process, not only for reasons of fairness, but because it is difficult (if not impossible) to separate the scientific and non-scientific components of risk assessment."

Student Participants

RUSSELL HAMILTON
Flagstaff, Arizona, USA
Undergraduate studying (Environmental) Engineering at Harvey Mudd College, Claremont, California

"Conservation and nuclear power are not enough. Only a world with a hydrogen economy will be a sustainable world."



JEAN HELLER-HENDRICK
Wildwood, Pennsylvania, USA
Undergraduate in Industrial Engineering at The University of Pittsburgh

"What is needed is an ergonomically centered approach to engineering changeovers to automation. The disposable worker approach now in effect is one of our greatest liabilities."

HUSSEIN KOTBY
Egypt
Graduate in Economics at Keio University, Tokyo, Japan

"Developing nations are encountered by two basic alternatives in their policy approaches to the problems of education. They can continue to expand formal systems quantitatively . . ., or they can attempt to reform the overall education system by modifying the conditions of demand for the supply of educational opportunities and by reorienting curricula in accordance with the real resource needs of the nation."

ROBIN MAY
Loves Park, Illinois, USA
Studying Psychobiology at Occidental College, Los Angeles, California

"As a society becomes intertwined with technology, it seems logical that the technology should increasingly reflect the best interests of that society. Unfortunately, this relationship is often overlooked. The atomic bomb is probably the best known example of a technological advance developed in the absence of social values and opinions."

Educating for the Socially Responsible Use of Technology

Student Participants

IMANN MUZIRMAN
Indonesia
Graduate in Crop Science/Agronomy at Michigan State University

"The intensity of the problem of pollution in agriculture exists, in part, due to a failure to recognize the interdependence of agriculture and environment."

SIMSON NUTSUGBODO
Ghana
Undergraduate studying Psychology and Philosophy at The University of Ghana

"Technology is urgently needed in less developed countries, especially Africa, South of Sahara. However, in selecting such technologies pre-eminence must be given to improved agricultural and industrial technology. One peculiar characteristic of governments of these poor and debt-burdened countries is that the technologies they employ are too exotic and impractical."

JEFFREY PORTEN
Philadelphia, Pennsylvania, USA
Graduate in Communications/American Civilization at The University of Pennsylvania

"The major difficulty in the responsible use of technology generally is not caused by the nature of the technology, but rather in its method of integration into the existing social context. A new methodology for conceptualizing emerging technologies is needed: that of the transitional technology."

S. JEAN SIMMONS
Reisterstown, Maryland, USA
Currently studying Liberal Arts & Technology: Computer Concentration at Villa Julie College

"Many think that the logical place to begin an educational effort is at the kindergarten level; however, in the case of the use and development of technology, the best place to begin is at the top. Governments that regulate the productions of machines, and corporations that develop and manufacture them, must carefully consider the potential benefit to humanity and compatibility with the biosphere of any current or emerging technology."

Student Participants

DANN SKLAREW
Reston, Virginia, USA
Graduate studying Cognitive & Neural Systems at Boston University

" 'Our environment,' said one Czech philosopher, 'is not the cherry on the cake of economic development, but the hole in a sinking ship.' Hopefully, we will work together to repair it."

CHRISTA TORRENS
Pittsford, New York, USA
Majoring in Environmental Issues at The School for International Training, San Jose, Costa Rica

"Awareness and alternatives: the two must go together if social and environmental change is to be affected. One should not be provided without the other."

ANNIE VanDUSEN
Denver, Colorado, USA
Graduate studying Health Policy at Yale University, New Haven, Connecticut

"In recent history, women have acquired the legal right to govern their own reproduction to a greater extent than ever before. However, as we approach the twenty-first century, women face the distinct possibility that they may relinquish the victories of the past two decades."

SCOTT WANNER
Rockford, Illinois, USA
Currently studying History & Philosophy of Science at The University of Illinois

"Technology has a 'sacred' quality removing it from participating in discussions of social values; instead, it looks on from above. Scientific experimentation itself, however, is embedded in social processes and practices."

Ethics & The Use of Genetic Information

Working Group 6

There are over 3000 genetic diseases that afflict humankind, and many more diseases in which genetic predisposition may play a significant role. The hope is that locating and isolating those genes that carry an illness will lead to the possiblity of gene therapy—removing the offending genes, replacing them with normal ones, and thus treating an illness before it even develops. The Human Genome Project is a world-wide research effort that seeks to locate and identify the fifty to one hundred thousand genes on each of the twenty-three human chromosomes, and to sequence the approximately three billion pairs of nucleotide bases that compose and carry the information of these genes. However, like all advancements in science and technology, the Human Genome Project raises important social, ethical, and legal issues that must be considered in order to curb the negative and harmful effects of the technology.

Several issues to be addressed include:

- *the health and medical benefits to be derived from genetic research*
- *other benefits that the Human Genome Project and genetic research may have for society*
- *resource allocation issues: is HGI the most effective and equitable use of scarse scientific resources?*
- *what effects will this genetic knowledge have on access to insurance, jobs, and civil rights? (discrimination issues)*
- *what long-term impacts will the technologies associated with genetic research have upon society, public health, the global gene pool, and bioengineering?*

Senior Participants

Peter Carpenter is currently a Visiting Scholar at the Center for Biomedical Ethics at Stanford University, where he has served as the Executive Director of the Stanford University Medical Center in the past. He also serves as an advisor to the Strategic Planning Committee of the ALZA Corporation, where he recently resigned his position as President. He co-chairs a subcommittee of the California AIDS Leadership Committee and serves on the boards of California Leadership and Student Pugwash. He is an Advisor of the International Medical Benefits/Risks Foundation, and founder of Mission and Values Institute.

Lee Crandall is a Professor and the Director of Departmental Research for the Department of Community Health and Family Medicine at the University of Florida. His current research activities include assessment of the impact of Human Genome Initiative derived diagnostic technologies on insurance practices and on ethnic minority groups. His areas of research and teaching interests are: Medical Sociology and Health Services Research; and Medical Ethics and Health Policy.

Robert DeHaan simultaneously holds the position of Director of the Cardiac Cell Function Program, Emory University Center for Health Science, and Director of Emory's Center for Ethics in Public Policy and the Professions. His research is in membrane biophysics and developmental physiology of the heart; he is author of over 100 scientific papers and has published two books. He is a fellow and a past member of the AAAS, a member of the Scientific Council of the American Heart Association, and a lifetime member of the Carnegie Institution of Washington.

Robert Murray is a Professor of Pediatrics and Medicine and Chief of the Division of Medical Genetics in the Department of Pediatrics and Child Health at Howard University. Dr. Murray is a Fellow of the American Association for the Advancement of Science, a Fellow and member of the Board of Directors of the Hastings Center, and a Fellow of the Institute of Medicine, National Academy of Sciences.

James Murtagh is currently a Genetic Researcher at the Atlanta V.A. Medical Center. He is also an Assistant Professor and Medical Director of the Pulmonary Laboratory, Division of Pulmonary Diseases, Department of Medicine, Emory University School of Medicine. He is certified by the American Board of Internal Medicine as a Diplomate in Pulmonary and Internal Medicine.

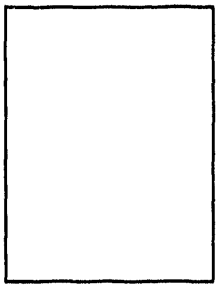
Ralph Trottier is currently in the Department of Pharmacology and Toxicology at Morehouse School of Medicine. He previously earned his law degree at Georgia State University College of Law and is now both a Professor and Attorney at Law. At present, he is conducting a study funded by the U.S. Department of Energy and the National Institutes of Health on ethical, legal and social issues arising from the Human Genome Project.

Douglas Wallace is the Chairman of the Department of Genetics and Molecular Medicine at Emory University, where he is also the Director of the Center for Genetics and Molecular Medicine. He received his Ph.D. in Microbiology and Mammalian Cell Genetics at Yale University. He has researched and published extensively on Genetics and Mitochondrial Research.

Nachama Wilker is the Executive Director of the Council for Responsible Genetics, where she initiated, designed and implemented the International Pledge Against the Military Use of Biological Research, which 1500 scientists signed. She also drafted and consulted on the Biological Anti-Terrorism Act of 1990 and co-founded the Biotechnology Working Group—a coalition of public interest groups which produced the report "Biotechnology's Bitter Harvest: Herbicide Tolerant Crops."

Ethics & The Use of Genetic Information

Student Participants



GOWTHAMI AREPALLY
Vidalia, Georgia, USA
Recently completed Residency in Internal Medicine at Emory University Affiliated Hospitals, Atlanta, Georgia

ALAN BEAN
Saginaw, Michigan, USA
Currently studying Biology at Delta College in Michigan

LORELEI BROWN
Springfield, Virginia, USA
Currently studying Science, Technology, and Society at Pomona College, Claremont, California

"The Third World has also served as a testing ground for many pharmaceuticals and other products often without informed consent of the subjects of the experiments."

STEPHEN BURRI
Canada
National Coordinator of Canadian Student Pugwash at The University of Victoria

Student Participants

COLLEEN CEBULLA
Hiram, Ohio, USA
Currently studying biochemistry at Macalester College, St. Paul, Minnesota

"A policy already adopted by most industrial nations, universal health care would prevent the problem of genetic discrimination and would contribute to the development of a more equitable society."

CHARLES CHUNG
Sylva, North Carolina, USA
Graduate student in Physics at Duke University, Durham, North Carolina

DENISE ARMOND DE OLIVEIRA
Brasil
Currently a Postdoctoral student at Emory University studying Molecular Biology

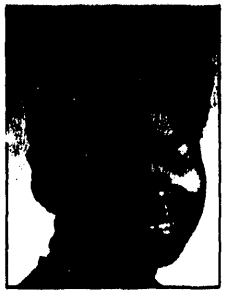
LITA HEGEMIER
Eaton, Ohio, USA
Undergraduate in Biology at Indiana University-East

"Would the removal of a 'bad' gene now result in the loss a 'good' trait later? It seems possible that we could destroy a gene that apparently is completely harmful, but there could be positive traits that we could engineer out as well."

Ethics & The Use of Genetic Information

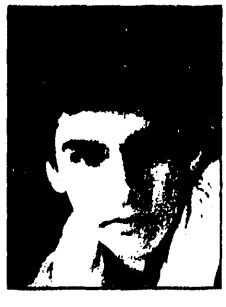
Student Participants

JAN HELLER
Powder Springs, Georgia, USA
Graduate studying Ethics & Society/Religion at Emory University, Atlanta, Georgia



MELISE HUGGINS
Trinidad & Tobago
Majoring in Agricultural Economics at Tuskegee University, Tuskegee, Alabama

"In a world wrought with racism, prejudices and biases, will genetic information lead to human manipulation and misuse? Will we attempt to construct our ideal human being by gene mapping 'the best' traits?"



DAVID PERLMAN
Atlanta, Georgia, USA
Majoring in Biology and Philosophy-Classics at Emory University

"Implicit in this immense project is the advent of certain genetic tests which will enable physicians to diagnose and possibly treat many genetic diseases and disorders that are presently untreatable. One consideration, and the focus of this paper, is precisely how these genetic tests might be used in the medical insurance industry and by employers."

KRISTINA SINEMUS
Germany
Graduate student in Biochemistry at The University of Darmstadt

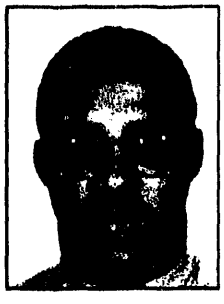
Student Participants

KRISTEN TESTA
Baltimore, Maryland, USA
Graduate in The School of Public Health/Public Health Policy at Johns Hopkins University

"Will this technology ever prove effective and at what and whose expense?"

ARISTOTELIS TYMPAS
Greece
Graduate studying Technology and Science Policy at Georgia Tech

"Despite the variance of biologists' estimations of how close we are to having the genetic mechanism completely analyzed and its script finally decoded, the very idea of taking our evolution into our own hands is becoming a subject of great debate within the scientific community."



ERIC WHITAKER
Chicago, Illinois, USA
Medical student at The University of Chicago - Pritzker

"Though the Human Genome Project will cure or prevent many medical conditions if successful, there is a dark side to the knowledge that may be acquired about human genetics. Genetic mapping will allow scientists to pinpoint genes responsible for all human characteristics, including those most essential for the development of memory, intelligence, and physical characteristics."

Special Guests

Elizabeth Bowen is an Assistant Professor of Family Medicine at Morehouse School of Medicine. Dr. Bowen is President of and a member of the Board of Directors of Physicians for Social Responsibility (PSR)—the American Chapter of International Physicians for the Prevention of Nuclear War, the group that won the Nobel Peace Prize in 1985. She has been asked by the U.S. President's Council on Environmental Quality to serve as an official medical consultant for the U.S. Report to the U.N. Conference on the Environment and Development (UNCED) in Brazil in June 1992. At UNCED she also presented a paper on "Values and Institutions in the New World Order."

Malcolm Gladwell was born in England and educated in Canada at the University of Toronto. He has a B.A. in History. Since 1987 he has been a reporter at the *Washington Post*, where he has covered the pharmaceutical industry as a business writer and, more recently, health and science policy.

Carolyn Hatcher is the President and Chief Executive Officer of The Georgia Conservancy. A graduate of Emory University (M.A.T. Ecology), she has been a community leader and active volunteer for the past 20 years, serving on numerous Governor's commissions, task forces, and boards. She served as Director of Community Relations at the Lovett School in Atlanta and also served as Commissioner of Parks, Recreation and Cultural Affairs for the City of Atlanta.

David Leifer is a practicing attorney with expertise in corporate reorganizations, insolvency, public international law and arms control and foreign affairs. David, brother to the founder of Student Pugwash, Jeffrey Liefer, has attended each of the international conferences. From 1983 to 1985, David served as Executive Director of Student Pugwash USA in Washington D.C. He has served on Student Pugwash USA's Board of Directors since 1985 and was Chairman of the Board from 1990 to 1992.

Herbert Leifer recently retired as a physicist. For 25 years he worked as a research scientist on a broad range of problems in Solid State Physics. For the last 20 years, beginning with his tenure at the Rand Corporation, he has dedicated much attention to issues of defense policy as driven by technology. Most recently, Dr. Leifer was a Senior Scientist at Rockwell International.

Jeffrey Leifer is President of Leifer Capital, a financial advisory firm located in Santa Monica, California, which advises state and local governments on solving strategic and financial problems. He is active in innovating financing mechanisms for resource recovery and alternative energy programs. Jeffrey received his MBA from Yale, after which he worked on Wall Street and then served as Chief Operating Officer of First Interstate Bank's Public Finance subsidiary. Jeffrey organized the first Student Pugwash USA International Conference in 1979 and has been instrumental in the development of the organization.

Shirley McBay assumed the position of President of the Quality Education for Minorities Network in 1990 following ten years as Dean for student Affairs at MIT and three years as Director of the Quality Education for Minorities Project. Dr. McBay also served with the National Science Foundation as Manager/Director to the Science Education Directorate,

and she helped launch and direct The Resource Centers in Science and Engineering. Dr. McBay continues to be an active supporter of human rights and the education and participation of women, minorities and disabled persons in the fields of science and engineering.

Mohan Munasinghe is presently the Division Chief for Environmental Policy and Research at the World Bank. During 1982-86, he served as Senior Advisor to the President of Sri Lanka. He has received several international awards for his research work and has authored over 40 books and several hundred technical papers. He has taught in universities in the U.S., Sri Lanka and Canada, and he currently lectures at the University of Pennsylvania. He is a Fellow of the National Academy of Sciences, Third World Academy of Sciences, and United Nations University.

George Page is best known as the host, narrator, and executive editor of NATURE, now in its 10th season as the most popular weekly program of PBS. As Thirteen/WNET's Director of Science and Natural History Programming, Mr. Page has been responsible for the production of numerous series and specials on PBS. Before joining WNET, the nation's largest public television station, Mr. Page was a foreign correspondent and producer for NBC News, covering the Vietnam War and other major stories of that period. He is a native of Hartwell, Georgia, and a graduate of Emory University, which awarded him a Doctorate of Humane Letters in 1990, "...for his contributions to science education in the United States."

Willie Pearson is a Professor of Sociology at Wake Forest University. He has served on committees and panels at the National Institutes of Health, National Science Foundation, American Chemical Society, and the American Association for the Advancement of Science. Dr. Pearson has written severals books, including *Black Scientist, White Society and Colorless Science: A Study of Universalism in American Science* and *Blacks, Education and American Science*. He currently serves on the editorial boards of the *Journal of the Association of Social and Behavioral Scientists* and *Science, Technology and Human Values*.

John Reid is the Director of Corporate Environmental Affairs at the Coca-Cola Company, where he is responsible for Coca-Cola's environmental policies and practices on a worldwide basis. He recently completed a two-year appointment as the Chief Administrative Officer for the City of Atlanta, managing all departments and agencies of the city, and reporting to the mayor. Serving on numerous boards, Mr. Reid is also Chairman of the Board of the Georgia Alliance for Children.

Emory Conference Staff

Timothy J. Larson, Conference Coordinator: Tim graduated Magna Cum Laude from the University of Pennsylvania with a bachelor's degree in International Relations in 1991. From January to June 1990, Tim conducted independent research in Dakar, Senegal, where he also co-organized and facilitated a conference on development trends in West Africa with fellow Pugger Dann Sklarew. Prior to his arrival at Student Pugwash USA in August 1991, Tim worked as a consulting assistant at Resource Planning and Management Systems Inc., an energy resource and management consulting firm; and as a social science researcher at The World Game Institute (1987-91). Tim was also an active member of UPENN's Student Pugwash chapter. His interests range from security and development issues to lazily floating down the Chattahoochee River on a rubber raft.

John Dietz: John graduated Phi Beta Kappa from Emory University in December 1991. He founded Emory's student environmental activist group, taught high school, interned with CNN's "Earth Matters," and visited several Native American communities within the United States. John hopes to travel abroad in the fall of 1992.

Meredith Dudley: Meredith just completed her sophomore year at Emory University where she is majoring in Anthropology with a co-major in Human and Natural Ecology. She has interned at SPUSA since January as a conference assistant. She is interested in cultural, environmental, and development issues. Though she is currently working hard (to accumulate a more impressive biography for future references), she admittedly escapes to the north Georgia mountains whenever she can.

Karen Grybek: Karen graduated from Emory University in May, majoring in Liberal Studies with a co-major in the Human and Natural Ecology program, where she worked with other students compiling data on global reforestation and related issues. Karen volunteered at the Carter Center in 1991 and began interning at the Atlanta office of SPUSA in January 1992, where she will be working as conference assistant through the June conference.

Christopher Rieger: Chris is a junior at Emory University majoring in English and minoring in Philosophy. During the spring semester, Chris assisted with the production of the various conference materials, including this "facebook." Chris comes to the big city of Atlanta from Greenwood, South Carolina, and is often still frightened by the big buildings.

Aram Vileno: Aram is a junior at Emory University majoring in English. Aram worked during the spring semester on media and outreach for the International Conference. He comes from Providence, Rhode Island, where a coastal life has made a particular impact on his environmental conscience.

Student Pugwash USA Staff

Betsy Fader, Executive Director: Betsy has served as Executive Director of Student Pugwash USA for three years. She is a 1985 graduate of Vanderbilt University where she studied political science and communications. While at Vanderbilt, she was actively involved in and lead a variety of extracurricular campus activities, and after her graduation was elected to serve a four-year term on the University's Board of Trustees. She was also the recipient of a University scholarship for her achievements and service to Vanderbilt. Prior to her work at Student Pugwash USA, Betsy served as Parliamentary Assistant to a Member of the House of Commons in London, England (1985-86), and then as Legislative Assistant in a Washington, D.C. law firm (1987). In both positions, Betsy monitored and wrote on policy developments in energy and environment issues. Betsy then served as Legislative Aide at the Association of American Universities (1988-89), where her work focused on a variety of science and research issues, with a specific concentration in biomedical research policy and policies regarding ethical conduct in research.

Justine Thompson, National Chapter Coordinator: Justine has been with the SPUSA staff since March 1991. She graduated from the University of California, Berkeley, in 1988 with a B.A. in Economics. Justine was director of Cal in the Capital, UC Berkeley's Washington, DC internship program. From June 1989 -1990, she taught English in Kasukabe, Japan. Justine also worked on the Coastal Project at the National Wildlife Federation. In the fall, Justine will be entering law school at Duke University (where she plans to start a Student Pugwash chapter).

Mike Smith, Management Director: Mike, who also joined the National Office Team in August, graduated from Yale University with a bachelor's degree in Chemical Engineering. Mike has been abroad almost as much as he has been in the states, having spent time studying in both France and Switzerland. In addition, he recently returned from Thailand, where he worked for a year in community and business development with that country's largest nonprofit organization. In between, Mike gave the requisite two years to the corporate sector, serving in the consulting practice of Price Waterhouse in Washington, D.C. and Dallas.

Rachel Segall, Conference Assistant: Rachel, who joined the National Staff at the end of September, graduated with a bachelor's degree in Psychology from Bates College in Lewiston, Maine. She began her work at SPUSA as an intern, and while she still contributes to many areas, she has become the Conference Assistant for SPUSA's 1992 International Conference in Atlanta. So far she is enjoying her new home in Washington, D.C. However, being a life long New Englander, she is waiting for a real snow storm to come.

Elise Berkman, Program Assistant: Elise began working at Student Pugwash USA in February. Like Rachel, Elise graduated from Bates College, where she was a Religion major and coordinator of the Bates chapter of Amnesty International. Before joining SPUSA, Elise interned with the Women's Health Education Project in New York City.

Student Pugwash USA Board of Directors

Dave Blecker
Taft Broome
Anne Cahn
Peter Carpenter
Rosemary Chalk
Takeshi "Kurt" Eto
Kathy Harrison
David Leifer
Sally Lilienthal
Indira Nair
Jeff Porten
Robert Rosenzweig
Dann Sklarew
Nicholas H. Steneck

Student Pugwash Supporters

Carnegie Corporation
Ciba-Geigy Corporation*
Ciba-Geigy Limited*
Emory University*
Georgia Power Company*
W. Alton Jones Foundation
The John D. and Catherine T. MacArthur Foundation*
National Institutes of Health*
National Science Foundation*
New-Land Foundation
Pfizer Corporation*
Ploughshares Fund*
Rockefeller Family Associates*
Rockefeller Foundation*
Samuel Rubin Foundation*
Schering-Plough Corporation*
Trust for Mutual Understanding*
U.S. Department of Energy*
The Winston Foundation for World Peace*
Individual Contributors

*denotes Conference supporters.

Appendix E

Pre-Conference Materials

*Acceptance letter to student delegates.

STUDENT

PUGWASH

April 15, 1992

Dear _____,

Congratulations! On behalf of Student Pugwash USA, it is my pleasure to inform you that you have been chosen to attend our 7th Biennial International Conference entitled, ***Visions for a Sustainable World: A Conference on Science, Technology, and Social Responsibility*** . The Conference will be held June 14 - 20, 1992, at Emory University in Atlanta, Georgia, USA.

General Information:

The Conference is strictly educational, and Student Pugwash USA is committed to representing a broad spectrum of political, international, and interdisciplinary prespectives. The Conference objectives are: 1) to broaden your awareness and improve your understanding of the interactions of science, technology, and society; 2) to strengthen your sense of ethical responsibility through dialogue with decision-makers and other outstanding students; and 3) to provide you with knowledge and resources that will help you to integrate social responsibility into your future academic and professional choices. The Conference is designed to promote discussion not consensus, so no official resolutions will be adopted as part of the Conference proceedings.

The informal community is an essential element of the Conference experience. All participants, both students and seniors, will live and dine together on the Emory University campus. All on-site costs, such as room, board, and local transportation will be paid for by Student Pugwash USA. Meals will begin with lunch on Sunday, June 14, and end with breakfast on Saturday, June 20. Rooms will be provided from Sunday to Saturday. With advance notification, we can make room and board available on Saturday, June 20, and Sunday, June 21, for students travelling long distances. We will be contacting you within the next few weeks with more logistical information.

To confirm your participation at the Conference, please contact me at the National Office by telephone, fax, or mail, **no later than April 30.** It is very important for us to know as soon as possible whether or not you plan to attend because if you have decided that you are no longer interested or are unable to come for some reason, we have many capable alternates who we will need to contact.

Working Group and Paper Information:

You will be a member of the Conference working group **Health Care In Developing Countries**. If this was not your first choice working group, please note that your paper should now be written on a topic within this realm. The group will include 13 to 18 students and 5-8 senior participants, and it will meet each morning from June 15 - 19. The group's membership will remain constant throughout the week. To encourage spontaneity and candor, working group meetings will be closed to the public. Each working group will determine its own agenda for the week, including, but not necessarily limited to, discussion of student papers. You will be asked to draw on your own experiences and to discuss your values and feelings as they relate to the working group topic.

BOARD OF DIRECTORS

David C. Leifer, Chair
Taft Broome
Anne Cahn
Peter Carpenter
Rosemary Chalk
Charles Chung
Takashi Kurt Eto
Kathy Harrison
Sally Lilienthal
Indira Nair
Nancy Pfund
Jeff Porten
Nicholas H. Steneck

Jeffrey R. Leifer, Founder

BOARD OF ADVISORS

Sissela Bok
Honorable George Brown
Audna England
Richard Graham
Hal Harvey
Walter Kohn
Shirley Malcom
Richard Nelson
Linus Pauling
Victor Rabinowitch
Roger Revelle
Jonas Salk
Frank von Hippel
Victor Weisskopf
Herbert York

NATIONAL STAFF

Betsy L. Feder
Executive Director

Timothy J. Larson
Conference Coordinator

Michael H. Smith
Management Director

Justine Thompson
Chapter Coordinator

1638 R Street, NW Suite 32
Washington, D.C. 20009
Tel: 202 328-6555
Fax: 202 797-4664

You should be prepared to discuss your paper with your group. As in past conferences, we will be attempting to publish as many student papers as possible. If you have any questions, or would like some advice about the focus and content of your paper, please contact Tim Larson in Atlanta at (404) 727-0730. As noted on the application, we expect your paper to be completed a month in advance of the Conference. In order to facilitate paper publication after the Conference, we ask that your final paper be between 8 and 15 pages long. **Please send us a copy of your completed paper by May 15.** By receiving the papers a month in advance of the Conference, we will have the opportunity to distribute copies of each student's paper to all the other members of his or her working group before the Conference begins. As a result, when you arrive at the Conference, you will already have some familiarity with the other students in your working group, as well as the issues that interst them. We feel that this part of the preparation process is essential to the functioning of each group.

In the past, delegates have found the Conference week to be very short, given the tremendous breadth and variance of the issues discussed. To make the most of it, we ask not only that you prepare your paper for presentation, but that you also make the effort to prepare youself. We will be sending you resource packets with information on your working group topic, and we ask you to supplement this packet with your own research. Since the direction each working group takes will be determined by the interests and curiosities of the students within it, **please send us a list of five questions you would like to see your working group address by May 15.** (Your questions can be sent along with the copy of your paper.) Your input will lay the groundwork for constructive use of the limited time the working group will have together.

Travel Information:

To effectively plan for the Conference, we must have your exact travel plans. All students travelling within the U.S. are responsible for their own travel expenses. We encourage you to seek support as a Conference delegate from your university. The university offices that have funded delegates in the past include specific academic departments, science and society programs, presidents' offices, alumni offices, and academic affairs offices. I have enclosed a letter to help of support, a brochure about Student Pugwash USA, and Conference poster, which should be of assistance in this effort. Should it be necessary to support your request with additional material, we will be happy to provide you with more information about Student Pugwash USA. We are currently working with Delta Airlines to obtain reduced fares for Conference participants, and we will contact you in the weeks to come regarding this possibility. In the meantime, please do what you can to locate sources of funding for your travel. If you should exhaust all avenues for support, we may be able to provide limited travel assistance. Information about travel assistance will be sent to you soon with the other logistical information. If you have any further questions concerning you travel to Atlanta, feel free to contact Tim Larson at Emory.

We are seeking international travel funds on an individual basis for students outside of the U.S. If you are coming from outside the U.S., we urge you to continue seeking funds from your home country. We will be working with each delegate on this matter on a case by case basis.

Once in Atlanta, we will provide all transportation. There will be no need for you to make your own arrangements for getting to and from the airport since we shall provide that assistance. As I said before, we will be sending you more information

within the next few weeks on logistics, including more detailed travel and housing information, as well as a preliminary agenda for the Conference.

Summary of Dates:

By April 30 - respond to our invitation to the Conference
By May 15 - send a copy of your paper and five questions

Should you have any questions or concerns about anything dealing with the Conference, please submit them *in writing* unless they demand immediate attention. If you need to contact me or Tim, I have listed our addresses, telephone, fax, (and in my case, email) numbers below.

Again, congratulations! The Conference will be fantastic, and I am glad that you will be a part of it!

Sincerely,

Rachel Segall
Conference Assistant

Please direct responses to:

Rachel Segall
Student Pugwash USA
1638 R Street, NW, Suite 32
Washington, DC 20009

Tel: 1-800-WOW-A-PUG
Fax: (202) 797-4664
Email: uspugwash@igc.org

Papers and questions to:

Tim Larson
Student Pugwash USA
c/o Department of Physics
Emory University
1001 Rollins Reserach Building
1510 Clifton Road
Atlanta, GA 30322

Tel: (404) 727-0730
Fax: (404) 727-0873

*Planning mailing to student delegates.

May 22, 1992

Dear Student Participant:

With only three weeks remaining until all Conference participants arrive in Atlanta, this letter will hopefully answer any questions you may have. Also enclosed in this mailing is a background packet which includes several articles that will help you prepare for your working group (please take the time to read through it as it will provide a foundation for working group discussions). Below we have provided logistical information that I urge you to read carefully in order to ensure that your arrival and stay in Atlanta runs smoothly.

Travel Logistics
If you have not already done so, please send in your **travel information form**. We need to know when you will be arriving, and if you require housing on any additional nights. Also, please notify us immediately if your travel plans change.

If you are flying into Atlanta, Student Pugwash USA will provide transportation between Atlanta-Hartsfield Airport and the Conference site at Emory University. Once you arrive, follow signs to the baggage claim area (you will need to board an underground tram/subway to get to the main terminal for baggage claim). There you will be met by Conference staff and volunteers who will be wearing Student Pugwash USA T-shirts and holding Student Pugwash signs. These staff members will assist you to the shuttle vans. If for some reason you are unable to locate a Student Pugwash staff member, please call 727-0730 and we will assist you.

For those of you who will be driving to the Conference, please contact us if you require directions to Emory University (the campus is easily accessible from I-75 and I-85, and is about 10 miles northeast of downtown Atlanta). When you register for the Conference on Sunday, June 14, you will be given a parking permit that will allow you to park on campus for the duration of the Conference week.

Registration and Housing
Conference registration will take place from 9am to 4pm on Sunday, June 14, at the Woodruff Residential Center on Clifton Road at Emory University. At registration you will be provided with Conference materials, a room assignment and key, and a meal card. A $30 deposit will be required from each student for the room key and meal card. The deposit is fully refundable at check-out, upon the return of the key and card. All students will be housed in a double room with another student for the week. Each student will be provided with linens, a pillow, and a set of towels. For those students arriving before Sunday, June 14, you will need to register at the Woodruff Residential Center in order to get your room key. You will then need to go through Conference registration on Sunday.

Student Pugwash USA will provide housing from Sunday night, June 14, through Friday night, June 19. If you plan to arrive a day early or stay a day after the Conference, you will be responsible for either finding your own accommodations or paying $17.00 extra per night to remain in the Woodruff Residential Center. This amount must be paid in full at registration (cash or check). If you plan to stay for an extra night, and have not indicated so on your travel form, you must notify us immediately. Meal service will be provided from dinner on Sunday, June 14, through breakfast on Saturday, June 20. Participants will be responsible for their own meals before and after this period. A list of inexpensive local restaurants (within walking distance of campus) will be available at registration.

(over)

STUDENT PUGWASH USA

BOARD OF DIRECTORS
David C. Leifer, Chair
Taft Broome
Anne Cahn
Peter Carpenter
Rosemary Chalk
Charles Chung
Takeshi Kurt Eto
Kathy Harrison
Sally Lilienthal
Indira Nair
Nancy Pfund
Jeff Porten
Nicholas H. Steneck

Jeffrey R. Leifer, Founder

BOARD OF ADVISORS
Sissela Bok
Honorable George Brown
Audna England
Richard Graham
Hal Harvey
Walter Kohn
Shirley Malcom
Richard Nelson
Linus Pauling
Victor Rabinowitch
Roger Revelle
Jonas Salk
Frank von Hippel
Victor Weisskopf
Herbert York

NATIONAL STAFF
Betsy L. Fader
Executive Director

Timothy J. Larson
Conference Coordinator

Michael H. Smith
Management Director

Justine Thompson
Chapter Coordinator

1638 R Street, NW Suite 32
Washington, D.C. 20009
Tel: 202 328-6555
Fax: 202 797-4664

Your Stay in Atlanta: What to Bring
As you may know, June can be quite hot and humid in Georgia. Casual dress is the norm for most of the week (shorts are perfectly acceptable). You may want to bring slightly more formal (and warmer) attire for some of the evening plenary sessions, as these events will be open to the public and press. Each participant will have free use of Emory's recreation facilities during the week (eg. indoor pool, tennis courts, track, jogging paths, volleyball, racquetball, etc.), so bring appropriate clothing. As a rule of thumb, dress in clothes that you will be comfortable in.

For those of you who have not sent in your paper before the Conference, you will be responsible for bring 25 copies of the paper to distribute to your working group. Every participant should bring any background or reference information that they wish to have at the Conference (we will not provide additional working group background packets). We encourage all participants to bring anything that you would like to share with other participants (eg. pictures, video, or slides of your country or a trip; souvenirs; articles; musical instruments; or whatever else, be creative). There will be time and facilities in the evenings for informal "show and tell". You may also wish to bring some spending money for late night snacks and beverage refreshments, and for any souvenirs you wish to purchase while in Atlanta. Although there will be little time during the week to explore Atlanta, we will have information available on local points of interest if you wish to get a taste of the South before or after the Conference.

Conference Program
The Conference program promises to be both interesting and informative. Wherever possible, we have constructed the agenda to allow for maximum discussion and participant interaction. The morning working groups offer an opportunity for students to interact with senior participants in an informal discussion session. Everyone's ideas and input are valuable, and I encourage you to actively participate in the discussions. Afternoon and evening plenary sessions and special events will address several of the main topic areas and themes of the **Visions for a Sustainable World** Conference. A full agenda will be provided at registration.

Although the week has been tightly scheduled, we have attempted to build in time for unstructured, informal discussions. Students will be attending from over 25 different countries, bringing a wealth of diversity and experience to the Conference. As many of the most memorable exchanges and interactions take place between sessions or late a night, I encourage you to bring your own ideas and interests to share and to listen to what other participants have to offer. The success of the Conference is largely determined by what the students make of it.

All of the staff and I are excited to meet you in June. Staff members include:

Emory Conference Staff	*Student Pugwash USA National Staff*
John Dietz	Betsy Fader, Executive Director
Meredith Dudley	Mike Smith, Management Director
Karen Grybek	Justine Thompson, Nat'l Chapter Coordinator
Chris Rieger	Rachel Segall, Conference Assistant
	Elise Berkman, Program Assistant
	Evelyne Delori, new Nat'l Chapter Coordinator

If we can answer any questions you have, please give us a call. Get excited and we'll see you in mid-June!

Sincerely,

Tim

Tim Larson
Conference Coordinator

Phone: (404) 727-0730
Fax: (404) 727-0873

STUDENT

PUGWASH

Environmental Challenges for Developing Countries
Working Group Background Packet

Senior participants for the environment working group will include:

Anne Ehrlich - Associate Director, Center for Conservation Biology, Stanford University
Indira Nair - Department Head, Engineering and Public Policy, Carnegie Mellon University
Larry Ragsdale - Head of Human and Natural Ecology Dept., Emory University
Carl Brown - Director, Center for Change Management; development consultant
Kathy Harrison - Department of Political Science, University of British Columbia
Steven Gasteyer - Committee for Sustainable Agriculture in Developing Countries, World Resources Institute
Ruben Mnatsakanyan - Environmental Economist, Russian Institute for Natural and Cultural Heritage

Please take the time to carefully review these pages, as these articles will provide a foundation for the working groups discussion. These articles are not intended to fully cover the range of issues or perspectives that the working group will discuss. Rather, these pages are meant to be a starting point for further analysis. You are encouraged to bring any books or articles to the Conference that you feel might be of interest to the other participants. Please bring this packet to the Conference, since additional copies will not be available. The following articles are included in this background packet:

"Redefining International Security," by Jessica Tuchman Matthews (Foreign Affairs, Spring 1989)

"The Case that the World has Reached Limits," by Robert Goodland (Environmentally Sustainable Economic Development: Building on Brundtland, UNESCO, 1991)

"Mothering the Earth," by Margarita Arias (Development 1992:1 - Journal of SID)

"Some Thoughts on Population, Equity and Sustainable Development," by Perdita Huston (Development 1989:2/3 - Journal of SID)

"Sustainable Agricultural - What it Implies." (International Agricultural Development, May/June 1991)

"Population: Toward a New Economic Model," by Herman Daly (Bulletin of the Atomic Scientists, April 1986)

"The Greening of the Global Reach: Conflicts in Global Ecology," by Vandana Shiva (Third World Resurgence, No. 14/15)

"Still Negotiating: UNCED," by Marguerite Holloway (Scientific American, 5/92)

1638 R Street, NW Suite 32
Washington, D.C. 20009
Tel: 202 328-6555
Fax: 202 797-4664

STUDENT PUGWASH

Energy Options: Their Social and Environmental Impact

Working Group Background Packet

Senior participants for the energy working group will include:

Howard Brown - President, RPM Systems Inc. (energy and resource management consulting firm); former Professor at Wesleyan University: Science, Technology, and Society Program.
Loretta Smith - Research Associate, American Council for an Energy-Efficient Economy
Bill Keepin - Consultant to The Energy Foundation (expert on renewable energy and global warming)
Tony Speller - Member of Parliament, England (Member of House Energy Committee and Chairman of the All-Party Alternative Energy Committee)
Steven Ewald - Environmental Affairs, Georgia Power Company
Ashok Gadgil - Lawrence Berkeley Laboratory (expert on energy and development)
Terry Sabonis-Chafee - MPA student, Wilson School of Public Policy, Princeton University (formerly research associate at Rocky Mountain Institute)
Barry Abramson - Vice President, Engineering, Servidyne, Inc.
Scott Peters - U.S. Council for Energy Awareness

Please take the time to carefully review these pages, as these articles will provide a foundation for the working group discussions. These articles are not intended to fully cover the range of issues or perspectives that the working group will discuss. Rather, these pages are meant to be a starting point for further analysis. You are encouraged to bring any books or articles to the Conference that you feel might be of interest to the other participants. Please bring this packet to the Conference, since additional copies will not be available. The following articles are included in this background packet:

"Redefining International Security," by Jessica Tuchman Matthews (Foreign Affairs, Spring 1989)

"Energy for the Developing World," by Amulya K.N. Reddy and Jose Goldemberg (Scientific American, September 1990)

"ANWR: Forget the Caribou, Let's Talk Dollars and Sense," by David Houghton (Trilogy, January/February 1992)

"Needed: A No-Regrets Energy Policy," by Joseph Romm (Bulletin of the Atomic Scientists, July/August 1991)

"Time to Choose," by John Greenwald (Time, April 29, 1991)

"A New Energy Agency," by Greenpeace International (Development 1992:1 - Journal of SID)

"Alternative Energy: First Steps Down a Safer, Softer Path" (Sierra, March 1991)

1638 R Street, NW Suite 32
Washington, D.C. 20009
Tel: 202 328-6555
Fax: 202 797-4664

STUDENT

Health Care in Developing Countries
Working Group Background Packet

Senior participants for the health care working group will include:

Eugene Gangarosa - Professor, School of Int'l Public Health, Emory University; former Dean, American University in Beirut; former official at Centers for Disease Control (expert on international public health issues)
Deborah McFarland - Professor, International Health Care Division, Emory School of Public Health (expert on health care financing and development)
Belmont Williams - Visiting Professor, Department of Obstetrics and Gynecology, Morehouse College of Medicine (expert on child and maternal health care, from Sierra Leone)
Edward Maiback - Professor, School of Public Health, Emory University; consultant, U.S. Agency for International Development
Evvy Hay - MAP International
Carol Hogue - Centers for Disease Control
Josephat Ngaira - MAP International, Nairobi, Kenya
Andrew Vernon - Centers for Disease Control

Please take the time to carefully review these pages, as these articles will provide a foundation for the working group discussions. These articles are not intended to fully cover the range of issues or perspectives that the working group will discuss. Rather, these pages are meant to be a starting point for further analysis. You are encouraged to bring any books or articles to the Conference that you feel might be of interest to the other participants. Please bring this packet to the Conference, since additional copies will not be available. The following articles are included in this background packet:

"Redefining International Security," by Jessica Tuchman Matthews (Foreign Affairs, Spring 1989)

"Health Education," by Emma Robson (UNDP Source, March 1991)

"Some Thoughts on Population, Equity and Sustainable Development," by Perdita Huston (Development 1989:2/3 - Journal of SID)

"Safe Motherhood: From Advocacy to Action," by Anne Tinker (Finance and Development, December 1991)

"A Booster Shot for Children's Vaccines," by Ann Gibbons (Scientific American, March 1992)

"Africa's Growing AIDS Crisis," by Phyllida Brown (New Scientist, November 17, 1990)

"The Other Epidemic," by Jodi L. Jacobson (World Watch Magazine, May/June 1992)

"Malaria: Obstacles and Opportunities," by Stanley Oaks, Violaine Mitchell, Greg Pearson, and Charles Carpenter (editors) (A Report of the Committee for the Study on Malaria Prevention and Control, Division of International Health, Institute of Medicine, National Academy of Sciences, 1991)

1638 R Street, NW Suite 32
Washington, D.C. 20009
Tel: 202 328-6555
Fax: 202 797-4664

STUDENT

PUGWASH

Changing Dynamics of Peace and Global Security
Working Group Background Packet

Senior participants for the security working group will include:

Anne Cahn - Senior MacArthur Scholar, University of Maryland
Peter Gleick - Director, Global Environment Program, Pacific Institute for Environment, Security, and Development
Theodore Taylor - retired physicist, Los Alamos National Laboratory (worked on Manhattan Project,"miniaturized" the bomb)
Joyce Neu - Associate Director, Conflict Resolution Program, Carter Center
Ambassador (ret.) James Leonard - Executive Director, Washington Council on Non-Proliferation
Alexi Bykov - Russian Peace Foundation, Moscow
Todd LaPorte - Analyst, Office of Technology Assessment (worked on recent study on international arms trade)
Chris Smith - Senior Fellow, Centre for Defense Studies, Kings College, England; expert on third world military affairs

Please take the time to carefully review these pages, as these articles will provide a foundation for the working group discussions. These articles are not intended to fully cover the range of issues or perspectives that the working group will discuss. Rather, these pages are meant to be a starting point for further analysis. You are encouraged to bring any books or articles to the Conference that you feel might be of interest to the other participants. Please bring this packet to the Conference, since additional copies will not be available. The following articles are included in this background packet:

"Redefining International Security," by Jessica Tuchman Matthews (Foreign Affairs, Spring 1989)

"Putting a Safety Cap on Testing," by Tom A. Zamora (Bulletin of the Atomic Scientists, March 1992)

"Can the U.N. Stretch to Fit its Future?," by Tad Daley (Bulletin of the Atomic Scientists, April 1992)

"Briefing Paper: Nuclear Proliferation." (Union of Concerned Scientists, May 1991)

"Briefing Paper: Chemical Weapons and Arms Control." (Union of Concerned Scientists, June 1987)

"Lost in Space," by Aldric Saucier (New York Times, March 9, 1992)

"Weapons Labs: After the Cold War," by Eliot Marshall (Science, Nov. 22, 1991)

"War and the Environment." (Audubon, Fall 1991)

"Natural Security," by Hal Harvey (Nuclear Times, March/April 1988)

1638 R Street, NW Suite 32
Washington, D.C. 20009
Tel: 202 328-6555
Fax: 202 797-4664

Educating for the Socially Responsible Use of Technology
Working Group Background Packet

Senior participants for the education working group will include:

Nicholas Steneck - Director, Historical Center for Health Sciences, University of Michigan-Ann Arbor
Rachelle Hollander - Program Director, Ethics and Values Studies, National Science Foundation
Gary Chapman - Director, Computer Professionals for Social Responsibility
Joel Yudken - Program on Regional and Industrial Economics, Rutgers University
Bailey Barash - Science News Producer, Cable News Network
Taft Broome - Professor of Engineering, Howard University
Willie Pearson - Professor of Sociology, Wake Forest University
Barbara Sabonis-Chafee (facilitator)

Please take the time to carefully review these pages, as these articles will provide a foundation for the working group discussions. These articles are not intended to fully cover the range of issues or perspectives that the working group will discuss. Rather, these pages are meant to be a starting point for further analysis. You are encouraged to bring any books or articles to the Conference that you feel might be of interest to the other participants. Please bring this packet to the Conference, since additional copies will not be available. The following articles are included in this background packet:

"Some Thoughts on Population, Equity and Sustainable Development," by Perdita Huston (Development 1989:2/3 - Journal of SID)

"What Kind of Inquiry Can Best Help US Create a Good World?," by Nicholas Maxwell (Science, Technology, and Human Values, Vol. 17 No. 2, Spring 1992)

"Bulgaria: Preparing for the New Information Age," by Mary Lynn Hanley (UNDP World Development, January 1990)

"One Computer, One World," by Erik Hagerman (World Watch Magazine, January/February 1992)

"Better College Courses Are Key to Raising Science Literacy," by Ricki Lewis (The Scientist, January 6, 1992)

"Report Card: U.S. Undergraduate Environmental Education," by James P. Deavor (Environment, Science, and Technology, Vol. 26, No. 1, 1992)

"The Calculus of Education Reform," by Elizabeth Culotta (Science, February 28, 1992)

"Developing the Critical Thinking Skills of Adult Learners through Consumer and Environmental Applications of Chemistry," by Harold McKone and Barbara Banville (Journal of Chemical Education)

"You Don't Have to be a Rocket Scientist...," by John Doble and Amy Richardson (Technology Review, January 1992)

1638 R Street, NW Suite 32
Washington, D.C. 20009
Tel: 202 328-6555
Fax: 202 797-4664

STUDENT
PROJECT

Ethics and the Use of Genetic Information
Working Group Background Packet

Senior participants for the ethics and genetics working group will include:

Robert Murray - Professor of Pediatrics and Genetics, Howard University; National Academy of Sciences - Institute of Medicine, Hastings Center - Fellow, National Institutes of Health - Fellow
Peter Carpenter - Visiting Scholar, Center for Biomedical Ethics, Stanford University; Adjunct Professor of Epidemiology, McGill University
Robert DeHaan - Director, Ethics Center, Emory University
Ralph Trottier - Morehouse College of Medicine; lawyer, expert on legal implications of Human Genome Initiative
Nachama Wilker - Executive Director, Council for Responsible Genetics
Douglas Wallace - Director, Center for Molecular Genetics, Emory University
Jim Murtagh - Emory V.A. Hospital; formerly at National Institutes of Health (genetic researcher)
Lee Crandall - Professor, Human Genome Insurance Project, University of Florida
John Brown - Federal Bureau of Investigation

Please take the time to carefully review these pages, as these articles will provide a foundation for the working group discussions. These articles are not intended to fully cover the range of issues or perspectives that the working group will discuss. Rather, these pages are meant to be a starting point for further analysis. You are encouraged to bring any books or articles to the Conference that you feel might be of interest to the other participants. Please bring this packet to the Conference, since additional copies will not be available. The following articles are included in this background packet:

"Redefining International Security," by Jessica Tuchman Matthews (Foreign Affairs, Spring 1989)

"The Human Genome Project: New Tools for Tomorrow's Health Research." (US Department of Health and Human Services, National Institutes of Health, 1991)

"The Genetic Age," by John Carey (Business Week, May 28, 1990)

"The Dark Side of the Genome," by Robert A. Weinberg (Technology Review, April 1991)

"Trial by Genetics," by The Boston Women's Health Book Collective (Ms., September/October 1990)

"DNA Fingerprinting: Academy Reports," by Leslie Roberts (Science, Vol. 256, April 17, 1992)

"Genome Research in Europe," by Sir Walter Bodmer (Science, Vol. 256, April 24, 1992)

1638 R Street, NW Suite 32
Washington, D.C. 20009
Tel: 202 328-6555
Fax: 202 797-4664

Questions for the Environmental Challenges Working Group

1. Does the attempt by developed nations to impose unilateral restrictions on international trade in natural resource based products on environmental grounds negate the principle of the sovereign rights of each country to develop and control its own natural resources?

Since major environmental problems do not respect political boundaries, what institutional mechanisms can address these problems without resorting to Northern coercion?

2. What can be done to create awareness of environmental issues? What social forces will mobilize support for environmental movements in developing countries? How big a role can voluntary citizen action play in the pursuit of sustainable development?

3. If environmental degradation and the lack of economic development go hand in hand, and the pursuit of sustainable development requires that we address the issues of environment and development in a coordinated fashion-- Can we focus on global environmental issues in the absence of also addressing fundamental economic development issues? Does effectively addressing international environmental protection require us to simultaneously deal with the larger issues surrounding the North-South conflict?

4. Development is often accompanied by rapid cultural upheaval and change. How do likely cultural changes affect environmental policy? What steps can be taken to protect indigenous cultures and knowledge while permitting social mobility?

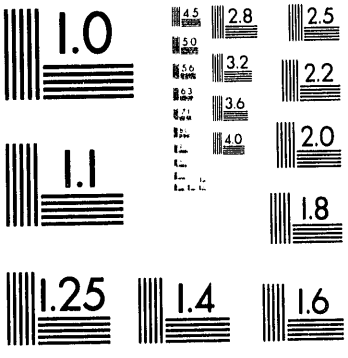
5. Can cessation of population growth slow depletion of resources, relieve pressures on the environment, and allow humanity more time to address the mistakes of past economic growth?

If so, how can positive population growth strategies be implemented without interfering with reproductive freedom? Can education and the spread of contraceptive technologies to women in developing countries help ease population pressures on the society and environment at large while also allowing more personal freedom for women?

6. What are the priorities for sustainable development? Ie. improving energy efficiency, developing alternative energy technologies, sustainable agricultural/land practices, controlling population growth, efficient and safe technology, reduced consumption in Industrialized countries, and the role of policy development.

7. Presently in the developing world, forests are being chopped down at an alarming rate. How can this be stopped yet at the same time secure sustainable fuel-wood alternatives and adequate land for cultivation? Do developed countries like the U.S., which has already cut down 96% of its own old-growth forests, have the right to forbid forestry practices which are practiced in their own countries?

8. What are the economic pressures, both internally and externally, which operate in developing countries and create poor land management and increased environmental deterioration? How do these factors also affect the health of the people? (Ie. by contaminating drinking water and depriving nutrients)


1.0
2.8
2.5
3.2
2.2
3.6
2.0
4.0
1.1
1.8
1.25
1.4
1.6

2 of 2

9. Are land use technologies and monocultures which have been developed in Northern Industrial countries appropriate for the tropical and/or semi-arid land of most developing countries located in the Southern Hemisphere?

10. Is it unethical to export pesticides and herbicides to developing nations when they have been banned in their own countries?

11. Industrial wastes from the developed world find "new homes" in the developing world. Industrial wastes from developing countries are frequently not disposed of properly. What should be done about this?

12. How can the recommendations put forward at the fora of concerned global citizens be translated into reality at the policy level of government and NGO's?

13. What role did the Earth Summit in Rio play in all of these issues?

14. What actions can we as individuals take in our everyday lives to solve these problems?

Questions for Energy Working Group:

1. Energy options, even "free" sources such as wood, are quite expensive, either directly or in terms of certain opportunity costs. What are the hidden costs of energy, and how do they discriminate?

Is it possible to formulate a systematic method for calculating, at least minimally, down stream and hidden fuel/energy costs?

2. Should electricity rates also reflect environmental externalities associated with its generation? If yes, how could we devise a scheme wherein poorer sections of the society are not discriminated against?

3. Can the implementation of new energy technologies such as "clean coal" take place without having adverse environmental effects?

4. Many environmentally disastrous attempts at industrialization have occured in the form of foreign aid to the developing world. Poorly planned, large-scale hydro-electric dams, for example, have often hurt the Third world more than helped. What are the developing world's energy needs and how can they best be met?

5. The availability of vast quantities of cheap fossil fuel, along with the widespread ecological destruction created by the uncensored extraction and release of these resource's biproducts back into the environment, helped "fuel" the industrial revolution in developed countries. In light of this, how will declining oil resources and responsible environmental regulations affect the role of development in the Third world in the next few decades?

6. How can we change our oil-based economic infrastructures to adapt to the expected oil shortage as peak production falls off within the next century?

7. At this point in time, what kinds of economies of scale alternative energy infrastructures are possible given the fact that oil and natural gas are cheap, the economy is bad, and our society frequently uses band aid approaches to fix complex problems?

How can the development of alternate and renewable energy technologies or products become more affordable?

8. More than the technology, there is a need for behavioral change whereby people have to stop wasting energy. Should there be a system of economic incentives to foster this?

9. Is the emissions trading program, laid out in the Clean Air Act Amendments of 1990, unfair in that the externalities are transferred from one region to another under the guise of market-based economies?

10. Can we leave development of large scale solar and wind energy to private enterprise or should the federal government intervene?

11. How could we implement a system in which we match energy quality with our energy needs?

12. What is the outlook for methane recovery from landfills? What are the possibilities of widespread use of solid waste as an energy option? How useful are various energy waste products as construction materials? How can glossy printed materials such as magazines

be put to valuable secondary uses after their use as literature? (.... discuss the possibilities as recycling various wastes as sources of energy potential)

13. How do public perceptions of new technologies affect their development and dispersal within the society? How are these perceptions created and or manipulated by the energy sectors involved? For example, how do public perceptions of nuclear energy match up with the real societal risks and how effective is the nuclear industry in trying to overcome this "unsafe" perception by promoting itself as an environmentally "clean" technology?

14. How does possession of, or access to, fuel/energy resources figure into issues of international security? As these resources become more scarce, will we see increasing conflicts? Will access to renewable energy technology be used as political or economic leverage?

Questions for the Health Care Working Group

1. The World Health Organization identified a Primary Health Care system as essential for "Health for All in 2000" to be reached. What are the obstacles to Primary Health Care and how can they be minimized?

2. How can Basic Health Care be expanded in developing countries to cover the rural majority?

3. Is it feasible to conduct in-vitro researches or studies in developing countries where financial resources are limited?

4. How can preventative health techniques and proper hygiene be most effectively communicated in developing countries? What is the best way to get local communities involved so that they perceive personal benefits from participating in these activities?

5. Since financial resources are scarce, how should funds be allocated to provide health care in both the industrialized countries and the Third World? Answers should involve a discussion of such issues as preventative health care vs. curative health care, in-patient vs. out-patient treatment, the merits of population control, and the allocation of funds between rural and urban areas and rich and poor citizens.

6. What are the health effects related to industrialization in a developing country? What policies should be implemented to minimize the environmental health risk of air pollution and deteriorating water quality due to this development?

7. What can be done to improve the sanitation in rapidly growing cities? How can infrastructure be designed to deal with the urban sprawl?

8. What are the health effects concerning the use of pesticides, herbicides and inorganic fertilizers in developing countries, and how can these be avoided?

9. How can the problem of inadequate food for growing populations in developing countries be addressed? Does foreign food aid help or hurt the occurance of malnutrition in the long run? Would enabling developing countries to be self-sufficient in food production help this situation, and how could this be accomplished?

10. How can the occurance of Malaria be controlled in tropical climates? Why has there been a resurgence of Malaria cases in the last decade?

11. In response to accelerating population growth, and concern for this effect on both health and the environmental integrity (which coorelate with the quality of life), aid is given for family planning programs in developing countries. How do these programs impact the lives and social structures of the recipients?

12. How do STD's affect the health of women and children in developing countries? How can the spread of these diseases be controlled with limited resources?

13. The AIDS pandemic joins the world in shared concern for prevention of further spread of this disease. How can countries of the world best assist one another in fighting the disease?

14. How might the traditional institutions of midwifery, herbal medicine, and sacred healers be incorprorated into a modern national health care system?

Questions for the International Security Working Group

1. There seems to be a trend in global politics to lump everything under the banner of internationalism and cooperation that relies on interdependence. Though it may sound like a wonderful thing, what does it mean for the new ethnic entities that are just starting to define themselves? What are the boundaries of globalization and independence? How do we go about defining a world order that balances the two?

2. One of the incongruities in our world is the fact that territorial sovereignty remains a cherished core value of nations, while many of their activities such as trade and finance are borderless in nature. This is also true for many global problems such as climate change, deforestation, pollution, etc. Can nations transform their concepts of sovereignty to allow for coordinated transnational solutions to problems, and to participate effectively in global activities?

3. How will the upsurgance of nationalism that is currently taking place in many parts of the world affect international relations and overall global stability?

4. What is the role of economics in global security? How do we go about making economic security an equal partner in our new world order on an equitable basis for all countries?

5. In what ways would the free market need to be constrained in order to promote ecological stability and social justice?

6. What role might communications technology play in facilitating global peace? What dangers to peace might it pose?

7. Can global security be achieved in a state system? In what ways does national security undermine global security? Can national security be redefined to encompass global security?

8. What role should the United Nations and other international organizations play in the New International Order? Can the UN serve as a realistic peacekeeping institution? What structural changes are necessary to assure the UN an effective role?

9. How will the increasing involvement of women in national and international politics change relationships between nations?

10. The proliferation of weapons of mass destruction in Third World countries have increasingly become an international security concern. Past efforts to halt the spread of nuclear weapons technology to countries such as China and Israel have failed. Are the acquisition of these mass destruction weapons by Third World countries inevitable, or can the trend be realistically reversed?

11. What will be the effects of nuclear proliferation in the Developing World?

12. What will be the impact of the end of the Cold War on disarmament?

13. As the threat of Communism has waned at the end of the Cold War, should the United States perhaps divert some of its massive defense spending from military buildup to expanding efforts that enhance security in a broader sense (such as strengthening infrastructure, providing economic security, health care, education, and environmental sustainability)?

Questions for the Education Working Group

1. Should the ethics of social responsibility, as related to technology, be taught as a class unto itself, or should ethics be integrated as an essential part of every discipline?

2. What is a viable definition of "social responsibility", and who gets to define it? Should it be based on environmental, humanistic, or other considerations such as politics or economics?

3. What programs or governing bodies need to be implemented to effect and moderate ethical changes in educational policy, and who should pay for them? Should such an organization be organized hierarchically or democratically?

4. How can minorities and women be encouraged to pursue math and science courses so that they would be empowered to enter technological fields? Is this discrepancy a culturally socialized phenomena that exists in the student's self concept or does the fault for unequal representation in the sciences rest on the shoulders of educators and their biased classroom methodology?

5. What incentives can government and industry generate to encourage gifted people to teach, rather than entering industry for purely monetary or power seeking purposes?

6. Does part of the socially responsible use of technology include the responsibility for respecting a particular culture's right **not** to participate in the "technetronic" society?

7. Some scholars believe that what makes poor people poor is that they are less well-off in relation to the sociocultural standard that directs and stimulates desires. Assuming this is true, does an advance in technology signal a widening gulf between classes within societies, and between the industrialized and the non-industrialized nations of the world?

8. How can we alter the socioeconomic prejudices inherent in economic infrastructure in order to ensure the socially responsible use of technology?

9. Given that the future of education will mandate the incorporation of societal values, what will be the differing roles of government, industry, research scientists, academics? Where will their interests and responsibilities converge?

10. To what extent should people and institutions have access to the results of experimentation on agriculture, livestock and various technologies? How do we increase the knowledge and awareness of precautions necessary for the user of technology ? (Ex. farmers' use of pesticides and fertilizers.)

11. How can a society educate for flexibility in thinking, transferability of skills, and enthusiasm for the efficiency of technology?

12. Is it possible for More Developed Countries to help finance the education of persons in Less Developed Countries without the well intentioned financier imposing cultural, environmental or technological bias in the curriculum? Given what we know about the North-South dialogue, is it not the best solution for MDC's to help LDC's to help themselves?

13. Is it possible for the countries south of the Sahara to attain the standard of technology of the more developed nations in Europe and America?

14. How can the people in LDC's be fully educated in the utilization of technology so that they will be able to achieve their goals?

15. If religion is being replaced by science, how is science, a value-free, pure system going to replace the ethics and values of a religiously based system? How can these systems work together to help each other?

16. How does the media influence the public and therefore the government on scientific studies and developments? Is there any way to get around the economically biased sensationalism of the media?

17. Is there a trend toward scientists thinking more about the implications of their work? If so, what role would the political system play in this "socially responsible" new scientific community?

18. Why are all the top administrative positions dominated by white males? Is there any way to work toward better representation?

19. Is the rigidity of the classification and delineation of various disciplines the factor that severs the ties of science to history? Why do some people fear the word "interdisciplinary"? Why do scientists, politicians and other leaders of society repeatedly make the same or similar mistakes throughout history when there are so many examples to learn from? Why must we reinvent the wheel? Should math and science be interdisciplinary by nature?

20. Which nations are at the forefront of investing in socially responsible technologies? How does this investment stimulate economic growth for these nations?

21. How can socially responsible technologies be marketed to private sectors of the Western World? Less Developed Countries?

22. Are there any models or examples for reaching, captivating interest and educating those people who are apathetic toward environmental science and awareness of appropriate technologies?

23. How will the end of the cold war affect investment in socially responsible technology?

24. Who decides what uses of technology are socially responsible? If the education is to happen in public school, will the government decide? Can we trust the government?

Questions for the Ethics and Genetics Working Group

1. Who would benefit from the Genome Project information? Who would be at risk?

2. In the case of genetic information privacy, who will ensure the privacy of an individual's genetic information? Who would have access to this information?

3. Consider the policy implications of genetic testing for third parties, namely health care insurers and employers. Ought genetic screening be used as a criteria for insurance coverage or employment?

4. What kind of legislative measures should be taken to regulate the technology and minimize its negative effects?

5. To what extent should a physician or counselor advise a couple about options to avoiding risks related to having affected offspring?

6. Who would be qualified for making decisions regarding genetic engineering/counseling?

7. Who would determine what a "birth defect" is? By the same token, who would determine what a "bad" gene is?

8. Would economic concerns come into play concerning genetic technology? Would the expense make it feasible for the wealthy only?

9. Would genetic enhancement techniques create social inequalities?

10. What problems can arise from the incorrect identification of genes or form incorrect individualized gene therapy that could result in unforeseen consequences in the individual?

11. Would these funds and resources be better allocated in finding solutions and funding programs that more directly address the social maladies of our country: homelessness, poverty, education, and health care etc.?

12. Since 95% of the human genome contains rapidly evolving DNA, with little biological relevance, should research be focused only on those genes relevant to specific diseases or conditions?

13. Will the genome map of each race be mapped, or will there be one general blueprint? Will we use the general blueprint to measure what is normal- correct- natural? Furthermore, will we use such a blueprint to analyze genetic "normalcy", "dominancy", "resistancy", or "correctness" in the same way that we use standardized tests to assess intellectual ability without regard to level of exposure, experience, or environment?

14. What far reaching implications could the Human Genome Project have for other countries, or is this just an ethnocentric concern?

Appendix F

Student Research Paper Titles

STUDENT PAPER TITLES
(listed by working group)

Educating for the Socially Responsible Use of Technology

"Implicit Gender Bias, A Priori Discrimination, and Fragmentation in the Intellectual Socialization of Twentieth Century Scientists," (Jose A. Camberos, Stanford University)

"Expert Disagreement: A Regulator's Nightmare," (Christina Chociolko, Simon Fraser University at Harbour Centre)

"Building the Foundation for Social Responsibility in the United States," (Sherry Gasper, Holyoke Community College)

"Public Perceptions and the American Landfill," (Russell S. Hamilton, Harvey Mudd College)

"Educating Engineers to Develop Technology and People," (S. Jean Heller-Hendrick, University of Pittsburgh)

"The Political System and Its Control of Technology," (Robin May, Occidental College)

"How to Educate Whom and About What: Socially Responsible Use of Technology. A Comparative Example Analysis and Its Assessment Impacts on Developing Countries," (Imann Muzirman, Michigan State University)

"Education for the Socially Responsible Use of Technology," (Simson Mallet Nutsugbodo, University of Ghana)

"Fear of Flying and Other Technophobias," (S. Jean Simmons, Villa Julie College)

"The Underpinnings of Court-Ordered Cesarean Sections: The Case of Angela Carder," (A. Elizabeth Van Dusen, Yale University)

"A Chautaugua on Science and Technology: The Difference Between Theory and Practice," (Scott Wanner, University of Illinois-U/C)

Environmental Challenges for Developing Countries

"Human Settlement and Environmental Health," (Babajide Alade, University of Lagos, Nigeria)

"Famine, Drought and the Destruction of Forests in Wello (Ethiopia)," (Msmaku Asrat, Rensselaer Polytechnic Institute)

"'Wolves in Sheep's Clothing?': The Role of Multi-National Corporations in Developing Countries' Environments," (Gabrielle Coady, SUNY-Buffalo)

"Overcoming the Constraints Developing Countries Face in Complying with International Environmental Treaties: A Few Modest Proposals," (Eric Jay Dolin, Massachusetts Institute of Technology)

"Transport of Metals Through Soil Applied With Poultry Litter Fines," (Aditi Dutt, University of Georgia)

"An Economics of Sustainability: Towards a Model of Intergenerationally Equitable Economy," (Christopher S. Elmendorf, Oberlin College)

"The Predicament of Economic Growth and Environmental Issues Encountered by Developing Countries," (Christopher E.C. Gan, Louisiana State University)

"Possible Constraints to the Introduction of Alternative Fuels in Africa: Rootfuel as an Alternative to Woodfuel," (Scott G. Haase, Washington University, St. Louis)

"Energy Use, Environment and Security in South Asia," (Mizanur Khan, University of Maryland)

"The Challenge of Breaking the Developing Nations Debt-Environmental Degradation Cycle," (Katie Kroehle, Carnegie Mellon University)

"Preserving Biodiversity: Alternatives to Tropical Deforestation and the Role of the United States," (Andrew F. Martz, Lewis and Clark College)

"An Opportunity for Hope: Women, Sustainable Development, and Kenya's Green Belt Movement," (David P. O'Brien, Dartmouth College)

"Agriculture and the Environment in Sub-Saharan Africa: Where Does the Conflict Lie and What Are Its Implications?," (Abikok Cuir Riak, Blufton College)

"International Environmental Governance and Suggested International Economic and Environmental Order," (Efpraxia Pamela Salpoglou, Clark University)

Energy Options: Their Social and Environmental Impacts

"James Bay and Hydro-Quebec: An Energy Development Strategy in North America," (David A. Blecker, Rensselaer Polytechnic Institute)

"Aspects of the Biomass Option," (Spencer L. Geswein, Rose-Hulman Institute of Technology)

"Oil and Oil-Refining Industry of Russia. Environmental Impact on the Territory: Social and Environmental Consequences (Case Study-Bashkir Republic of Russia)," (Gulnara Ishkuzina, Brown University)

"Energy in Future: Need for a New Approach," (Nikolai N. Kukharkin, Moscow Institute of Physics and Technology)

"Energy Sanity," (Julie Neff, Spokane Falls Community College)

"An Energy and Equality Producing City," (Daniel O'Connor, San Francisco)

"The Particular Features of International Cooperation on Environment Protection in the Information Sphere," (Anna Orlova, Information Department, "Ecology and Industrial Wastes" Company, Moscow)

"Economic and Environmental Assessment of Electricity Generation Options: Striking a Balance Towards Sustainability," (Ashok Sarkar, University of Wisconsin-Madison)

"The Carbon Tax: Implications and Alternatives," (Chuck Scott, University of Maryland-College Park)

"Current Energy Options in the United States: A Case Study of the National Energy Strategy," (Marialena Selvaggio, Pennsylvania State University)

"Fuelwood's Social and Environmental Impact," (Nicola Short, Georgetown University)

"The Environmental Impacts of Oil Dependency," (Michael J. Urbanas, Pennsylvania State University)

"Energy at Real Costs: Restructuring Electricity Rates to Promote Conservation," (Peter Wold, St. Olaf College)

"Advanced Lighting Technology: A Resource in Regional Development," (Andrew R. Young, University of California-Berkeley)

Changing Dynamics of Peace and Global Security

"Security and Economics in Northeast Asia," (John Bertland, University of Pennsylvania)

"Peace and the Resolution of Ethnic Conflicts--Process of Politics or Ideology?," (Kerem Durdag, University of New Hampshire)

"Building Foundations for Global Peace," (Tim Heath, College of William and Mary)

"Democracy as a Pathway to Global Security," (Kim Holley, University of Maryland)

"The Creation of an International Criminal Court," (Irma Lehtonen, The University of Helsinki)

"Strategic Stability Analysis through Mathematical Modeling and New Realities of the Former USSR," (T.A. Matiyasevich, St. Petersburg University)

"Environment, Resources and Conflict: The Changing Context of International Security," (Michael D. Purugganan, University of Georgia)

"The Third World in the Post Cold War Era," (Rajesh Rajagoplan, CUNY)

"A Case Study of Germany: An Exploration of the 1992 European Dilemma," (Julia Shelton, George Mason University)

"Environmental Degradation and Global Stability," (Matthew Udziela, University of British Columbia)

Health Care in Developing Countries

"Health Care in Developing Countries," (Dominic Brefo, University of Ghana)

"Health in Development," (Karen Brown, Columbia University)

"Health Care in the Philippine Setting: The Cancer Patient," (Ferdinand M. Guevera, University of Philippines)

"Archipelago Lessons: AIDS in the Islands. A Comparative Study of Cuba, Haiti and Hawaii," (Lyta Hamm, San Francisco State University)

"AIDS in Africa: Challenges for National Policies and International Aid," (Mark Johnson, Virginia Technical University)

"Unsafe, Unhealthy and Unfair: The Effect of Poor Working Conditions in Multinational Corporations on the Health of Third World Women Workers," (Kristin Loerzel, College of William and Mary)

"The Expanded Programme on Immunization in Nigeria Since Alma-Ata," (Dr. A. Olajitan, Nigeria)

"Investing in People: A Socioeconomic Analysis of Health Care in Developing Countries," (Morris Reid, University of Akron - Ohio)

"Health Care in Developing Countries With Emphasis on Ghana," (Kwaku Frederick Sarfo, University of Ghana)

"Perspectives on Health in India," (Jina Shah, SUNY Health Science Center, Syracuse)

"A Comparison of Deliveries at a Hospital Versus a Maternal and Child Health Center," (Abdalla I. Shehata, Tulane University)

"Prevention of AIDS in Sub-Saharan Africa," (Danny Toub, Emory University Medical School)

"Health Trends and Their Causes in Developing Nations," (Jim Vierengel, Carnegie Mellon University)

Ethics and the Use of Genetic Information

"The Ethical Dilemma of Genetic Screening," (Gowthami Arepally, M.D., Emory University)

"Diabetes, Ethics, and the Human Genome Project," (Alan Bean, Delta College)

"Eugenics and the Consequences of the Human Genome Initiative: The Pressure to Become Perfect," (Lorelei Brown, Pomona College)

"The Human Genome Project: Implications for Mice and Men," (Colleen Cebulla, Macalester College)

"Ethical Issues in Genetic Engineering," (Lita Hegemier, Indiana University-East)

"Getting the Goods on the US Human Genome Project and Getting Them Right! Exploring the Limits of Consequentialism," (Jan C. Heller, Emory University)

"Mapping Our Gens: Janis and Pandora," (Melise D. Huggins, Tuskegee University)

"The Impact of the Human Genome Project on Developing Countries," (Denise Armond de Oliveira, Emory University)

"Genetic Testing in the Medical Marketplace," (David Perlman, Emory University)

"Do Ethical Arguments Influence Management Decisions? A Case Study Using Genetically Engineered Plants as a Model System," (Kristina Sinemus, University of Darmstadt)

"The Use of Genetic Tests in Public Health: Considering the Implications and the Need for Safeguards," (Kristen Testa, Johns Hopkins University)

"From the Ethics of Kaiadas to the Ethics of the Human Genome Project: Mapping the Old Human Project for Democracy," (Aristotelis Tympas, Georgia Technical University)

Appendix G

Working Group Reports

Environmental Challenges for Developing Countries
Working Group Report

Historically speaking, development, as a theory and in practice, has been focused on quantitative rather than qu litative principles. The focus of World Bank programs and other development initiatives has always been economic productivity, as measured by GNP, no matter what the cost in human or environmental terms. This narrow definition has led to bleak situations in many developing countries, as well as in many developed countries (look at our own inner cities). Despite decades of effort and the expenditure of billions of dollars on development programs, there is little indication that the process of environmental degradation is being halted, let alone reversed. Indeed, the situation seems to be getting worse. While the notion of 'sustainable growth', suggested by the Brundtland Commission as a way to redefine development, has inspired a valuable public discussion, it is probably impossible to achieve in the long run. The world's economic systems can not continue to grow indefinitely, at least not without major changes to our environment.

In the midst of the debate on these issues, delegates representing ten countries gathered at the SPUSA International Conference for the *Environmental Challenges for Developing Countries* working group. In spite of the difficulties which sometimes can arise with such diversity, our discussions were very congenial rather than confrontational and a great learning experience for all. Indeed, the diverse ethnic, experiential and personal make up of the working group provided invaluable resources for the group as a whole, as we sought to define and explore issues. What is 'sustainable development?' How can we decouple the notion of 'development' from 'growth' in order to move toward sustainability? How can we best measure and analyze our efforts, in both a quantitative and a qualitative fashion? Besides the frequently used terms, 'More Industrialized Nations' and 'Less Industrialized Nations,' should we define a new term for 'Degrading Industrialized Nations' which would include some of the so called 'Developed Nations?'

Virtually all members of the group, whatever their background, agreed that the bioregional approach, which argues for managing the environment in a holistic fashion that recognizes the integrity and importance of ecosystems, is a sensible way to address resource and pollution problems. The debate heated up, however, when the group moved from this agreement on principles to a discussion of how bioregionalism could be operationalized in light of the fact that ecosystems don't respect traditional political jurisdictions. Some argued that the bioregional approach requires improved cooperation among existing political units. Others felt that the only way to achieve bioregionalism is to dissolve or at least severely weaken traditional political jurisdictions and create new international forms of government, such as a 'global environmental protection agency.' Understandably, the challenges inherent in the creation of a global EPA or similar structures inspired another interesting and inconclusive debate on how such international governmental structures could be established and why nations would consent to be, in effect, stripped of their sovereignty in some regard.

A number of participants felt that, under the rubric of technology transfer, the Developed Nations should send environmental experts to the Developing Nations in order to help the latter implement sustainable policies. No sooner had this proposal been mentioned than some of the participants from developing countries pointed out that it was not expertise that their countries lacked, but the financial means and technological hardware necessary to put that expertise to work. The group agreed that this was an important distinction. After all, developing countries are populated by many smart and capable administrators, scientists, and policy makers. The real challenge is to carefully consider the social, economic and

political climate within which these individuals must operate, when designing foreign aid and technology transfer initiatives. In this regard, western industrialization models for development can be inappropriate for developing countries. While the expertise and aid that Developed Nations have to offer are essential components of a sustainable future, one should be careful to avoid the assumption that this expertise is all important or inherently sufficient.

Another element of the expertise question has to do with indigenous knowledge. Local people who have the closest relationship with their environs often can provide information that can be used in designing sustainable practices, especially those having to do with agriculture. Rather than approach a situation with the 'answers,' development agencies, in particular, should seek to learn from those they want to help. Part of this learning process involves understanding how the indigenous people will react to new programs. The importance of this understanding in ensuring the success of such programs was highlighted in one of the student papers as follows:

> "In many African villages, water supply projects fail because they [do not] take account of the fact that the task of gathering water serves a social purpose for women to get together and talk. Wood gathering may serve a similar social purpose, giving women a chance for a long absence from overbearing males, in addition to the main objective of gathering fuel. Issues such as these must be carefully considered."

This focus on indigenous knowledge and culture fit in well with our discussion of the need to utilize both top-down and bottom-up strategies to the implementation of environmental programs.

In recognition of the 'environmental challenges' posed by rapid population growth in the Developing Nations, we explored the obstacles of implementing western control measures such as Family Planning, contraception and educational programs. First of all, the pervasive Catholicism in many developing nations simply does not allow women access to contraception. Secondly, from a cultural point of view, children are often equated with virility, which makes population control measures unacceptable to many men even if women desire access to it. Finally, uneducated women often believe that children are a 'boon from the heavens' and simply do not question or want to interfere with this process. Hence, many members of the group felt that it was crucial to work toward an increased financial and educational backbone for all women in the world, resulting in increased self-esteem and independence for women to address these obstacles. As Pat Schroder said, "A woman can have a brain and a uterus too!"

One of the frustrations of the group was our inability, in some instances, to come up with specific steps that should be taken to implement those principles of sustainable development on which there was substantial agreement. It is one thing to support a top-down and bottom-up approach to program implementation, but quite another to map it out. Aspirational language is inspirational, but we wanted more than nice sounding policy prescriptions. At the same time, we realized that in light of the time constraints, the complexity of the issues addressed, and the lack of case-specific data, coming up with detailed proposals was unrealistic. This frustration, however, should not be construed as an indication of despair or failure. We were all heartened by the quality of the discussion and each other's dedication to the cause of sustainable development. Our time together was clearly a success. And we were all confident that as our academic and professional careers progress, so too will our ability to influence the sustainable development debate, ultimately contributing to the process of transforming aspirations into reality.

Energy Options: Their Social and Environmental Impacts
Working Group Report

A central question presents itself in planning for a sustainable global future: how can we meet the rapidly expanding energy demand, and at what cost? The demand for energy will continue to increase as energy provides a means to meet basic human needs for increasingly large populations virtually everywhere. For example, half of the planet's population depends on fuel wood to provide meals; inhabitants of the more extreme latitudes rely on heating to survive harsh climate conditions; and energy is required to build and operate sanitation systems that prevent communicable disseases from decimating heavily populated areas. Now more than ever there exists a direct link between access to energy and survival. However, energy issues extend far beyond the comparatively narrow realm of technology and environmental science. To address the broader scope of energy problems, our working group, *Energy Options: Their Social and Environmental Impact*, organized the analysis of energy options and their implications into the categories of technological issues, institutional influences, and political interplay.

From the technological perspective there is much promise for a sustainable future, assuming that the new technologies are nurtured and implemented. Energy efficient technologies offer huge potential for environmental and economic savings. One compact flourescent lamp factory, for example, can displace the energy need that is provided by a base-load, coal-fired power plant at 1/139 of the cost. There is also much room for efficiency improvement. Japan, who has yet to meet its full potential of energy efficiency, still enjoys twice the efficiency of the United States, and four times that of the former Soviet Union.

Renewable energy also shows much promise for the future and is economically competitive today. Wind power can currently be produced for $.07/kWh and solar thermal for approximately $.08/kWh, as compared to $.094/kWH for nuclear power. These renewable energy costs are expected to drop even lower in the near future. Nuclear power has also seen many recent innovations, but the question of safe waste disposal remains unsolved.

If technology promises to solve our energy problems, then why is there such great concern about energy now? At this point, political and institutional factors lend serious complication and challenge to our vision of an economical, equitable, and environmentally benign energy future. In most of the world electric power is heavily subsidized, while energy efficient and environmentally sound technologies are not. This absence of financial incentives encourages the wasting of energy which restricts the availability of energy services. To further pave the way for energy efficiency, utility energy sales should be decoupled from profits. The emphasis should be placed on providing energy services, i.e., the end-use benefits, and not placed simply on the sale of electric power.

Harmful environmental and health externalities associated with the fossil fuel and nuclear industries have also been ignored in energy pricing, and prices have not reflected the social costs. Placing the cost of externalities "up-front" in the form of an environmental tax would help ensure the success of beneficial energy technologies and would prevent our and future generations from having later to pay the "cost" of today's energy consumption. Instituting an externality tax is not a simple solution, however. It must be done in a way that equitably distributes the burden of transition to a soft energy path until the new technologies have proliferated. In addition, though it is clear that non-renewable power sources are unsustainable, the complexity of our biosphere makes it difficult to foresee the broader effects of pollution and consumption, much less attach a price to them.

In conclusion, the *Energy Options* working group exposed some of the incredible complexities of the problems surrounding energy and sustainability. The problems are global in magnitude and influence. Accordingly, they require solutions which embrace a global perspective.

Health Care in Developing Countries
Working Group Report

The *Health Care in Developing Countries* working group was comprised of participants from seven countries, with many varied perspectives and experiences represented. Because health care in developing countries is largely dependent on foreign aid, the relationship between donor and recipient was a recurring theme. We paid particular attention to programs which failed to be effective because they did not, or were not able to address the self identified problems of the community affected. Without a sincere and sustained dialogue between donor and recipient , it seems impossible to plan and implement sustainable health care initiatives.

In order to illustrate this, we would like to invite you to tune in to the **Health Channel**. Here on "Health-Talk", we have Dr. North from the Developed World, and Ms. South representing the Developing World:

Dr. North: We viewed a colleague's slide presentation a while ago, and were deeply concerned about an underdeveloped village. We decided that the best intervention was to send a team to run a modern clinic in your village. What went wrong?

Ms. South: For the first few weeks, people from my village did not go to the hospital, for they thought that people went there to die. My people eventually went, hoping to get better, but then the doctors left the clinic. Nothing has changed, really. We still have malnutrition, poor water and disease.

Dr. North: The clinic is a state-of-the-art facility and we sent a well-qualified staff to run it and train others. Granted, many of the diseases are recurring and our follow up procedures could have been better, but what more could we have done? Tell me, South, how can we assist you?

Ms. South: In the work of a non-governmental organization in my village, we've seen that, above all, community participation builds health. One must respect good and bad traditions, and reason with people. In this way, people feel like they own the project, and eventually improvements occur. Furthermore, one must listen to the needs of the people. We often promote agriculture, breast feeding, and the equal status of women in the name of comprehensive community health and empowerment.

Dr. North: Your approach sounds workable in a small area, but what about an entire country or world?

Ms. South: This is the true challenge we face. I am convinced, however, that the change must be from the bottom up to be effective and permanent.

Bearing in mind this kind of bottom-up approach, we explored many structural issues during the course of the week. These included increasing the status of women and the availability of family planning services in order to increase the health status of a society. Other needs discussed were improved sanitation, food supply, transportation, rural health services, occupational safety and the reduction of pollution hazards. In addition, we discussed the need for governmental "political will" to make health a priority and the need for political stability. Many hard won health gains have been eliminated by political instability and war.

However, we must not forget that, in reality, this sort of mutually respectful dialogue between North and South rarely occurs. The largest barriers to improved health care are the same barriers which inhibit success in nearly all aspects of society and science. These

barriers are not due to a lack of technology, research or ideas, nor even to a lack of resources. Rather, they are due to the way in which we interact, as individuals, as communities, as organizations, and as nations. Our critical examination of health care issues in developing countries led us to conclude that this was the point of failure in society's efforts. Overcoming this is the challenge for a sustainable world today.

The type of *koinonia,* or commonality of community, that has been identified as occurring in the 1992 Student Pugwash USA International Conference as a whole occurred in our working group as well. We ask you to look for long-term solutions, listen to other opinions, and learn to think in a new way.

Changing Dynamics of Peace and Global Security
Working Group Report

The first issue that needs to be recognized when considering the concept of global security is that of definitions. What is peace? Peace and Security for whom? A comprehensive notion of peace and security must include several factors. Peace is not just the absence of war, but the absence of the potential for war, and as such must incorporate issues of health and education. Similarly, a country cannot be called secure if it does not fulfill the basic needs of its people. Security is inextricably linked to national well-being and therefore must address such issues as environmental degradation, resource allocation, and sustainable development.

The end of the Cold War has resulted in both challenges and opportunities for global peace and security. While there is increased cooperation between the superpowers, there are also new instabilities being created as smaller nations, previously armed along Cold War lines, experience a marked decrease in weapons shipments from their former guardians. While increased economic interdependence opens avenues for cooperation, all countries must balance this with the need to retain national sovereignty. Accordingly, this diverse spectrum of tensions demands an equally diverse spectrum of solutions, alliances and treaties.

Europe is beginning its well publicized cooperation through the EEC, but the same dynamism can be found in Asia with no formal organizational body. The spread of democracy can be seen in light of this search for new solutions, as well. However, while the current model of liberal democracy may create stability, this is by no means a foregone conclusion. Democratic leaders are prevented from more extreme actions by their constituencies. We must search for ways to improve all governmental structures if we hope to meet the challenges that lie ahead.

Proliferation of nuclear weapons and the arms trade must be stopped, and the US must take the lead here. The most recent U.S.-CIS treaty (June 1992) is a promising first step, but the U.S. should continue with new actions and military reductions. India and Pakistan may proliferate, but both are looking for paths to peace, and should be shown the way. Of course, deeds are more powerful than words, but words are also important and must be expressed.

Issues of equity and access must also be addressed, in our search for global peace and security. For developing nations especially, security is linked to the procurement of common basic needs. Thus, resource allocations must be revamped, from the individual to the national level. Sister city programs must be strengthened and expanded, for direct aid between cities is often more efficient than hierarchical governmental programs. Governments must learn to cooperate as Finland has done by donating its old computers and technology to the Balkans. Furthermore, success in these types of resource allocation and reallocation programs is greatly enhanced by visibility of accounting practices and information exchange. If you can show people where all the funds are going, pressure increases on leaders to stop the accumulation of wealth and work toward a more equitable distribution. In the interim, a world court could help to mediate conflicts and aggression centered around these issues. It need not have the power to pass judgement to be effective.

Above all, knowledge empowers. We must give more money for education -- specifically primary education. This is usually more efficient when carried out through non-governmental agencies. In addition, we must give materials, even simple ones such as

paper and textbooks. Texts must not be ethnocentric, however, as the educational initiatives we support must be part of a foundation to build a global community.

Peace is a process, not a goal. To fully engage in this process, we must blend the visionary with the pragmatic. We must take big steps and small steps when appropriate. In an effort to decrease international secrecy and increase levels of trust, we must foster new ways of understanding through communications, student exchanges, and community living. Towards this end, reducing international airline fares is one small step that should be considered. On a larger scale, European developments give new models for economic sharing. West-East relations can reduce tensions and increase transparency. Perhaps we should change the common saying to, "Act globally, act locally."

Peace is not static; we move through it. We must increase trust through avenues such as the Student Pugwash USA International Conferences. We must stop hiding from each other and begin to act as if we are all part of one family. We are.

Educating for the Socially Responsible Use of Technology
Working Group Report

The Education working group had to coalesce from a very broad base...and a long title: *Educating for the Socially Responsible Use of Technology.* The papers submitted and discussed interpreted 'education' to involve everything from how to best inform the public on the environmental hazards of landfills; to criticism of gender bias and other flaws built into formal education; to the unique problems of technological education in the face of extensive defense and the aerospace industry influence.

From the diversity of topics to the diversity of individuals, to the diversity of educational and experiential backgrounds (students ranged in age from 19 to 53), the group worked to identify themes that could bring the far ranging topics into relationship. We developed a list of 36 educational issues which had been raised with three major categories emerging: 1) broad public education, as in media and print, 2) educating for values as a base for socially responsible decision making and global sustainability and 3) formal education in classroom settings.

Discussion around the 'what' and 'how' of broad public education led to an increased awareness of the magnitude of issues that call for our attention, of the critical importance of maintaining respect for a diversity of views in addressing these issues, and of the tremendous power the media has to mold public opinion within this process. Many members of the group felt that we must strengthen lines of communication between traditional 'educators' and the 'educated' for it is more often than not that solutions to problems are found within the richness of human diversity than by 'experts' seeking solutions in isolation.

In order to enhance our understanding and facilitate our exploration of an educational agenda for instilling values as a base for socially responsible decision-making and global sustainability, we generated a list of 21 criteria for consideration in developing a working definition of 'socially responsible technology.' The most inclusive and acceptable definition was that "socially responsible technology must be environmentally and economically sound, politically and socially acceptable over time, and it must meet the needs of today's population without compromising the needs of future generations." Furthermore, in order to explore the implications of such an educational agenda on a more individual level, we shared 'personal plans of action' of how we might go about learning and sharing with others our visions for a sustainable world. These ranged from developing a global support network for activists in developing countries, to producing a program on this conference for the local public access cable channel, to pursuing teaching in the sciences at the high school level as a career.

Our final task was to address the needs of formal education at various levels. In keeping with the concepts evolved in prior discussions, the group concluded that the goal of formal education should be the cultivation of globally educated citizens, with skills in critical thinking, creativity, empathy and the ability to communicate effectively. These citizens must also be ethically concerned and able to develop, select, and use culturally sustainable technologies. In any attempt to reach this goal, however, formal education must first switch its emphasis from the imparting of information to the building of skills for 'learning how to learn' and for making responsible choices. Also seen as important was the commitment of those possessing knowledge and experience to mentor the next generation. Only then will citizens be truly educated and empowered to act as agents of change.

One conference participant, José Camberos, reflected upon the 'why' of educating oneself and others on the creation of a sustainable world. José shared with the participants of the 1992 SPUSA International Conference one possible answer he found universal, "because I contain the capacity to choose. Freedom. Unless we respect and cherish freedom, in the ideal, we impose a personal bias to all our judgements. Any practical explicit solution to our common problem ultimately presupposes some bias because personal experience limits our capacity for action....Lao Tzu speaks of the world as a process, not an ideology, not a political, economic, environmental or social agenda. The world Lao Tzu envisioned refers to an awareness of universal incompleteness in the process of becoming complete. Commitment to such an ideal transcends even our most noble actions."

Ethics and the Use of Genetic Information
Working Group Report

INTRODUCTION
Genetic technology has made astounding progress in the last 15 years, and we can only speculate where we will be in the next 15. Only now do we have the technology to delve into the molecular structure of our human inheritance and try to shed light on questions of human nature. Over the next 15 years, the human genome endeavor, a concerted international effort, will attempt to map all 50 to 100 thousand human genes to their chromosomal locations. Another phase of the project will determine the exact sequence - the text, if you will - of these genes. The stated impetus of a project of this magnitude is to prevent and hopefully treat some of the 4,000 already known genetic disorders which afflict humanity. The information to be gained will lift a veil of uncertainty from our collective identity, but we must be wary of this technology. Given these ideas, we, the members of the *Ethics and the Use of Genetic Information* working group, have prepared a statement on our recommendations for the use of the information gained from this endeavor.

PREAMBLE
Modern genetic research will open many new vistas and create many new challenges. The greater knowledge of humankind's genes can be a window into important facets of our inner self and of all humanity. The human genome endeavor should be conducted in a manner that will benefit all humanity, and we should be well prepared to deal responsibly and ethically with the information that will be produced by this endeavor. However, we must recognize that our genes are not the sole determinant of our being; we are social beings, inextricably a product of our environment and behavior.

In particular, our working group perceived a need for increasing public awareness and understanding of the human genome endeavor in particular and of science in general. People of all disciplines and backgrounds need to become involved in and welcomed into the scientific process. Science in general can and must become more democratic. We call upon scientists to provide easily understood and accessible information. We also call upon the public to better educate themselves on these issues in order to make informed decisions.

To encourage the beneficial uses and applications, and to discourage intentional or accidental abuse, misdirection, or misapplication of genetic research, we, the members of the *Genetic Information Working Group* , believe that the following guidelines should be adopted regarding the human genome endeavor and similar applications of genetic technology.

I. All information resulting from the human genome endeavor, except that which discloses an individual's genetic information, should be public property and be available to all nations and people. All nations that possess the technological capacity to assist with the genome endeavor and that stand to benefit from the information have a responsibility to participate (financially and with human, material, and scientific resources) to the extent they are capable.

II. At its current funding rate, the human genome endeavor will produce information of fundamental importance at a rapid rate and with great potential for both use and abuse. It is the obligation of the global community to develop in parallel the ethical, legal, social, economic, and political tools, policies, principles, and procedures necessary to use this information to the benefit of humanity, and in an ethically sound manner. In addition, this parallel effort must go beyond research to include broad dialogue and public participation.

III. The priorities of the human genome endeavor (and of publicly supported science in general) should focus on the needs of the global community. In particular, priorities shall not be determined by racial, gender, or discriminatory preferences.

IV. The results of the human genome endeavor shall be used to the benefit of all. Great care shall be taken that the results are not used to the detriment of any people, based on race, ethnic, or gender groups or against people who do not have economic, racial, or political power.

V. All individuals associated with the human genome endeavor have an on-going responsibility (which is not terminated by the completion of their particular involvement in specific studies) to ensure that appropriate steps are taken so that the information obtained from the effort is used in an ethical and responsible manner. The human genome endeavor may give humanity new appreciation of our diversity; it is critical that this information not be used to alter that.

VI. No individual's genome should be typed as their genetic information without their prior consent or a court order. An individual's identified genetic information should not be disclosed to anyone without that person's prior written consent, except by court order.

VII. Any identification of an individual based on genetic techniques must be accompanied by an explicit statement regarding the known uncertainty of that identification. Any advice, counseling or proposed medical intervention based on genetic evaluation should be preceded by an explicit statement regarding the known uncertainty of that evaluation.

VIII. Attempts to use predictive genetic technologies in decisions regarding access to and equity of education, employment and insurance are especially subject to misinterpretation, misunderstanding, misuse, or abuse. If allowed, the use of predictive technologies in these areas requires regulation and monitoring sufficient to prevent misuse of information and to safeguard human dignity and human rights.

CONCLUSION

The exchange of information and dialogue are essential prerequisites for the development of mutual trust and respect, but only the sharing of our inner selves, our hopes, and our fears can establish the basis for truly working together to understand and solve the fundamental problems facing humanity.

Appendix H

Personal Plan of Action

Student Pugwash USA's Seventh International Conference

Visions for a Sustainable World:
A Conference on Science, Technology
and Social Responsibility

Personal Plan of Action

"Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has."

- Margaret Mead

Student Pugwash USA seeks to extend the interactive, educational experience afforded through the International Conference and our other programs to as broad an audience as possible. We believe it is crucial that *all* individuals feel they share a responsibility in addressing social and global problems, and ensuring that science and technology are used with forethought to their implications for society. In order to achieve this goal, we rely on the energy, enthusiasm and commitment of our program participants to help us increase awareness of global problems and to encourage participation in their possible resolution.

As participants of Student Pugwash USA's 1992 International Conference, we encourage you to consider actions to extend the Conference, its impact and educational value to your home community and/or campus. In doing so, you will help empower and inform others, ensuring that they feel (as you probably do) that all citizens share a stake and a role in creating a safe, sustainable global future. The possibilities for extending the International Conference experience are limitless. The following provides just a sampling of ideas and options possible. We look forward to meeting with you during the week to discuss these ideas, and to learning of your interest in empowering others.

How to Extend the International Conference Experience:

• Initiate/organize a local, campus-based chapter of Student Pugwash USA. (The National Office of Student Pugwash USA has a Chapter Coordinator, and provides a variety of organizing guides, leadership seminars, and services to assist you.)

• Write a newspaper article regarding the International Conference and your involvement for your college/university or local newspapers.

• When you return to school, contact campus organizations (such as environmental, peace/security, women's, or human rights groups) and arrange times to speak to their members about the role and importance of young people and students in addressing global issues.

• When you return to school, speak with professors about making presentations in their classes, informing them about your experience at the Student Pugwash USA International Conference.

• Organize an event or get-together with friends or peers focusing on the International Conference and what you learned. (Share pictures, papers, or borrow video footage from the Student Pugwash USA National Office.)

• Educate your community by speaking in locally organized lecture series, such as those coordinated by the following groups:

- Local libraries
- Church/religious organizations
- Rotary Clubs
- Kiwanis/Lions Clubs (US groups)

• Help educate younger people (such as elementary, junior high or high school students) on issues at the juncture of science and society, and help increase awareness of the impacts of science and technology in their lives in the following ways:

- Meet with secondary school teachers and principals about introducing concepts of STS (Science, Technology and Society) in secondary school.

- Arrange a time to speak in a secondary or high school class.

- Speak to youth clubs, such as Girl Scouts, Boy Scouts, 4-H Clubs or religious groups.

• Take advantage of the opportunity to share your experience or views via electronic mail systems. These include EnviroNet and PeaceNet (among many others), or electronic bulletin board systems (such as the Student Pugwash USA bulletin board).

• Publish your research. Student Pugwash USA will work with you to distribute your International Conference research paper to interested journals and publications.

PERSONAL PLAN OF ACTION ACCOMPLISHMENTS OF 1992 INTERNATIONAL CONFERENCE PARTICIPANTS

The following list describes several of the accomplishments achieved by student participants since the 1992 International Conference. These actions had been identified by students in their Personal Plans of Action as activities they could pursue to extend the dialogue of the Conference.

- After graduation, one participant has undertaken a bike tour around the country with stops at local colleges to gather information of volunteer programs. Upon completion of the tour, the student will assemble a book on how to start or get involved in volunteer programs and opportunities.

- A student has co-edited a book on international environmental treaty making.

- A student in the *Ethics and Use of Genetic Information* working group has decided to pursue a graduate degree in Ethics and Genetics. Since the Conference he has prepared another paper on the social implications of genetic testing that he is submitting to various professional journals.

- A student has initiated Ghanaian Student Pugwash (based at the University of Cape Coast, Ghana). The group now has a membership of 80 students and has organized several events.

- As a result of the chapter organizing sessions held at the 1992 International Conference, approximately **10 new US and 2 foreign Student Pugwash chapters** have been formed, while many other students have become active in other Student Pugwash USA activities and programs.

- After participating in the World Game Workshop at the International Conference, one student held a similar workshop at her college.

- A student has begun work on an energy and environmental audit of her college.

- Several students have initiated recycling programs at their apartment complexes or campuses.

- A student has organized a conference on business and the environment at Prescott College in Arizona.

- Many students have given presentations on the International Conference and the issues that were addressed to groups at their school or in their community.

- A student conference participant has initiated a class at the University of California at Berkeley titled "Towards an Environmentally Sustainable World."

*Follow-up letter for Personal Plan of Action

April 1, 1993

Dear 1992 International Conference Participant,

Greetings! I hope this letter finds you well. I, and the rest of the staff at Student Pugwash USA, have greatly enjoyed keeping in contact with many of you over the past months. We are very excited that so many of you have remained active with Student Pugwash USA through our Chapter Program, Mentorship initiatives, and Professional Pugwash. For those of you we have not spoken with recently, we look forward to speaking with you again soon.

A lot has come out of the Conference last June: eleven participants have started Student Pugwash chapters; several seniors and students have started an international business venture; three students' papers were accepted for publication; and many participants have accomplished exciting projects which they outlined in their Personal Plans of Action. In addition, you have all demonstrated a strong commitment to carry forth the ideas, energy, and enthusiasm that was exhibited at the Conference. We applaud your efforts, as it is only through the work of *individuals* that we can hope to realize a more secure, sustainable, and equitable world!

I have enclosed a copy of your Personal Plan of Action form to follow-up on our "next steps" project. We are very interested to learn of any experiences or activities over the past year that have related to your PPA or the themes of the Conference. This is important to us, as we are often looking for "next step" ideas to share with others. It is also helpful to us, as we seldom hear about outcomes of our Conferences. So please write or call (800-WOW-A-PUG) me to let us know what you have been up to!

Here in Washington, exciting initiatives have been brewing:

- *Professional Pugwash* is nearly one year old, with active chapters and exciting events springing up around the country.
- The fourth edition of Student Pugwash USA's **New Careers Directory: Internships and Professional Opportunities in Technology and Social Change** has just been published, featuring profiles of hundreds of organizations and opportunities.
- SPUSA's new project, the *Science, Technology, and Society Global Issues Project*, will be launched this summer, leading to the compilation of an extraordinary, student-authored, educational guidebook. Short background papers will profile over 100 technologies and issues, their impact on society, and next steps individuals can take to address them. This resource will be used in high schools and colleges around the country.

Give us a call to find out more about these initiatives, or if you are interested to be an author for the *STS Issues Guidebook*. With this letter, I have also enclosed an updated address list for all of the 1992 Conference participants so you can "reconnect" with people you may have lost contact with.

Best of luck in all your endeavors, and don't forget to stop in if you're ever in Washington!

Sincerely yours,

Tim

Timothy Larson

STUDENT PUGWASH

BOARD OF DIRECTORS

David C. Leifer, Chair
Taft Broome
Anne Cahn
Peter Carpenter
Rosemary Chalk
Charles Chung
Takeshi Kurt Eto
Kathy Harrison
Sally Lilienthal
Indira Nair
Nancy Pfund
Jeff Porten
Nicholas H. Steneck

Jeffrey R. Leifer, Founder

BOARD OF ADVISORS

Sissela Bok
Honorable George Brown
Audna England
Richard Graham
Hal Harvey
Walter Kohn
Shirley Malcom
Richard Nelson
Linus Pauling
Victor Rabinowitch
Roger Revelle
Jonas Salk
Frank von Hippel
Victor Weisskopf
Herbert York

NATIONAL STAFF

Betsy L. Fader
Executive Director

Timothy J. Larson
Conference Coordinator

Michael H. Smith
Management Director

Justine Thompson
Chapter Coordinator

1638 R Street, NW Suite 3
Washington, D.C. 20009
Tel: 202 328-6555
Fax: 202 797-4664

Institutions with Established Chapters

Armand Hammer United World College
Boston University
Bronx High School of Math and Science
Carnegie Mellon University
Cass Technical High School
College of William and Mary
Delta College*
Emory University*
Galesburg High School
Georgia Institute of Technology*
George Washington University
Georgetown University
Howard University
Illinois Math and Science Academy
Kalamazoo Area Math and Science Center
Marywood College
Michigan State University
Michigan Technological University
Middlebury College
Montgomery-Blair High School for Science and Technology
North Carolina School for Science and Math
Occidental College
Pomona College
Purdue University
Rensselaer Polytechnic Institute
SUNY - Syracuse/Syracuse University
Stockton State College
Thomas Jefferson High School for Science and Technology
University of California - Berkeley
University of California - Santa Barbara
University of Connecticut
University of Maryland - College Park*
University of Notre Dame
University of Oklahoma - Norman
University of Pennsylvania
Villa Julie College*
Worcester Polytechnic Institute
Wright State University

Institutions with Developing Chapters and Active Student Pugwash USA Representation

Allegheny College
American University
Amherst College
Appalachian State University
Arkansas School for Math and Sciences
Baltimore Polytechnic Institute
Bard College
Bates College
Battle Creek Area Math and Science Center
Battle Mountain High School
Bronx High School of Science
Bowling Green University
California State University - Chico
Cantonsville Community College
Catholic University
Colgate University
Colorado School of Mines
Colorado State University
College of DuPage
Conroe Academy of Science and Technology
Cornell University
DeAnza High School
DePauw University
Dickinson College
Duke University
Eleanor Roosevelt School
Fairport High School
Georgia State University*
Hampshire College
Harvey Mudd College
Holyoke Community College*
Hood College
Indiana University*
Johns Hopkins University*
Louisiana State University*
Marine Academy of Science and Technology
Massachusetts Institute of Technology
Michigan State University
Mt. St. Mary's
Mt. Vernon College
New Jersey Institute of Technology
North Carolina State University
Ohio State University*
Pennsylvania State University*
Pioneer Academy for Agriscience and Environmental Science
Princeton University
Sandia Preparatory High School
San Jose State University
San Francisco University
Santa Monica Community College
Sidwell Friends School
Stanford University
SUNY - Oswego
Texas A&M University
The New School for Social Research
Tuskegee University
University of California - Davis
University of California - LA
University of Chicago
University of Colorado - Boulder
University of Georgia
University of Illinois - Urbana/Champaign

University of Iowa
University of Massachusetts - Amherst
University of Michigan
University of Minnesota
University of Nevada - Las Vegas
University of Northern Colorado
University of Pittsburgh
University of Rochester
University of Texas - Austin
University of Wisconsin - Madison*
Vassar College
Virginia Institute of Technology*
Wake Forest University
Washington University
Yale University

*indicates schools where chapters have been initiated as a direct result of the 1992 International Conference.
(As of 1/93)
(* *This list does not include the dozens of schools whose students have participated in conferences, or the campuses with Student Pugwash USA contacts)

Appendix I

Publicity, Press and Media

PRESS AND PUBLICITY FOR STUDENT PUGWASH USA'S 1992 INTERNATIONAL CONFERENCE

Student Pugwash USA's 1992 International Conference, *Visions for a Sustainable World: A Conference on Science, Technology and Social Responsibility*, received outstanding media coverage. The Conference's press and publicity have helped to raise public awareness of critical global technology and society issues, while involving more people in Student Pugwash USA's programs. The following list details the press received for the 1992 Conference:

- **Associated Press** Wire Service Day Book (available to news agencies throughout the United States);
- Feature on **Paul Harvey**'s syndicated program on the **ABC Radio Network**;
- Feature on Cable News Network's (**CNN**) ***Earth Matters***, which aired repeatedly for 3 weeks in the United States and around the world on **CNN International**;
- Interviews of International Conference participants on **CNN's *Futurewatch***;
- Broadcast of Conference plenary session, "The Road from Rio: Prospects for Global Environmental Cooperation," on **WABE**, an Atlanta affiliate of **National Public Radio**;
- Live interviews of Conference participants on **WAFS**-Atlanta radio station on the social and ethical implications of the Human Genome Project;
- Live interviews of Conference participants on **WAFS**-Atlanta radio station on the United Nations Conference on Environment and Development (UNCED);
- Over 20 articles in the local and regional print media, including articles in:
  - *Atlanta Journal-Constitution*
  - *Brunswick News*
  - *Columbus Ledger-Enquirer*
  - *Creative Loafing*
  - *Daily Citizen News*
  - *Daily Tribune News*
  - *DeKalb News-Sun*
  - *Deluth Daily News*
  - *Emory Wheel*
  - *Jonesboro Daily News*
  - *Sandy Springs Neighbor*
  - *Statesboro Herald*
  - And other local and college newspapers;
- News bulletins and public service announcements on numerous local and regional radio stations.

In addition, brief summaries of the 1992 International Conference appeared in many organizations' publications, ranging from the United Nation's *Disarmament Newsletter* to AAAS's *Professional Ethics Report*.

Not book

Student Earth Summit Staged At Emory

During the same month as the Earth Summit in Rio de Janeiro, Emory University hosted a conference for 100 talented students to foster understanding of environmental and ethical concerns in relation to the science and technology careers they plan. Student Pugwash USA, formed in 1957 at the behest of Albert Einstein and Bertrand Russell, takes its name from the city in Nova Scotia where the organization first met. Emory hosted students from 27 countries and 60 international leaders and experts. Featured in the week's events was the World Game Workshop, an interactive simulation that allowed students to explores issues such as environmental problems, literacy, population and global resource distribution. Above: Aditi Dult, India; Mark Johnson, USA; Takesi Kurt Eto, USA; Kristina Sinemos, Germany; and Jose Camberos, USA; participate in the World Game Workshop.

Jim Cook Jr./Staff

Atlanta Journal-Constitution June 23, 1992

Students talk about technology at Emory

By Carla Schnurr and Arthur Brice
STAFF WRITERS

They've come to Emory University from 30 countries to try to understand each other just a bit better.

And to hear the scientific and political leaders of tomorrow tell it, they're doing just that this week at the Student Pugwash USA International conference.

"This is a great opportunity for me to interact with people from different parts of the world," said Ashok Sarkar, a 28-year-old native of New Delhi, pursuing a graduate degree at the University of Wisconsin. "We're learning different perspectives on different issues."

Begun in 1957 as the brainchild of Albert Einstein and Bertrand Russell, Pugwash conferences focus on the responsible use and ethical implications of science and technology. The name is taken from Pugwash, Nova Scotia, where the first conference took place.

While national conferences occur biennially in the United States, international meetings happen every two to three years. The previous meeting was in Boulder, Colo., three years ago. This year's conference began Sunday and ends Friday.

Participants meet in the mornings in small groups with experts and concentrate on subjects from ethics and the use of genetic information to the dynamics of peace and global security. Afternoon and evening sessions are open to the public and structured around panel discussions and question-and-answer sessions with specialists from government, universities and industry.

Many of the students from developing countries used their own savings and were aided by Student Pugwash to pay their way to the conference. For several, this was their first trip outside their homelands.

WALTER STRICKLIN / Staff

Indira Nair, a Carnegie-Mellon University student, listens to a Pugwash panel discussion Monday at Emory.

"I wanted to see the other side of the world," said Stanley Ahorlu of Ghana. "I hope to take back to Ghana a broader view of issues, a comprehension of what Americans feel about my country, Third World countries overall and global issues in general."

When asked what he would most like Americans to understand about his country, Jaroslaw Jazwinski of Poland said: "There are a lot people who are afraid of opening up to the world. We need people to give us a little bit of help and patience at the beginning. We have to learn to think in a new way."

Some students like Pugwash because it offers them accessibility to experts in their fields.

"I love the crossing of the barriers," said Aditi Dutt of Bombay, India, a graduate student at the University of Georgia, "the big shots and the small fries."

But the major benefit, participants agreed, comes from learning more about each other.

"As scientists, we're taught the technical aspects but very little social and policy application," said Michael Purugganan, a 28-year-old UGA graduate student from the Philippines. "The conference shows us how to combine it with our work so that we can understand when we get back that there's a world out there and how we fit in it."

Atlanta Journal-Constitution June 23 1992

Students, experts explore science, technology role

By Carla Schnurr
STAFF WRITER

Student leaders representing 30 nations will join 60 experts on technology, public policy and the environment at Emory University this week to discuss the role of science and technology in solving global social problems.

The international conference, hosted by a group named Student Pugwash USA, is designed to open a dialogue on issues ranging from global environmental cooperation to ethics and the use of genetic information.

This is the seventh international meeting of the Pugwash conference, which grew out of the fertile minds of Albert Einstein and Bertrand Russell. The annual scientific conference focuses on the ethical and social implications of science and technology. It takes its name from Pugwash, Nova Scotia, the original gathering place.

"The goal of the conference is to encourage people to think about how science and technology affect their everyday lives," said Timothy Larson, conference coordinator. "That's something that people don't normally do."

Young scholars from Ethiopia to Russia and El Salvador to India were chosen by leading educators and will participate in daily discussions with experts from government, industry, public policy and academia.

Topics will include health care and environmental challenges in developing countries, the social and environmental impact of various energy options, and the dynamics of peace and global security.

Student Pugwash USA is an annual conference that focuses on the ethical and social implications of science and technology.

On Thursday evening the conference will assess the accomplishments of the United Nations-sponsored Earth Summit conference, which ended Sunday in Brazil.

Student Pugwash USA is a non-profit organization run by recent graduates and young professionals. It has more than 100 chapters around the country and a membership of 7,500 students and professors. The chapters involve students of both the sciences and liberal arts in campus and community recycling projects, lecture series on technological and social issues, courses on the environment and public policy, and outreach programs to high schools nationwide.

The organization receives financial support from a variety of government, foundation and corporate sources, including the National Science Foundation, the U.S. Department of Energy, the National Institutes of Health, the Rockefeller Foundation, Emory University and Georgia Power Co.

The meeting, being held at various sites on the Emory campus, started Sunday and runs through Saturday.

CREATIVE LOAFING FREE

PUZZLING THE PATH

BY GREG LAND

Who controls the weapons? The water? Do the benefits of genetic manipulation outweigh the risks and ethical concerns? How much of the world's population do we "write off" for the survival — or convenience — of the rest of us? And aren't *they* us?

These and other questions, baffling in their complexity and dependent on factors that change seemingly by the second, are among the topics being discussed, evaluated and dissected at Emory University this week, where a carefully chosen group of students join an array of scholars and experts, seeking ways to bend the bewildering issues facing life on Earth to the tortured frame of technology, economy and realpolitik.

The occasion is the seventh annual conference for Student Pugwash USA, an organization with branches in 18 countries that seeks to explore the ethical and social responsibilities facing scientists and professionals in many fields. Even the theme of this year's meeting is daunting — "Visions for a Sustainable World: a Conference on Science, Technology and Social Responsibility."

The group finds its name and guiding tenets in the 1957 Conference on Science and World Affairs held in Pugwash, Nova Scotia, under the direction of Albert Einstein and Bertrand Russell. Their "Pugwash Manifesto," which delineated the responsibility of scientists and technologists to consider the ethical and social ramifications of their work, became the basis for Pugwash International, and the student organization meeting here.

The 100 students from 26 countries represent some of the sharpest minds in a variety of disciplines, and those working with them, both in lectures and in small workshops, come from areas as diverse as the Washington Council on Non-Proliferation to the Department of Defense, the FBI to the CDC, the Carter Center to Rockwell International — in all, some 60 experts from here and abroad, exploring problems and formulating solutions.

"People dream about the future in terms of Star Wars," says John Dietz, a recent graduate of Emory and one of the events' organizers. "One of the keys to the future is finding ways to use this technology to meet all these problems — they're all related...."

"We're not here to form a consensus," says Jim Vierengel, a recent graduate from Carnegie/Mellon University, "we're here to exchange ideas....The number of people here who can tell us first-hand what it's going to be like when we're working in our fields; we can bounce stuff off of 'em, and they can tell us we're fulla shit or whatever...."

And the ideas are flying — in the hallways, over beer and pizza, and most certainly during the lectures and workshops.

"The conference on media ["Communicating Science and Technology to the Public"] just turned into a brawl," says Michael Puruggnan, a student from the Philippines studying at the University of Georgia, by way of example. "The guys from CNN and The *Washington Post* really caught hell."

But catching hell — and figuring ways to avoid living in it — is what this conference is all about. Consider some of the topics: "International Security in the World of the 21st Century," "Weapons Development Under a New World Order," The Human Genome Initiative: Disease Prevention at What Cost?"

As the scope of subjects indicates, organizers want to accent the need for action in a wide range of endeavors — as was continuously pointed out in last week's World Summit in Rio, the world's future is inextricably linked with environmental degradation, with poverty, with distribution, use and abuse of resources, with disease and health care, with funds diverted for arms and military uses — and with how people think about these issues.

Acknowledging the group's origins in the first Pugwash Conference, which was primarily concerned with the threat of the hydrogen bomb, Peter Gleick, the director of Global Environmental Program for the Pacific Institute for Environment, Security and Development cited more far-reaching concerns for today.

PATH continued page 11

PATH

continued from page 8

"Some argue that the threat of nuclear war is gone; certainly, it is changed," he said. "But there are other things going on simultaneously....The challenges are many times more difficult than the nuclear threat — they are much more complex today. But, with a will, human resources can be brought to bear on those problems...."

Perhaps the reason for such conferences was most graphically pointed up the following evening, during a question and answer period following the weapons development discussion. A student demanded of Theodore Taylor, a nuclear scientist at the Los Alamos National Laboratory bomb project during the early '50s, how "grown-up human beings" could engage in such an enterprise.

Taylor, now an outspoken opponent of nuclear arms, replied: "The sense of personal power was extraordinary — the president, congress, everybody was depending on *us*....You mention 'grownups' — the image at the project...was *like* little kids. We were running around in shorts and ball caps...playing with the biggest fire of all." ■

Student Pugwash USA continues at Emory University through Friday, June 19, with afternoon and evening events open to public. For information, call 727-0730.

DAILY NEWS

DULUTH, GA
DAILY 48,830

MONDAY
JUN 15 1992

158 BURRELLE'S XM

Students try to solve problems of world

The conference aims to encourage discussion of the implications of the use of science and technology.

By Elizabeth Lee
Daily News senior staff writer

ATLANTA — A team of students, assembled from across the United States and the world, is meeting at Emory University this week to solve a few of the world's problems. Among the items on the agenda: world peace and security, energy, the environment, health care, the socially responsible use of technology and the ethics of genetic engineering.

"We grew up in the '80s, a time of greed and selfishness, and I have a lot of hope that people in my generation will remember that and realize you can't live that way anymore. That they would develop some thoughts about how we're going to survive, (to create) a sustainable world. That's really what this conference is about," said Lorelei Brown, a senior at Pomona College in Los Angeles.

The gathering, Student Pugwash USA's seventh annual international conference, aims to encourage young people to discuss science and technology issues to gain a greater understanding of the social and ethical implications of their use. Some 100 students from the United States and 30 other countries have gathered at Emory for a week's worth of workshops. They're teamed with 60 business and government leaders and policy-makers for discussions.

"We're trying to train people going into the science field about how their work will impact society, so they can make better judgments about the work they do, and how it impacts society, and also educate future policy-makers," said Tim Larson, the Pugwash conference coordinator.

The organization draws its name from Pugwash, Nova Scotia, the site of a 1957 conference on science and world affairs organized by Albert Einstein and Bertrand Russell. The two men urged scientists to consider the social and ethnical aspects of their work. There is also a senior Pugwash group which holds annual conferences that unite scientists and policy-makers to discuss international security, development and the environment.

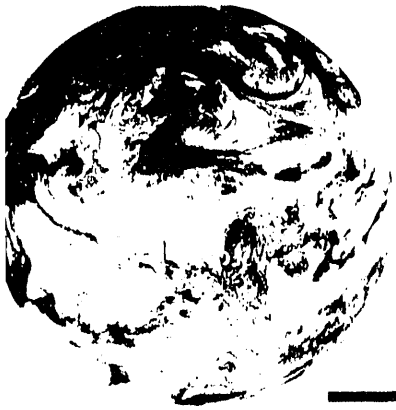
"I always believe you need many types of these (conferences)," Tim Heath, who is majoring in philosophy at the College of William and Mary, said Sunday. "The more you talk, the more you explore your opportunities, the more you realize there are options. For people to get together and talk, it's of enormous importance for people in a democratic society."

Idealism and optimism was in ready supply among students at the conference's kickoff on Sunday. Jina Shah, a medical student from New York, is among the participants assigned to spend a week discussing health care issues in developing countries. She hopes to share information about how Third World countries have handled health care for the poor with others at the conference, in hopes that the United States will adopt some of those methods. She believes some developing countries have mastered more efficient ways of distributing health care to the people than the United States has.

Several events connected with the conference are free and open to the public. They are:

- The Road from Rio: Prospects for Global Environmental Cooperation, a panel discussion with three participants from the environmental summit in Rio de Janeiro, Brazil. Panel members are Elizabeth Bowen, president-elect of Physicians for Social Responsibility; Mohan Munasinghe, the chief of the environmental policy division at the World Bank; and John Reid, director of corporate environmental affairs at Coca-Cola. The discussion starts at 7 p.m. Thursday in the Robert Woodruff Health Sciences Center on Clifton Road.
- Communicating Science and Technology to the Public, a panel discussion with George Page, who narrates and produces the PBS series "Nature"; Malcolm Gladwell, senior science writer for the Washington Post; and Bailey Barash, senior science producer for CNN, 2 p.m. today in White Hall, Room 208.
- Weapons Development Under the New World Order, a panel discussion with Theodore Taylor, a scientist who worked on nuclear weapons design at Los Alamos, N.M.; Col. David Tanks with the Institute for Foreign Policy Analysis in Washington, D.C.; and Herbert Leifer, a senior defense scientist at Rockwell International; 7 p.m. today in the Woodruff [illegible]

SUMMER 1992



Tough Questions

STUDENT PUGWASH USA

Envisioning a Sustainable World: Science, Technology, and Social Responsibility

By Tim Larson
Conference Coordinator

On June 2, 1992, over 100 heads of state, along with thousands of individuals representing government ministries, NGOs, religious groups, indigenous peoples, and the press, converged on Rio de Janiero, Brazil. The occasion was the United Nations Conference on Environment and Development (UNCED) and the Global Forum. The 'Earth Summit', touted as the largest gathering ever of world leaders, differed markedly from its predecessor in Stockholm in 1972 — in particular, 'development' was a central issue of concern. No longer could environmental degradation be separated from economic development, burgeoning population growth, technological innovation, income distribution, or global resource consumption. The economic and environmental fates of the countries in the South were recognized to have a causal link with quality of life in the North.

As past Student Pugwash USA International Conferences have highlighted, the challenges and problems facing countries all over the world have become inextricably intertwined. The repercussions of social, economic, political, and environmental change in one country can be felt by countries in another hemisphere. Furthermore, environment, trade, and social services remain tightly connected, as GATT negotiations have illustrated. Public health is directly impacted by seemingly disparate issues such as soil erosion, urban migration, deforestation, and religion. The resulting complexity creates substantial difficulties in devising and implementing solutions, since a seemingly beneficial solution can have devastating impacts on another important sector or in another geographic location. In fact, the Pugwash Conferences on Science and World Affairs were initiated to encourage scientists and world leaders to look beyond isolated disciplines and isolated problems and consider the larger global setting.

Student Pugwash USA's Seventh International Conference, ***Visions for a Sustainable World: A Conference on Science, Technology, and Social Responsibility***, aimed not only to acknowledge the challenges of increasing interdependence, but also to discuss solutions and future directions. The Conference, held at Emory University in Atlanta, Georgia, from June 14-20, 1992, united 100 graduate and undergraduate students from 27 countries along with over 65 experts from government, industry, and academe for a week of intensive analysis. Students and professionals participated in the following working groups throughout the week:

- Environmental Challenges for Developing Countries
- Energy Options: Their Social and Environmental Impacts
- Health Care in Developing Countries
- Changing Dynamics of Peace and Global Security
- Educating for the Socially Responsible Use of Technology
- Ethics and the Use of Genetic Information

Since a plethora of information exists which documents and details the problems that confront us in these areas, the Conference sessions and working groups concentrated on exploring the relationships between issues and developing potential solutions which could take into account these interrelations.

continued on page 5

Inside

1992 International Conference	2
Senior Perspective	3
Multi-Cultural Participation	4
Visions for a Sustainable World	6-11
International Section	8-9
Personal Plans of Action	12

Student Pugwash USA is a tax-exempt, non-profit educational organization dedicated to inspiring a commitment among students and professionals to solve global problems through the responsible use of science and technology. Through a variety of educational activities, SPUSA provides current and future leaders with a forum to examine critical social and global issues

From the Executive Director

Person-Sized Actions and Our Global Future

By Betsy Fader

Betsy Fader is a 1985 graduate of Vanderbilt University where she studied political science and communications. While at Vanderbilt, she served two years in the Student Senate and was subsequently elected to the University's Board of Trustees upon her graduation from the University. Prior to her arrival at SPUSA, Betsy served as Parliamentary Assistant to a member of the House of Commons in London, England, and then as Legislative Assistant in a D.C. law firm. In both positions, Betsy tracked legislative and policy developments in alternative energy and clean energy technology issues. Betsy then served as legislative assistant at the Association of American Universities where she focussed on biomedical research policy and policies regarding ethical conduct in research. She has served as Executive Director of Student Pugwash USA since 1989.

Each day, news sources inform us that the lifestyles we lead, and our consumption of the world's resources, are not sustainable. We know that our over-use of finite energy resources and abuse of the environment will soon place us in a state of ecological crisis. We know that our fragile planet cannot carry the ever-increasing numbers of people inhabiting its limited space. This is not news.

An interested individual can easily locate a plethora of articles, books and journals devoted to examining these issues. However, while there is no shortage of information documenting the unfavorable direction we're heading or the problems we will soon confront, there is a distinct absence of realistic solutions to these dilemmas. Likewise, there is a notable lack of attention devoted to the role that young scholars will play as the leaders, decision-makers and managers of technology in the not-too-distant future.

Student Pugwash USA's conferences and programs help to bridge the gap between documentation of problems and positive social change by providing opportunities for young people to develop their own individual agendas for the exploration of critical global issues. For the week of June 14 - 20,1992, Student Pugwash USA's Seventh International Conference brought together an interdisciplinary, international and intergenerational group of committed scholars and eminent professionals for intensive discourse and examination of a variety of social and global issues. Unlike the dozens of student conferences that take place each year, the Student Pugwash USA International Conference stressed the exploration of solutions to current and impending problems. Rather than focussing solely on the current state of social, environmental and global dilemmas, Student Pugwash USA's International Conference stressed the importance of ENVISIONING the type of world in which each of us would like to live and identifying what we, as individuals, can do to help shape such a world.

Unfortunately, SPUSA does not attract the 'average' or 'typical' student. Rather, we attract young people with an established affinity for critical analysis of global issues and a strong desire to utilize their talents to affect positive social change. And so, while we successfully assembled a group of committed citizens who recognize that we each share in the responsibility for determining and setting our global agenda, I ask myself why more people do not share this commitment? What will it take before more people feel empowered to take action and change the unsustainable course we have chosen? Will it take global catastrophe before individuals realize that we are all part of the problem, but we are also part of the solution?

Following are the closing remarks that I made to the 95 student participants of Student Pugwash USA's Seventh International Conference. I present these remarks here as a commendation, a challenge, and a responsibility that we all need to accept!

The activities of this past week have, hopefully, helped to better form your collective and individual vision for a world that IS sustainable, a world which supports life that is free from the threat of nuclear war, a world which supports a balanced ecosystem, and a world which ensures freedom and opportunity for all of its inhabitants.

The challenge we face in achieving such a vision is great, but the potential to facilitate positive social change is equally great, beginning with you. The path toward sustainability begins with your ability to make a difference through the work you undertake, through the decisions you make in your professional and personal life, and through your ability to empower other people to share your vision.

You have now had the opportunity to share in the development of a very special community. You have helped create a community dedicated to exploring and learning from global problems in the context of a vision for the future. You have helped form a community that challenges itself and others to seek solutions. You have helped develop a community that serves as a catalyst for change.

A Student Pugwash USA International Conference similar to this one will not take place for another two to three years, and there are less than one thousand individuals who have had the opportunity to take advantage of this experience over the last thirteen years. So it is extremely important that this experience not end here, at Emory University. The Conference, and the energy that you have expended, must extend to Africa, Europe, Asia, and South America — to each of the 27 countries from which you have come.

And while this Conference may have begun when you arrived one week ago, it does not end here. It will continue after you leave, when you share this experience with the people you know and meet, and the community in which you live. The Student Pugwash USA International Conference will continue as long as you, as individuals, decide that you have a contribution to offer, a responsibility to make this world a better place than you found it, and a vision of the future to share.

As you read through the reports, perspectives, and reflections that are contained in the pages of this special conference edition of *Tough Questions*, I invite you to become a part of this community as well. In encouraging widespread participation and commitment to global sustainability, more emphasis and attention must be placed on how tangible, behavioral changes by average citizens can have a profound impact upon our continued survival. After all, global problems will be resolved, in the end, through person-sized actions.

Weapons Addiction

By Theodore Taylor

During his participation in Student Pugwash USA's Seventh International Conference, Theodore Taylor was often called upon to speak of his experiences in the field of weapons development. A retired physicist, Theodore Taylor worked on the Manhattan Project and was instrumental in "miniaturizing" the bomb. In the 1960's, he worked at the Pentagon under Robert McNamara, then Secretary of Defense. Later, in 1965, Mr. Taylor made a decision to separate himself from weapons development and to work, instead, toward the abolition of all nuclear weapons.

We asked Mr. Taylor, having once worked so enthusiastically on the design of nuclear weapons, about his individual decision to shift his focus from weapons development to disarmament and environmental responsibility.

Soon after I reported for work at the Los Alamos Laboratory in November 1949, I showed symptoms of an addictive disease. I became fascinated with the inner workings of nuclear explosives. Astronomical temperatures and pressures caused by the release of as much energy as in a pile of high explosive as big as the White House were contained, for an instant, in a sphere of plutonium no bigger than a tennis ball. I became obsessed with pushing the designs to absolute limits. Could we design an atom bomb small enough to be fired out of a canon or carried in a suitcase, or big enough to destroy all of Moscow? Each successful test of one of these bombs I helped design triggered an intense high. I developed a sense of personal power over global events. I kept wanting more.

My mother and my wife, Caro, asked how I could work on anything designed to kill as many people as possible. My answer was the same as my government's: We at Los Alamos were, in fact, the world's front line of peacemakers. We were making war impossible by making sure it would be completely devastating. This answer didn't wash with Caro or my mother. I continued to search for new highs for some 16 years.

Like drug addiction, my disease is incurable. The only way to control it is total abstinence. To take control requires bottoming out. This means feeling such profound despair about the future that the addict has no acceptable choice but to admit the addiction and quit — absolutely and forever.

This happened to me in 1965, while I was working in the Pentagon. The wars in Korea and Vietnam proved that our 30,000 nuclear warheads were not preventing devastating wars. I also became totally alarmed with the lack of understanding in Congress on nuclear weapons matters. I was present when Congress was told by the highest authorities in the Defense Department that we had no problem in terms of actually using our deterrents. I was the last witness at those hearings and sort of spilled a lot of beans. Somehow that crowned

Herbert Leifer, Ted Taylor, and David Tanks

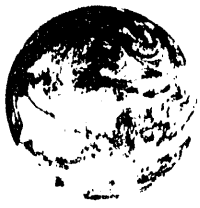
the whole architecture of the new form in which I saw nuclear weaponry. At that point I said, "It's bad, it's wrong, it's immoral, it's the work of the devil, we must get rid of that." I had engaged in self deception, to feed my addiction, and I realized that my wife and mother had been right all along.

Since that time I have devoted myself to the worldwide abolition of all nuclear weapons for all time. For 25 years it has troubled me deeply that my country is prepared to kill millions of innocent people in retaliation to acts committed by a few insane leaders.

I think it's up to all of us to change the direction we're headed in now. For reasons I don't understand, I think all of us, all people on earth, are now being put upon to take responsibility. This is the time for passion. Passion is what's needed to keep us off this reckless drive which has no end but death, really. I think the signal of where to get off this freeway is the receptiveness of people to expressions of good feeling and trust. We need to start looking at some of the things that we can do together. We need to become dependent on working together. For example, take a tiny fraction of our military spending and, starting tomorrow, put it into a project to find some way to purify the aquifers in the Commonwealth of Independent States and the United States that are now contaminated with pesticides. That's the way to go. I just wish we'd get on with it.

Building upon his personal vision of a sustainable world, Mr. Taylor has dedicated his work not only to nuclear disarmament but also to the promotion of environmental responsibility. Currently, Mr. Taylor is the president of Southern Tier Environmental Protection Society (STEPS), a non-profit organization which provides pathways for concerned citizens to take "steps" to promote renewable energy sources, energy conservation, environmental education, and environmental renewal. STEPS involves citizens in action in areas of energy, the environment, and education. Mr. Taylor is also a consultant for the Federation of American Scientists. He currently writes, lectures, and testifies about nuclear arms control and disarmament, ethical and moral issues facing scientists and engineers, environmental issues, and space technology for peaceful uses.

For reasons I don't understand, I think all of us, all people on earth, are now being put upon to take responsibility. This is the time for passion. Passion is what's needed to keep us off this reckless drive which has no end but death, really.



Reaching, Teaching, and Understanding: SPUSA Invites Dialogue on Multi-Cultural Participation

By Morris Reid

Environmental protection must be understood as intimately connected to efforts to expose and eradicate injustice....Most importantly, individuals and organizations simply cannot afford to maintain the view that they are not involved with or unconcerned about who benefits and who loses from restrictions on economic growth.

Just five decades ago, most black Americans could not work, live, shop, eat, seek entertainment, or travel where they chose. Even a quarter century ago, 100 years after the Emancipation Proclamation of 1863, most blacks were effectively denied the right to vote. A large majority of blacks lived in poverty, and very few black children had the opportunity to receive a basic education. Indeed, black children were forced to attend inferior and separate schools in jurisdictions that had not accepted the 1954 decision of the Supreme Court, declaring segregated schools unconstitutional.

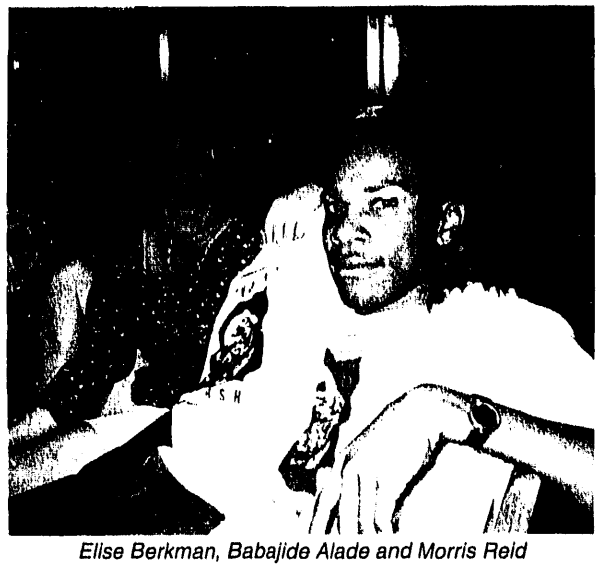
While the situation today is very different, the great gulf that existed between black and white Americans in 1939 has only been narrowed; it has not closed. One out of three blacks still lives in a household with an income below the poverty line. Even more blacks live in areas where ineffective schools, high rates of dependence on public assistance, severe problems of crime and drug use, and low and declining employment prevail. Race relations, as they affect the lives of inhabitants of these areas, differ considerably from race relations involving middle-class blacks. Lower status blacks are effectively restricted in their access to desegregated schools, neighborhoods, and other institutions or public facilities. Furthermore, their interactions with whites, as low-skilled employees, public agency clients or marginally performing pupils, frequently emphasize this subordinate status.

From Emancipation Into the Marvelous "Green" Light

With the exception of anti-toxic campaigns and selected environmental initiatives, there has been little communication or collaboration in the United States between organizations working for social change in Science, Technology and Society issues and Non-European minority groups. Critical problems such as population control, limiting human intervention in the ecosystem, or rebuilding our cities in balance with nature have been discussed almost entirely from a European, and often elitist, perspective.

Recent environmental campaigns have taught us to appreciate and respect the biodiversity of our planet and to recognize the fundamental inter-dependency of human and non-human life with respect to various planetary processes. However, despite a conscious effort to highlight crises in underdeveloped countries, the environmental movement has tended to be racially exclusive, expressing the point of view of middle- to upper-class European ethnic groups in developed countries.

If the sustainability movement hopes to have credibility as the voice of a grassroots planetary movement, this pattern of exclusivity will have to change. Traditionally under-represented groups can play an important role in this shift of strategy and consciousness. Environmental protection must be understood as intimately connected to efforts to expose and eradicate injustice. Solutions must offer practical goals which can be accomplished in the short run as we explore paths toward a more sustainable future. Most importantly, individuals and organizations simply cannot afford to maintain the view that they are not involved with or unconcerned about who benefits and who loses from restrictions on economic growth.



Elise Berkman, Babajide Alade and Morris Reid

The American inner city was once a wilderness. Today, islands, estuaries and forests that once existed in these privileged locations have been replaced by asphalt, concrete, barbed-wire fences, boarded-up stores, crack houses, landfills and pollution. After generations of isolation and manipulation, the people who live in these places rarely remember what it once was, or speculate on what it might become. The debate on sustainability must reach into these areas in order that we may collectively envision the city, and the world, of the future.

Reaching, Teaching, and Understanding

Just how important is it that those involved in sustainability issues include and involve the African American and other under-represented communities? Consider the fact that population growth among the Latin, Asian and African American communities is nearly twice that of white Americans. Consider the findings of the *Workforce 2000* study which projects increasing numbers of women and minorities in the workforce by the year 2000. Reaching, teaching and understanding are crucial components to any effort to envision or actualize a sustainable future.

What is Reaching, Teaching, and Understanding? Reaching, Teaching, and Understanding is a long term commitment initiated through Student Pugwash

continued on next page

Multi-Cultural Participation

continued from previous page

USA to foster dialogue on increased multi-cultural participation in the debate on critical global issues and, specifically, to increase minority participation in all aspects of SPUSA activities and programs. However, this is not just an attempt to increase the number or percentage of minorities participating in SPUSA, but rather an earnest effort to fill a void that now exists between the minority community and the sustainability movement.

Clearly, there must be more race sensitive planning by many of the larger environmental organizations, like the Sierra Club or the National Wildlife Federation. As we approach the 21st century, race sensitive planning must take on a more progressive and visible role, which I fundamentally believe could address and eradicate the void that now exists by:

- promoting greater understanding of the productive assets of society, including land, water and natural resources
- Strengthening collaboration with groups seeking to redirect public investment and economic development away from wasteful exploitation of nature and gaining access to information resources which enhance the potential of community survival
- Strengthening social and political organization and creating new opportunities for leadership within the community.

In order to meet responsibilities for citizenship, blacks and other minorities must have opportunities and learn to play a greater role in formulating environmental policies which, after all, affect all members of the community. We must find new ways to bridge the gap between the sustainability movement and the African American and other under-represented communities.

"Reaching, Teaching, and Understanding: Multi-Cultural Participation in the New Environmental Order" has been initiated by Eric Whitaker and Morris L. Reid through Student Pugwash USA to address multi-cultural recruitment and participation in Science, Technology, and Society issues. For further information or involvement, contact Eric Whitaker at (312) 324-6665 or Morris L. Reid at (216) 794-1232 or write to Student Pugwash USA.

What Do You Think?

Send us your thoughts on:
Multi-Cultural participation in Science, Technology, and Society issues;
•What SPUSA can do;
for possible inclusion in the next issue.

TQ Forum
Student Pugwash USA
1638 R St, NW, Suite 32
Washington, DC 20009

Envisioning

continued from page 1

The broad range of topics covered, along with the diversity of student and expert backgrounds, greatly enhanced the ability of participants to discover and discuss the broader impact of science and technology on global issues.

"Vision" was a central theme throughout the Conference week. The need to look to the future is essential to the concept of sustainability, which implies the ability of a given generation to meet its needs without compromising the quality of life for future generations. A failure or inability to envision a viable, livable future for our world is itself a threat to our survivability. This threat is especially apparent in light of recent global events and accelerating technological advancement, which force individuals to act, or react, ever more quickly to meet the challenges of societal, economic, and environmental change. The critical component in meeting these challenges is the ability to comprehend the global framework in which all of these issues reside and envision the positive effect we can have upon that framework.

During the Conference, participants were called upon to visualize the type of world in which they want to live, and to determine how our scientific and technological know-how can help to create such a world. The World Game Workshop, which took place early in the week, provided an excellent vehicle for viewing broad global themes and trends and developing a collective vision of how the world should look. The Workshop highlighted the growing demand for individuals who are able to see and work across traditional disciplinary boundaries, and individuals who are sensitive to the long-term impacts of their work on all aspects of society.

As the week progressed, the tone of the Conference evolved from vision to action. The energy, ideas, excitement, and frustration arising from the discussions had to be channeled to solve problems. It is essential to convince students - who will soon enter into positions of organizational and global leadership - that they have the power to create change, but that this requires commitment and individual responsibility. These students, however, must determine what steps and actions are appropriate for their interests, abilities and beliefs. In order to facilitate this process at the International Conference, each student met with a SPUSA staff member during the week to outline a "Personal Plan of Action." This exercise provided an opportunity for students to share information on their past involvement with the issues addressed at the Conference and to brainstorm actions which they would like to pursue in the future. Mapping out the Personal Plans of Action also gave staff members a chance to inform students about the variety of resources SPUSA could provide to support their efforts, helping to ensure that the Conference did not end in Atlanta.

As the pace of global change continues to intensify, young people must know that they have a crucial role to play in shaping and creating our common future. In Atlanta this summer, a talented group of students let the world know that they were ready and excited to accept that challenge.

The need to look to the future is essential to the concept of sustainability, which implies the ability of a given generation to meet its needs without compromising the quality of life for future generations. A failure or inability to envision a viable, livable future for our world is itself a threat to our survivability.

Visions and Agendas...

Development in the Developing World

Eric J. Dolin, Aditi Dutt and Scott Haase

Besides the frequently used terms, 'More Industrialized Nations' and 'Less Industrialized Nations,' should we define a new term for 'Degrading Industrialized Nations' which would include some of the so-called 'developed' countries?

Historically speaking, development, as a theory and in practice, has been focused on quantitative rather than qualitative principles. The focus of World Bank programs and other development initiatives has always been economic productivity, as measured by GNP, no matter what the cost in human or environmental terms. This narrow definition has led to bleak situations in many developing countries, as well as in many developed countries (look at our own inner cities). Despite decades of effort and the expenditure of billions of dollars on development programs, there is little indication that the process of environmental degradation is being halted, let alone reversed. Indeed, the situation seems to be getting worse. While the notion of 'sustainable growth', suggested by the Brundtland Commission as a way to redefine development, has inspired a valuable public discussion, it is probably impossible to achieve in the long run. The world's economic systems cannot continue to grow indefinitely, at least not without major changes to our environment.

In the midst of the debate on these issues, delegates representing ten countries gathered at the SPUSA International Conference for the *Environmental Challenges for Developing Countries* working group. In spite of the difficulties which sometimes can arise with such diversity, our discussions were very congenial and a great learning experience for all. Indeed, the diverse ethnic, experiential and personal make up of the working group provided invaluable resources for the group as a whole, as we sought to define and explore issues. What is 'sustainable development'? How can we decouple the notion of 'development' from 'growth' in order to move toward sustainability? How can we best measure and analyze our efforts, in both a quantitative and a qualitative fashion? Besides the frequently used terms, 'More Industrialized Nations' and 'Less Industrialized Nations,' should we define a new term for 'Degrading Industrialized Nations' which would include some of the so-called 'developed' countries?

Virtually all members of the group agreed that the bioregional approach is a sensible way to address resource and pollution problems. This approach argues for managing the environment in a holistic fashion that recognizes the integrity and importance of ecosystems. The debate heated up, however, when the group moved from this agreement on principles to a discussion of how bioregionalism could be operationalized in light of the fact that ecosystems don't respect traditional political jurisdictions. Some argued that the bioregional approach requires improved cooperation among existing political units. Others felt that the only way to achieve bioregionalism is to dissolve or at least severely weaken traditional political jurisdictions and create new international forms of government, such as a 'global environmental protection agency.' Understandably, the chal-

continued on page14

The World Game Workshop

Health Care: Look, Listen and Learn

Liesl Copper,Lyta Hamm and Troy Jacobs

The *Health Care in Developing Countries* working group was comprised of participants from seven countries, with many varied perspectives and experiences represented. Because health care in developing countries is largely dependent on foreign aid, the relationship between donor and recipient was a recurring theme. We paid particular attention to programs which failed to be effective because they did not, or were not able to, address the self-identified problems of the community affected. Without a sincere and sustained dialogue between donor and recipient, it seems impossible to plan and implement sustainable health care initiatives.

In order to illustrate this, we would like to invite you to tune in to the **Health Channel**. Here on the "Look, Listen, and Learn Show" - your window into the world of health and development - we have Dr. North representing global aid in the Developed World, and Ms. South representing the Developing World:

> Dr. North: A team of development professionals from the Industrialized Nations and I viewed a colleague's slide presentation a while ago, and we were deeply concerned about rural underdevelopment. We saw pictures of malnourished children, dirty living conditions, no indoor plumbing or toilets, and rampant diseases. We decided that the best intervention was to send a team to build a modern clinic in your village. As you know, the clinic has not been wholly successful. What went wrong?
>
> Ms. South: For the first few weeks, people from my village did not go to the clinic, for they thought that people went there to die. The translators came to tell the people that it was better than our old ways and villagers eventually went,

continued on page 15

For a Sustainable Future

Energy Options: Embracing a Global Perspective

Nicola Short and Andrew Young

A central question presents itself in planning for a sustainable global future: How can we meet the rapidly expanding energy demand, and at what cost? The demand for energy will continue to increase, as energy provides a means to meet basic human needs for increasingly large populations throughout the world. For example, half of the planet's population depends on fuel wood to provide meals; inhabitants of the more extreme latitudes rely on heating to survive harsh climate conditions; and energy is required to build and operate sanitation systems that prevent communicable diseases from decimating heavily populated areas. Now more than ever there exists a direct link between access to energy and survival. However, energy issues extend far beyond the comparatively narrow realm of technology and environmental science. To address the broader scope of energy problems, our working group, *Energy Options: Their Social and Environmental Impact*, organized the analysis of energy options and their implications into the categories of technological issues, institutional influences, and political interplay.

From the technological perspective there is much promise for a sustainable future, assuming that the new technologies are nurtured and implemented. Energy-efficient technologies offer huge potential for environmental and economic savings. One compact flourescent lamp factory, for example, can displace the energy need that is provided by a base-load, coal-fired power plant at 1/139 of the cost. There is also much room for efficiency improvement. Japan, who has yet to meet its full potential of energy efficiency, still enjoys twice the efficiency of the United States, and four times that of the former Soviet Union.

Renewable energy also shows much promise for the future and is economically competitive today.

continued on page 13

Stanley Ahorlu, Ferdinand Guevara and Tim Heath

Ethics and the Use of Genetic Information

INTRODUCTION

Genetic technology has made astounding progress in the last 15 years, and we can only speculate where we will be in the next 15. The human genome endeavor, a concerted international effort, will attempt to map all 50 to 100 thousand human genes to their chromosomal locations. Another phase of the project will determine the exact sequence - the text, if you will - of these genes. The stated impetus of a project of this magnitude is to prevent and hopefully treat some of the 4,000 already known genetic disorders which afflict humanity. The information to be gained will lift a veil of uncertainty from our collective identity, but we must be wary of this technology. Only now do we have the technology to delve into the molecular structure of our human inheritance and try to shed light on questions of human nature. Given these ideas, we, the members of the *Ethics and the Use of Genetic Information* working group, have prepared a statement on our recommendations for the use of the information gained from this endeavor.

PREAMBLE

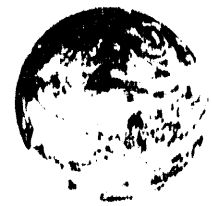
Modern genetic research will open many new vistas and create many new challenges. The greater knowledge of humankind's genes can be a window into important facets of our inner self and of all humanity. The human genome endeavor should be conducted in a manner that will benefit all humanity, and we should be well prepared to deal responsibly and ethically with the information that will be produced by this endeavor. However, we must recognize that our genes are not the sole determinant of our being; we are social beings, inextricably a product of our environment and behavior.

In particular, our working group perceived a need for increasing public awareness and understanding of the human genome endeavor in particular and of science in general. People of all disciplines and backgrounds need to become involved in and welcomed into the scientific process. Science in general can and must become more democratic. We call upon scientists to provide easily understood and accessible information. We also call upon the public to better educate themselves on these issues in order to make informed decisions.

To encourage the beneficial uses and applications, and to discourage intentional or accidental abuse, misdirection, or misapplication of genetic research, we, the members of the *Genetic Information* Working Group , believe that the following guidelines should be adopted regarding the human genome endeavor and similar applications of genetic technology.

I. All information resulting from the human genome endeavor, except that which discloses an individual's genetic information, should be public property and be available to all nations and people. All nations that possess the technological capacity to assist with the genome endeavor and that stand to benefit from the information have a responsibility to participate (financially

continued on page 11



The human genome endeavor should be conducted in a manner that will benefit all humanity, and we should be well prepared to deal responsibly and ethically with the information that will be produced by this endeavor. However, we must recognize that our genes are not the sole determinant of our being; we are social beings, inextricably a product of our environment and behavior.

Babajide Alade
Nigeria

Stanley Ahorlu
Ghana

Msmaku Asrat
Ethiopia

Karen Brown
Canada

Stephen Burri
Canada

Christina Chociolko
Canada

Denise Armond de Olivera
Brazil

Kerem Durdag
Turkey

Aditi Dutt
India

Ferdinand Guevara
Phillipines

Pedro Rafael Hernandez
El Salvador

Melise Huggins
Trinidad and Tobago

Ada Igwebuike
Nigeria

Guinara Ishkuzina
Russia

Jaroslaw Jazwinski
Poland

Mizanur Khan
Bangladesh

"Several issues come into play when we consider health care in developing countries: 1) defining health care and dichotomizing 'Western' medicine in comparison to folk medicine; 2) evaluating Western medicine in terms of its beneficial and harmful influence upon other societies; 3) being realistic in our regard for Western medicine while being respectful of another society's regard for its own medical interventions; 4) establishing rapport and mutual familiarity with respected individuals of the targeted community; 5) carefully outlining an ethical and practical agenda. Because medicine can become an extensive and autonomous force within society, these ethical considerations must be promoted in order to sanction the decisions of medical practitioners. For example, the issue of health care as a right or a privilege must first be evaluated within American society prior to exercising an influence upon developing countries."
-Ada Igwebuike

"Advantages and disadvantages of the use of genetic engineering methods have been widely discussed in Germany for the last ten years. At the Center for Technical Assessment at the Technical University of Darmstadt (Zentrum für Interdisziplinäre Technikforschung) we set up an interdisciplinary research group to investigate the influence of ethics on management decisions in the field of biotechnology....This project is the only one in Germany with an 'ethical' center of gravity."
-Kristina Sinemus

"In view of the dramatic worsening of the global environment, ecological degradation is becoming an ever greater cause of conflict. The close connections between environmental and socio-economic problems on the one hand, and security on the other, are perhaps best demonstrated in South Asia, a region plagued by overpopulation, poverty, and historically-rooted tensions. We need a redefinition of the notion of security, particularly in the context of the developing world. Unless the dictates of geography and environment override the primacy of politics in interstate relations, there can be no real peace and security in South Asia, a region inhabited by one-fifth of mankind and one of the poorest on earth."
-Mizanur Khan

"Environmental degradation is one of the most challenging problems currently facing a majority of LDCs, especially the countries of Africa. Decades of climatic change and other factors have resulted in drought and famine which are rightly considered to be among the greatest natural disasters of the 20th century. The Ethiopian famine of 1985-1986 was one of the most severe to hit any nation this century, and the international response effort to assist the drought victims was one of the most successful of its type. However, natural forces and uncontrolled human action have led to deforestation and the permanent loss of cultivable and pastoral land, particularly in the north of the country. Our effort in rehabilitating the land was largely focused in afforestation, which was not particularly successful due to the social, political and economic turmoil brought about by the doctrinaire and hardline Stalinist-Marxist government."

-Msmaku Asrat

"The impact of energy technologies on the environment and public health and safety are difficult to estimate. In view of the fact that anthropocentric activity can violate natural processes on a global scale, the problem of energy development transforms from national to international, from regional to global, from narrow to complex."

-Nikolai Kukharkin

"Given the current industrial practices in operation in the world, the scramble for scarce resources is bound to intensify. There are some analysts who feel that the world trade system will compensate for impending scarcities; price mechanisms, they argue, will identify these scarcities and encourage substitution. There are certainly historical precedents for economically-driven substitutions. However, the use of alternative resources may be prohibitive for capital- and technology-poor developing countries. The uneven global distribution of resources and innovative technologies does not foster the alleviation of scarcity problems for these countries. For the Third World, resource conflicts could potentially increase as governments are placed under increased pressure simply to meet the needs of their survival."

-Michael Purugganan

Nikolai Kukharkin
Russia

Irma Lehtonen
Finland

Tanya Matiyasevich
Russia

Imann Muzirmann
Indonesia

Adebambo Olajitan
Nigeria

Agesin Olusegun Olawale
Nigeria

Anna Orlova
Russia

Michael Purugganan
Phillipines

Rajesh Rajagopalan
India

Abikok C. Riak
Jamaica

Ashok Sarkar
India

Abdalla Shehata
Egypt

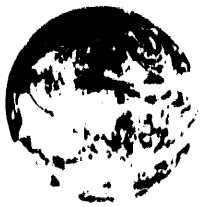
Alexander Shestakov
Russia

Kristina Sinemus
Germany

Aristotelis Tympas
Greece

Ione Voss
Brazil

Student Delegates to the 1992 Conference



Visions and Agendas...

Peace as a Process

Matthew Udziela

Peace is not just the absence of war, but the absence of the potential for war, and as such must incorporate issues of health and education. Similarly, a country cannot be called secure if it does not fulfill the basic needs of its people. Security is inextricably linked to national well-being and therefore must address such issues as environmental degradation, resource allocation, and sustainable development.

The first issue that needs to be recognized when considering the concept of global security is that of definitions. What is peace? Peace and security for whom? A comprehensive notion of peace and security must include several factors. Peace is not just the absence of war, but the absence of the potential for war, and as such must incorporate issues of health and education. Similarly, a country cannot be called secure if it does not fulfill the basic needs of its people. Security is inextricably linked to national well-being and therefore must address such issues as environmental degradation, resource allocation, and sustainable development.

The end of the Cold War has resulted in both challenges and opportunities for global peace and security. While there is increased cooperation between the superpowers, there are also new instabilities being created as smaller nations, previously armed along Cold War lines, experience a marked decrease in weapons shipments from their former guardians. While increased economic interdependence opens avenues for cooperation, all countries must balance this with the need to retain national sovereignty. Accordingly, this diverse spectrum of tensions demands an equally diverse spectrum of solutions, alliances and treaties.

Europe is beginning its well-publicized cooperation through the EEC, but the same dynamism can be found in Asia with no formal organizational body. The spread of democracy can be seen in light of this search for new solutions, as well. However, while the current model of liberal democracy may create stability, this is by no means a foregone conclusion. Democratic leaders are prevented from more extreme actions by their constituencies. We must search for ways to improve all governmental structures if we hope to meet the challenges that lie ahead.

Proliferation of nuclear weapons and the arms trade must be stopped, and the US must take the lead here. The most recent US-CIS treaty (June 1992) is a promising first step, but the US should continue with new actions and military reductions. India and Pakistan may proliferate, but both are looking for paths to peace, and should be shown the way. Of course, deeds are more powerful than words, but words are also important and must be expressed.

Issues of equity and access must also be addressed, in our search for global peace and security. For developing nations especially, security is linked to the procurement of common basic needs. Thus, resource allocations must be revamped, from the individual to the national level. Sister city programs must be strengthened and expanded, for direct aid between cities is often more efficient than hierarchical governmental programs. Governments must learn to cooperate as Finland has done by donating its old computers and technology to the Balkans. Furthermore, success in these types of resource allocation and re-allocation programs is greatly enhanced by a visibility of accounting practices and information exchange. If you can show people where all the funds are going, pressure increases on leaders to stop the accumulation of wealth and work toward a more equitable distribution. In the interim, a world court could help to mediate conflicts and aggression centered around these issues. It need not have the power to pass judgement to be effective.

Above all, knowledge empowers. We must give more money for education — specifically primary education. This is usually more efficient when carried out through non-governmental agencies. In addition, we must give materials, even simple ones such as paper and textbooks. Texts must not be ethnocentric, however, as the educational initiatives we support must be part of a foundation to build a global community.

Peace is a process, not a goal. To fully engage in this process, we must blend the visionary with the

continued on page 15

Peace Sign

The Cold War is over, but . . .

- Who controls the weapons in the former Soviet Union?
- Which countries have the bomb now?
- Which countries are racing to get it?

The Cold War is long gone, and now the East-West arms race is headed for history's dustbin. The world is changing with mind-numbing speed.

But 50,000 weapons remain. Dismantling the deadly legacy of the Cold War will be a long and dangerous task. Let the *Bulletin* keep you up to date as the forces of reason attempt to build a new world order in which "the peaceful resolution of conflict" becomes a reality rather than a slogan.

For a free issue of the Bulletin, *return the coupon below.*

Yes, send the *Bulletin* and bill me only $15 for a year of issues—half off the regular rate. If it's not for me, I may cancel and owe nothing!

❑ Payment enclosed. ❑ Bill me later.

Name

Address

City/State/Zip

Canada and Mexico, US $18.00; other non-U.S. subscriptions, $25.00. Mail coupon to *Bulletin* subscription office: 6042 S. Kimbark, Chicago, IL 60637.

SP2

For a Sustainable Future

Genetic Information

continued from page 7

and with human, material, and scientific resources) to the extent they are capable.

II. At its current funding rate, the human genome endeavor will produce information of fundamental importance at a rapid rate and with great potential for both use and abuse. It is the obligation of the global community to develop in parallel the ethical, legal, social, economic, and political tools, policies, principles, and procedures necessary to use this information to the benefit of humanity, and in an ethically sound manner. In addition, this parallel effort must go beyond research to include broad dialogue and public participation.

III. The priorities of the human genome endeavor (and of publicly supported science in general) should focus on the needs of the global community. In particular, priorities shall not be determined by racial, gender, or discriminatory preferences.

IV. The results of the human genome endeavor shall be used to the benefit of all. Great care shall be taken that the results are not used to the detriment of any people, based on race, ethnic, or gender groups or against people who do not have economic, racial, or political power.

V. All individuals associated with the human genome endeavor have an on-going responsibility (which is not terminated by the completion of their particular involvement in specific studies) to ensure that appropriate steps are taken so that the information obtained from the effort is used in an ethical and responsible manner. The human genome endeavor may give humanity new appreciation of our diversity; it is critical that this information not be used to alter that.

VI. No individual's genome should be typed as their genetic information without their prior consent or a court order. An individual's identified genetic information should not be disclosed to anyone without that person's prior written consent, except by court order.

VII. Any identification of an individual based on genetic techniques must be accompanied by an explicit statement regarding the known uncertainty of that identification. Any advice, counseling or proposed medical intervention based on genetic evaluation should be preceded by an explicit statement regarding the known uncertainty of that evaluation.

VIII. Attempts to use predictive genetic technologies in decisions regarding access to and equity of education, employment and insurance are especially subject to misinterpretation, misunderstanding, misuse, or abuse. If allowed, the use of predictive technologies in these areas requires regulation and monitoring sufficient to prevent misuse of information and to safeguard human dignity and human rights.

CONCLUSION

The exchange of information and dialogue are essential prerequisites for the development of mutual trust and respect, but only the sharing of our inner selves, our hopes, and our fears can establish the basis for truly working together to understand and solve the fundamental problems facing humanity.

Educating Global Citizens

José Camberos, Jean Heller-Hendrick, and Barbara Sabonis-Chaffee

The Education working group had to coalesce from a very broad base... and a long title: *Educating for the Socially Responsible Use of Technology*. The papers submitted and discussed interpreted 'education' to involve everything from how to best inform the public on the environmental hazards of landfills; to criticism of gender bias and other flaws built into formal education; to the unique problems of technological education in the face of extensive defense and aerospace industry influence.

From the diversity of topics to the diversity of individuals, to the diversity of educational and experiential backgrounds (students ranged in age from 19 to 53), the group worked to identify themes that could bring the far ranging topics into relationship. We developed a list of 36 educational issues which had been raised, with three major categories emerging: 1) broad public education, as in media and print; 2) educating for values as a base for socially responsible decision making and global sustainability; and 3) formal education in classroom settings.

Discussion around the 'what' and 'how' of broad public education led to an increased awareness of the magnitude of issues that call for our attention, of the critical importance of maintaining respect for a diversity of views in addressing these issues, and of the tremendous power the media has to mold public opinion within this process. Many members of the group felt that we must strengthen lines of communication between traditional 'educators' and the 'educated', for it is more often than not that solutions to problems are found within the richness of human diversity than by 'experts' seeking solutions in isolation.

In order to enhance our understanding and facilitate our exploration of an educational agenda for instilling values as a base for socially responsible decision making and global sustainability, we generated a list of 21 criteria for consideration in developing a working definition of 'socially responsible technology.' The most inclusive and acceptable definition was that "socially responsible technology must be environmentally and economically sound, politically and socially acceptable over time, and it must meet the needs of today's population without compromising the needs of future generations." Furthermore, in order to explore the implications of such an educational agenda on a more individual level, we shared 'personal plans of action' of how we might go about learning and sharing with others our visions for a sustainable world. These ranged from developing a global support network for activists in developing countries, to producing a program on this conference for the local public access cable channel, to pursuing teaching in the sciences at the high school level as a career.

Our final task was to address the needs of formal education at various levels. In keeping with the concepts evolved in prior discussions, the group concluded that the goal of formal education should be the cultivation of globally educated citizens, with skills in critical thinking,

continued on page15

Socially responsible technology must be environmentally and economically sound, politically and socially acceptable over time, and it must meet the needs of today's population without compromising the needs of future generations.

Next Steps...

By Barry Lasky

"If you 'do your homework' and 'think things out', it is possible to figure out just the right place to intervene in a big, complicated, seemingly overwhelming system. You can do something, when no one notices, without necessarily possessing wealth and power as prerequisites to taking action or causing change. You can have a significant effect."

Howard Brown
President, Resource Planning and Management Systems, Inc.

Ever since the first SPUSA International Conference, *Science and Ethical Responsibility* held at the University of California, San Diego in 1979, SPUSA has emphasized that all citizens, young and old, have a right and a responsibility to join with experts in addressing the world's most pressing problems. But how? Even with an appreciation of the importance of this mission and a clear desire to involve oneself in the decision-making process, 'addressing the world's most pressing problems' can often be a confusing and frustrating endeavor. Recognizing the importance of working together to move beyond this confusion and frustration, one student participant from the 1992 International Conference recently wrote to us, "It's wonderful that so many people take an interest in important global issues, but taking an interest is not enough. We must search together for answers and solutions."

Aside from informing themselves and others on critical global issues and participating in extensive issue-based discussions, the student delegates to the 1992 SPUSA International Conference, *Visions for a Sustainable World,* sought to take their conference experience one step further. They sought to extend the dialogue on a sustainable future to action and application by developing a Personal Plan of Action, embodying their commitment to continue exploring their rights and responsibilities as individuals and participants in the process of social change.

The student delegates to the 1992 SPUSA International Conference, Visions for a Sustainable World , sought to take their conference experience one step further. They sought to extend the dialogue on a sustainable future to action and application by developing a Personal Plan of Action, embodying their commitment to continue exploring their rights and responsibilities as individuals and participants in the process of social change.

Most delegates felt that the very first step in creating a safe, sustainable world is a personal commitment to being informed about important global, social and scientific issues. Students identified the following initiatives as ways to further educate themselves on the issues they find important and to prepare themselves to educate others in turn:

- organize further discussion groups based on issues examined during the International Conference;
- join an established SPUSA chapter or create one of their own;
- cycle across the U.S., learning and writing about various community organizing efforts;
- explore, with organizing and lobbying groups, the possibility of local and regional political actions concerning Conference issues;
- learn another language;
- travel to the tropical rain forests of Africa and South America;
- live and work on an organic farm in order to gain first-hand knowledge of a 'sustainable' way of life.

The more than 90 Personal Plans of Action generated at SPUSA's International Conference exemplify a commitment to the learning process and serve as a starting point to affecting change. Abikok Riak, an Economics and History major at Bluffton College, writes, "I've always known that I'd go 'into' development, but now I have a better idea of what exactly development is and how I can make a difference."

With a solid foundation to build upon, many conference participants wish to direct their efforts towards outreach. Mentoring younger people was one educational avenue identified repeatedly. Specifically, students identified the following avenues of outreach:

- communicate with secondary school teachers in order to discuss the possibility of incorporating Science, Technology and Society issues into the curriculum;
- organize a "junior Pugwash" mini conference at the junior high school level;
- explore educational alternatives focused on building young people's self-esteem and involvement in environmental issues;
- conduct day and overnight wilderness excursions with inner-city children;
- set aside time to talk about the International Conference with their children or younger siblings.

continued on next page

Student Pugwash USA Supporters

Carnegie Corporation
Ciba-Geigy Corporation
Ciba-Geigy Limited
Emory University
Georgia Power
Robert Wood Johnson Foundation
W. Alton Jones Foundation
The John D. and Catherine T. MacArthur Foundation
National Institutes of Health
National Science Foundation
New Land Foundation
Pfizer Corporation
Ploughshares Fund
Rockefeller Family Associates
Rockefeller Foundation
Samuel Rubin Foundation
Schering-Plough Corporation
Trust for Mutual Understanding
U.S. Department of Energy
The Winston Foundation for World Peace
Individual Contributors

Now Available
A Free Guide to Graduate Programs in the Energy Field

Now students and other individuals interested in the energy field can find a list of 62 graduate programs offered nationwide in the new "**Dir ctory of Energy-Relat d Graduat Programs in U.S. Univ rsiti s.**" This informative guide describes the type of degrees offered, sample courses, faculty specializations, enrollment, contacts, and other facts helpful in choosing a graduate school.

The directory is published by the Energy Foundation, a joint initiative of the John D. and Catherine T. MacArthur Foundation, the Pew Charitable Trusts, and the Rockefeller Foundation. The Energy Foundation was created in 1991 to assist in the nation's transition to a sustainable energy future by promoting energy efficiency and renewable energy. Student Pugwash USA is assisting the publishers of Home Energy Magazine with the distribution of the directory.

If you would like a free copy of the "**Directory of Energy-Related Graduate Programs in U.S. Univ rsiti s**", or a complimentary copy of Home Energy Magazine, please write to:

Home Energy Magazine, 2124 Kittredge St., #95, Berkeley, CA 94704

Next Steps

continued from previous page

While outreach to younger people is certainly a primary component to empowerment and education concerning the world's most pressing problems, an equally urgent need exists to focus on the inclusion of women and minority groups in the decision-making process. The International Conference highlighted the need for empowerment of traditionally underrepresented groups through a panel discussion on access and equity in the sciences, leading many students to examine their roles and responsibilities with regard to social justice. Spencer Geswein, a mechanical engineering student at Rose-Hulman Institute of Technology, says, "[The Conference] changed my outlook on people more than on issues. I have lived my entire life in a homogeneous society, but now, at least I know how to begin to widen my perspective." Furthermore, several Conference participants have identified specific outreach objectives as being part of their Personal Plan of Action to work toward a sustainable future. While attending medical school at Emory University, Nicolai Hinds plans to involve more members of the African-American community in SPUSA events, "because the issues that SPUSA addresses are so critical in shaping our vision of the future, and because these issues necessitate having all members of our global community included in the decision making-process."

Obviously, no single educational program or outreach initiative will suffice in 'addressing the world's most pressing problems.' Nonetheless, the student delegates to the 1992 SPUSA International Conference have developed Personal Plans of Action to explore their rights and responsibilities within the process of social change. After working together to create visions for a sustainable world, they have made a commitment to ensure that these visions become reality. Reflecting on her conference experience, one woman writes, "I expected to find a great deal of discussion between students and professionals concerning science and technology as they relate to the world. What I found instead was an incredibly enthusiastic group of diverse individuals devoted to making the world a better place."

Energy

continued from page 7

Wind power can currently be produced for $.07/kWh and solar thermal for approximately $.08/kWh, as compared to $.094/kWH for nuclear power. These renewable energy costs are expected to drop even lower in the near future. Nuclear power has also seen many recent innovations, but the question of safe waste disposal remains unsolved.

If technology promises to solve our energy problems, then why is there such great concern about energy now? At this point, political and institutional factors lend serious complication and challenge to our vision of an economical, equitable, and environmentally benign energy future. In most of the world, electric power is heavily subsidized, while energy efficient and environmentally-sound technologies are not. Financially, this encourages the wasting of energy which restricts the availability of energy services. To further pave the way for energy efficiency, utility energy sales should be decoupled from profits. The emphasis should be placed on providing energy services, i.e., the end-use benefits, and not placed simply on the amount of electric power sold.

Harmful environmental and health externalities associated with the fossil fuel and nuclear industries have also been ignored in energy pricing, and prices have not reflected the social costs. Placing the cost of externalities 'up-front' in the form of an environmental tax would help ensure the success of beneficial energy technologies and would prevent our and future generations from having to pay the 'cost' of today's energy consumption tomorrow. Instituting an externality tax is not a simple solution, however. It must be done in a way that equitably distributes the burden of transition to a soft energy path until the new technologies have proliferated. In addition, though it is clear that non-renewable power sources are unsustainable, the complexity of our biosphere makes it difficult to foresee the broader effects of pollution and consumption, much less attach a price to them.

In conclusion, the *Energy Options* working group exposed some of the incredible complexities of the problems surrounding energy and sustainability. The problems are global in magnitude and influence. Accordingly, they require solutions which embrace a global perspective.

If technology promises to solve our energy problems, then why is there such great concern about energy now? At this point, political and institutional factors lend serious complication and challenge to our vision of an economical, equitable, and environmentally benign energy future.

Development

continued from page 6

lenges inherent in the creation of a global EPA or similar structures inspired another interesting and inconclusive debate on how such international governmental structures could be established and why nations would consent to be, in effect, stripped of their sovereignty in some regard.

A number of participants felt that, under the rubric of technology transfer, the Developed Nations should send environmental experts to the Developing Nations in order to help the latter implement sustainable policies. No sooner had this proposal been mentioned than some of the participants from developing countries pointed out that it was not expertise that their countries lacked, but the financial means and technological hardware necessary to put that expertise to work. The group agreed that this was an important distinction. After all, developing countries are populated by many smart and capable administrators, scientists, and policy makers. The real challenge is to carefully consider the social, economic and political climate within which these individuals must operate, when designing foreign aid and technology transfer initiatives. In this regard, western industrialization models for development can be inappropriate for developing countries. While the expertise and aid that Developed Nations have to offer are essential components of a sustainable future, one should be careful to avoid the assumption that this expertise is all-important or inherently sufficient.

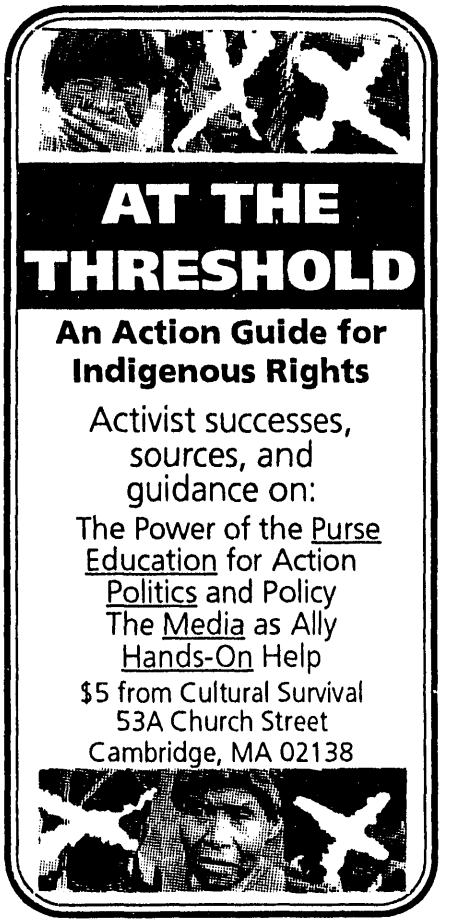
Another element of the expertise question has to do with indigenous knowledge. Local people who have the closest relationship with their environs often can provide valuable information for designing sustainable practices, especially those having to do with agriculture. Rather than approach a situation with the 'answers,' development agencies, in particular, should seek to learn from those they want to help. Part of this learning process involves understanding how the indigenous people will react to new programs. The importance of this understanding in ensuring the success of such programs was highlighted in one of the student papers as follows:

> In many African villages, water supply projects fail because they [do not] take account of the fact that the task of gathering water serves a social purpose for women to get together and talk. Wood gathering may serve a similar social purpose, giving women a chance for a long absence from overbearing males, in addition to the main objective of gathering fuel. Issues such as these must be carefully considered.

This focus on indigenous knowledge and culture fit in well with our discussion of the need to utilize both top-down and bottom-up strategies in the implementation of environmental programs.

In recognition of the 'environmental challenges' posed by rapid population growth in the Developing Nations, we explored the obstacles of implementing western control measures such as Family Planning, contraception and educational programs. First of all, the pervasive Catholicism in many developing nations simply does not allow women access to contraception. Secondly, from a cultural point of view, children are often equated with virility, which makes population control measures unacceptable to many men even if women desire access to them. Finally, uneducated women often believe that children are a 'boon from the heavens' and simply do not question or want to interfere with this process. Hence, many members of the group felt that it was crucial to work toward an increased financial and educational backbone for all women in the world, resulting in increased self-esteem and independence for women to address these obstacles.

One of the frustrations of the group was our inability, in some instances, to come up with specific steps that should be taken to implement those principles of sustainable development on which there was substantial agreement. It is one thing to support a top-down and bottom-up approach to program implementation, but quite another to map it out. At the same time, we realized that in light of the time constraints, the complexity of the issues addressed, and the lack of case-specific data, coming up with detailed proposals was unrealistic. This frustration, however, should not be construed as an indication of despair or failure. We were all heartened by the quality of the discussion and each other's dedication to the cause of sustainable development. Our time together was clearly a success. And we were all confident that as our academic and professional careers progress, so too will our ability to influence the sustainable development debate, ultimately contributing to the process of transforming aspirations into reality.



Health Care

continued from page 6

hoping to get better, but then funding for the project ceased and the doctors left the clinic. Nothing has changed, really. We still have malnutrition, poor water and disease.

Dr. North: The clinic is a state-of-the-art facility, and we sent a well-qualified staff to run it and train others. Granted, many of the diseases are recurring and our follow-up procedures could have been better, but what more could we have done? Tell me, Ms. South, how can we better assist you?

Ms. South: In the work of a non-governmental organization in my village, we've seen that, above all, community participation builds health. One must respect good and bad traditions, and reason with people. In this way, people feel like they own the project, and eventually improvements occur. Furthermore, one must listen to the needs of the people and promote development in a broad sense. We often promote agriculture, breast feeding, and the equal status of women in the name of comprehensive community health and empowerment.

Dr. North: Your approach sounds workable in a small area, but what about an entire country or world?

Ms. South: This is the true challenge we face. I am convinced, however, that the change must be instituted by the communities themselves in order to be effective and permanent.

Bearing in mind this kind of bottom-up approach, we explored many structural issues during the course of the week. These included increasing the status of women and the availability of family planning services in order to increase the health status of a society. Other needs discussed were improved sanitation, food supply, transportation, rural health services, occupational safety and the reduction of pollution hazards. In addition, we discussed the need for governmental 'political will' to make health a priority and the need for political stability. Many hard-won health gains have been eliminated by political instability and war.

However, we must not forget that, in reality, this sort of mutually respectful dialogue between North and South rarely occurs. The largest barriers to improved health care are the same barriers which inhibit success in nearly all aspects of society and science. These barriers are not due to a lack of technology, research or ideas, nor even to a lack of resources. Rather, they are due to the way in which we interact, as individuals, as communities, as organizations, and as nations. Our critical examination of health care issues in developing countries led us to conclude that this was the point of failure in society's efforts. Overcoming this is the challenge for a sustainable world today.

The type of *koinonia,* or commonality of community, that has been identified as occurring in the 1992 Student Pugwash USA International Conference as a whole occurred in our working group as well. We challenge you to Look, Listen, and Learn: **Look** for underlying problems and long-term solutions, **Listen** actively and respect other people's points of view, and **Learn** to think in a new way.

Peace

continued from page 10

pragmatic. We must take big steps and small steps when appropriate. In an effort to decrease international secrecy and increase levels of trust, we must foster new ways of understanding through communications, student exchanges, and community living. Towards this end, reducing international airline fares is one small step that should be considered. On a larger scale, European developments provide new models for economic sharing. West-East relations can reduce tensions and increase transparency. Perhaps we should change the familiar saying to, 'Act globally, act locally.'

Peace is not static; we move through it. We must increase trust through avenues such as the SPUSA International Conferences. We must stop hiding from each other and begin to act as if we are all part of one family.

Educating

continued from page11

creativity, empathy and the ability to communicate effectively. These citizens must also be ethically concerned and able to develop, select, and use culturally sustainable technologies. In any attempt to reach this goal, however, formal education must first switch its emphasis from the imparting of information to the building of skills for 'learning how to learn' and for making responsible choices. Also seen as important was the commitment of those possessing knowledge and experience to mentor the next generation. Only then will citizens be truly educated and empowered to act as agents of change.

One conference participant, José Camberos, reflected upon the 'why' of educating oneself and others on the creation of a sustainable world. José shared with the participants of the 1992 SPUSA International Conference one possible answer he found universal -- "because I contain the capacity to choose. Freedom. Unless we respect and cherish freedom, in the ideal, we impose a personal bias to all our judgements. Any practical explicit solution to our common problem ultimately presupposes some bias because personal experience limits our capacity for action....Lao Tzu speaks of the world as a process, not an ideology, not a political, economic, environmental or social agenda. The world Lao Tzu envisioned refers to an awareness of universal incompleteness in the process of becoming complete. Commitment to such an ideal transcends even our most noble actions."

Board of Directors
Michael Berger
Dave Blecker
Taft Broome
Anne Cahn
Peter Carpenter
Rosemary Chalk
Takeshi "Kurt" Eto
David Leifer
Sally Lilienthal
Indira Nair
Jeff Porten
Robert Rosenzweig
Dann Sklarew
Nicholas H. Steneck

Board of Advisors
Sissela Bok
Honorable George Brown
Audna England
Richard Graham
Hal Harvey
John Holdren
Walter Kohn
Shirley Malcom
Richard Nelson
Linus Pauling
Victor Rabinowitch
Jonas Salk
Frank von Hippel
Victor Weisskopf
Herbert York

Staff
Betsy Fader
Executive Director

Mike Smith
Management Director

Timothy Larson
Program and Development Coordinator

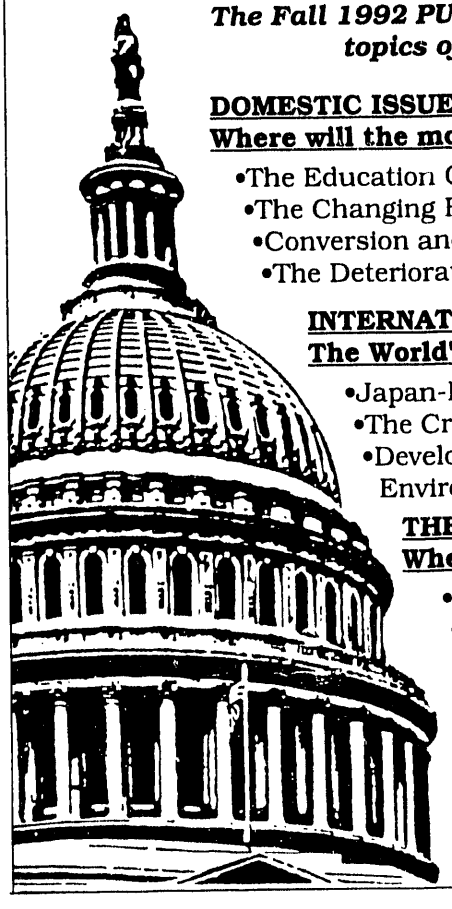
Evelyne Delori
National Chapter Coordinator

Anne Joseph
Program Assistant

Barry Lasky
Program Assistant

THE '92 ELECTION and THE GLOBAL AGENDA

Fall PUGWASHington
October 14-17, 1992



The Fall 1992 PUGWASHington will address the following topics of global and national relevance

DOMESTIC ISSUES
Where will the money come from?

- The Education Crisis: Funding Priorities and Political Roadblocks
- The Changing Face of American Health Care
- Conversion and the Elusive Peace Dividend
- The Deterioration of our Urban Centers

INTERNATIONAL ISSUES
The World's Policeman, or Something Better?

- Japan-Bashing, Technology Transfer, and GATT
- The Critical Path to Global Security
- Development and the Harmonization of Economy and Environment

THE ROAD FROM RIO
Where do we go from here?

- The Earth Charter - Does It Go Far Enough?
- The U.S. as an Obstacle to Global Sustainability
- Prospects for a Comprehensive U.S. Energy Policy

CALL FOR AN APPLICATION TODAY!
1-800-WOWAPUG

Tough Questions is a Quarterly Newsletter Designed and Edited This Time Around by Barry Lasky

Student Pugwash USA
1638 R Street NW, Suite 32
Washington, DC 20009-6446

Nonprofit Org.
U.S. Postage PAID
Washington, DC
Permit No. 4138

Address Correction Requested

PRINTED WITH SOY INK
Recycled paper

Appendix J

Evaluations and Participant Feedback

Conference Evaluation

1992 Student Pugwash USA International Conference

Visions For a Sustainable World: A Conference on Science, Technology, and Social Responsibility

1. Before you came to the Conference, what did you expect? How does this compare to what really did happen?

2. How did the Student Pugwash USA Conference compare to other conferences you've attended?

3. What do you feel were the two most important things that took place at this conference?

4. How were you affected by the Conference? Did the Conference change your outlook on certain issues?

5. What were the most positive aspects of the Conference for you?

6. What things could have been improved? How?

7. Was the Conference staff helpful and responsive to your needs?

8. Overall, how would you rate the Conference?

___ Outstanding ___ Good ___ Fair ___ Forgettable

9. Has the Conference helped you make any decisions about your future academic/ career plans?

___ No ___ Not Sure ___Yes

If YES, please explain:

_____

_____

_____

_____

10. Please evaluate the following Conference features and activities by checking the appropriate response. Please use the comment lines if you would like to expand on any of the ratings.

	Excellent	Good	Fair	Poor
a. Pre-Conference Materials	___	___	___	___
b. Variety of Events	___	___	___	___
c. Conference Length	___	___	___	___
d. Social Activities	___	___	___	___
e. World Game Workshop	___	___	___	___

11. Overall, how would you rate the Working Group Meetings?

Excellent	Good	Fair	Poor
___	___	___	___

12. What was the name of your Working Group?

13. In general, how would you rate the plenary sessions?

	Excellent	Good	Fair	Poor
a. International Security in the World of the 21st Century	___	___	___	___
b. Communicating Science and Technology to the Public	___	___	___	___
c. Redirecting R&D for the Post Cold War World	___	___	___	___
d. Weapons Development Under a New World Order	___	___	___	___
e. The Human Genome Initiative: Genetic Disease Prevention at What Cost?	___	___	___	___
f. Minority Leadership in Science and Technology? Issues of Access and Equity	___	___	___	___
g. Public Health and International Development: An Agenda for the 1990's	___	___	___	___
h. The Road From Rio: Prospects for Global Environmental Cooperation	___	___	___	___
i. Visions of World Leaders for a Sustainable Environment	___	___	___	___
j. Social Change and Individual Responsibility	___	___	___	___

14. Did you feel a strong connection between the Conference theme and the plenary and working group sessions?

15. Are there issues related to the Conference theme that should have been more fully emphasized?

16. If you are willing to have Student Pugwash quote some of your comments in descriptive or promotional material, please put your name on this form.

NAME (Optional) _____

(Please use remaining space for any additional comments)

PARTICIPANT QUOTES FROM THE 1992 INTERNATIONAL CONFERENCE

Dr. Robert DeHaan
The Timmie Professor of Anatomy and Cell Biology, Emory University
"It has been a stimulating and exciting week for me; the opportunity to meet and get to know a wonderful group of students and other "senior" participants, and to discuss and think about a series of profound issues has been a memorable experience."

Dr. Lee Crandall
Professor, Human Genome Insurance Project, University of Florida
"I express my appreciation for the opportunity to participate in the 1992 International Conference in Atlanta. I found it to be a profoundly rewarding experience that contributed both substance and perspective to my work on the insurance implications of mapping the human genome. Thank you for all that you did to bring together this exceptional group of participants and to promote such an exceptionally useful interdisciplinary exchange of ideas."

Morris Reid
Student from Morehouse College
"Student Pugwash USA...has done an excellent job of bringing together individuals from all parts of the world, economic status, and political belief -- thank you for helping to bridge the gaps between cultures and the people of the world."

Carol Hogue
Staff Epidemiologist, Centers for Disease Control
"Thank you for the opportunity to participate in this exciting endeavor. I have learned much, have a great deal to reflect on, and have been inspired by the next generation of leaders."

Ione Voss
Student, from Amazonia, Brazil
"Thank you so much. It was an honor to participate in the Student Pugwash conference. It was an intensive week of learning and sharing on culture, politics, science, and technology. The conference has played a fundamental role in reshaping the way I view science, technology, and the world."

Ralph Trottier
Professor of Law, Morehouse College of Medicine
"In this brief time, I've made personal contact with excellent minds on the issues before us in human genetics. Thank you for the invitation to participate in this program and I look forward to future meetings on this topic."

Aditi Dutt
Graduate Student from India
"I'm really glad I came to the conference, mainly because unlike other conferences, [illegible]t to interact one-on-one with not just academicians but also experts from industry and government, from the US and abroad. It's really nice to see that we can exchange ideas with people in these positions."

Dr. Robert Murray
Professor of Genetics and Pediatrics, Howard University
"These few days have been a revelation to me of the way that men and women a generation apart can communicate, share ideas and work to constructively solve problems that cause suffering in people throughout the world."

Kristin Loerzel
Student from the College of William and Mary (Truman Scholar)
"The Conference did not change my outlook on any particular issue, but the knowledge I gained did help me to redefine and refocus my academic interest in certain subjects. I have a better idea of what I want to learn in my last years at undergraduate school and I have more options for post-graduate work and school."

Lita Hegemier
Student from Indiana University
"I expected to find a great deal of discussion among scientists concerning science and technology as they relate to the world. What I found was an incredibly enthusiastic group of diverse individuals devoted to making the world a better place. I can honestly say that the conference changed my life. I no longer feel that there's nothing that I can do - one person can make a difference and nothing is hopeless!"

Abikok Riak
Student from Jamaica
"The Conference was stimulating. Where I go to school, we really do not have a forum to discuss important issues such as the ones we did here. I can see myself going through "Pugwash withdrawal symptoms" very soon. I can't think of one word to describe just how much I learned. The plenary sessions, working groups, and people all contributed to the learning experience. I hope that I'll be able to do something like this again."

Ruben Mnatsakanyan
Environmental Economist, Russian Institute for Natural and Cultural Heritage, Moscow
"Student Pugwash USA's International Conference is more than just a Conference. It offered a learning and interacting experience that other conferences do not offer. The activities held were very much correlated to the major theme of the Pugwash Conference."

Agesin Olusegun Olawale
Medical doctor from Nigeria
"I was able to increase very widely my knowledge of problems of various countries and different ways by which these problems could be solved, especially by the young generation."

Spencer Geswein
Student at the Rose-Hulman Institute of Technology
"The conference has inspired me and given some direction to the next few years that were previously uncertain. It changed my outlook on people more than on issues. I have lived my entire life in a homogeneous society. At least now I know how to widen my perspective."

Kerem Durdag
Graduate student from Turkey studying at University of New Hampshire
"I am seriously considering a career change to go into science policy as a result of this conference. This was, without a doubt, the best conference I have ever attended. I will definitely spread the word! The conference was excellently organized. Plus, the working group on Peace and International Security had outstanding discussions and interactions."

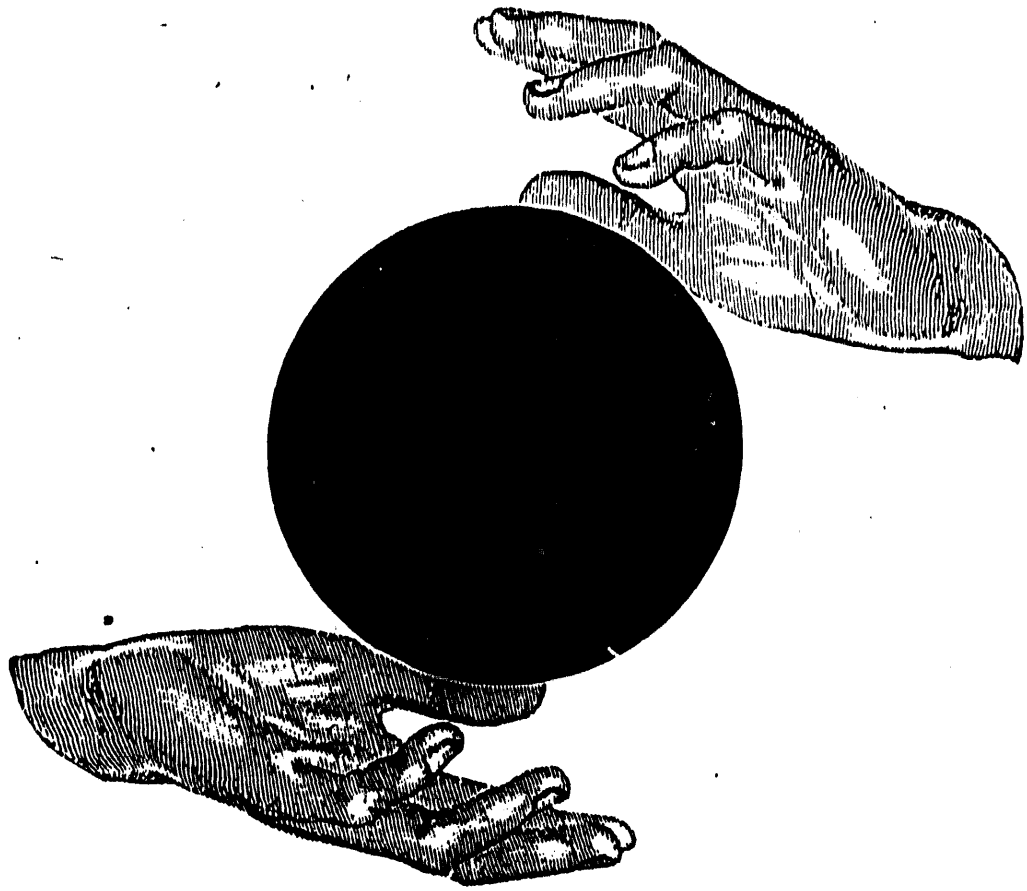
The Seventh Student Pugwash USA International Conference

VISIONS

For A Sustainable World

A Conference on Science, Technology, and Social Responsibility

Emory University, Atlanta, Georgia
June 14-20, 1992



CONFERENCE PROGRAM

STUDENT PUGWASH USA
1638 R Street NW, Suite 32, Washington, DC 20009

SUNDAY, JUNE 14

9:00 am - 4:30 pm	**Registration of Conference Participants at Woodruff Residential Center**
4:00 pm - 4:30 WHSCAB 101	**Orientation and Announcements** (closed to public)
4:45 pm - 5:30 pm	**Working Groups Meet for Agenda and Goal Setting** (closed to public)
5:45 pm - 7:00 pm	**Dinner at Dobbs University Center, Winship Ballroom**
7:15 pm - 7:45 pm WHSCAB 101	**Welcoming Remarks** Timothy Larson - Conference Coordinator, Student Pugwash USA Billy Frye - Provost, Emory University
7:45 pm - 9:30 pm WHSCAB 101	**Opening Plenary:** **International Security in the World of the 21st Century** Peter Gleick - Director, Global Environment Program, Pacific Institute for Environment, Security and Development Chris Smith - Senior Fellow, Centre for Defense Studies, Kings College, England

MONDAY, JUNE 15

7:30 am - 8:45 am	**Breakfast at Dobbs University Center, Common Area**
9:00 am - 12:00 noon	**Working Group Meetings** (closed to public)
12:15 pm - 1:45 pm	**Lunch at Dobbs University Center, Winship Ballroom**
2:00 pm - 3:45 pm White Hall 208	**Communicating Science and Technology to the Public** Todd LaPorte (Moderator) - Office of Technology Assessment Bailey Barash - Senior Producer for Science News, CNN Malcolm Gladwell - Science Writer, *The Washington Post* George Page - WNET-NY; Executive Producer of *NATURE*
3:45 pm - 4:15 pm	**Break**
4:15 pm - 5:15 pm White Hall 208	**Redirecting R&D for the Post Cold War World** Joel Yudken - Program on Regional and Industrial Economics, Rutgers University Gary Chapman - Director, Computer Professionals for Social Responsibility Anne Ehrlich - Associate Director, Center for Conservation Biology, Stanford University
5:30 pm - 6:45 pm	**Dinner at Dobbs University Center, Winship Ballroom**
7:00 pm - 9:00 pm WHSCAB 101	**Weapons Development Under a New World Order** Anne Cahn (Moderator) - Founder, Committee for National Security Theodore Taylor - Nuclear Scientist, Los Alamos National Laboratory, 1949 - 56 Herbert Leifer - Senior Scientist (ret.), Rockwell International Jacquelyn Davis - Executive Vice-President, Institute for Foreign Policy Analysis U.S. Department of Defense Official - (TBA)

TUESDAY, JUNE 16

7:30 am - 8:45 am	**Breakfast at Dobbs University Center, Common Area**
9:00 am - 12:00 noon	**Working Group Meetings** (closed to public)

12:15 pm - 1:45 pm	**Lunch at Dobbs University Center, Common Area**
2:00 pm - 5:15 pm Winship Ballroom	**World Game Workshop** (please call 727-0730 for reservations)
5:30 pm - 6:45 pm	**Dinner at Dobbs University Center, Common Area**
7:00 pm - 9:00 pm Location TBA	**Using Science and Technology to Serve Human Needs** **Issue Groups Meet to Discuss World Game**

WEDNESDAY, JUNE 17

7:30 am - 8:45 am	**Breakfast at Dobbs University Center, Common Area**
9:00 am - 12:00 noon	**Working Group Meetings** (closed to public)
12:15 pm - 1:45 pm	**Lunch at Dobbs University Center, Winship Ballroom**
2:00 pm - 3:45 pm White Hall 208	**The Human Genome Initiative: Disease Prevention at What Cost?** Robert DeHaan (Moderator) - Director, Center for Ethics in Public Policy and the Professions, Emory University Robert Murray - Professor of Pediatrics and Genetics, Howard University Nachama Wilker - Executive Director, Council for Responsible Genetics John Brown - Federal Bureau of Investigation
4:15 pm - 7:45 pm	**A Taste of the South: Barbecue Dinner and Recreation in Lullwater Park** (closed to public)
8:00 pm - 10:00 pm WHSCAB 101	**Minority Leadership in Science and Technology? Issues of Access and Equity** Taft Broome (Moderator) - Professor of Civil Engineering, Howard University Rachelle Hollander - Program Director, Ethics and Values Studies, National Science Foundation Willie Pearson - Professor of Sociology, Wake Forest University Shirley McBay - Executive Director, Quality Education for Minorities Network

THURSDAY, JUNE 18

7:30 am - 8:45 am	**Breakfast at Dobbs University Center, Common Area**
9:00 am - 11:30 noon	**Working Group Meetings** (closed to public)
11:45 pm - 1:00 pm	**Lunch at Dobbs University Center, Winship Ballroom**
2:00 pm - 3:45 pm Carter Center Cypress Room	**Public Health and International Development: An Agenda for the 1990s** (please call 727-0730 for reservations) Donald Hopkins - Senior Consultant, Global 2000 Eugene Gangarosa - Professor of International Health, Emory School of Public Health, and Director of the Office of International Affairs, Emory University Belmont Williams - Visiting Professor, Morehouse College of Medicine Carol Hogue - Centers for Disease Control
3:45 pm - 4:45 pm	**Free Time to Explore the Carter Presidential Center & Museu**

5:30 pm - 6:45 pm	**Dinner at Dobbs University Center, Winship Ballroom**
7:00 pm - 8:30 pm WHSCAB 101	**The Road From Rio: Prospects for Global Environmental Cooperation** Carolyn Hatcher (Moderator) - President, The Georgia Conservancy Mohan Munasinghe - Chief, Environmental Policy Division, World Bank Elizabeth Bowen - President-Elect, Physicians for Social Responsibility John Reid - Director of Corporate Environmental Affairs, The Coca-Cola Company
8:45 pm - 9:15 pm WHSCAB 101	**Visions of World Leaders for a Sustainable Environment (Video)**
9:15 pm WHSCAB Foyer	**Reception for Conference Participants and the General Public**

FRIDAY, JUNE 19

7:30 am - 8:45 am	**Breakfast at Dobbs University Center, Common Area**
9:00 am - 12:00 noon	**Working Group Meetings** (closed to public)
12:15 pm - 1:45 pm	**Lunch at Dobbs University Center, Winship Ballroom**
2:00 pm - 3:30 pm White Hall 208	**What Have We Learned?** Conference participants will report on working group discussions, as well as compelling strategies and ideas to confront global challenges.
3:30 pm - 3:45 pm	**Break**
3:45 pm - 5:15 pm White Hall 208	**Personal Plan of Action and Chapter Organizing** Presentations on what individuals can do to continue the dialogue, and introduction to the Student Pugwash USA Chapter Program.
5:30 pm - 6:45 pm	**Dinner at Dobbs University Center, Winship Ballroom**
7:30 pm - 9:15 pm WHSCAB 101	**Social Change and Individual Responsibility** Jeffrey Leifer (Moderator) - President, Leifer Capital and Founder, Student Pugwash USA Andrew Young - (former) Mayor, City of Atlanta (tentative) Howard Brown - President, Resource Planning and Management Systems Inc. Additional speakers to be announced.
9:15 pm - 9:30 pm	**Closing Remarks** Betsy Fader - Executive Director, Student Pugwash USA

SATURDAY, JUNE 20

7:30 am - 9:30 am	**Breakfast at Dobbs University Center, Common Area**
	Conference Participants Depart

All events will be held on the Emory University Campus (unless otherwise noted) in White Hall and the Woodruff Health Sciences Center Administration Building (WHSCAB).

Senior Participants

Environmental Challenges for Developing Countries

Carl Brown - Center for Change Management
Anne Ehrlich - Center for Conservation Biology, Stanford University
Stephen Gasteyer - Committee for Sustainable Agriculture in Dev. Countries, World Resources Institute
Peter Gleick - Director, Global Environment Program, Pacific Institute
Kathy Harrison - Department of Political Science, University of British Columbia
Indira Nair - Engineering and Public Policy, Carnegie Mellon University
Larry Ragsdale - Human and Natural Ecology Dept., Emory University

Energy Options: Their Social and Environmental Impact

Barry Abramson - Vice President, Engineering, Servidyne, Inc.
Gary Breece - Georgia Power Company
Howard Brown - President, RPM Systems Inc.
Steven Ewald - Environmental Affairs, Georgia Power Company
Ashok Gadgil - Energy Expert, Lawrence Berkeley Laboratory
Bill Keepin - Consultant, The Energy Foundation
Scott Peters - U.S. Council for Energy Awareness
Terry Sabonis-Chafee - Wilson School of Public Policy, Princeton University
Loretta Smith - Consultant, RPM Systems Inc.
Tony Speller - Member of Parliament, England (1979-92)

Health Care in Developing Countries

Eugene Gangarosa - Emory School of Public Health; former Dean, American University in Beirut
Evvy Hay - MAP International
Carol Hogue - Centers for Disease Control
Donald Hopkins - Senior Consultant, Global 2000
Edward Maibach - Emory School of Public Health
Deborah McFarland - International Health Care Division, Emory School of Public Health
Josephat NGaira - MAP International (Nairobi, Kenya)
Andrew Vernon - Centers for Disease Control
Belmont Williams - Morehouse College of Medicine (Sierra Leone)

Peace and Global Security

Alexi Bykov - Russian Peace Foundation, Moscow
Anne Cahn - Senior MacArthur Scholar, University of Maryland
Todd LaPorte - U.S. Office of Technology Assessment
Herbert Leifer - Senior Defense Scientist (ret.), Rockwell International
Ambassador (ret.) James Leonard - Executive Director, Washington Council on Non-Proliferation
Joyce Neu - Conflict Resolution Program, Carter Center
Chris Smith - Centre for Defense Studies, Kings College, England
Theodore Taylor - Retired physicist, worked at Los Alamos National Lab

Educating for the Socially Responsible Use of Technology

Bailey Barash - Science News Producer, Cable News Network
Taft Broome - Professor of Engineering, Howard University
Gary Chapman - Director, Computer Professionals for Social Responsibility
Papa Nalla Fall - Consultant, United Nations Development Program (Senegal)
Rachelle Hollander - Program Director, Ethics and Values Studies, National Science Foundation
Willie Pearson - Professor of Sociology, Wake Forest University
Barbara Sabonis-Chafee - Freelance Education Writer
Nicholas Steneck - Director, Historical Center for Health Sciences, University of Michigan-Ann Arbor
Joel Yudken - Program on Regional and Industrial Economics, Rutgers University

Ethics and the Use of Genetic Information

John Brown - Federal Bureau of Investigation
Peter Carpenter - Visiting Scholar, Center for Biomedical Ethics, Stanford University
Lee Crandall - Human Genome Insurance Project, University of Florida
Robert DeHaan - Director, Ethics Center, Emory University
Robert Murray - Professor of Pediatrics and Genetics, Howard University; NAS/IOM/NIH Fellow
Jim Murtagh - Emory V.A. Hospital; formerly at National Institutes of Health
Ralph Trottier - Lawyer, Morehouse College of Medicine
Douglas Wallace - Director, Center for Molecular Genetics, Emory University
Nachama Wilker - Executive Director, Council for Responsible Genetics

Student Pugwash USA

Student Pugwash USA is a national, educational, nonprofit organization dedicated to building a commitment among young people to solve critical global problems through the responsible use of science and technology. Through interactive, international and interdisciplinary programs, Student Pugwash USA educates young people on the relevance of science and technology to their own lives, and on its ability to shape the future of the global community. Student Pugwash USA originated in 1979 with an International Conference on technology and ethical responsibility, held at the University of California at San Diego. Subsequent International Conferences, held at Yale, Michigan, Princeton, Stanford, and the University of Colorado at Boulder, have led to the development of our campus-based Chapter Program, which currently extends to over 100 college, university, and high school campuses across the country, and to the establishment of Student/Young Pugwash organizations in 16 countries throughout the world.

Student Pugwash USA also offers a New Careers Program, designed to introduce students to career opportunities that emphasize the responsible use of technology. We publish *New Careers: A Directory of Jobs and Internships in Technology and Society* and *The Mentorship Guide: A Directory of Resource People and Advisors in Social Change*. In addition, we provide support to recent graduates and young professionals through a developing Internship Placement Program. A developing Professional Pugwash program for non-students will provide a means through which Student Pugwash USA "alumni" and other interested individuals can continue or commence their involvement with the organization. Further information on membership in Professional Pugwash may be obtained by contacting the Student Pugwash USA National Office.

Student Pugwash USA Board of Directors

Dave Blecker
Taft Broome
Anne Cahn
Peter Carpenter
Rosemary Chalk
Takeshi "Kurt" Eto
Kathy Harrison
David Leifer
Sally Lilienthal
Indira Nair
Jeff Porten
Robert Rosenzweig
Dann Sklarew
Nicholas Steneck

Student Pugwash Supporters

Carnegie Corporation
Ciba-Geigy Corporation*
Ciba-Geigy Limited*
Emory University*
Georgia Power*
W. Alton Jones Foundation
The John D. and Catherine T. MacArthur Foundation*
National Institutes of Health*
National Science Foundation*
New-Land Foundation
Pfizer Corporation*
Ploughshares Fund*
Rockefeller Family Associates*
Rockefeller Foundation*
Samuel Rubin Foundation*
Schering-Plough Corporation*
Trust for Mutual Understanding*
U.S. Department of Energy*
The Winston Foundation for World Peace*
Individual Contributors

*denotes Conference-supporters.

Produced by Emory University Publications *Printed on recycled paper*

DATE
FILMED
1/12/94

END