

DE-FG02-94ER61751
CONF-9406435--Summ.

**Meeting The
Needs of The
Global Community**

**Information
Communicate
Educate**

CONFERENCE

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED
mm

**Science and
Technology for
The 21st Century**

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, make 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.

DISCLAIMER

**Portions of this document may be illegible
in electronic image products. Images are
produced from the best available original
document.**

CONF-9406435--Summ.

Student Pugwash USA's Eighth Biennial International Conference

*Science and Technology for the 21st Century:
Meeting the Needs of the Global Community*

Johns Hopkins University
Baltimore, Maryland, USA
June 12-18, 1994

CONFERENCE REPORT

Table of Contents

Attached: Conference Recruitment Poster
Conference Agenda
Conference Facebook

Conference Report

Appendices:

- A. Student Recruitment
- B. Application Materials
- C. Student Participants
- D. Senior Participants
- E. Paper Topics
- F. Tough Questions
- G. Personal Plan of Action
- H. Conference Evaluation

Student Pugwash USA's Eighth Biennial International Conference

Science and Technology for the 21st Century: Meeting the Needs of the Global Community

Johns Hopkins University
Baltimore, Maryland, USA
June 12-18, 1994

CONFERENCE REPORT

I: EXECUTIVE SUMMARY

This report summarizes the organization, activities and outcomes of Student Pugwash USA's 1994 International Conference, *Science and Technology for the 21st Century: Meeting the Needs of the Global Community*. The Conference was held June 12-18, 1994 at Johns Hopkins University in Baltimore, Maryland, and brought together 91 students from 25 countries and over 65 experts from industry, academe, and government.

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 1994 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 featured:

- Preventive Diplomacy and Conflict Resolution for a Secure Future
- Resource Stewardship for Environmental Sustainability
- The Social Costs and Medical Benefits of Human Genetic Information
- Overcoming Barriers to Health Care Education and Delivery
- Meeting Societal Needs Through Communication and Information Technologies
- Designing the Future--From Corporations to Communities

The International Conference was specifically designed to include mechanisms for ensuring its long-term impact. The issue papers which served, in part, as the basis for students' acceptance to the Conference, are being compiled into a discussion guide and curriculum resource, the *Global Issues Guidebook*. In addition to providing a foundation for Student Pugwash USA Chapter activities, the *Guidebook* will raise awareness of issues of science, technology and social responsibility in high schools and among other student organizations. Additionally, participants were encouraged to focus on their individual role in helping to resolve global issues, through the development of a Personal Plan of Action.

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 1994 International Conference was initiated in October 1993 by Betsy Fader, Executive Director of Student Pugwash USA and Tim Larson, Coordinator of Student Pugwash USA's 1992 International Conference. Johns Hopkins University in Baltimore, Maryland, was selected as the Conference location for its outstanding local resources and support. Johns Hopkins' internationally recognized resources in many of the Conference issue areas, i.e. public health, medicine, genetics, and international affairs, as well as its strong undergraduate arts and sciences program supported and augmented the multidisciplinary program. Baltimore's community development programs likewise proved to be a helpful Conference resource, particularly in terms of the "Designing the Future: From Corporations to Communities" working group. The city fulfilled the organizational goal of bringing the International Conference to the Mid-Atlantic region, which had not hosted an International Conference since 1985. Baltimore's proximity to Washington provided access to an even greater number of policy makers and analysts. Hopkins' attractive undergraduate campus also contributed to its selection as the 1994 International Conference site.

Nicola Short was employed as Conference Coordinator in August of 1993. Given the host campus' proximity to the organization's headquarters, the Conference was planned from the Student Pugwash USA's National Office located in Washington, DC. A Conference Program Assistant, Laura Gaines, was hired in January, 1994. Throughout the planning process, Nicky and Betsy sought out advice and assistance from a wide range of individuals who provided guidance on important topics to be addressed, speaker identification, and outreach. Such individuals include 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 1994 International Conference included:

Jacob and Hilda Blaustein Foundation
Ciba-Geigy Corporation
Ciba-Geigy Limited
First National Bank of Maryland
Legg-Mason Corporation
The John D. and Catherine T. MacArthur Foundation
Morton and Sophia Macht Foundation
Mercantile Bank
National Science Foundation
Ploughshares Fund
Samuel Rubin Foundation
Trust for Mutual Understanding
U.S. Department of Energy
United States Institute of Peace

Student Pugwash USA encouraged and provided guidance to students in securing 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. Nearly all speakers and senior participants covered their travel costs to Baltimore. Once in Baltimore, 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 1994. Any undergraduate, graduate, or professional (e.g. law, medical) student was eligible to apply, regardless of discipline, nation, or age. (Only students who had previously attended a Student Pugwash USA International Conference were ineligible to apply.) In October, over 14,300 conference posters and application packets were mailed to college and university departments, foreign student advisors, and academic programs across the United States and abroad, a 43% increase in the number of forms distributed for the 1992 International Conference. 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 168 organizations (12% more than in 1992). This effort resulted in numerous *pro bono* advertisements and "ad swaps." Finally, the conference was publicized electronically, specifically posted on 20 newsgroups, bulletin boards and networks, and was undoubtedly distributed much more widely as a result. As a result of the Conference recruitment efforts, Student Pugwash USA received over one hundred requests for additional information on our organization and 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 participants in our Chapter and New Careers Programs. (Information on the recruitment process is presented in Appendix A.)

III. The Application Process

The Conference was organized around six working groups, which met for three hours each morning of the week-long event. Students were accepted to the Conference based on an issue paper written on one of the six working groups topics, a statement of their interest in the working group and Conference themes, and their past experience in the topics to be discussed. Students' issue papers formed the basis for the discussion during working group sessions, and are now being edited for publication in the *Global Issues Guidebook*. (For more information on the *Global Issues Guidebook*, see the "Conference Outcomes" section which follows.)

The application process was conducted in two stages. Applicants first submitted a preliminary application form, including their proposed issue paper topic. Students applying from within the U.S. were paired with a mentor, based on their paper topic, for the paper writing process. Difficulties with international communications precluded such collaboration for students applying from outside the U.S. In part because they did not have the opportunity to work with a mentor, but also because of the desirability of international opinions, students applying from abroad were requested to include cultural and personal perspectives in their papers.

The second stage of the application process required the submission of an issue paper addressing a topic relating to one of the six working group themes, an essay describing the applicant's interest in the Conference, and a resumé or brief description of the students' activities and experiences relevant to the Conference and/or working group themes. This was the most rigorous application process for a Student Pugwash USA International Conference, in that it required a full paper to be submitted. Nonetheless, SPUSA received twice as many preliminary applications and 14% more full applications for the 1994 International Conference than applications received in 1992. Over 300 preliminary applications and 171 full applications were received from 27 countries. (See Appendix B for application materials.)

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, their familiarity with Student Pugwash USA or their previous experience in an International Conference. 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.

Ninety-one undergraduate and graduate students representing 69 colleges and universities and twenty five countries attended the Conference. Students' academic backgrounds were quite varied, with 28% from the sciences, 22% from interdisciplinary programs, 41% from the social sciences, and 8% from medicine and public health. Forty-eight percent of the delegates were women, and 27% of the American participants were minorities. This is an improvement over the 1992 International Conference where 40% of the student participants were women and 13% of the American participants were minorities. (Additional details on student participants can be found in Appendix C and in the Conference "Facebook".)

Senior Participants

Sixty-five professionals and experts from eight 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, National Academy of Science, National Institutes of Health, the Internet Society, the Carnegie Endowment, Ciba-Geigy Limited and RAND. (A complete listing of senior participants and their affiliations is included in Appendix D. Additional biographical information is provided in the Conference "Facebook".) 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:

- 24 academe
- 17 non-governmental organization / non-profit organization
- 6 business
- 11 government

Thirty six percent (up from 33% in 1992) of the senior participants were women, while 14% were from countries other than the United States. Eight percent of the senior participants were minorities.

IV: THE CONFERENCE PROGRAM

Through a varied format of interdisciplinary sessions, Student Pugwash USA's 1994 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 (listed below). Each working group consisted of about fifteen students, six to ten experts and professionals, and a trained facilitator. The week's agenda for each group was determined by its members, based on the issue papers prepared by the students prior to the Conference week. (A list of paper topics can be found in Appendix E.)

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. In addition, each working group included a 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:

- Resource Stewardship for Environmental Sustainability
- Preventive Diplomacy and Conflict Resolution for a Secure Future
- The Social Costs and Medical Benefits of Human Genetic Information
- Overcoming Barriers to Health Care Education and Delivery
- Designing the Future--From Corporations to Communities
- Meeting Societal Needs Through Communications and Information Technologies

On the last day of the Conference, each working group was called upon to make a twenty minute presentation to the Conference community on the main themes, concepts, conclusions or solutions which they discussed throughout the week. This session was quite innovative and informative. (See Appendix F for the special Conference edition of Student Pugwash USA's quarterly newsletter, *Tough Questions*.)

Plenary Sessions

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:

- Envisioning the Future: Towards a Global Community in the 21st Century
- Exchanging Technologies Between Cultures and Countries: The Good, The Bad and The Ugly
- Science and Human Rights
- Innovations and Innovators: Technology and Social Responsibility
- The Future of U.N. Peacekeeping: Prospects for a Volunteer Force
- Creating Solutions and Initiating Change: Young People and the Global Community

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. The Chapter Program staff assisted in publicizing the Conference to the Baltimore area and, as a result, the events enjoyed significant public participation.

The "Innovations and Innovators: Technology and Social Responsibility" session was held at the Maryland Science Center in conjunction with an innovative technologies forum. The event was attended by approximately 250 guests, including several summer programs for accelerated high school students. The event proved to be quite effective in recruiting both students and faculty advisors for Student Pugwash USA's Chapter Organizing Workshop, held two months later in August 1994.

Special Events

Several special events augmented the Conference week, including:

- Exploring Cultures and Value Systems, an interactive session to examine participants' preconceptions about inter-cultural dialogue
- A dinner discussion with Mohammed El-Ashry, Director of the World Bank Environmental Program
- A boat ride around Baltimore Harbor on the historic Clipper City tall ship, with experts speaking on the social, economic and environmental history of the harbor
- An innovative technologies forum and reception held in conjunction with the Innovations and Innovators discussion at the Maryland Science Center

Other special events included an ice cream social, a barbecue picnic, and student-led talent show. Evening coffee houses allowed participants to interact informally--several participants took these occasions to present their work and lead discussions.

Press and Media

The event was publicized to many news sources, such as National Public Radio, Monitor Radio, Canadian Broadcasting Service, the *Washington Post*, the *Chronicle of Higher*

Education, Science Magazine, The Scientist. Articles about the Conference appeared in the *Carroll County Times* (MD), and the newsletters of Washington Evolutionary Systems Society and the National Organization of Gay and Lesbian Scientists and Technical Professionals. The Conference received attention in the Baltimore area through several Johns Hopkins University publications and through the *Baltimore City Paper*. In addition, two Conference participants were interviewed on the Lisa Simione Show on WJHU, Baltimore's National Public Radio affiliate.

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. Furthermore, in conjunction with the 1994 International Conference, Student Pugwash USA is developing a curriculum and discussion resource, the *Global Issues Guidebook*.

The following section describes several of the exciting outcomes of the 1994 International Conference.

The Global Issues Guidebook

Like the International Conference, the *Guidebook* highlights the interdisciplinary nature of global issues, explores creative solutions, and evaluates their impact on both society and the individual. The *Guidebook* project affords Conference participants the opportunity to be published on STS-related issues, and to serve as a role model to their peers.

Information contained in the *Guidebook* is presented in a format which can be used as a guide in classroom or student group discussions. Following its publication in 1995, over 300 copies will be distributed across the United States and internationally to university student organizations and to high school teachers for use in the classroom. The *Guidebook* will be produced in both loose-leaf binder and electronic forms to allow for continual updating.

The *Global Issues Guidebook* will be integrated into all future activities of the Student Pugwash USA Chapter Program, which currently extends to over 200 university, college, and select high school campuses nationwide. The Chapter Program, which has grown by 300% in the last three years, engages thousands of students each year in dialogue and experiential education on critical social and global issues. Through the continued expansion of the Chapter Program, coupled with future editions and updates of the *Global Issues Guidebook*, Student Pugwash USA will involve a growing number of students and professionals in analyses of critical global issues.

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 addressing 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 G for an example of the Personal Plan of Action form)

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 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. Following the International Conference, several students arranged internships with organizations to which senior participants are affiliated. Students from Zambia and the United Kingdom are presently interning in the US as a result of the International Conference.

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. A number of new chapters emerged from the International Conference, as well as several International Student/Young Pugwash organizations internationally, notably in Sierra Leone and Papua New Guinea. 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 1994 International Conference using several different sets of criteria and feedback. Written evaluation forms were completed by student participants at the close of the Conference. Seventy three 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 H for more detailed information of the evaluation process and results.)

Conference evaluations indicated that *Meeting the Needs of the Global Community* 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. Sixty-one percent of the students gave the Conference an overall rating of "excellent" and an additional thirty-three percent gave the Conference an overall rating of "good." Eighty-two percent of the students indicated that the Conference helped them to make decisions about their future academic or career plans.

The evaluation forms revealed several aspects of the 1994 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 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 1994 International Conference also received positive feedback from senior participants. Nearly every senior participant said that they were extremely impressed with high quality of the students' research and discussion, and that they would welcome the opportunity to participate in any upcoming Student Pugwash USA conferences. Many seniors also stated that the 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 explore.

VII: CONCLUSION

By all measures Student Pugwash USA's 1994 International Conference, *Science and Technology for the 21st Century: Meeting the Needs of the Global Community* was successful in educating, empowering, and uniting a highly talented group of young leaders. Through the *Global Issues Guidebook* and initiatives of student participants, the impact of the 1994 International Conference will continue to be felt around the world. The generous assistance of the foundations, corporations, and individuals who supported the 1994 International Conference has enabled Student Pugwash USA to affect the lives of hundreds of students, educating and empowering young people to work towards meeting the needs of the global community.

Appendix A
Student Recruitment

Student Recruitment

To inform students about the 1994 International Conference, Student Pugwash USA utilized many organizations, newsletters and networks for publicity. Particular emphasis was placed on promoting ethnic, gender, and racial diversity among participants. Below is a partial listing of such organizations and resources; institutions/resources focusing on underrepresented/marginalized groups are noted with an astrix.

ACCESS Security Information Service
American Association for the Advancement of Science (AAAS) Professional Ethics Report
*AAAS Minority Scholars
American Institute of Architect Students (AIA)
American Institute of Chemical Engineers
*Association for Women in Science (AWIS)
*Bonner Foundation Scholars Faculty Contacts
Campus Green Vote
Campus Outreach Opportunity League (COOL)
Computer Professionals for Social Responsibility (CPSR)
Green Corps
LEAD USA
*National Action Council for Minorities in Engineering (NACME)
National Association of Foreign Student Advisors (NAFSA)
National Association for Science, Technology and Society (NASTS)
*National Council of Black Engineers and Scientists
*National Organization of Gay and Lesbian Scientists and Technical Professionals (NOGLSTP)
*National Science Foundation Research Centers in Minority Institutions
*National Society of Black Engineers (NSBE)
National Wildlife Federation (NWF)
*Organizations in AAAS' *Associations offor Racial and Ethnic Minority Science, Engineering and Health Professionals*
Participants in the Pugwash Conferences on Science and World Affairs
Public Interest Reseach Groups
*Quality Education for Minorities Network (QEM)
*Society for the Advancement of Chicanos and Native Americans in Science
*Society of Women Engineers (SWE)
Student Environmental Action Coalition (SEAC)
Student Pugwash USA Chapters
Student Pugwash USA Faculty Contacts
Student/Young Pugwash Groups in 18 other countries
Technoscience Readers
*US Student Association National and Regional Networks
*Women in International Security (WIIS)

**Science and Technology for the 21st Century:
MEETING THE NEEDS OF THE GLOBAL COMMUNITY**

Dear AAAS Scholar:

Student Pugwash USA, 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, seeks your assistance in promoting a unique educational opportunity for talented students from around the world.

From June 12-18, 1994, Student Pugwash USA will hold its Eighth International Conference, **Science and Technology for the 21st Century: Meeting the Needs of the Global Community**, at Johns Hopkins University in Baltimore, Maryland. The Conference will assemble 100 undergraduate and graduate students and 50 eminent leaders from government, industry, and academe to explore resolutions to critical issues at the juncture of technology, society, and world affairs. Student delegates will each prepare an "issue paper" for the Conference that will subsequently be published in the *Global Issues Guidebook*, an educational curriculum resource. In order to make the 1994 International Conference and resulting *Guidebook* a success, we seek your assistance in:

• **Informing students** about the 1994 International Conference and encouraging them to apply. A Conference poster is enclosed. We encourage you to post in a prominent location and to enter your name and phone number in the space designated "Local Representative _____." This will enable interested students to receive photocopies of the application materials directly from you, helping them to meet the preliminary application deadline of December 20, 1993.

• **Serving as a mentor** to student applicants. To ensure the quality of the issue papers, Student Pugwash will pair each student with a professional in the student's expressed area of interest. Mentors will be drawn from a variety of fields and disciplines.

Thank you for helping to make students aware of this unique educational opportunity. Should you require any further information, please call Nicky Short at 202-328-6555.

I'm interested in becoming involved! Please send me information on: (tear here)

- Serving as a mentor for the *Global Issues Guidebook*
- Student Pugwash USA's campus-based Chapter Program
- Professional Pugwash and Mentorship Programs
- The New Careers Directory*
- General information on Student Pugwash USA
- Please add my name to your mailing list

Name, Address, Phone: _____

Please return to: Student Pugwash USA, 1638 R Street NW, Suite 32, Washington, DC 20009;
fax: (202) 797-4664; uspugwash@igc.org

STUDENT



PUGWASH

U S A

BOARD OF DIRECTORS

Nicholas Steneck, Chair
Ruth Adams
Michael Berger
David Blecker
Tali Broome
Richard Bryant
Anne Cahn
Peter Carpenter
Rosemary Chalk
Pamela Clarke
Walter Lee
David Leifer
Alan McGowan
Indira Nair
Robert Rosenzweig
Dann Sklarew

Jeffrey Leifer, Founder

BOARD OF ADVISORS

Sissela Bok
Honorable George Brown
Audra England
Richard Graham
Hal Harvey
John Holdren
Walter Kohn
Sally Lillenthal
Shirley Malcom
Richard Nelson
Linus Pauling
Victor Rabinowitch
Jonas Salk
Frank von Hippel
Victor Weisskopf
Herbert York

NATIONAL STAFF

Betsy Feder
Executive Director

Evelyn Delori
Chapter Coordinator

Anne Fraeh
Management Director

Timothy Larson
Program and Development
Coordinator

Nicky Short
International Conference
Coordinator

Electronic Mail Announcements

The 1994 International Conference also focused on electronic publicity as an inexpensive way to reach a very broad audience. Dozens of applications were received electronically. Below is a partial listing of where our electronic conference announcement appeared. We expect that the announcement was copied and distributed well beyond the subscribers of the lists below.

the earthtime
snore@antenna.nl (European Youth Forest Action)
ewire.news
sgr.news
aaasmsp@gwuvm.edu
internews (national council of black engineers and scientists)
tech+society
soc.culture.China
soc.culture.HongKong
soc.culture.Taiwan
talk.politics.china
seac@igc.org (student environmental action coalition)
campaign@cec.org (center for environmental citizenship)
coolit@nwf.org
coesa@nwf.org (endangered species act campaign)
lead@igc.org (LEAD USA)
Peacenet
Econet
Homeonet
Labornet

Electronic Conference Announcement

ANNOUNCING: Student Pugwash USA's Eighth International Conference

"SCIENCE AND TECHNOLOGY FOR THE 21ST CENTURY MEETING THE NEEDS OF THE GLOBAL COMMUNITY"

JOIN: 100 talented students from over 25 countries to meet with accomplished professionals from science, government, industry, non-governmental organizations, and academe for a week-long educational forum to explore the impacts of technology on society and world affairs.

TOPICS:

- * Resource Stewardship for Environmental Sustainability
- * Preventive Diplomacy and Conflict Resolution for a secure future
- * The Social Costs and Medical Benefits of Human Genetic Information
- * Overcoming Barriers to Health Care Education and Delivery
- * Designing the Future--From Corporations to Communities
- * Communications and Information Technologies

ELIGIBILITY: ALL students (undergraduate, graduate and professional) from any and all disciplines. Student Pugwash USA encourages participation that represents a diversity of race, age, gender, sexual orientation, and national origin.

APPLICATION INFORMATION: Participants will be chosen through a competitive, merit-based application process based, in part, upon applicants' submission of a brief 'issue paper' on one of the topics listed above. For an application or additional information, please CONTACT: Nicky Short Student Pugwash USA 1638 R Street NW, Suite 32 Washington, D.C., 20009 phone:(202) 328-6555 email:uspugwash@igc.org

Sample Newsletter Advertisements*

June 12-18, 1994. **The 1994 Student Pugwash USA 8th International Conference. *Science and Technology for the 21st Century: Meeting the Needs of the Global Community*, Johns Hopkins University, Baltimore, Maryland.** Working group topics include: Resource Stewardship for Environmental Sustainability, Preventive Diplomacy and Conflict Resolution for a Secure Future, The Social Costs and Medical Benefits of Human Genetic Information, Overcoming Barriers to Health Care Education and Delivery, Designing the Future--From Corporations to Communities, and Meeting Societal Needs Through Communications and Information Technologies. Application deadline: December 1, 1993. All undergraduate, graduate, and professional students are encouraged to apply. On-site Conference costs will be covered, limited travel assistance is available. For more information, contact Student Pugwash USA, 1638 R St. NW, Suite 32, Washington, D.C. 20009; (202) 328-6555 or 1-800-WOW-A-PUG (students only); fax (202) 797-4664, email: uspugwash@igc.org

Student Pugwash USA's Eighth International Conference
**SCIENCE AND TECHNOLOGY FOR THE 21ST CENTURY:
MEETING THE NEEDS OF THE GLOBAL COMMUNITY**
Johns Hopkins University, Baltimore, Maryland, USA
June 12-18, 1994

The Conference will bring together 100 students from around the world with leaders from academe, government, industry, and NGOs for a week of intensive exploration of the social and ethical implications of science and technological advancement. The event will culminate in the production of a unique publication -- *The STS Global Issues Guidebook*, a student-authored educational resource on cutting-edge science and technology issues and critical global challenges. Working groups will focus on:

STUDENT



PUGWASH

U S A

- Resource Stewardship for Environmental Sustainability
- Preventive Diplomacy and Conflict Resolution for a Secure Future
- The Social Costs and Medical Benefits of Human Genetic Information
- Meeting Societal Needs Through Communications and Information Technologies
- Overcoming Barriers to Health Care Education and Delivery
- Designing the Future--From Corporations to Communities

For more information on the *Guidebook*, or to request an application for the Conference (students only), please contact:

Student Pugwash USA, 1638 R Street NW, Suite 32
Washington, DC 20009; (202) 328-6555 or 1-800-
WOW-A-PUG (students); email: uspugwash@igc.org

* 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!

STUDENT PUGWASH USA's EIGHTH INTERNATIONAL CONFERENCE

SCIENCE AND TECHNOLOGY FOR THE 21ST CENTURY:
MEETING THE NEEDS OF THE
GLOBAL COMMUNITY

Johns Hopkins University, Baltimore, Maryland, USA
June 12-18, 1994

Student Pugwash USA's Eighth International Conference and *Global Issues Guidebook* project will assemble one hundred talented students from over 25 countries for a week-long educational forum to explore the impacts of technology on society and world affairs. Students selected for the Conference will join accomplished professionals for intensive evaluation of the following global issues:

- **Resource Stewardship for Environmental Sustainability**
- **Preventive Diplomacy and Conflict Resolution for a Secure Future**
- **The Social Costs and Medical Benefits of Human Genetic Information**
- **Overcoming Barriers to Health Care Education and Delivery**
- **Designing the Future--From Corporations to Communities**
- **Meeting Societal Needs Through Communications and Information Technologies**

Selection to the Conference will be based upon applicants' submission of a brief "issue paper" addressing a component of one of the themes identified above. Conference participants' papers will subsequently be incorporated into the resulting *Global Issues Guidebook*, to be published in Fall 1994.

The International Conference experience is enhanced by a variety of perspectives and ideologies. Student Pugwash USA encourages participation that represents a diversity of race, age, gender, sexual orientation, and national origin.

**For an application or more information,
see the local representative or contact:**

Student Pugwash USA
1638 R Street NW, Suite 32
Washington, D.C. 20009
phone:(202) 328-6555
fax: (202) 797-4664
e-mail: uspugwash@igc.org

Rolling Admissions

Final Application Deadline: February 15, 1994

Local Representative: _____

Please leave posted throughout the academic year.

Appendix B
Application Materials

**Science and Technology for the 21st Century:
Meeting the Needs of the Global Community**

June 12-18, 1994

Johns Hopkins University, Baltimore, Maryland, USA



Application Procedures

December 15, 1993: Preliminary Application Due. *This is a separate, two sided form. Please contact our office at 202-328-6555 (fax: 202-797-4664, e-mail: uspugwash@igc.org) if you did not receive the Preliminary Application form with this information sheet.*

February 15, 1994: Full Application Due. *The Full Application involves the submission of the following:*

- A four- to six- page issue paper addressing a subject relating to your chosen working group theme. (See enclosed Issue Paper Guidelines.)
- A short (not more than 500 word) essay describing your interest in attending the Conference. Include what you can contribute and what you hope to gain by attending the Conference.
- A resumé or brief description of all academic coursework, extracurricular activities, and other experiences relevant to the Conference or working group themes. (optional)

March 15, 1994: Notification of Acceptance Mailed.

The Conference will be conducted in English.

International Students Please Note: Student Pugwash USA recognizes that students from outside of the U.S. may experience difficulty in acquiring application materials on time. Please do not be deterred from applying if you cannot meet one of the above deadlines. Do, however, contact us as soon as possible if you believe you will not be able to meet the application due date.

Student delegates applying from outside of the U.S. should seek to obtain a passport from their country and a visa from the U.S. embassy as soon as possible. Visa applications should be secured concurrently with the application process.

Although we cannot commit to accepting student delegates before March 15, we can deliver by telex, fax or e-mail an estimate of the likelihood of admission upon receipt of the Full Application. To facilitate communication please provide a telex or facsimile number at which you can be reached on the Preliminary Application. *Please submit the Preliminary Application as soon as possible.*

Conference and Travel Costs:

There is no application or registration fee required for the International Conference, and Student Pugwash USA will provide room and board during the Conference week. However, delegates selected to attend the Conference are expected to cover their own travel costs, although limited travel assistance may be available on a case by case basis. Most Conference participants are able to obtain funds for travel to the event from their university or academic department. Upon request, Student Pugwash USA will assist delegates in securing travel funds.

Working Groups and the Conference Structure:

Working group meetings comprise the backbone of the International Conference. These sessions foster non-hierarchical discussion among students of diverse backgrounds and accomplished professionals, and provide a context within which students' issue papers can be discussed. Working groups meet each morning of the Conference and have autonomy in deciding their agendas and goals. At the end of the week, the groups share highlights of their discussions and recommendations with the entire Conference community.

Afternoons throughout the Conference week will focus on broader aspects of the "Meeting the Needs of the Global Community" theme. Plenary sessions vary in format—from lectures to interactive, role playing workshops—and examine critical global issues relating to many of the working group themes.

Electronic Mail:

One of the goals of the 1994 International Conference and *Global Issues Guidebook* project is to maintain an on-going dialogue among participants before and after the meeting in Baltimore. To this end, Student Pugwash USA is interested in securing access to electronic mail (e-mail) for all students applying to the Conference.

In conjunction with the application process, students without an e-mail address are strongly encouraged to obtain an e-mail account on their campus. Because the process varies from country to country, we cannot provide students with a single set of directions for securing an e-mail account. Please contact us if you run into any difficulty securing access to electronic mail. We will make every effort to insure that all students are able to participate in the on-line Conference interactions.

Address and Contact Information:

Should you have any questions or require additional information, please contact Nicky Short, 1994 International Conference Coordinator, or Tim Larson, *Global Issues Guidebook* Editor. We can be reached at:

Student Pugwash USA
1638 R Street NW, Suite 32
Washington, DC 20009-6446
USA
phone: (202) 328-6555
fax: (202) 797-4664
e-mail: uspugwash@igc.org

Student Pugwash USA's Eighth International Conference
and *Global Issues Guidebook*

**Science and Technology for the 21st Century:
Meeting the Needs of the Global Community**

June 12-18, 1994
Johns Hopkins University, Baltimore, Maryland, USA

Preliminary Application

This form should be returned to Student Pugwash USA as soon as possible. The final deadline for receipt of the preliminary application is December 15, 1993.

All materials should be sent to:
Conference Coordinator, Student Pugwash USA; 1638 R St. NW, Suite 32; Washington, DC 20009-6446; USA. (phone: 202-328-6555, fax: (202) 797-4664, e-mail: uspugwash@igc.org)

Completion of this preliminary application indicates a student's interest to attend Student Pugwash USA's 1994 International Conference, *Science and Technology for the 21st Century: Meeting the Needs of the Global Community*. Acceptance to the Conference will be based on completion of this form, a brief personal statement, and the submission of an "issue paper," which will be included in the resulting *Global Issues Guidebook*, to be published in Fall 1994. (For additional details, see the enclosed Application Procedures and Issue Paper Guidelines forms.) Approximately 100 students from around the world will be selected to attend the 1994 International Conference.

There is no application or registration fee for the International Conference, and Student Pugwash USA will provide room and board during the Conference week. Undergraduate, graduate and professional students from all disciplines are eligible to apply. In addition, Student Pugwash USA encourages participation that represents a diversity of race, gender, age, national origin and sexual orientation.

Please type or print legibly the following information:

Name: _____

School address: _____

Phone: _____ Telex or fax: _____

E-mail address: _____ Address will be valid until: _____

Permanent address: _____

Phone: _____ Telex or fax: _____

(Circle one): Undergraduate Graduate Other: _____

School: _____ Major: _____

Expected year of graduation: _____ Date of birth: _____

Country of citizenship: _____ Ethnic background (optional): _____

How did you learn about the Conference?(check one) Past Conference participant

Poster Fellow student Advertisement (where) _____

Faculty member (name) _____

Conference and *Global Issues Guidebook* Themes:

The central activity of the Conference is the daily working group meeting, which unites approximately fifteen students and five professional participants for interactive exploration of timely global challenges. Working group members will have autonomy in selecting the manner in which they address issues within their topic area. Issue papers prepared for the Conference will provide a foundation for discussion and evaluation in the working group, and will be incorporated into the corresponding section of the *Global Issues Guidebook*.

Please check the working group to which you are applying:

- Resource Stewardship for Environmental Sustainability
- Preventive Diplomacy and Conflict Resolution for a Secure Future
- The Social Costs and Medical Benefits of Human Genetic Information
- Meeting Societal Needs Through Communications and Information Technologies
- Overcoming Barriers to Health Care Education and Delivery
- Designing the Future—From Corporations to Communities

Please suggest one or more issue paper topics that you would be interested to research relating to the working group you have chosen above: _____

Page 2 of 2 Preliminary Application Deadline: December 15, 1993

Conference Coordinator
Student Pugwash USA
1638 R St. NW, Suite 32
Washington, DC 20009-6446
USA

Science and Technology for the 21st Century:
Meeting the Needs of the Global Community

June 12-18, 1994

Johns Hopkins University, Baltimore, Maryland, USA

Issue Paper Guidelines

S T U D E N T



P U G W A S H
U S A

Students applying to the 1994 International Conference must prepare a four- to six-page paper that addresses an issue related to one of the six working group themes listed below:

- Preventive Diplomacy and Conflict Resolution for a Secure Future
- Overcoming Barriers to Health Care Education and Delivery
- The Social Costs and Medical Benefits of Human Genetic Information
- Resource Stewardship for Environmental Sustainability
- Designing the Future—From Corporations to Communities
- Meeting Societal Needs Through Communications and Information Technologies

Following the International Conference, student papers will be published in the *Global Issues Guidebook*, an educational resource designed to introduce students to a variety of critical global challenges from interdisciplinary perspectives.

Paper Guidelines for International Students

Papers authored by international students will bring unique perspectives to the six thematic areas addressed at the 1994 International Conference. We ask that each international student submit a **4- to 6-page (typed and double-spaced) essay** examining an aspect of their chosen working group theme. This essay should look at a particular issue from both personal and cultural perspectives. While it is difficult to address an important issue in much depth in 4-6 pages, these essays are intended to provide commentary on the issue, demonstrating how that issue affects and is perceived by individuals from around the world.

Addressing the following questions may serve as a guideline in planning your essay:

- How does this issue affect people in your country, culture, or region?
- How is this issue being addressed in your country, culture, region?
- What role does or can technology play in this issue, both positively and negatively?
- What do you and others in your country perceive to be the largest barriers to overcoming this problem?
- What are your personal feelings about how the issue should be addressed?

Please select a topic of interest that has relevance to your country, region, or culture. An example of a paper topic for the "Meeting Societal Needs Through Communications and Information Technologies" working group might be "Using Satellite Communications to Make Health Information Accessible in Africa," while a paper for the "Resource Stewardship for Environmental Sustainability" working group might focus on "Preserving Fish Stocks in the North Sea." Your selected topic should relate to one of the following six working group categories:

- **Resource Stewardship for Environmental Sustainability**

Papers in this area could explore methods and approaches for managing natural resources ranging from biological diversity to forests or oceans. Papers are also encouraged which address some aspect of environmental sustainability.

- **Preventive Diplomacy and Conflict Resolution for a Secure Future**

This section will focus on measures that can be taken to promote peace, disarmament and cooperation. Topics might address the future role of the United Nations, efforts to control the arms trade, or the role of scientific and cultural exchanges in promoting peace and international understanding.

- **The Social Costs and Medical Benefits of Human Genetic Information**

Papers in the human genetics section might address any social, ethical, or legal issue raised by the mapping and sequencing of the human genome. Papers might examine privacy issues related to genetic testing, including employment or insurance discrimination, or a potential medical benefit of genetic research.

- **Overcoming Barriers to Health Care Education and Delivery**

This section will focus on innovative strategies and programs for improving public health. Papers might include community-based health care delivery initiatives, AIDS education programs, or the reform of financing and funding for health care services.

- **Designing the Future—From Corporations to Communities**

This section will explore how the design of corporations and communities can change the way people interact with technology, the environment, and each other in the future. Papers might consider criteria that should be used in design such as environmental sustainability, democratization, and equity. Papers might address topics such as “green” architecture, urban planning, environmentally sound product design, the organizational structure of corporations, or the design of information and communication systems in the electronic age.

- **Meeting Societal Needs Through Communications and Information Technologies**

Papers in this section will highlight the ways in which computers and communications technologies can be used to address important global and local problems, including environmental degradation, economic and social development, and health care delivery. Papers may also address challenges or problems posed by the use of communications and information technologies.

As the range of topics from which to choose is quite broad, we encourage you to consult us before submitting your paper, to ensure its appropriateness for the Conference and the *Global Issues Guidebook*. In addition, once you send in your preliminary application form with your proposed issue paper topic, we will attempt to contact you with comments. If you have any questions, please contact Nicky Short or Tim Larson at Student Pugwash USA by phone at (202) 328-6555; by fax at (202) 797-4664; by e-mail at uspugwash@igc.org; or by mail at 1638 R Street, NW, Suite 32, Washington, DC 20009, USA.

Note: If possible, please *prepare and save* your paper on a Macintosh or IBM compatible diskette. Computer facilities will be available at the International Conference so that students can incorporate edits and new ideas into their papers. Having your paper on disk will greatly facilitate the editorial process. Thank you.

**Science and Technology for the 21st Century:
Meeting the Needs of the Global Community**

June 12-18, 1994
Johns Hopkins University, Baltimore, Maryland, USA

Application Procedures



December 30, 1993: Preliminary Application Due. *This is a separate, two-sided form. Please contact our office at 1-800-WOW-A-PUG (fax: 202-797-4664, e-mail: uspugwash@igc.org) if you have not received the Preliminary Application form.*

February 15, 1994: Full Application Due. *The Full Application involves the submission of the following:*

- A four- to six-page issue paper addressing a subject relating to your chosen working group theme. Issue papers will be published in the *Global Issues Guidebook*, to be produced as a result of the Conference.
- A short essay (not more than 500 words) describing your interest in attending the Conference. Include a description of what you hope to contribute and gain by attending the Conference.
- A resumé or brief description of all academic coursework, extracurricular activities, and other experiences relevant to the Conference or working group themes.

March 15, 1994: Notification of Acceptance Mailed.

The Conference will be conducted in English.

Application Procedures:

Students interested in attending the 1994 International Conference must apply to one of the six working groups listed below (also described on page 2 of the Preliminary Application). After selecting a working group theme, applicants should suggest one or two potential issue paper topics that fall within the parameters of that working group. *Please complete and submit the Preliminary Application form as soon as possible.*

Once Student Pugwash USA has received your Preliminary Application, we will send you detailed guidelines on how to prepare the issue paper. Following your receipt of these guidelines, a member of the Conference staff will contact you to discuss your issue paper topic, answer questions, and provide you with ideas and resources appropriate to your issue paper.

Student Pugwash USA will pair each student applicant with a mentor who can provide insight, resources, and information on your issue paper topic. Mentors will be selected from academe, industry, government, and non-governmental organizations. Students are not required to work with a mentor, however, the mentorship experience can be rewarding and useful on many levels. Additional information on the mentorship process will be included with the issue paper guidelines.

Admission to the International Conference will be based upon the ideas and interests expressed by the applicant in the issue paper and brief personal statement. In selecting participants for the International Conference, Student Pugwash USA seeks a diversity of perspectives, ages, academic experiences, and backgrounds. College and university students from all disciplines and levels of study are encouraged to apply.

Your issue paper topic should relate to one of the following six working group categories:

• **Resource Stewardship for Environmental Sustainability**

Papers in this area could explore methods and approaches for managing natural resources ranging from biological diversity to forests or oceans. Papers addressing an aspect of environmental sustainability are also encouraged.

• **Preventive Diplomacy and Conflict Resolution for a Secure Future**

This section will focus on measures that can be taken to promote peace, disarmament, and international cooperation. Topics could address the future role of the United Nations, efforts to control the arms trade, or the role of scientific and cultural exchanges in promoting peace and international understanding.

• **The Social Costs and Medical Benefits of Human Genetic Information**

Papers in the human genetics section could address a social, ethical, or legal issue raised by the mapping and sequencing of the human genome. Papers might examine privacy issues related to genetic testing, including employment or insurance discrimination, or a potential medical benefit of genetic research.

• **Overcoming Barriers to Health Care Education and Delivery**

This section will focus on innovative strategies and programs for improving public health. Papers might include community-based health care delivery initiatives, AIDS education programs, or the reform of financing and funding for health care services.

• **Designing the Future—From Corporations to Communities**

This section will explore how the redesign of corporations and communities can change the way people interact with technology, the environment, and each other in the future. Papers might consider factors, such as environmental sustainability, democratization, and equity, that should be included in the design process. "Green" architecture, urban planning, environmentally sound product design, the organizational structure of corporations, or the design of information systems in the electronic age are all potential topics.

• **Meeting Societal Needs Through Communications and Information Technologies**

Papers in this section will highlight the ways in which communications technologies and computers can be used to address important global and local problems, including environmental degradation, economic and social development, and health care delivery. Papers may also address challenges or problems posed by the use of communications and information technologies.

Conference and Travel Costs:

There is no application or registration fee required to attend the International Conference, and Student Pugwash USA will provide room and board during the Conference week. However, delegates selected to attend the Conference are expected to cover their own travel costs, although limited travel assistance may be available on a case by case basis. Most Conference participants are able to obtain funds for travel to the event from their university or academic department. Upon request, Student Pugwash USA will assist delegates in securing travel funds.

Conference Structure:

Working group meetings held throughout the Conference week foster interactive discussion among the student and professional participants, and provide a context within which students' issue papers can be discussed. Afternoons and evenings of the Conference will include plenary sessions and special events that examine issues relating to the working group themes from interdisciplinary and international perspectives.

Questions?

Please contact Nicky Short or Tim Larson at Student Pugwash USA, 1638 R Street NW, Suite 32, Washington, DC 20009-6446, phone: 1-800-WOW-A-PUG, fax: (202) 797-4664, e-mail: uspugwash@igc.org

Student Pugwash USA's Eighth International Conference
and *Global Issues Guidebook*

**Science and Technology for the 21st Century:
Meeting the Needs of the Global Community**

June 12-18, 1994

Johns Hopkins University, Baltimore, Maryland, USA

Preliminary Application

This form should be returned to Student Pugwash USA as soon as possible. The final deadline for receipt of the preliminary application is December 30, 1993.

**All materials should be sent to:
Conference Coordinator, Student Pugwash
USA; 1638 R St. NW, Suite 32; Washing-
ton, DC 20009-6446; USA. (phone: 202-
328-6555, fax: (202) 797-4664,
e-mail: uspugwash@igc.org)**

Completion of this preliminary application indicates a student's interest to attend Student Pugwash USA's 1994 International Conference, *Science and Technology for the 21st Century: Meeting the Needs of the Global Community*. Acceptance to the Conference will be based on completion of this form, a brief personal statement, and the submission of an "issue paper," which will be included in the resulting *Global Issues Guidebook*, to be published in Fall 1994. (For additional details, see the enclosed Application Procedures.) Approximately 100 students from around the world will be selected to attend the 1994 International Conference.

There is no application or registration fee for the International Conference, and Student Pugwash USA will provide room and board during the Conference week. Undergraduate, graduate and professional students from all disciplines are eligible to apply. In addition, Student Pugwash USA encourages participation that represents a diversity of race, gender, age, religion, national origin and sexual orientation.

Please type or print legibly the following information:

Name: _____

School address: _____

Phone: _____ Telex or fax: _____

E-mail address: _____ Address will be valid until: _____

Permanent address: _____

Phone: _____ Telex or fax: _____

(Circle one): Undergraduate Graduate Other: _____

School: _____ Major: _____

Expected year of graduation: _____ Date of birth: _____

Country of citizenship: _____ Ethnic background (optional): _____

How did you learn about the Conference?(check one) Past Conference participant
Poster Fellow student Advertisement (where) _____
Faculty member (name) _____

Conference and *Global Issues Guidebook* Themes:

The central activity of the Conference is the daily working group meeting, which unites approximately fifteen students and five professional participants for interactive exploration of timely global challenges. Working group members will have autonomy in selecting the manner in which they address issues within their topic area. Issue papers prepared for the Conference will provide a foundation for discussion and evaluation in the working group, and will be incorporated into the corresponding section of the *Global Issues Guidebook*.

Please check the working group to which you are applying:

- Resource Stewardship for Environmental Sustainability
- Preventive Diplomacy and Conflict Resolution for a Secure Future
- The Social Costs and Medical Benefits of Human Genetic Information
- Meeting Societal Needs Through Communications and Information Technologies
- Overcoming Barriers to Health Care Education and Delivery
- Designing the Future—From Corporations to Communities

Please suggest one or more issue paper topics that you would be interested to research relating to the working group you have chosen above: _____

Page 2 of 2 Preliminary Application Deadline: December 30, 1993

Conference Coordinator
Student Pugwash USA
1638 R St. NW, Suite 32
Washington, DC 20009-6446
USA



Dear Applicant:

Thanks for applying to Student Pugwash USA's 1994 International Conference, *Science and Technology for the 21st Century: Meeting the Needs of the Global Community*. We are pleased to involve you in our Global Issues Project which includes the 1994 International Conference and the production of the *Global Issues Guidebook*, a student-authored educational resource on current issues at the juncture of technology and society.

Both the International Conference and the *Guidebook* offer an unforgettable experience, providing you with a unique opportunity to rigorously examine issue of global importance in an interactive, interdisciplinary setting. Conference participants get to meet other students from around the world who share their interests, often resulting in lasting friendships and professional contacts.

This mailing includes detailed information on the second phase of the application process. **Please carefully review the enclosed paper writing guidelines and then contact the Student Pugwash USA national office to discuss your issue paper topic.** (Details about the application/paper writing process are printed on the other side of this sheet. Be sure to look them over as well.)

Please do not feel intimidated by the issue paper or application process. Staff members at Student Pugwash, along with a cadre of enthusiastic mentors, are excited to assist you in making your paper writing a rewarding, meaningful process. Feel free to give us a call at 1-800-WOW-A-PUG if you would like additional guidance with your paper.

As a matter of fact, Nicky (who was a student participant at the 1992 International Conference) almost did not apply to the Conference because she did not think she was qualified. Fortunately, there was a snow storm (we're not making this up) and the cancelation of classes gave her just enough time to follow through with all of the groundwork she had already done. Learn from Nicky's near mistake! Take the plunge and apply--and don't be afraid to give us a call! We're flexible and here to help!

We look forward to hearing from you and reading your papers!

Sincerely yours,

Nicky Short
Conference Coordinator

Tim Larson
Guidebook Editor

This paper has been written for the "Meeting Societal Needs Through Communications and Information Technologies" working group.

Making Information Accessible in Developing Countries

Timely access to accurate information is essential for sound decision-making in addressing critical societal problems. Unfortunately, many developing countries lack the adequate communications and information infrastructure necessary to effectively mobilize resources to address issues in health care, education, agriculture, and the environment. The challenge, therefore, is to find creative ways to make relevant information accessible, enabling people to respond to challenges confronting the health and stability of their communities.

In the United States and other industrialized countries many people take unlimited access to information for granted; however, developing countries must struggle to receive any information at all. The results of this struggle are painfully obvious to those who take the time to look--we see the bloated bellies of small children, hear statistics of infant mortality rates, and look at pictures of once fertile land now incapable of supporting agriculture. However, information about the benefits of reduced family size could curb some of the hunger, information about vaccines and new cures for diseases could decrease the mortality rates, and information about irrigation and sustainable agriculture could create fertile land for farming. Access to information, we now recognize, is a necessary component of global sustainability.

Brian K. Toren, in his article for the World Futures Society, "GlobalNet: A Worldwide Network for Information and Knowledge Sharing," asserts that information is, or at least should be, an individual's right rather than a privilege for those who can afford it. "When the basic raw materials to fulfill this right are available to all on the planet, then all will prosper." (Toren, p.223) However, making relevant information available in communities can be much more difficult than it seems. The existing information sources, especially newspapers, radio, television, and telephones, are so lacking in developing countries that it is nearly impossible to increase their use enough to make information dissemination a reality. The table below illustrates the discouraging statistics about the state of information technology around the world, highlighting the incredible discrepancies between developing and developed nations:

		Newspaper circulation per 1000 pop.	Persons per radio receiver	Persons per television receiver	Persons per telephone receiver
low income areas	Africa	8.5	12.2	418.3	297.4
	Asia	17.3	19.7	89.6	385.5
	Developing Countries	17.0	13.5	307.5	304.0
high income areas	US and Canada	304.5	0.9	1.3	1.3
	Western Europe	307.5	2.4	3.1	1.6
	Developed Countries	304.6	2.1	3.1	1.8

- Years of data: newspapers, latest; radio and television, 1991; telephone, 1990
- All statistical information taken from *Britannica World Data*, 1993.
- Countries chosen were based on income levels in the World Bank's 1992 World Development Report.

Sample *Guidebook* Issue Paper

Increasing the use of what is known as "information technology" (i.e. radio, telephones, and televisions) may be one answer to the developing world's problems, but the barriers to greater use seem insurmountable. Extremely high costs make the use of information technologies unaffordable in many developing countries which are strapped with debts caused by civil war or food shortages. In addition, the existing telecommunications systems in these countries are often so limited in scope and antiquated in technology that improved access would require enormous infrastructure investments.

High costs may be the single largest obstacle to information-sharing in developing countries. Costs for international calls and faxes are in some cases ten times higher than in the United States, with the technologies being situated often at far distances from those who need them. SateLife, an organization working to reduce excessive information costs as they pertain to health care, reports these statistics on the high costs of information-sharing:

- In Kenya, one faxed page can cost \$7.70.
- In Tanzania, the minimum charge for a telex is \$30.
- In Zambia, an international telephone call is \$6 per minute.

While these rates are expensive even by Western standards, they are completely out of reach for the people of developing countries, where the typical salary of a physician may be as low as \$50 per week. (SateLife Fact Sheet)

Notwithstanding the high costs, in many cases governments prohibit the amount and type of information to reach their citizens. Donald Janelle, a professor of geography at the University of Western Ontario, writes that "some societies have barred certain kinds of information from the air waves, sometimes filtering out reports that reflect poorly on their society, that contradict official policies, or that are judged to be detrimental to the cultural development of their people." (Janelle, p.73) Though this may be a way for the government to prevent exposure of its people to unfamiliar and culturally-incomprehensible Western ideas, such limitations can also, Janelle argues, cause even more "uninformed judgements" by rural citizens, resulting in unsustainable practices in agriculture or family planning for example.

In many countries, increasing the capacity and capabilities of the "information infrastructure" (ie. transmission cables, receiving and broadcast stations) would require almost starting from scratch, rather than just adding a few telephone lines or computer networks. SateLife has found the following in their research:

- There are fewer telephones in all of Africa than in Manhattan.
- New telephone service in Zimbabwe takes five years to install.
- For Egyptians, reaching an international operator may require 65 dialing attempts.
- Packet-switched circuits are almost nonexistent in developing countries.
- Former colonies of different countries often find communicating with one another very difficult. For example, a former Portuguese colony can easily call Lisbon and a former English colony can easily call London, but it is nearly impossible for the two countries to contact each other.

Even when the costs, government, and infrastructure allow for limited access to information, the information is usually concentrated in a few urban centers, resulting in dramatic differences in the availability of information to rural and urban-dwellers. Janelle writes that "this discrepancy contributes to regional disparities within countries that are often as great as those between nations....In the developing world, [such information gaps] may even contribute to the flow of migrants from rural to urban centers" for the purpose of securing a better life or standard of living. (Janelle, p.72) Although migration to cities often creates great strains on inadequate urban infrastructures, information shared with those living in rural areas can help curb such pressures. "Prospective migrants may

Sample Guidebook Issue Paper

recognize there is less reason to 'go' to the national capital or to secondary urban centers to obtain what they want if satellites provide education, health and agriculture information in one's home village." (Janelle, p.72) An information base in rural areas, then, could help keep the flow of migrants to urban cities in developing countries to a minimum, thereby slowing the crowdedness, poverty, and even environmental problems in urban centers.

Information-sharing obviously can have an enormous positive impact on the developing world in all sectors. The effectiveness of a nation's health care system, specifically, is directly related to the amount of information available. Presently, there is a drastic disparity between access to and quality of health care provided in developing countries and industrialized nations. The table below illustrates some of these inequalities:

		Number of physicians per nation	Population per physician per nation	Hospital beds per 10,000 pop.	Public health expenditures per capita
low income areas	Africa	2,024	19,669	16.0	\$3.60
	Asia	203,161	7,716	10.7	\$2.10
	Developing Countries	53,429	15,576	14.7	\$4.30
high income areas	U.S. and Canada	335,235	427	60.5	\$478.50
	Western Europe	55,466	428	82.3	\$691.60
	Developed Countries	75,948	462	77.2	\$625.20

• Years vary by country, but are the latest reported by Britannica World Data, 1993.

Information on health care procedures, delivery, and education is lacking as well. While American medical schools normally subscribe to over 3,000 journals, in 1983 the University of Ghana held only 51, and the medical library at Makerere University in Uganda had only ten-year-old journals (SatelLife Fact Sheet). This lack of medical information could result in research on the same subject happening simultaneously in several places without colleagues being able to collaborate, or a disease spreading although one particular doctor knows of a cure but is unable to share his or her knowledge with others.

Increased communications and the resultant information-sharing can directly lead to improved health care services. But without reliable and affordable communications, relevant information does not get into the hands of those in need. SatelLife calls this lack of information, "information poverty," meaning, "planning without facts, making decisions based upon information that is several years out of date, and undertaking research that is irrelevant or redundant." This "information poverty" exacerbates the economic poverty that confronts many developing countries. An increase in the availability of basic information could eradicate some of this poverty, however, leading to improved health care, sustainable agriculture, and better education.

Eric R. Ram, in a 1989 article for World Health Magazine, writes, "Information is power. Information fights ignorance, which lies at the base of many diseases." (Ram, p.8) It is through access to relevant information that solutions can be found to the problems which plague large segments of our global population; and only with these solutions can a healthy and prosperous global community be sustained.

Sample *Guidebook* Issue Paper

Case Study: SATELLIFE

Five years ago, doctors in East Africa had no way to communicate with doctors in West Africa, for no phone lines between the two regions existed. A doctor in Zambia who discovered a new symptom of AIDS had no way to let other doctors know about his findings; and research done in Africa about the link between Vitamin A and measles had no way of reaching those health centers which needed the information. Now, fortunately, doctors in East and West Africa can collaborate on medical research easily and inexpensively; information on the spread of AIDS through infants with bloody diarrhea is being shared with doctors all over Africa; and a medical bulletin has been put together by African medical librarians for African use, featuring articles on new cures for diseases and techniques for treating patients.

Satellife, a non-profit organization based in Cambridge, Massachusetts, has made these changes in access to health care information possible. Through the use of a small satellite called HealthSat, Satellife is linking up doctors and health care centers throughout the developing world, creating a network to facilitate dialogue and information-sharing throughout developing countries and between the Northern and Southern hemispheres. In doing so, current and reliable health information is provided to anyone who needs it.

The founders of Satellife saw the limited access to medical information in Africa as extremely discouraging and looked for ways to improve access to information. The idea for Satellife was inspired, surprisingly, as a result of the Strategic Defense Initiative (SDI). Dr. Bernard Lown, the founder of International Physicians for the Prevention of Nuclear War, looked at SDI as an idea to be built upon, rather than scrapped. He developed the idea of a global network, a "Strategic *Health* Initiative," linking not weapons but doctors.

In January 1989, Satellife was formed and access to satellite communications was sought for the project. At first, the rate of progress was discouraging because of the high costs and unwillingness of the U.S. and developing countries to license the construction of ground stations necessary for operation of the satellite. After extensive research, however, they found that by going to different countries for different objectives, the project could be completed within their limited budget. They then received funding from a few forward-thinking donors and were able to launch HealthSat in January, 1990, before even having licences for ground stations.

Defying original skeptics, HealthNet currently connects health centers and other organizations in fourteen African countries, using nine ground stations to relay messages and needed health care information. It was begun first in East Africa and more recently expanded to the West, and there is much hope that the numbers will increase steadily. Since it was once nearly impossible for East and West African doctors to communicate due to the scarcity of telephone lines, satellite linkage has proven enormously successful in connecting West African countries (Ghana, Mali, and Cape Verde) with East African countries (Zambia, Uganda, Tanzania, Kenya, Mozambique, Malawi, and Sudan), with Central African countries (Zimbabwe, the Congo, Botswana, and Cameroon). Ground stations exist in five countries outside of Africa as well, linking health centers in Canada, England, Russia, Cuba, and Brazil to the network. Any country or individual who has access to electronic mail can be connected. Furthermore, doctors are not the only people to use the system. Medical librarians, students, researchers, and members of many non-governmental organizations and community groups use it as well to promote health care issues throughout their regions.

HealthSat uses desk-size "ground stations," consisting of an inexpensive personal computer, radio, and antennae, to connect each country to the network. From there, many

Sample *Guidebook* Issue Paper

stations are linked via modem to other health centers or organizations in the region through existing decentralized networks. In Zambia, for example, over 200 computer "mailboxes" connect more than 75 institutions, all through the use of one ground station, and in Uganda, eight departments at the medical school are connected, plus the World Health Organization office and health care workers in two communities 70 and 200 kilometers away respectively. (*Satellife News*, p. 4)

HealthSat is used both as "an orbital mail carrier...[and] a vehicle for health workers in developing countries reclaiming their own research and sharing it with a wider audience." (*Satellife Fact Sheet*) Linking health organizations in dialogue about problems and solutions is only one part of the HealthNet Information Service. They also use HealthSat to link libraries in developed and developing countries together as "sister libraries" through their Library Partnership program. The libraries contain updated information on diseases, medicine, available publications, the World Health Organization, AIDS, and many other issues.

Satellife has also made sure that the operation of HealthNet in Africa is carried out completely by Africans. Satellife believes in helping individuals in developing countries to help themselves, rather than coming in to tell them how to run their own country. From now on, Charlie Clements said, "when new stations are installed in Africa, they will be installed by personnel trained by Africans for Africans." (Clements, p.12) In addition to the operators being indigenous nationals, each ground station is owned by a "User's Council" made up of about ten people who own and coordinate the station, overseeing all activities of HealthNet in their country. Eric Ram highly advocates this approach. He writes, people "have to take responsibility for their own health. We...can only facilitate the process by helping to increase the level of awareness, giving people confidence to take actions, creating opportunities to increase self-reliance, sharing health information and strengthening community building skills." (Ram, p.8)

Future plans for Satellife include the expansion of existing ground-based computer networks in Africa, creating networks throughout the countries where HealthNet is utilized. Such expansion could create a link for every health center, urban or rural, and allow for every individual health care worker to access health care information on the network. Ultimately, however, Satellife hopes to expand its goals by facilitating dialogue and the distribution of information on issues other than health, such as agriculture, education, and the environment.

HealthNet has been an impressive success story in using communications technologies to facilitate access to relevant information in developing countries. The network has promoted dialogue between doctors who have never been able to communicate before. HealthNet has served as a catalyst for research-sharing on a plethora of health care topics from AIDS to cholera. Such dialogue has helped to empower native Africans to find their own solutions to problems of public health, care delivery, and disease treatment and prevention. Charlie Clements sums it up by saying, "I think the important point is that if we don't have visions and dreams that are beyond our grasp, we will remain mired in the doubts and uncertainties of those who are more cautious.... [Our work] demonstrates that there are common values such as health that can serve as passports for international collaboration." (Clements, p.12) If this collaboration continues, perhaps one day people in all countries will have access to information which will assist them in leading healthy lives.

Sample Guidebook Issue Paper

Bibliography

- Berman, Bruce J. "The State, Computers, and African Development: The Information Non-Revolution" in Suzanne Grant Lewis and Joel Samoff (ed.) Microcomputers in African Development: Critical Perspectives. Westview Press, 1992.
- Britannica World Data. "Comparative national statistics." Britannica Book of the Year 1993. Chicago: Encyclopedia Britannica, 1993.
- Clements, Charlie. "HealthNet: A Global Communications System the 'Authorities' Said Shouldn't Exist." Plenary Address to the 43rd Pugwash Conference on Science and World Affairs. Hasseludden, Saltsjo-Boo, Sweden, June 9-15, 1993.
- International Institute for Sustainable Development. Sourcebook on Sustainable Development. Winnepeg: IISD, 1992.
- Janelle, Donald G. "Global Interdependence and Its Consequences" in Stanley D. Brunn and Thomas R. Leinbach (ed.) Collapsing Space & Time: Geographic Aspects of Communication & Information. London: Harper Collins Academic, 1991.
- Langdale, John V. "Telecommunications and International Transactions" in Collapsing Space & Time.
- Munasinghe, Mohan. "Computers and Informatics Policy and Issues for Third World Development" in Mohan Munasinghe (ed.) Computers & Informatics in Developing Countries. World Academy of Science, 1989.
- Office of Technology Assessment. Advanced Network Technology (background paper). Washington: U.S. Government Printing Office, June 1993.
- Ram, Eric R. "Information is Power." World Health. Jan/Feb 1989, p. 8-9.
- SatelLife Fact Sheet: Partnerships in Global Communication for Health. SatelLife News. 3rd issue, May 1993.
- Toren, Brian K. "GlobalNet: A Worldwide Network for Information & Knowledge Sharing," in The Years Ahead: Perils, Problems and Promises, ed. by Howard Didsbury. Bethesda, MD: World Future Society, 1993.



March 20, 1994

Dear Conference Applicant:

Congratulations! It is my pleasure to inform you that you have been selected to attend Student Pugwash USA's Eighth International Conference, *Science and Technology for the 21st Century: Meeting the Needs of the Global Community*. The Conference will be held June 12-18, 1994, at Johns Hopkins University in Baltimore, Maryland, USA.

The International Conference will bring together 100 talented students from over 20 countries with more than 50 eminent professionals and experts. The Conference will provide a unique opportunity to explore timely global issues and seek creative solutions to problems confronting humanity as we approach the 21st century. You have been selected to participate in the working group entitled, *Resource Stewardship for Environmental Sustainability*.

To confirm your place at the Conference, it is extremely important that you fill out and return the enclosed **Response Form (blue paper) to Student Pugwash USA as soon as possible (no later than April 20)**. Also, please enclose a black and white photograph of yourself (passport size) with the form. This is important, since each participant's photo will be included in the Conference handbook. (It will also help us to recognize you if you are arriving at the airport in June!)

Student Pugwash USA will provide for housing, food, and local transportation throughout the Conference week. The International Conference will begin on Sunday morning, June 12 and close on Saturday, June 18 around noon. We encourage you to arrive Saturday afternoon or evening. Student Pugwash USA will provide housing (double-occupancy rooms in university dormitories) from Saturday night, June 11 through Friday night, June 17. Meals will be provided beginning with breakfast on Sunday, June 12.

Arranging Your Travel to Baltimore

All student delegates are responsible for covering their own travel expenses to Baltimore. In past years, students have had great success in securing travel funding from their colleges and universities. Specific places to approach for support include academic departments, Science, Technology and Society (STS) programs, presidents' offices, alumni offices, and student/academic affairs offices. We have enclosed an official invitation, a Conference poster, and information on Student Pugwash USA to assist you in your fundraising efforts. Please contact us if we can provide any additional assistance or information. In the event that all avenues for travel support have been exhausted, contact Student Pugwash USA so that we can work with you to raise the necessary funds.

Students are also responsible for arranging their own travel to the Conference. If you will be flying to the International Conference, we encourage you to make your travel arrangements with **Here Today There Tomorrow Inc. Travel Service**. They have secured a special conference discount with USAIR, and are prepared to help you secure the lowest possible fares with USAIR or any other airline. To make your reservations, contact Michelle Thong at **(800) 368-5965** and tell her

you are making a reservation for the Student Pugwash USA Conference. The earlier you book your ticket, the better prices you will find.

Return your Travel Information Form (yellow paper) as soon as possible, no later than May 15. Student Pugwash USA will provide your local transportation between Baltimore-Washington International (BWI) Airport, Baltimore's Penn Station (Amtrak trains), or the Baltimore Bus Terminal and the Conference site. If you plan on driving to the Conference, please let us know so that we can arrange for a parking permit. (If you are interested, we can also help to link you with other students with whom you might share a ride.)

In the next few weeks, we will be sending you more detailed information on the International Conference (such as Conference background materials and an agenda). In addition, we will be sending you an issue paper packet which includes a copy of your paper with reviewers' comments and suggestions for revisions that you should make prior to your arrival at the International Conference. The packet will also describe how the papers will be used at the Conference and in the *Global Issues Guidebook*. **Revised papers should be returned to Student Pugwash USA no later than May 15**, so that we can make copies available to other students in your working group. Please contact Nicky Short, Tim Larson, or Laura Gaines at (800) 969-2784 if we can answer any questions or provide you with additional information.

Please remember to meet the following deadlines:

- April 20 -** *Return the International Conference Response Form (blue) to Student Pugwash USA.
Include a black and white passport photo of yourself.*
- May 15 -** *Return the Travel Information Form (yellow) to Student Pugwash USA.
Submit revised issue paper to Student Pugwash USA.*

Again, congratulations on your acceptance and we look forward to seeing you in Baltimore!

Peace,

Nicola Short
Conference Coordinator

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

Tel. (800) 969-2784
(202) 328-6555
Fax: (202) 797-4664
E-mail: uspugwash@igc.apc.org



May 19, 1994

Dear 1994 International Conference Participant:

As the Conference approaches, I wanted to touch base with a few details about the event, and hopefully anticipate questions you might have. Enclosed is a background reading packet for your working group. Coming prepared to the Conference will enhance the experience, *please read the packet before you arrive*. The logistical information below can make your arrival a lot less challenging, please read it carefully as well.

Travel

We are in the process of working out travel arrangements with many of you. Those of you arranging your own travel who have not yet returned your travel information form, please do so!

If Student Pugwash USA is reimbursing you for any portion of your travel, we will need to see your documentation. Please have your boarding passes, travel itinerary, train tickets or gas receipts with you when you register.

If you will be reimbursing us for any portion of your travel, please bring a check for the appropriate amount, made out to Student Pugwash USA, to registration.

• *If you are arriving by plane*

Student Pugwash USA will provide transportation from Baltimore-Washington International (BWI) Airport. Go to the baggage claim area and look for Student Pugwash signs. Staff and volunteers will be wearing Student Pugwash T-shirts. If you are unable to find a Student Pugwash representative, please contact the Conference office in Baltimore: 410-516-6401.

(If you are a flying into an airport other than BWI, *from within the U.S.*, please contact the national office, 1-800-969-2784, before June 6 for local travel arrangements.)

• *If you are arriving by train*

Student Pugwash USA representatives will meet you at Penn Station. Just follow the crowd to the Charles Street exit (where the taxis are) and look for the Student Pugwash USA signs and T-shirts. If you do not see us, call the Conference office in Baltimore: 410-516-6401.

• *If you are arriving by automobile*

Campus parking permits can be arranged. If you have already returned the travel information form, you're all set. If you have not yet returned the form, please return it soon or give us a call at the national office. Directions and a campus map are enclosed.

Registration

The registration desk and the Conference office will both be located in Alumni Memorial Residence I (AMR I) on the Johns Hopkins University campus.

Registration times are:

- Saturday, June 11: 7 pm - 9 pm
- Sunday, June 12: 9 am - 2 pm

Early and late arrivals should check in with the Conference office.

Because there is a charge for all unreturned keys, you will be asked for a **\$25 refundable deposit when you register**. It will be returned when your key is returned at the end of the Conference. Checks should be made payable to Student Pugwash USA.

What to bring

• *Cultural Stuff*

You are representative of communities from all over the US and 26 countries! To make sure that you will have an opportunity to share your cultural perspectives, we've organized coffee houses--informal gatherings to relax and get to know each other--several evenings of the Conference week. We hope you will bring examples of things from every day life that are important to you, to share with participants from other cultural backgrounds, such as:

- musical instruments
- tapes or compact discs of your favorite music
- slides, pictures or videos of people and/or places that are significant to you
- typical/traditional dress or other symbols of your cultural heritage
- toys, children's stories or fables

These are just suggestions: please do not feel limited by this list! (US citizens, do not think you are off the hook--you are coming from many varied cultures, too!)

• *Spending Money*

It is a good idea to bring a little spending money for snacks and souvenirs. On Wednesday (June 15) the Conference will leave campus for a boat tour and reception in Baltimore's Inner Harbor. We will provide dinner and transportation. If you decide to stay late to check out the night-life, you're on your own--bring money for food, drink, and a taxi back to campus.

• *Dress, etc.*

Dress is casual! Baltimore is warm in June--probably just over 80° Fahrenheit. Dorms, working group classrooms, and the dining hall are air conditioned; the boat ride will be a little chilly, so you may want to bring a range of clothing. Johns Hopkins has many beautiful lawns: feel free to bring frisbees, soccer balls, and other fun things to do outside. There will be access to a gym (with a pool)--if you like to work out, bring your gear!

• *Your Paper, Supplies, and Contact Information*

If at all possible, please bring a copy of your issue paper on computer disk. Much editing will take place at the Conference! You will probably also want to bring pens and paper to take notes in your working group sessions. Finally, if you have your contact information for the coming academic year (Fall 94-Spring 95), please bring it with you as well.

If you have any questions about the above information or the Conference in general, please do not hesitate to call me or Laura Gaines. All of us in the national office are really excited to see you in June!

Peace,

Nicky Short
Conference Coordinator

May 24, 1994

To whom it may concern:

Agnes Nteta has been selected as an official delegate to Student Pugwash USA's Eighth International Conference. The Conference, entitled **Science and Technology for the 21st Century: Meeting the Needs of the Global Community**, will take place at Johns Hopkins University in Baltimore, Maryland, USA, on June 12-18, 1994.

The Conference is an educational opportunity of the highest order, bringing together 100 talented undergraduate and graduate students from 25 countries with sixty experts from industry, government, and academe for a week of intensive discussion on pressing global issues. The Conference is funded by the National Science Foundation, the U.S. Department of Energy, the John D. and Catherine T. MacArthur Foundation, the U.S. Institute of Peace, and the Ploughshares Fund, among others.

The delegates' selection brings considerable distinction to their academic institutions. Students have been selected through a rigorous, merit-based process from an outstanding pool of applicants, representing the finest institutions throughout the world. Each student is required to write an original paper for the Conference on a major issue at the juncture of science, technology, and society. Following the Conference, Student Pugwash USA will publish the students' papers in the *Global Issues Guidebook*, to be released in Fall 1994.

Student Pugwash USA will provide all on-site costs for the students throughout the Conference week, including housing, food, and local transportation. However, we ask students to be responsible for their own travel expenses and encourage them to seek support from their university, department, or other sponsors. We hope that you will look favorably on this request and support this delegate in this unusually challenging and enriching educational endeavor. Thank you for your consideration.

Sincerely yours,

Nicola Short
International Conference Coordinator

S T U D E N T



P U G W A S H

S A

Appendix C
Student Participants

Distributions of Student Participants

Ninety one students from 69 academic institutions attended the 1994 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 41 graduate and professional students, 50 undergraduate students and one high school student from the following fields.

25 Science students (biology, chemistry, computer science, physics, geology, engineering, environmental science)

31 Social science students (anthropology, development studies, economics, political science, psychology, sociology, urban planning)

19 Interdisciplinary students (conflict and peace studies, environmental policy, history of science, science and technology policy, double majors in science and non-science fields)

7 Medical students (medicine, public health)

3 Humanities students (English, history, language, liberal arts, philosophy)

3 Business students (business administration, public management)

3 Law students

By Gender:

Forty Seven (or 45%) of the student participants were women.

By Race:

Twenty seven (or almost 40%) of the American delegates were minorities.

Student Participants' Home Countries:

(The number in parentheses indicate countries with more than one delegate)

Bangladesh
Bulgaria (2)
Canada
England
France
Germany (2)
Ghana (6)
India
Indonesia
Israel
Kenya
Mexico
Nigeria (3)
Pakistan
Papua New Guinea
Philippines
Poland
Russia
Sierra Leone
Sweden
Trinidad
Ukraine
United States (55)
Zimbabwe

Student Participants' Colleges and Universities

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

American University in Bulgaria (2)
American University in Rome
Amherst College
Arizona State University Law School
Bayero University (Nigeria)
Boston University
California State University - Bakersfield (2)
Cambridge University
Capital University
Cass Technical High School
Central European University (2)
Clarke University
Columbia University
Cornell University (4)
Duke University
Ecole des Hautes Etudes et Sciences
 Sociales
Ferrum College
Florida State University
Fourah Bay College (Sierra Leone)
George Washington University (3)
Graduate School of Geography
Hampshire College (2)
Harvard University (4)
Israeli Institute of Technology
ITESM (Mexico)
Jawaharlal Nehru University (India)
Johns Hopkins University
Loyola University
McMaster University
Meharry Medical College
New York University
Northwestern University
Ogun State University (Nigeria)
Ohio State University
Oregon State University
Oxford University
Pennsylvania State University (2)
Rice University
San Jose City College
Smith College
Springhill College
TH Darmstadt (2)
Trinity University
Tuskegee University
University of California - Los Angeles
University of California - Santa Cruz
University of California - Irvine
University of Cape Coast (Ghana) (4)
University of Denver
University of Ghana - Legon
University of Ghana Medical School
University of Gothenburg
University of Helsinki (2)
University of Kansas
University of Limburg (Denmark)
University of Maryland - College Park
University of Maryland - Baltimore County
University of Nairobi
University of Papua New Guinea
University of Puerto Rico
University of Southern California
University of Texas - Austin
University of Texas - El Paso (2)
University of Utah
University of Wisconsin - Madison
University of Zimbabwe
Warsaw University
Xavier University

Appendix D

Senior Participants

Appendix D
Senior Participants

Speakers and Special Guests

Gerard Bodeker, Coordinator, Global Initiative for Traditional Systems of Health
Taft Broome, Professor, Howard University School of Engineering
Anne Cahn, MacArthur Fellow, University of Maryland
Rosemary Chalk, National Academy of Science
Carol Corillon, National Academy of Science Pr
Mohammed El-Ashry, Director, World Bank Environmental Programme
David Fleming, Founder, Students' Support Council for Africa
Jeff Leifer, Founding member, Student Pugwash USA Board of Directors
William Maines, Editor, *Foreign Policy*
Ken Phillips, New York University, Massachusetts Institute of Technology
George Rathjens, Professor of Political Science, Massachusetts Institute of Technology
Anne Richard, International Affairs Fellow, Council on Foreign Relations
Sheldon Segal, Distinguished Scientists, Population Council
Adele Simmons, President, The John D. and Catherine T. MacArthur Foundation
Clyde Snow, Oklahoma Medical Examiner Office
Ted Taylor, Nuclear Scientist, Los Alamos National Laboratory (1949-1956)
Brian Trelstad, Founder, Center for Environmental Citizenship
Armstrong Wiggins, Central and South American Programs Director, Indian Law Resource Center

Senior Participants

Resource Stewardship for Environmental Sustainability

Tim Foss, Wilderness Coordinator, U.S. Forest Service
Richard Collins, University of Virginia
Vibha Gupta, Senior Social Scientist, Centre of Science for Villages, Maharashtra, India
Alexander Kalinin, Visiting MacArthur Scholar, University of California-Berkeley and Lawrence Berkeley Laboratory
Jean True, Western North Carolina Alliance
Francis Weill, Public Affairs, Ciba Corporation

Overcoming Barriers to Health Care Education and Delivery

Ellen Benevides, Hennepin County Board of Health, Minnesota
Lorelei DeCora, Founder, Porcupine Clinic, Pine Ridge Reservation, South Dakota
Kaja Finkler, Department of Anthropology, University of North Carolina at Chapel Hill
Paul Jellinek, Vice President, Robert Wood Johnson Foundation
Connie Pechura, Institutes Of Medicine
Yasmin Tyler-Hill, Assistant Medical Director, Total Health Care

Preventive Diplomacy and Conflict Resolution for a Secure Future

Richard Darliek, RAND Corporation
Ashok Kapur, Professor of Political Science, University of Waterloo, Ontario, Canada
Sahr Kpundeh, Program Officer, Issues in Democratization, National Academy of Sciences
Lora Lumpe, Director, Arms Sales Monitoring Project, Federation of American Scientists
Michael Shuman, Executive Director, Institute for Policy Studies
Dan Volman, Association of Concerned African Scholars

Meeting Societal Needs Through Communications and Information Technologies

Rosie Albritton, Wayne State University

Susan Brummel, Clearinghouse On Computer Accomodation, General Services Administration

David Fleming, Founder, Students' Support Council for Africa

Gregg Garriott, Volunteers in Technical Assistance

Kay Johnson, Benton Foundation

Lisa Kimball, Meta Systems Design

Edson Pereira, SatelLife

Sam Pitroda, Advisor to the Prime Minister, India

Victoria Verana, Network of East-West Women

Designing the Future--From Corporations to Communities

Karen Aberle, Aberle Unlimited

Nancy Brennan, Director, City Life Museum of Baltimore

Karen Childress, Rural Resources

Alexander Laszlo, ITSEM

Jeffrey Leifer, President, Leifer Capital

Karl Linn, Co-Founder, Planners, Architects and Designers for Social Responsibility

Sandy Nelson, President, Sanford Nelson Architects

John Salmen, AIA, President, Universal Designers and Consultants, Inc.

The Social Costs and Medical Benefits of Human Genetic Information

Barbara Bernhardt, Johns Hopkins University

Barbara Biesecker, Genetics Counselor, National Center For Human Genome Research

Dean Hamer, National Cancer Institute, NIH

Victor McKusick, University Professor of Medical Genetics, Johns Hopkins University

Robert Murray, Professor of Pediatrics and Genetics, Howard University; NAS/IOM/NIH Fellow

Angela Pattatucci, National Cancer Institute, NIH

Senior Participants Home Countries:

Brazil

Canada

India

Mexico

Russia

Sierra Leone

United States

May 24, 1994



Dear Senior Participant,

As the week of June 12 rapidly approaches, I would like to thank you once again for the time and professional insight you will be sharing at Student Pugwash USA's Eighth International Conference, **Science and Technology for the 21st Century: Meeting the Needs of the Global Community**. This mailing will hopefully answer any further questions you may have about the Conference, and will provide you with a more detailed look at what will happen during the week. This packet includes a tentative Conference Agenda, a list of other senior participants, and the background reading packet which has been distributed to students in the working group.

Travel

For those of you whose travel arrangements are being made by Student Pugwash USA, you will be receiving your airline tickets in the mail. Please contact me or Laura Gaines if you have any questions or do not receive your ticket by June 7. For those of you making your own travel plans, please take a minute to fill out the enclosed travel form or to give us a call in the national office (202-328-6555) to inform us of your travel plans. We will arrange for you to be picked up at the train station or airport, or for a campus parking permit. (Directions to campus by car are enclosed.)

If Student Pugwash USA is reimbursing you for any portion of your travel, we will need to see your documentation. Please have your boarding passes, travel itinerary, train tickets or gas receipts with you when you register.

If you are flying into Baltimore-Washington International airport, please meet the Student Pugwash USA representative(s) in the baggage claim area. We will be wearing Student Pugwash USA T-shirts and holding a Student Pugwash USA sign. If you cannot find us, please call the Conference office in Baltimore at 410-516-6401 and someone will assist you.

Registration

The registration desk and the Conference office will both be located in Alumni Memorial Residence I (AMR I) on the Johns Hopkins University campus.

Registration times are:

- Saturday, June 11: 7 pm - 9 pm
- Sunday, June 12: 9 am - 2 pm

Early and late arrivals should check in with the Conference office.

Housing

All senior and student participants will be housed in the Alumni Memorial Residence in order to facilitate interaction and on-going dialogue outside of the plenary and working group sessions. Rooms are double occupancy; seniors will room with other seniors.

Student Pugwash USA will provide housing from Sunday, June 12 through Friday night, June 18. Please contact us as soon as possible if you require housing for any additional nights. Meal service will be provided from breakfast on Sunday, June 12 through breakfast on Saturday, June 18. Please inform us of any special dietary requirements on the enclosed form, by calling the national office (202-328-6555).

What to Bring

Baltimore is warm in June--around 80° Fahrenheit. Dorms, working group classrooms, and the dining hall are air conditioned. Casual dress is the norm for the working groups and for most of the week. (Plenary discussions are open to the public and press. Seniors serving on a panel may want to dress in slightly more business-like attire.) All participants will have free use of Johns Hopkins' athletic facilities throughout the week.

We have asked student participants, who represent a number of cultures from both within and outside of the US, to bring items of personal and cultural significance. We hope senior participants will do the same: feel free to bring any pictures, books, video, slides, etc., that you would like to share with students and other seniors from around the world. There will be opportunities throughout the week for informal interaction. In addition, we encourage you to bring information or literature on your organization. There will be information tables at all plenary sessions.

The Role of the Senior Participant

Each working group will be comprised of roughly 15 undergraduate, graduate and doctoral students, and 5-8 senior participants from a variety of professional backgrounds. The role of the Senior participant is to provide professional insight and enhance discussion, rather than to lecture. Seniors are not expected to make formal presentations in the working groups, but to share work experiences, ideas and opinions through interactive discussion. All students will have prepared a research paper for the working group (details on the paper writing and editing process are enclosed), and will have read the enclosed working group background reading packet. Student papers will be available at the Conference (or sooner, upon request), and will serve as a catalyst for discussion. Working groups will meet Monday through Friday from 9 am until noon.

The staff and I are all very excited to meet you in June. If we can answer any questions, please give us a call. We look forward to seeing you in Baltimore!

Regards,

Nicola Short
Conference Coordinator

enclosures

Appendix E

Paper Topics

Issue Paper Titles

Resource Stewardship for Environmental Sustainability

Kim Anderson	United States	<i>Renewable Energy Sources</i>
Bustanul Arifin	Indonesia	<i>Misconception About Environmental Degradation</i>
Rose Baafi	Ghana	<i>Wetlands and their Utilization in Ghana</i>
Virginia Bacay	Philippines	<i>Energy, Economic Development and the Environment</i>
Clayton Bond	United States	<i>Using Integrated Pest Management Instead of Pesticides</i>
Kenneth Fair	United States	<i>Sustainable Development and the Emerging Role of NGOs</i>
Elizabeth Fulari	United States	<i>Providing a Means for Future Environmental Sustainability</i>
Gunhild Gurlich	Germany	<i>Biological Control and Integrated Pest Management</i>
Abdul Hakim	Bangladesh	<i>Ecological Farming for Developing Agriculture in the World</i>
Steven Kyei-Boahen	Ghana	<i>Preventing Deforestation in Tropical Africa</i>
Lilia Maliar	Ukraine	<i>Environmental Problems in a Transitional Economy: The Case of Zaporozhye, Ukraine</i>
Susanne Moser	Germany	<i>In Search of a New Understanding of How We Create and Cope with an Uncertain World</i>
Christopher Nolte	United States	<i>The Changing Relationship between Science and Society: Consequences for Future Generations</i>
Jennifer Powers	United States	<i>Adaptive Forestry Management in the Pacific Northwest</i>
Stephen Schlett	United States	<i>Stewardship for Environmental Sustainability</i>
Dana Seaman	United States	<i>Sustainable Harvesting as a Possible Solution to the Depletion of Endangered Species Due to Habitat Destruction and Illegal Importation</i>
Ian Stone	United States	<i>Air Pollution and the California Mobile Source Plan</i>
Silvia Vriesen	Germany	<i>Renewable Resources: A New Form of Agriculture</i>
Joe Wemin	PNG	<i>Commercial Logging and Deforestation in Papua New Guinea</i>
Joseph Wireko	Ghana	<i>Resource and Land Degradation in Ghana</i>

Preventive Diplomacy and Conflict Resolution for a Secure Future

Suleman Alasan	Nigeria	<i>Misunderstanding Islam: What Western Eyes Do Not See</i>
Dave Andersen	United States	<i>Lessons from Iraq: Strengthened Nuclear Non-Proliferation Regi</i>
Jesper Engman	Sweden	<i>The Prospects of Collective and Cooperative Security</i>
Victor Fiawoo	Ghana	<i>Peace, Disarmament and Cooperation for Diplomacy in Ghana</i>
Chris Fitz	United States	<i>Development of International Mediation: Toward a Flexible Mode</i>
Lisa Hare	United States	<i>Making Conventional Weapons Transfers Transparent</i>
Stanimira Hristova	Bulgaria	<i>Focus on Macedonia: The Macedonian, Greek and Bulgarian Perspective</i>
Merle Jacob	Trinidad	<i>Ideological Neutrality and UN Policy from the Perspective of the Small Island States</i>
Letitia Lagudah	Ghana	<i>Preventive Diplomacy from the Ghanaian Perspective</i>
Iwona Lesnik	Poland	<i>Europe in Trouble</i>
Munira Majmundar	India	<i>Understanding the Impact of Spread of Nuclear Wespon Making Capability on Inter-state Relations</i>
Stephanie Mitchell	United States	<i>The Role of NGOs in Appropriate Technology Transfer to Developing Nations</i>
Hindowa Momoh	Sierra Leone	<i>Preventive Diplomacy in Sierra Leone</i>
Laurence Nardon	France	<i>Western Europe Union's Satellite Agency: A Model of Positive-Effects Technology</i>
Richard Ponzio	United States	<i>An Agenda for Peace: Forging a New Security Order for the 21st Century</i>
Rosalind Reynolds	United States	<i>Global Approaches to Nuclear Proliferation in South Asia</i>
Eran Singer	Israel	<i>Reaching Peace - The Journey and the Future</i>
A.H. Toor	Pakistan	<i>Disarmament in South Asia</i>

The Social Costs and Medical Benefits of Human Genetic Information

Sunita Bhamidipaty	United States	<i>Eugenics: Past, Present, and Future</i>
Sara Chandros	United States	<i>The Dor Yeshorim "Genetic Dating Service": Framing a Morally Acceptable Set of Screens for Recessive Genetic Disorders</i>

Eugene Chiu	United States	<i>The Ethics of Rejecting New Technologies: The Right Not to Know</i>
David Heyman	United States	<i>Policy Statement on Human Embryo Cloning</i>
Jacquelyn Jackson	United States	<i>Using Genetic Information to Create a More Perfect Society: Ethic and Moral Choices</i>
Per Jambeck	United States	<i>Minimum Description Length Encoding in Discovery and Dissemination of Human Genetic Information</i>
Anne Joseph	United States	<i>The Testing Obsession—Ethics of Genetic Screening</i>
David Kurtz	United States	<i>Biotechnology Research: The Seed of Patents</i>
Olaleye Olateju	Nigeria	<i>Sickle Cell Disease: A Bane in the Nigerian Society</i>
Adedayo Onitilo	Nigeria	<i>Sickle Cell Disease—National Genetic Screening in Nigeria</i>
Lycely Sepulveda	United States	<i>The Human Genome Project: A Challenge to the Physician-Patient Relationship</i>
Ben Sun	United States	<i>Patenting and Commercialization of Genetic Information</i>
Caroline Thomason	United States	<i>The Implications of Eugenics on the Information Derived from the Human Genome Project</i>
Evette Weil	United States	<i>The Human Genome Project</i>

Overcoming Barriers to Health Care Education and Delivery

Jaimu Busari	Nigeria	<i>Health Care and Education: Nigeria In Retrospect</i>
Francis Conduah	Ghana	<i>Health Care Education and Delivery in Ghana</i>
Elora Dasgupta	United States	<i>Reducing Infant Mortality in the United States</i>
Hussein Jama	Kenya	<i>Appropriate Technology in Health: A Solution to Rural Africa's Problems</i>
Diane Kondratowicz	United States	<i>Alleviating the Shortage of Organs and Tissues for Transplantation</i>
Walter Lee	United States	<i>Water Quality and Sanitation in China</i>
Ann Moore	United States	<i>Providing Family Planning is the Solution to Overpopulation</i>
Loretta Morales	United States	<i>Environmental Health and Hygiene on the US–Mexico Border</i>
Lissette Ortiz	United States	<i>The Impact of Environmental Racism on Children's Health</i>
Mercy Ozaeta	United States	<i>Prenatal Care: A Factor for Reducing Health Care Cost in the US</i>

Candace Parker	United States	<i>The Pentagonal Prism of Medicine: The Medical Ethics of Age Based Rationing of Health Care</i>
Raj Ponnaluri	India	<i>AIDS: Problems and Precautions</i>
Linda Tello	United States	<i>An Alternative to the Emergency Department for a Rural Commun. Hospital</i>
Teng-Pin Wang	United States	<i>The NHS: A Model for Comparison?</i>
Matthew Wireko	Ghana	<i>Socio-Cultural Influences in Health Care Education: The Ghanaia. Experience</i>

Meeting Societal Needs Through Communication and Information Technologies

Ajay Behera	India	<i>Confidence Building and Cross-Cultural Dialogue: The Role of New Communications Technologies</i>
Fernando Botelho	Brazil	<i>Telecommunications for the Amazon: The Power of Information i Development</i>
Hewitt Chizyuka	Zambia	<i>Using the Media and Information Technology to Meet Social Neea Focus on the Media and African Needs</i>
Lisa Covi	United States	<i>The Role of Community Networks in Promoting Democratized Participation</i>
Robert DiNardo	United States	<i>Beyond Library Walls and into the Future</i>
Sacha Hare	United States	<i>Information Technologies Serving Society: Educational Equity an Intercultural Understanding</i>
Wynship Hillier	United States	<i>The Social Construction of Caller ID: A New Direction for Regulatory Policy</i>
Henry Mensah	Ghana	<i>Information is Power: The Role of Communications and Information Technologies for Rural Development in Ghana</i>
Agnes Nteta	South Africa	<i>Multi-Media as an Educational Tool in South Africa and other Developing Countries</i>
Doug Ruuska	United States	<i>Thoughts on a National Information Infrastructure</i>
Carla Shafer	United States	<i>Local Governments in the National Information Infrastructure</i>

Designing the Future – From Corporations to Communities

Janet Anderson	United States	<i>Regional Approaches to Metropolitan Well-Being</i>
Abigail Baker	Great Britain	<i>Using Technology to Free the Community from Enclosure</i>
Karen Byron	United States	<i>Economic Incentives and Environmental Sustainability</i>
Kathia Castro	Mexico	<i>Reforming Educational Systems for a Better Future</i>
Arthur Daemmrch	United States	<i>Sugarcoating Bill: Pharmaceutical Companies and the Clinton Health Care Reform</i>
Ugenyi Ekenna	Nigeria	<i>Re-evaluation of Corporate Ethics in the Face of Technological Advancements and Environmental Challenges in Africa</i>
Greg Harris	United States	<i>Socially Responsible Investing: A Liberalist's Approach to Protecting the Environment</i>
Lena Johnson-Davis	United States	<i>Defining Sustainable Architecture</i>
Stephen Lacroix	United States	<i>Environmental Implications of Corporate Accounting Practices</i>
Michael Neff	Canada	<i>Industrial Ecology: A New Approach for Industry–Environment Symbiosis</i>
Aaron Panofsky	United States	<i>Paradigm Shift and Metaphor: From the Organism to Gaia</i>
Andrey Petrichtche	Russia	<i>The Nature of Technological Risk in the Nuclear Sector of the Russian Economy: Implications for the Global Society</i>
Deyan Vassilev	Bulgaria	<i>Privatization in Bulgaria: The Multi-Sided "Tug-of-War"</i>
Carol Welker	United States	<i>Green Governments: Zanolis—An Appalachian Model</i>

Appendix F
Tough Questions



Tough Questions

1994 International Conference Issue

Meeting the Needs of the Global Community

by Nicky Short

This issue of Tough Questions is dedicated to the participants of Student Pugwash USA's Eighth International Conference. The innovative solutions generated in the working groups reflect the critical thinking and dedication to both process and outcome of the wide range of talents assembled. We hope the explorations of the Conference week that follow inspire you!

One of the first obstacles encountered at Student Pugwash USA's 1994 International Conference involved finding a context to discuss the title: **Science and Technology for the 21st Century: Meeting the Needs of the Global Community**. In the national office we wrestled with the implications of different expressions: does using the phrase "the Global Community" deny diversity? Do certain conditions need to be met before we have global community, i.e. should we be Meeting Needs for a Global Community?

The trouble we had deciding on a title reflects an essential theme that recurred throughout the week at Johns Hopkins University—young people today stand at a crossroads of historic opportunity for improving the world and an environment of unprecedented global challenges. The students attending the International Conference were challenged to identify the root causes of these issues, and the processes that should be used to address them. To start off the week we invited three distinguished policy makers—Adele Simmons, Timothy Wirth, and Mohammed El-Ashry—to share their thoughts on how we might seek to meet the needs of the global community.

Adele Simmons, President of the MacArthur Foundation, argued that presently there is no

global community, but that we need one. She spoke of the need to change the processes we use to approach global problems and argued that democracy is earning greater appreciation as a "global ordering structure". Information, and access to information, are the driving forces behind this paradigm shift. Recognizing the Committee on Global Governance's adoption

of the "right to information" as a basic human right, Simmons called on Pugwash to consider the role of the scientific community in global decision-making. Are scientists responsible for who has access to their work or how their work is interpreted?

Tim Wirth, the U.S. Undersecretary of State for Global Affairs, discussed the emergence of population and development as a key element of international relations. He suggested that the sheer number of people in the world will overwhelm opportunities for individual self-realization. But the flip side of the population coin is consumption: the relatively few in industrialized nations consume a grossly disproportionate amount of the world's resources. For whom in the global community is population a problem? Whose values determine one's responsibility towards the earth and her inhabitants?

Mohammed El-Ashry, Director of the World **continued on page 14**



Babajide Alade and Adedayo Onitilo, Nigeria

INSIDE

From the Director	2
Working Groups:	
Environment	3
Diplomacy	3
Information Technologies	4
Health Care	4
Genetics	5
Design	5
Student Feature	6
Professional Feature	7
What's a Pug?	10

Student Pugwash USA is a tax-exempt, nonprofit 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

Executive Inspiration

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 later 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 legislation and developments in alternative energy and clean energy technology policy. Betsy then served as Legislative Assistant at the Association of American Universities where she followed a variety of science and research issues, with special concentration in biomedical research policy and policies regarding ethical conduct in research. She has served as Executive Director of Student Pugwash USA since 1989.

Many aspects of my life have changed since becoming the Executive Director of Student Pugwash USA five years ago. My interests, skills, understanding and awareness of a multitude of issues, all have evolved—particularly my outlook on our global future. I've become more of an optimist, maybe even an idealist. I believe that positive change *can* still occur in our increasingly complex, interdependent and technological world. And I believe that the talents and commitment of young people to resolve global problems can—and will—make the difference we seek. The individuals involved in Student Pugwash USA programs have instilled in me this belief, along with enormous personal and professional inspiration.

Most recently, I was deeply impressed by the participants attending Student Pugwash USA's Eighth International Conference, *Science and Technology for the 21st Century: Meeting the Needs of the Global Community*. I was struck by the intensity and dedication of the 95 students who traveled to Johns Hopkins University in Baltimore, Maryland from 25 countries. Each participant came to share experiences, research findings and advanced understanding of challenges confronting environmental sustainability, global security, health care, and information technology, among other areas. The participants also brought to the Conference the desire to learn more about critical issues from people with perspectives quite different from their own, along with a willingness to be challenged by peers and professionals. The Conference was certainly not a gathering where experts lectured and students sat passively. This was an intense scholastic experience shaped and made significant by the students themselves. The participants' determination to explore solutions to global and technologi-

cal dilemmas, to look beyond accepted parameters in their identification of policy options, went beyond impressive; the students gave me (and several others who attended) a true sense of hope for the future.

But now the Conference week is over. How will the students' determination and commitment be translated into tangible outcomes? Thus far, the impacts of the week have led to the development of Student Pugwash in Papua New Guinea, the initiation of several U.S.-based campus chapters, international internships, and the establishment of a widely used electronic dialogue (Listserve) on technology, social

responsibility and world affairs. The Conference has also led to the compilation of an educational resource, the *Global Issues Guidebook*, written by the Conference participants to be disseminated nationally and internationally to students and teachers. As with the development of all of Student Pugwash USA's programs, the outcomes of the 1994 International Conference were in-

spired by the students themselves in seeking to identify opportunities to secure a desired global future.

Through Student Pugwash, I have discovered that the desire to be involved in issues larger than oneself is clearly present among young people once the connection between the issue and the individual is understood. The challenge to Student Pugwash and other institutions of learning, whether academic or extracurricular, is to forge these connections for increasing numbers of students. Opportunities that invite the participation of young people in working toward positive global change constitute the crucial first step toward the world we seek in the future. The creation of such opportunities has always been our mission at Student Pugwash USA. Happily, even five years into my position, the students continue to inspire me all along the way.

...the desire to be involved in issues larger than oneself is clearly present among young people once the connection between the issue and the individual is understood...





Mohammed El-Ashry
Director of Environment, World Bank

Exploring Environmental Sustainability

by Jennifer Powers and Susi Moser

The Environment working group brought together a diverse group of 18 students with shared concerns from places as widespread as Ghana, Washington DC, Germany, Texas, Virginia, the Philippines, California, Papua New Guinea, Oregon, the Ukraine, Florida, Bangladesh, and Pennsylvania. We were fortunate enough to have an insightful facilitator (Dann Sklarew) and staff member (Laura Gaines) as well as an excellent group of resource people whose expertise included community organizing in the Southeastern United States, environmental conflict mediation, appropriate technologies for rural Indian villages, sustainable forestry in the Pacific Northwest States, public relations and social investing for a major agrochemical firm, and physics. Following is the framework for asking questions and conceptualizing the issues that emerged over the course of the week.

What is sustainability? The key issues are "What are we sustaining?" and "Who are we sustaining it for?" While there was consensus that the current global patterns of resource use are not sustainable indefinitely, the group did not produce a single, common definition of sustainability. Paul Ehrlich's contention that the environmental impact of a culture is a function of population size, affluence, and technology proved to be a useful heuristic device for examining some of the components of the debate, especially the Northern-Southern hemi -

continued on page 13

Towards a Global Security Paradigm

by Rosalind Reynolds

During the week that our "Preventative Diplomacy and Conflict Resolution for a Secure Future" working group met at Student Pugwash USA's 1994 International Conference, conflict escalated in Rwanda and North Korea threatened to remove itself from the International Atomic Energy Association. Throughout the conference our discussions of working group themes intertwined with international current events as we tried to discover answers to the many questions of international security.

In the beginning we were overwhelmed by the numerous topics relevant to our working group. Our mandate covered economic and environmental security, as well as traditional military and weapons issues. To sort out our vast themes into specific questions, we agreed to the format of each student presenting their paper and having discussion after each set. The paper presentations brought out the following major themes: nonproliferation, role and reform of the U.N. and other non-state actors, regional conflict resolution, the role of human rights and democracy in international security, and conventional and nuclear arms. With each theme we had many questions to consider.

We often had difficulties reaching a consensus. Considering the wide backgrounds of members of the working group, some controversy was to be expected. The role of nuclear weapons in the future of security generated the most discussion, with some believing that nuclear weapons could and should be used as instruments of policy, and others advocating that total and complete disarmament should be the goal of preventive diplomacy. The issue of humanitarian intervention also brought disagreement. Some argued just-war theory to show that military intervention can be useful and necessary to alleviate suffering and maintain security, while others felt that war was often used as an easy way out as preventive diplomacy and conflict resolution measures were neglected.

Naturally, we were doubtful at being able to present a final report at the plenary session that adequately represented our hard work and diverse findings and opinions. After much debate, we decided to focus on the title of our working group and present what we thought "preventive diplomacy" and "conflict resolution" meant for our future. We realized that most of our discussion dealt with the changes in security that have taken place in the post-Cold War world. Finally we decided to present the "Preventative Diplomacy and Conflict Resolution" global paradigm. We presented a paradigm with some of the following qualities: a

continued on page 14

Susi Moser is currently working on her Ph.D. in geography at Clark University in Worcester, Massachusetts.

Jennifer Powers is completing her M.S. in forest ecology at Oregon State University.

Rosalind Reynolds is a Ph.D. student in the Government and Politics Department at the University of Maryland, concentrating on international relations and national security policy.

Overcoming Barriers to Health Care Education and Delivery

by Linda Tello

Linda Tello is currently working as a Health Educator in the Tobacco Control Section of the Cook County Health Department. She recently completed her M.S.A. at California State University.

The Health Care group was comprised of unique individuals from various parts of the United States, Africa, and the Netherlands. As a working group, we found that although we came from different geographical areas and had different backgrounds, we all at some point experienced or could all relate to having similar health care problems in each of our communities: costs, politics, education, technology, resource management, cultural sensitivity, availability of resources, and environmental concerns. With so many issues to discuss, the topics were grouped under health care education, prenatal care, the environment, and other health care issues. The grouping of topics was the best strategy not only for gaining greater insight, but also for providing possible solutions to some of the health care problems that exist worldwide.

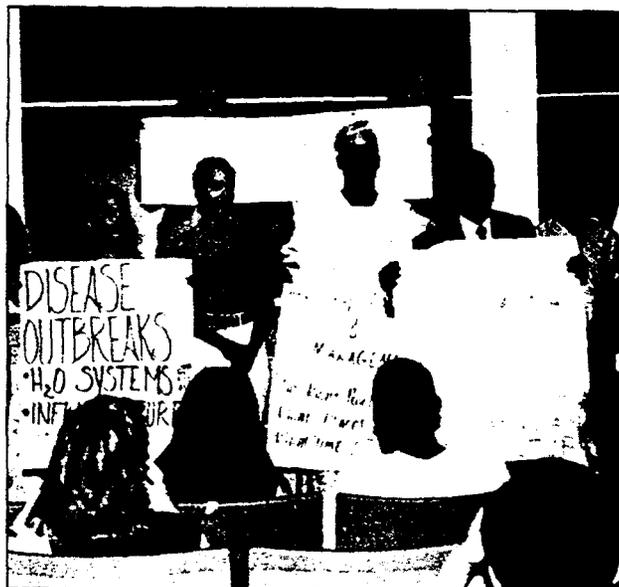
Douglas Ruuska is working towards a Ph.D. in physics at Northeastern University.

Under health care education, a great deal of time was spent on identifying what sort of barriers to health care exist in developing countries. By using Nigeria as a prototype, issues such as low education, poverty, disease, and lack of managerial skills were identified as key barriers that prevented adequate health care education and delivery. Possible solutions included using well-respected community leaders such as the local traditional healer, church authorities, and other prominent figures to establish strong lines of communication within the community. The use of credible sources and integrating local culture were identified as key strategies for stressing and institutionalizing the importance of preventative health care education in developing nations.

Wynship Hillier recently graduated from the University of California at Santa Cruz with a degree in computer science. His field of interest is telecommunications policy analysis.

When discussing environmental issues in health care, the group found that clean water and sanitation were basic problems in communities such as those in China and El Paso, Texas. Unlike China, which has been successful in addressing the issue and in controlling the outbreak and spread of disease, clean water and sanitation problems continue to be a major issue of concern for families living in the border communities of Texas. Factors accounting for disease in such areas include poor housing, overcrowded dwellings, and lack of adequate sewer and sanitation facilities. The group also discussed environmental issues dealing with lead poisoning in rural and urban communities. Recommendations for addressing water sanitation and lead poisoning involved encouraging community leaders to be aware of the issues and become more actively involved by voicing the concerns of their constituents to local

continued on page 14



Health Care working group

Information Technologies: Access and Equity

by Doug Ruuska and Wynship Hillier

The "Meeting Societal Needs Through Communications and Information Technologies" working group began with different perspectives that were maintained throughout the conferences. The optimistic technological determinists saw technology as benign and its ethical implications in terms of access issues. Others perceived information technologies as responsible for widening disparities in wealth, privilege, and opportunity arising from race, class, gender, ability, or citizenship. To accommodate the differing viewpoints in discussion, basic ground rules were established. A recognition rule was instated that required the previous speaker or the moderator to acknowledge the next speaker. After preliminary introductions, each participant presented the theme of their paper and any additional thoughts that they felt should be added. The senior participants then gave their insights on the various topics and brought up some new issues that were overlooked by the issue papers.

Following introductions and presentation of our papers, we debated which of our many discussion topics were important or wide ranging enough to discuss in more detail and categorized these topics under broad subject headings. We then began roundtable discussions on which issues were important to keep in mind when designing, implementing and using information and communication systems. Some of the many topics that came into play were: social and cultural responsibility and the dangers of cultural imperialism; economics—who would pay for broad-based access and, since it most likely was not going to be

continued on page 13

Human Genetic Information Designing the Process

by Anne Joseph

By Michael Neff

The Human Genome Project was launched in 1988 as a joint venture between the National Institutes of Health (NIH) and the Department of Energy (DOE). The project has two major goals: to map the 50,000 to 100,000 human genes and to sequence as many of the three billion base pairs that make up human DNA as possible. Initially projected to take 15 years to complete and to cost three billion dollars, the Human Genome Project is a major scientific initiative with medical, ethical and social implications.

The Social Costs and Medical Benefits of Human Genetic Information working group discussed some of these implications. In research and medical settings, informed consent is needed from potential research subjects and patients. What qualifies as informed consent is open for discussion. Consent may not be entirely voluntary. For instance, doctors fearing malpractice suits may encourage pregnant women to undergo prenatal diagnosis for particular genetic conditions. Pressure may also come from family members. In studies on hereditary breast and ovarian cancer, many women in affected families decided to provide blood samples for research because of pressure from other relatives. Informed consent also raises issues of the treatment of minors and others who may not be able to provide consent on their own.

Even with informed consent, should genetic information be offered in all circumstances? For example, certain procedures test for late onset disorders where patients currently display no symptoms. The dominant gene for Huntington's Chorea, a progressive and fatal neurological disorder that strikes in middle age, was located on the fourth chromosome. Information providing a diagnosis of Huntington's Chorea has psychological, economic and social repercussions. Who should be tested for such a disorder? Other tests can indicate if a person is an unaffected carrier of a genetic condition that could be passed along to offspring. Such conditions include cystic fibrosis, Tay Sachs and sickle cell anemia. Should tests be targeted at people with family histories of these conditions? Should they be provided to the general populations?

Once people have undergone genetic tests, many parties are interested in the results. Researchers want results for studies; insurers could use such information to charge higher premiums or deny insurance to at-risk or affected applicants; employers could deny promotions to people with late onset conditions, family members want to know if they could be affected. Are doctors and researchers

continued on page 14

The Design working group proved to be somewhat of an enigma. Even the title, "Designing the Future: From Corporations to Communities", proved problematic. Some group members saw the topic as directional, designing a move from corporations to communities, while others saw it as merely a range of designable items. We struggled for some time to reach a consensus on what our topic should be. What follows is a description of those discussions.

After much discussion, our group decided that instead of looking directly at design, we wanted to look at the process of design. How does someone go about designing something and what are the important considerations that must be included in the design process?

At this point, there was widespread concern among working group members that our group did not truly represent the "global village" we were hoping to design for. Out of this concern, catalyzed by a presentation on developing common areas by senior participant Karl Linn, the idea of creating a Conference Commons was born. This Commons became a space where all members of the conference could come, interact, relax and through the use of sign boards, give the design group their opinions on the questions we were struggling with. The design of this Commons proved varyingly satisfying and frustrating for the group members, but I believe it proved a positive addition to the conference as a whole.

From this experience, two important lessons for the design process arose. The first is that it is fundamentally important to be aware of who is creating the design and whose voices are not being heard at the design table. Efforts must be made to solicit the unheard voices and always remember their concerns. The desire to be inclusive in the design process was probably the greatest strength of our working group. The second lesson is that you will never have everyone at the design table and you cannot allow this to paralyze your efforts. This view was articulated well by diplomacy working group participant Merle Jacob as well as several members of the design group. It is important to be aware of who is not being heard, but you must eventually move forward with the people who are at the design table, or you will never design anything. Our group at times was so dedicated to trying to be inclusive, that it greatly limited our other discussions. It is not an easy balance to strike.

For our final presentation, the group decided that every member should be given an opportunity to present their insights on design, rising out of the

continued on page 14

Anne Joseph is a first year Ph.D. student in Political Economy and Government at Harvard University.

Michael Neff is a Computer Engineering and Society major at McMaster University in Hamilton, Ontario, Canada.

The Impact of Western Technologies in a Non-Western Context

by Dr. O. Jaimu Busari



Dr. O. Jaimu Busari is a physician and has recently completed his Master's degree in Health Professions Education. He intends to embark upon a follow-up residency in pediatrics. His professional interests lie in helping the underprivileged.

In practice the term "technology" has a much wider scope than its dictionary definition. To the layperson, technology begins and ends with the physical hardware made use of in business and industry. In reality, however, it embraces both software and hardware resources and materials. It is essential therefore that clarification of what is understood by the term "technology" be made as it applies in the day to day activities of our world and particularly as it relates to the issue of western and non-western contexts. "Technology" properly used should include the use of both "hardware" and "software" equipment, resources, knowledge and or procedures for practical purposes in our day to day activities. Both forms of technology exist together and are an inseparable unit, the one inter-meshing with the other.

Over the past decades, the world has witnessed a number of scientific and technological breakthroughs that have brought misery and joy to the people of many non-western countries. The impact(s) of western technologies in a non-western context generates mixed feelings due to the benefits and shortcomings associated with western technologies in non-western societies. Let us take a look at technology in health care and the recent debate on global population held in Cairo (September 5-13, 1994). Modern birth control methods, a product of western technology, were an issue of great controversy and heated debate: on the one hand, an essential measure required to avert impending global catastrophe of overpopulation, on the other a threat to cultural beliefs, faiths and religions of some non-western societies.

Yet taking a look at some of the reasons for the increased technological endeavors, to prevent pregnancies that are unprepared for and/or that pose risks to the mother, one must ask whether this research can be justified. It is estimated that half a million women die from complications of pregnancy, abortion, and child-birth each year. Every year reproduction-related mortality is among the five leading causes of death in the 15-45 year age group in developing societies—a quarter of all the deaths in these regions compared to the less than one per cent recorded in the United States and Europe. The answer to the question would undoubtedly be yes.

However another question arises; how can and/or do we apply this technology in non-western contexts? Illiteracy and educational bias against women is pronounced in non-western societies. For example, it is

estimated that 87% of women in Pakistan, 71% in Bangladesh, and 92% in Nepal cannot read. Closely associated with illiteracy are poverty and illness. How then can technology from the West suited for a largely literate female population benefit a non-western society with a high illiteracy rate?

Reproductive health technologies from the West have had positive impacts in health care delivery in these societies. The increased possibility of early diagnosis, effective treatment of disease, and early management of complications of pregnancy contributing to the reduction in maternal and infant mortality are areas where the contributions of hardware technologies cannot be undermined. Important to note in this context, however, is the cost for acquiring, running and maintaining such technology in their relatively unstable political and economical climates.

Though western technology appears to have made a giant leap in alleviating some of the health problems of these non-western countries, they have equally done great harm in forcefully repressing the preexisting native health practices and local technology due to a one-sided scientific conviction. They have failed and refused to understand the beliefs of the people with respect to how they understand disease, and failed to adequately assist and educate the people to develop and make use of locally available resources when they would be left on their own. Exploitation of the illiteracy of women in non-western societies by western technology interests has also been witnessed, whereby human subjects were used to conduct experimental trials of hormonal contraceptives (e.g. Norplant in Brazil in 1986 and the injectable contraceptive norethisterone oenathate in India). Technology in an alien society will only succeed if it is compatible with the religious beliefs, culture and societal norms of the people.

To succeed in our search for scientific and technological excellence, the people of the North must respect the beliefs of the people of the South and vice versa. The people of the world are different and yet one. No one people has all the answers, what some lack the others shall provide. Until all countries of the world acknowledge this basic rule of mutual coexistence, our struggle for peace and harmony shall continue to be a dream.



Population Growth and Modern Science

by Sheldon J. Segal, Ph.D



Dr. Sheldon J. Segal, Distinguished Scientist at the Population Council in New York City, is a leading authority on global population issues, family planning and contraceptive technology. He was one of the developers of the subdermal implant contraceptive NORPLANT®.

We are in the midst of a historic decade: during the 1990s, the world's population will increase by nearly one billion, the largest ten year increase ever recorded. In 1994 alone world population will grow by a record 93 million to over 5.7 billion people.

The quantity of human life can have a negative impact on the quality of human life. For a developing nation with a rapidly growing population, like Alice in Wonderland, it becomes necessary to run faster just to stay in place. To achieve national goals of improving life's quality and enhancing individual well-being, the key is a strategy that maintains a sustainable balance between human numbers and needs and the resources available, locally, regionally or even globally. Family planning alone cannot achieve this balance but its record in past decades proves that it can be an essential, cost-effective element of any nation's development strategy.

Over the past thirty years family planning has been a remarkable success story in many countries of the developing world. It is as impressive as the green revolution in agriculture or the control of disease in public health. Developing world women are averaging 3.6 children, and more than 50 percent of the couples use some form of contraception according to United Nations estimates. This is a stunning change from the 8 percent who used contraception in 1965 when they were averaging more than six children. Notable successes have occurred in Thailand, Indonesia, Mexico, Columbia, Brazil and Bangladesh. In just thirty years, the developing world has passed the halfway mark in reducing fertility to replacement levels.

All this portends further significant declines in fertility if sufficient investment in family planning is made in the years ahead. This investment will determine whether the world's population grows from 5.7 billion today to a stabilized 8 billion to 10 billion as early as the year 2025 or 15 billion to 20 billion by 2100, according to United Nation projections. No one can predict with accuracy the local, regional, or global impact of a population of over ten billion, but it is certain that this will depend on what people do as well as how many people there are.

There is a sound basis for optimism. The global population's growth rate has declined faster than many experts thought possible in the late 1960s. This decline has come mainly as a result of the voluntary use of public and private family planning

services, not through coercive measures. There are still developing nations, primarily in sub-Saharan Africa and the Islamic world, where the use of birth control remains low and fertility remains high. But even in several of these—Kenya, Egypt, Zimbabwe—the acceptance of contraceptives is growing.

A remarkable feature of this contraceptive revolution is the near universality in the developing regions in adopting family planning policies and the absence of political risk in doing so. Nearly all developing countries provide contraceptive services. Over ninety percent of the population of the developing world live in countries that have official family planning programs.

Another surprising feature has been the low investment needed to reduce birth rates. The United Nations estimates that developing countries spend a total of \$7.2 billion yearly on family planning and related activities, including such costly items as census taking, demographic surveys and public information campaigns. Donor nations provide about \$1.3 billion of this sum. Costs are rising yearly. This results partly from the growing number of couples learning to use contraception, many of whom desperately want no more children, and partly from the large number of young people entering childbearing years.

Reaching this group requires substantial improvements in the quality of services as well as in living standards, including reductions in infant and maternal mortality and better education of women. These advances will cost more per capita than existing programs.

If the United Nations projection of a world population ten years from now of 6.7 billion is not to be exceeded, the annual cost of family planning programs in the developing world will soar; contraceptives alone will cost \$6 billion a year.

Most of these costs will have to be absorbed by the hard-pressed countries themselves. But donor assistance will also have to increase. Failure to give adequate support to family planning programs would be measured in the billions of people added before the world's population is stabilized.

The optimistic view is that this cost-effective assistance will be provided and developing countries, implementing their own policies for sustainable development, will put the brakes on population growth in time to stabilize world population in the mid-21st century near the ten billion level.



1994 Internatic



Alexander Laszlo MEXICO • Jeff Leifer USA • Dann
 • Walter Lee USA • Lora Lumpe USA • Wynship Hillie
 • David Andersen USA • Jesper Engman SWEDEN • C
 Filauri USA • Ian Stone USA • Jennifer Powers USA
 Arifin INDONESIA • Lisa Hare USA • Carol Welker
 Christopher Nolte USA • Jacquelyn Jackson USA • C
 USA • Loretta Lynn Morales USA • Gregory Harris US
 USA • Janie Casey USA • Susanne Moser GERMANY
 USA • Munira Majmundar INDIA • Richard Ponzio
 Candace Parker USA • Kenneth Jason Fair USA •
 Panofsky USA • Virginia Bacay PHILIPPINES • Karer
 • Silvia Vriesen GERMANY • Gunhild Gurlich GERMA
 • Joe Wemin PAPUA NEW GUINEA • Diane Kondra
 USA • Janet Anderson USA • David Kurtz USA • Eve
 • Jamiu Oladimeji Busari UNITED KINGDOM • Francis
 Mensah GHANA • Linda Tello USA • Per Jambeck U
 Mitchell USA • Abdul Hakim BANGLADESH • Christo
 Momoh SIERRA LEONE • Merle Jacob TRINIDAD
 Fiawoo GHANA • Eran Singer ISRAEL • Iwona Lesn
 FRANCE • Robert Notzon USA • Eugene Chiu US
 Adedayo Ayodeji Onitilo NIGERIA • Abigail Baker U
 Stoikov Vassilev BULGARIA • Hussein Haji Jama
 GHANA • Agnes Nteta SOUTH AFRICA-USA • Carol
 EL SALVADOR • Kay Johnson USA • Adele Simme
 USA • Gerard Bodeker USA • Armstrong Wiggins US
 USA • Sheldon Segal USA • Ted Taylor USA • Willia
 USA • Karen Aberle USA • Nancy Brennan USA • K
 USA • Karl Linn USA • Sally Loomis USA • Sandy
 USA • Steve Fetter USA • Ashok Kapur CANADA •
 • Richard Collins USA • Tim Foss USA • Vibha Gup
 Francis Weill SWITZERLAND • Barbara Bernhardt U
 Dean Hamer USA • Victor McKusick USA • Angela F
 • Paul Jellinek USA • Connie Pechura USA • Yasmir
 USA • Rosie Albritton USA • Susan Brummel USA •
 USA • Lisa Kimball Carlson USA • John Mendenhall
 Pitroda INDIA • Victoria Verana USA •

nal Conference

arew USA • Pamela Clarke USA • Taft Broome USA
SA • M. Gordon Wolman USA • Michael Shuman USA
on A. Bond USA • Sunita Bhamidipaty USA • Elizabeth
ena Seaman USA • Stephen Lacroix USA • Bustanul
• Lycely del Sepulveda USA • Anne Joseph USA •
line Thomason USA • Ann Moore USA • Lissette Ortiz
Michael Neff CANADA • Lisa Covi USA • Lena Johnson
acha Hare USA • Carla Shafer USA • Douglas Ruuska
• Rosalind Reynolds USA • Elora Dasgupta USA •
rcy Ozaeta USA • Arthur Daemmrich USA • Aaron
ron USA • Kim Anderson USA • Lilia Maliar UKRAINE
• Stephen Kyei-Boahen GHANA • Rose Baafi GHANA
cz USA • Suleman Alasan NIGERIA • Benjamin Sun
Weil CANADA • Matthew Wireko Boampong GHANA
Conduah GHANA • Hewitt Chizyuka ZAMBIA • Henry
• Chris Fitz USA • Teng-Pin Wang USA • Stephanie
er Richardson USA • Stephen Schlett USA • Hindowa
bert DiNardo USA • Kathia Castro MEXICO • Victor
DLAND • Letitia Lagudah GHANA • Laurence Nardon
Tom Hsieh USA • Stanimira Hristova BULGARIA •
ED KINGDOM • Andrey Petrichtche RUSSIA • Deyan
YA • Ajay Darshan Behera INDIA • Joseph Wireko
eil USA • Thomas Johnson USA • Rafael Hernandez
USA • Mohammed El-Ashry EGYPT • Brian Trelstad
Carol Corillon USA • Clyde Snow USA • Ken Phillips
Maines USA • George Rathjens USA • Anne Richard
Childress USA • Shawn Dalton USA • Paul Jahnige
son USA • John P.S. Salmen USA • Richard Darliek
• John Kpundeh SIERRA LEONE • Dan Volman USA
INDIA • Alexander Kalinin RUSSIA • Jean True USA •
• Barbara Biesecker USA • Donald Hadley USA •
atucci USA • Steven Selden USA • Kaja Finkler USA
er-Hill USA • Ellen Benavides USA • Lorelei DeCora
d Fleming USA • Gregg Garriott USA • Barry Greene
• Sylvia Ospina USA • Edson Pereira BRAZIL • Sam



What the Heck is a Pug, Anyway?

by Beezer Moolji

Beezer Moolji is graduate of the Illinois Math and Science Academy. Following is the speech he gave to become central coordinator of the IMSA Student Pugwash Chapter.

Many people are hesitant to join the organization of Pugwash simply because they're turned off by the name. I mean, what the hell's a Pug anyway? But now, after working with the people I've come to be friends with, I know exactly what it is.

You see, everyone is born with a Pug, Pug clean and pure. A Pug is that part of your soul that allows you to be happy with life and with what life has given you. It makes you fun to be with and makes life worth living. Unfortunately, as time goes by, people are exposed to misconceptions, stereotypes, fear, anger, hatred. They start to become cynical. Life has gotten to them. They no longer believe in love at first sight, or even in the spirit of good will. They say they've just gotten to become more realistic. I say, their Pug has just gotten to become less pure. That's all it is. They have a dirty Pug!

Now, the purpose of Pugwash is to help all of you wash that Pug. It's not too late to make that Pug clean again. If we, as an organization, as well as a group of friends, get rid of ignorance, then we have also gotten rid of the misconceptions, the stereotypes, the fear, the anger, and the hatred.

I hope to see a day, someday, when people will have no reason to be cynical. When everyone is happy with life, and everyone has a clean Pug.

THE PERFECT MAGAZINE FOR CAMPUS LEADERS

Subscribe to Student Leader, the New Leadership Magazine Written Exclusively for You!

Student Leader is perfect for Student Government members, Greek leaders, RAs, orientation leaders, officers and key members of other campus organizations, and other activists who want to improve their leadership, management, and communication skills!

EACH MAGAZINE FEATURES USEFUL ARTICLES:

- ◆ National student leader polls
- ◆ Making ethical leadership decisions
- ◆ How to combat apathy and frustration
- ◆ How to get student involved in community service

SPECIAL INTRODUCTORY SUBSCRIPTION RATES!

✓ Get two issues of Student Leader this year (October and March) for these low prices!

- Get one copy (twice a year) for only \$15
- Get 5 copies (twice a year) for only \$29
- Get 10 copies (twice a year) for only \$39
- Get 25 copies (twice a year) for only \$79
- Get 50 copies (twice a year) for only \$109
- Get 100 copies (twice a year) for only \$159
- Get 200 copies (twice a year) for only \$209

■ Need more copies? Please call Butch Oxendine at (904) 373-6907.

Student LEADER

Return this portion with check or purchase order: Oxendine Publishing, Inc., P.O. Box 14081, Gainesville, Fla. 32604-2081

Name/ Title _____

Your School / Company / Organization _____

Address _____

City/State/Zip _____

Phone () _____

Student Pugwash USA's Mentorship Network

Student Pugwash USA's commitment to intergenerational and interdisciplinary dialogue has led to the formation of a network of mentors and resource people. Consisting of professionals, recent graduates and current chapter members, the database provides an important avenue for individuals of all ages and disciplines to share their experiences to benefit others and enhance their own understanding of global challenges.

Mentors:

- advise individuals on graduate study, career planning, and internships
- advise Student Pugwash chapters on contacts and resources for events
 - speak at local and national SPUSA events
 - give tours of their workplaces

Get involved!

By filling out the form on the following pages, you can become part of Student Pugwash USA's Mentorship Network. You choose the level and nature of your involvement. As appropriate, contact information will be made available to students/young professionals who have expressed a need for the mentorship you are willing to offer.

For more information on the Student Pugwash USA Mentorship Network call us at 202-328-6555, or fill out the form on the following pages and return it to the National Office at your earliest convenience. As soon as we receive your form, you will be sent additional information about the Mentorship Network.

The Student Pugwash USA Mentorship Network Needs You: Become a Mentor!

Student Pugwash USA Mentorship Program

Contact Information

salutation first name last name

address

city state zip

work phone: _____

home phone: _____

fax: _____

email: _____

Date of Birth: _____ Sex: _____

Ethnic Background (Optional) _____

Yes! I will participate in the Mentorship Program!

I would like to talk with students about:

- career planning internships
- general advice/contacts job shadowing
- graduate study my areas of expertise

I am interested in participating in SPUSA activities by:

- speaking on my subject area
- providing chapters with contacts & information
- advising students on research endeavors
- giving tours of my workplaces
- providing internship or volunteer opportunities

Other assistance I could provide:

Current Employment

title

organization

organization description

- My resume is enclosed
- Materials about my organization are enclosed

Educational Background

field degree year

college/university

field degree year

college/university

field degree year

college/university

Please provide a short biography about yourself.

Past Student Pugwash USA Involvement

Areas of Expertise or Experience

- Business Technology policy
- Global security Information technologies
- Health Care Population/Development
- Women/Minorities Energy
- Youth issues Science & Science Policy
- Environment Space
- Ethics Human Rights

Other Interests or Organizational Affiliations

Why did you get involved in Student Pugwash?

How would you like to benefit from being involved in the Mentorship Network?

Have you mentored previously in other programs? If yes, in what type of program?

Advice to students interested in your field

Recommended books or readings

How did you select your career or area of expertise?

Most gratifying position you have held and why

What is the importance of mentorship and intergenerational dialogue?

Any comments on the value of Pugwash or the importance of science and technology studies?

Please return this form to:
Student Pugwash USA
1638 R Street, NW • Suite 32
Washington, DC 20009
phone: 202-328-6555 • fax: 202-797-4664
email: uspugwash@igc.org

Environment, continued from page 3

sphere dichotomies. Some people in the group seemed to have a mathematical interpretation of "sustainability" as the biological carrying capacity of the planet, while others were more concerned with the cultural context of resource development and distribution. Working toward sustainability means accepting responsibility for the distribution of resources amongst ourselves and other species, and between current and future generations.

How do we achieve sustainability? Moving towards sustainability means taking a hard look at the immediate costs and benefits of how natural resources are currently managed versus the long term social and ecological benefits of less intensive land management options. A recurrent theme (that echoed the 1992 Rio Summit) was that economic development and the alleviation of poverty must proceed simultaneously with efforts to ameliorate environmental problems. Technologies such as genetic engineering and biocontrol of crop pests will have an important role to play in maximizing the yield from agricultural land. However, these efforts will fail unless we pay attention to the ways that resources and technologies are distributed among people.

Who is responsible for bringing sustainability about? There were a lot of discussions about the power structures that have perpetuated wasteful and inefficient use of our limited resources and barriers to changing these institutions. Some felt that we could reform the economy by incorporating external costs into prices and thus use the market to link individual consumption choices to more environmentally forgiving production systems. This solution is more applicable to the northern industrialized countries and does not address the fundamental problem of the unequal distribution of resources. Others saw the emerging role of non-governmental organizations as a decentralized way to effect change at a variety of scales. Clearly, multi-national corporations need to own up to their role as resource extractors and be made responsible to some higher body. Lastly, we agreed that we all share responsibility in implementing a more sustainable future and linking our individual visions of sustainability to a global vision.

How do we measure sustainability? We discussed the need for alternative accounting systems and ways to assess the ecological, economic, and social impacts of different resource management scenarios. Someone proposed creating a "gross sustainable product" as the index of a country's economic production that did not come at the expense of degrading ecological systems.

Beyond these tentative and cautious answers that we found, our working group concentrated on asking questions and learning to listen to each other's visions, problems, and perspectives. Within the group, we quickly found that the communication and ideological gridlock that exists in the outside world are easily replicated on a smaller scale. We also found that after all the theory, all the numbers, and all the talking, it comes down to feeling personally responsible for one's own actions, to never forgetting that the numbers are abstractions for individual lives, and to taking action wherever we can in each of our own capacities.

TQ

Information Technologies, continued from page 4

altruistic corporations, how could businesses profit from communication services without resorting to harmful methods; how would universal access be defined? Once our subject boundaries were established we jumped right into them, then later broke up into the smaller groups to gain different perspectives on the issues. The differences in the group and individual dynamics brought about just by changing from the open architecture round-table forum to the more intimate smaller working groups were quite striking. Each group then made a report to the reassembled larger group so that we could all benefit.

The final task was to figure out what it is that we should bequeath to anyone interested in our topic via the *Global Issues Guidebook*. The group thought that if our section of the *Guidebook* consisted of just an introduction followed by our papers we would be doing our audience, as well as ourselves, an injustice. An injustice in that much of what we had explored as a group would not even be a part of our section. We felt it very important to emphasize that information and knowledge (two very separate entities) are not static, fixed forms, but rather are very dynamic, ill-defined quantities. This leads to another very important consideration, that of definition. Two people, or groups of people, can be discussing the same terminology, but each be discussing very different issues. For example, universal access may mean a computer in every home to one person while to another it may mean centralized computer 'libraries' that everyone has free access to. With this in mind we wanted our section in the *Guidebook* to include a Teachers' Section in addition to the introduction and papers. This section would include a glossary of terms that we considered worthy of greater clarification.

In the working group's final presentation/skit to the assembled Pugwash Global Issues tribe, we spread ourselves throughout the audience and one-by-one stood up and orated a sentence concerning one of our many issue topics. Another product of the conference is a computer news group, set up at Cornell for the dissemination of information and announcements pertinent to our central interest in information technologies. Finally we should recognize the senior participants who were a great addition to our group, in the experience and wisdom that they delivered through their broad and varied backgrounds, working knowledge of organizations large and small, and their personal opinions and guidance to each of us. The senior participants were a very necessary part of making these discussions as well rounded as they were.

The information technologies working group's experience at the conference reflects what good education is about, self-fulfillment and enjoyment that can be applied to the greater good of all.

TQ

Diplomacy, continued from page 3

balance between global security and national sovereignty; respect for personal security; decreased reliance on nuclear weapons; a focus on resource management and distribution; and incorporation of preventive diplomacy and conflict resolution measures to avert unnecessary military intervention. While we felt that our recommended paradigm had not been implemented as much as the public might believe immediately after the Cold War, we felt that there was hope for a secure world.

TQ

Health Care, continued from page 4

government officials. Environmental concerns need to take precedence in every community in order to keep health care costs from overburdening citizens living in those communities.

Under other health care issues, the range of topics included the shortage of harvested organs for transplant, emergency room abuse, and the ethics involved in prolonging the lives of the elderly. With a variety of topics, the group again found that the best way to address such complex issues is to establish strong lines of communication and provide both the public and health care professionals with comprehensive education. The focus of health care delivery needs to shift from clinical treatment to education and prevention. With soaring medical costs, the US and other countries cannot afford to ignore the importance of getting back to basics and must stress more education in communities throughout the world. As a global community, we need to keep a strong focus in addressing such issues if we are to help alleviate the world's health care problems in the future.

TQ

Global Community, continued from page 1

Bank Environmental Programme, described the evolution of understanding about the natural world at the Bank. He reiterated that as an organization of economists there are challenges in demonstrating win-win policies for economies and the environment. He argued that new economic tools need to be created to account for environmental degradation; a means to assign value to the global services provided by forests and other natural resources. El-Ashry also suggested that while technology that repairs environmental degradation is necessary in the short run, to realize a sustainable world we must design technologies that do not harm the environment in the first place.

Critical global political changes have catalyzed awareness of the need for paradigm shifts in major institutions. Meeting the needs of the global community ultimately depends as much on the process of identifying goals as realizing the goals themselves. Science and technology—as ways of knowing and controlling the world—can promote or impede a paradigm shift that better meets the needs of the global community. Fortunately, participants of Student Pugwash USA's International Conferences demonstrated their dedication to creating global community, one that is prepared to direct institutional transitions towards a peaceful future.

TQ

Design, continued from page 5

weeks discussion. This was accomplished by having each group member, in turn, stand up in a semicircle enclosing the audience and make a brief statement on design. The effect was to produce a collage of ideas that reflected well the workings of the group. It is telling that we had agreed upon a form for our presentation, but not its content. This was a reflection of our working group that focused always on the process of design and never on the more tangible, concrete aspects of design.

A closing thought—attempting design with a large group of diverse individuals can be painful, challenging and frustrating, but it can also produce some quite remarkable results. In an inclusive, group-based design process, the role of the facilitator cannot be overemphasized. His or her job is not to lead the group to some preordained conclusion, but to ensure that the group is constantly progressing towards the conclusion that will satisfy all group members. Maintaining this progression is a far from easy task. Inclusive, group-based design—like the process we experimented with—requires the efforts of strong, directed and caring facilitators.

TQ

Genetics, continued from page 5

permitted to disclose such results to a spouse or other family members who will be affected by such information? Do insurers have a right to genetic information? What if the insurer has paid for the test or if a person upon finding out she is likely to have a costly disease has purchased considerable health and life insurance without indicating her future condition? Many concerns center around employment and insurance discrimination. Since particular conditions afflict certain ethnic and racial groups, mandatory genetic screening programs are seen by certain groups as eugenic actions. There is also fear that an underclass of people with genetic ailments is developing.

Genetic information not only plays a role in medical diagnosis but also is used in criminal and paternity applications. DNA typing is a new form of evidence in criminal and civil investigations, providing information about identity. Although a majority of states have passed legislation to establish databases of genetic profiles of convicted felons and all states have admitted DNA evidence into court, there are still concerns about the use of the technique and the storage of blood samples of convicted felons. DNA databases in attempting to maintain social order curtail privacy of certain individuals.

Genetic information also impacts how we define ourselves and our health. Defining normalcy and illness solely on genetics raises philosophical issues not only in biology and medicine but also in how we develop communities. Providing such information must be informed by social, ethical and medical concerns and benefits, catered to the individual and protected by society.

TQ

Staff Updates

Laura Baraff, Program Assistant

Laura joined Student Pugwash less than a week after graduating from Colgate University. Although she received her degree in English Literature, her true educational passion was for environmental studies. Laura is currently working on the editing and formatting of the *Global Issues Guidebook*.

Pamela Clarke, Program Assistant

Pamela joined Student Pugwash in September and is a Program Assistant working on the National Chapter Conference and chapter outreach. She graduated from The College of William and Mary in May '94 with a degree in Anthropology.

Evelyne Delori, National Chapter Coordinator

Evelyne has coordinated the activities and expansion of the Chapter Program since she graduated from Barnard College over two years ago. In addition to her coursework in her major—cultural anthropology—Evelyne took courses in Spanish, studio art and geology. During college, Evelyne spent five summers working on public health and environmental projects in Latin America.

John Deschner, Program Assistant

John is working on the *Global Issues Guidebook* and *Tough Questions* newsletter. John has attended both University of Washington in Seattle and the Moscow Institute of Social and Political Studies in Moscow, Russia. His coursework focuses on political science and Russian.

Heather Henry, Program Assistant

Heather began working at SPUSA after graduating from The College of William and Mary in May. She majored in marketing with a Spanish minor. Heather was involved with the William and Mary SPUSA chapter for three years. Her current project at the National Office is to develop the Mentorship Program to promote intergenerational dialogue among SPUSA participants.

Susan Higman, Management Director

Susan is a 1986 graduate of Siena College, where she studied biology. She is pursuing a Masters degree part-time in American Government at Johns Hopkins University. As Management Director at SPUSA, Susan seeks to combine science policy with organizing and outreach through the Mentorship, Professional Pugwash, and New Careers programs.

Adam Reynolds, Program Assistant

Adam is currently a senior at The American University in Washington, DC, studying International Communications and Computer Information Systems, though he has retained the ability to speak to people as well as machines. He is working on both the new Mentorship Program Database and Professional Pugwash at SPUSA.

Nicky Short, Global Issues Project Coordinator

A 1992 graduate of Georgetown University, Nicky majored in Science, Technology and International Affairs with a concentration in African Studies. Before joining the national staff, Nicky was a National Network of Environmental Management Studies Fellow at the EPA.

Thank you!

Anne Freeh, former Management Director

As Management Director, Anne was responsible for overseeing Professional Pugwash and office finances as well as coordinating the New Careers Program. She is now International Editor at Greenwire, an environmental news service.

Tim Larson, former Program and Development Coordinator

Tim is now pursuing a Master's degree in Public Affairs and Urban and Regional Planning at Princeton University. His research focuses on how regional technological systems affect economic development, quality of life, and environmental sustainability.

PUGWASH LISTSERV

Get involved with the latest Pugwash network on the Internet! **Pugwash-L** is an electronic mailing list for all members of Pugwash: Student, Professional, Senior, and International Student/Young Pugwash groups. It is a forum for active discussion about current Pugwash topics. To join you need an electronic mail account. If you need help acquiring an account call the National Office.

To get involved send electronic mail to:

listserv@cornell.edu

with no subject message, but with the message:

subscribe Pugwash-L [your name]

Once you've subscribed, a copy of all mail sent to the listserv will be sent to you. To send something out (and be sure to introduce yourself!), write to Pugwash-L@cornell.edu. See you on-line!

Subscribe



A new magazine about service & activism

Subscribe now and save 25% off the regular price. One year (4 issues) \$15. *Who Cares* is published by Who Cares Inc., 1511 K Street, N.W., 1042, Washington, DC 20005 Phone 202-638-1100

Student Pugwash USA Supporters

Louis and Henrietta Blaustein Foundation • Ciba Corporation • Ciba Limited • Commonwealth Fund • Eaton Family Fund • First National Bank of Maryland • Johns Hopkins University • W. Alton Jones Foundation • Legg-Mason Corporation • John D. and Catherine T. MacArthur Foundation • Morton and Sophia Macht Foundation • Mercantile Bank • Stewart Mott Foundation • National Institutes of Health • National Science Foundation • New-Land Foundation • Ploughshares Fund • Rockefeller Family Associates • Samuel Ruben Foundation • Trust for Mutual Understanding • U.S. Department of Energy • U.S. Institute of Peace • Individual Contributors

Board of Directors
 Nicholas Steneck, Chair
 Ruth Adams
 David Andersen
 Michael Berger
 Taft Broome
 Richard Bryant
 Anne Cahn
 Peter Carpenter
 Rosemary Chalk
 Pamela Clarke
 Rajesh Krishnan
 Walter Lee
 David Leifer
 Alan McGowan
 Indira Nair
 Robert Rosenzweig

Board of Advisors
 Sissela Bok
 Honorable George Brown
 Audna England
 Richard Graham
 Hal Harvey
 John Holdren
 Walter Kohn
 Sally Lilienthal
 Richard Nelson
 Victor Rabinowitch
 Jonas Salk
 Frank von Hippel
 Victor Weisskopf
 Herbert York

S T U D E N T



P U G W A S H
 U S A

PROFESSIONAL PUGWASH

A Great Way to Stay Involved with Student Pugwash USA

Professional Pugwash is a national network of socially-committed policy makers, industry leaders, scientists, and others who seek to explore issues surrounding the use of science and technology. Professional Pugwash is also:

A *forum* for the discussion of critical global, social, and technological issues

- Seminars, discussion series, and brown bag lunches
- Events focusing on global issues, security, and sustainability
- Working groups to explore the social impacts of technology in depth

A *network* of professionals and individuals interested in

- Peace and global security
- Population and development
- Energy resources and the environment
- Health and biotechnology
- Information technologies/communications

A *method* of community outreach and education

- Speak at SPUSA campus-based events (or attend them)
- Serve as a resource person for a SPUSA chapter
- Become a mentor

A *resource* for continuing professional development

- An expanding Mentorship Network and database
- *New Careers Directory*, listing opportunities with nonprofit and policy organizations
- SPUSA alumni professional databases



For more information on becoming involved contact Susan Higman at (202) 328-6555

Tough Questions is the Quarterly Newsletter of Student Pugwash USA
 Designed and Edited by John Deschner & Nicola Short

Student Pugwash USA

1638 R Street, NW, Suite 32
 Washington, DC 20009-6446

Non-Profit Org.
 U.S. Postage PAID
 Washington, DC
 Permit No. 4138

Address Correction Requested

printed with soy ink on recycled paper

Appendix G

Personal Plan of Action

Student Pugwash USA's Eighth International Conference
*Science and Technology for the 21st Century:
Meeting the Needs of the Global Community*

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

"Not to dream boldly may turn out to be simply irresponsible."

- George Leonard

During this International Conference week, you will participate in a wide range of thought-provoking sessions addressing the current and potential paths of our global society. Like many past Conference participants, you may find that making interconnections between issues and discussing new ideas with friends and colleagues is an empowering experience. We hope that, if you haven't already, you will discover that your ability to affect change and create a safe, sustainable global future is potentially limitless.

These explorations can be very inspiring, but potentially overwhelming. As an individual who strives to "make the world a better place" or "give something back to the community," you face an endless array of opportunities and life paths. How do you decide where to get involved? How do you allocate time and energy to have the greatest positive impact on your professional career and your personal fulfillment? Where do community service and social action fit into the rest of your life and career? How can you make a difference on a day-to-day basis? What are the best ways to educate yourself and others?

The Personal Plan of Action is a tool to help you strategically plan your actions and put on paper the many ideas you have for your future. The following questions and worksheets will help you identify how you can combine your interests and skills, community needs, and local resources to effect positive change. By taking the time to map out your goals, inventory your skills, and record your interests, you will find that channeling your efforts will become easier, as well as more productive and rewarding.

Most importantly, you will find that the process can be fun! During the Conference week, you will have access to an amazing variety of resources — other student and senior Conference participants; information in the Personal Plan of Action Resource Center; electronic bulletin boards and conferences; and Student Pugwash USA staff. To be surrounded by this kind of support network is a rare event: take advantage of these resources to help you explore your options and prioritize your goals!

Take a few minutes to read over this form before arriving in Baltimore. Fill in as much as you'd like, but don't forget to leave room for additional ideas that you may come up with during the Conference! You should have plenty of opportunities to talk about your Personal Plan of Action during the course of the week. Your registration packet will contain more specific information about the times that will be set aside during the Conference to share ideas and projects.

Your Personal Plan of Action will be collected the morning of Friday, June 17 and returned to you later that day. The Conference staff will summarize and tally the Personal Plans of Action so that we can give you a "snapshot" of the kinds of projects, proposals and plans that you and your colleagues hope to achieve after the Conference is over. We look forward to hearing your ideas and helping you identify resources to help you turn your visions into reality!

What are my areas of interest?

What are the issues and topics that you are most concerned about or most interested in? Don't limit yourself simply to what you have done or thought about in the past: think about what you'd like to explore in the future as well!

What are my skills?

What are you good at? What do you enjoy doing? What are some of the skills you would like to acquire or improve?

What can I do? What do I enjoy doing? There are many ways to effect change, both within yourself and within your community. Use this list as a starting point for thinking about the kinds of projects you might like to pursue. Circle items in the column on the left that interest you; in the blank column to the right, add other project ideas or describe more specific plans for the items you circled on the left. Be creative!

Education

- Create a student-run course
- Speak to other organizations, classes and individuals about your Conference experience
- Start a Student Pugwash USA chapter on your campus
- Organize a conference
- Plan a forum or lecture series
- Write an article or editorial & have it published
- Mentor elementary and high school students
- Share your perspectives via electronic mail

Other Ideas & Projects

Activism/Community Service

- Start a recycling program on your campus or in your community
- Create a non-profit organization to address a community need
- Conduct a survey & publish the results to raise community awareness
- Work on a political campaign
- Run for office yourself!
- Join a community advisory board
- Write to your elected representatives
- Volunteer... in an area that interests you
- Join an existing group working on issues you care about
- Become a socially responsible entrepreneur
- Travel as a citizen diplomat or researcher
- Make your school or work site more energy efficient

Personal Development

- Take classes in new subject areas
- Educate yourself on issues of cultural diversity
- Cultivate your own leadership abilities
- Travel in your own country or abroad
- Find out more about electronic mail

Professional Enrichment

- Find an internship or job at a socially-responsible organization
- Search for — and work with — a mentor
- Learn about different careers by interviewing professionals from different fields
- Start a Professional Pugwash chapter
- Publish your research

Day to Day Differences

- Conserve water, energy
- Plant a tree
- Use your purchasing power to support socially-responsible businesses
- Recycle
- Practice random acts of kindness and senseless acts of beauty
- Pick up a can, bottle or piece of garbage left behind by someone else

What does my "ideal world" look-like?

What are the guiding values or principles of your ideal world? What are the key areas which you feel need to be changed?

Do I need to change myself or my values to realize this vision?

Effecting change is both an internal and external process. Before you can work for change in your community, think about how close — or far — you are to truly living your own vision. How can you strengthen yourself and your ideals?

What are the main barriers to realizing this vision in my community?

Do other people in your community share your vision? Why or why not? What are the obstacles to creating community awareness?

How can I overcome the barriers I have identified above?

Where do you want to focus your efforts? How can you use your abilities, skills, talents and resources to overcome these barriers? What networks, contacts, organizations or individuals could help you in your work?

Why is my vision important to well-being of the community?

What potential impact does this vision have for the future?

What are my goals?

As you have seen, identifying avenues for action and involvement frequently flows out of the process of deciding where you want to fit in and what skills and resources you have at your disposal. The next crucial (but frequently overlooked!) step is to chart your course for the future. People continually draft strategic plans to chart organizational goals and project directions, but often fail to reflect formally on their own goals, objectives, resources, and action plans!

Goals in the long term:

Other resources, other ideas:

Use this space for your own notes!

Goals for the next year:

First five steps:

Remember: big ideas begin with small actions! Be sure to identify things that you will enjoy doing.

Name: _____

Working group: _____

School: _____

Address: _____

Appendix H
Conference Evaluation

Conference Evaluation
Student Pugwash USA International Conference
Science and Technology for the 21st Century: Meeting the Needs of the Global Community

GENERAL EVALUATION

Overall, how would you rate the Conference?

Excellent Good Fair Poor

What were your expectations for the Conference? Were they fulfilled?

What do you feel were the two most important things that happened at the Conference?

What were the most positive aspects of the Conference for you?

What could have been improved? How?

Did the Conference change your outlook or help you make any decisions about your future?

Was the Conference staff helpful and responsive to your needs?

Please evaluate the following Conference features and activities by circling the appropriate response. Please use the additional space if you would like to expand on any of the ratings.

• Pre-conference materials Excellent Good Fair Poor

• Variety of events Excellent Good Fair Poor

- | | | | | |
|---------------------|-----------|------|------|------|
| • Conference length | Excellent | Good | Fair | Poor |
| • Social activities | Excellent | Good | Fair | Poor |

WORKING GROUPS

Which working group were you in?

Overall, how would you rate the working group meetings?

Excellent Good Fair Poor

Overall, how well did your facilitator fulfill his or her role?

Excellent Good Fair Poor

Please comment on the facilitator's ability to promote everyone's participation, keep to the agenda, clarify key points and bring out additional questions or issues.

Were you a student or a senior participant in the working group?

Were you clear on your role in the working group? Did you feel that others in the working group were clear about their roles?

What did you enjoy most about your working group experience?

What were the major obstacles that your working group faced?

PLENARY SESSIONS

Please rate and comment on the following plenary sessions:

Mohammed El-Ashry's address Excellent Good Fair Poor

Exploring Values and Cultures Workshop Excellent Good Fair Poor

World Game Workshop Excellent Good Fair Poor

*Envisioning the Future: Towards
a Global Community in the 21st Century* Excellent Good Fair Poor

*Exchanging Technologies
Between Cultures and Countries* Excellent Good Fair Poor

Science and Human Rights Excellent Good Fair Poor

*Innovations and Innovators:
Technology and Social Responsibility* Excellent Good Fair Poor

*The Future of UN Peacekeeping:
Prospects for a Volunteer Force* Excellent Good Fair Poor

*Creating Solutions and Initiating Change:
Young People and the Global Community* Excellent Good Fair Poor

Did you feel that there was a strong connection between the Conference theme and the plenary and working group sessions?

GUIDEBOOK/PAPER WRITING PROCESS

What suggestions do you have for improving the paper writing and editing process?

If you received comments on your paper from reviewers and staff, did you find them to be helpful?

Please rate and comment on the usefulness of the paper writing workshop that took place during your working group session.

Excellent Good Fair Poor

If you are willing to have Student Pugwash USA quote some of your comments in descriptive or promotional material, please put your name below.

Name: _____

Please use additional space for other comments:

Participant Quotes

Ashok Kapur

Professor of Political Science, University of Waterloo (Canada)

[The 1994 International Conference] was a valuable experience for me. I particularly appreciated the non-hierarchical student-mentor approach. It facilitated listening, learning, and problem solving. It fits nicely with two themes: learning should be a life long experience and everyone is a potential teacher.

Anonymous

[The Conference] provided a rare opportunity for an extended discussion of international issues from a broad range of perspectives and, at least for me, illuminated issues I was not familiar with. When I see a Bulgarian chatting with a Bangladeshi, or a Papua New Guinean in serious conversation with a German, I feel there is hope for a global commons in the future. The world can be saved. Thanks, Pugwash.

Henry Mensah

Student from Ghana

After the Conference I said to myself "Pugwash 1994 gave me an insight into life, offered me a place to stand and so I shall move the world." Indeed I am possessed by the ideas that sprung from the Conference and it is my duty to spread them to the ends of the world.

Ben Sun

Student, Harvard University

I wasn't quite sure what to expect from the conference apart from talking about issues of genetic information. However, it has turned out to be one of the best experiences I've had in quite a while. First, the people I met were incredible. Students from all over the world came to share their ideas and perspectives, and everyone was so friendly. I learned a huge amount from peers and senior participants. Second, and almost as important, the Conference made me really think about my future--my long-term goals and plans. Should I devote my life to creating large amounts of money or dedicated to a higher cause? I came to the Conference perilously close to committing to the first--now I'm seriously reconsidering and thinking about a future with a higher social purpose. Pugwash has definitely opened my options and perspectives, and hopefully I'll be better able to choose the correct path.

Susi Moser

Graduate Student at Clark University, from Germany

This Student Pugwash conference for me was an incredibly intensive week of continuous exchange among thoughtful, spirited young people of all walks of life in an atmosphere of open-mindedness and the true desire to reach out for each other...My wish [in coming to the conference] was simple yet big: to find hope again that we can actually find each other to work together for solutions of global problems. My wish was granted.

Lisette Ortiz

Student, Xavier University

Overall, the conference proved to be a very rewarding and gratifying experience. Throughout the week I was able to speak with many different people from different countries...the feeling of comradeship was overwhelming, it didn't seem like we only [were] together for a week, it seemed more of a lifetime friendship. Truly a rewarding experience.

Victoria Verana

Network of East-West Women

Incredible--the Conference enriched and expanded both my personal and professional life immensely. I feel renewed and re-energized and look forward to getting involved with Professional Pugwash.

Anonymous

It was invigorating to be around constructive and responsible intellectuals all week. Thanks for a great experience. I just hope I can multiply the impacts through my work.

Anonymous

You have done something that is for me very difficult to express. The absolute substance, energy and vision you have given to me surpasses anything that I had ever done in the US...All of you have added so much to my life that I will be forever indebted to Student Pugwash.

Andrey Petrichtche

Student from Russia, studying at Central European University, Prague

The 1994 Pugwash International Conference was a very important event in my life. I will never forget this forum not only because it was my first visit to the USA and I made many new American friends, but also because it was a challenging experience. My own values and ideas were exposed to ideas and values of young people from 27 countries. The Conference was a unique chance to explore complex global issues in an international, multidisciplinary community.

Elizabeth Fulari

Student from Pennsylvania State University

I learned so much--this is an understatement! I plan to utilize what I learned by incorporating it into my thesis on energy biodiversity. I also plan to use what I've learned to change myself. It's as if I see the world through a new perspective, one that is much more humane and considerate.

Diane Kondratowicz

Graduate Student from Loyola University (Chicago)

It was so refreshing to be among peers who, despite our diverse cultures, backgrounds--academic and otherwise--and professional goals came together to share our ideas and engage in dialogue about problems of fundamental and global importance. The senior participants and entire Pugwash staff and volunteers, moreover, were most encouraging and supportive of us to act upon our ideas and visions.

Ajay Behera

Graduate Student from India

I must admit this conference was a wonderful experience for me. For the first time in my life I had the opportunity to meet so many people from all over the world...Life is not going to be the same after this Conference. It has opened my eyes to a lot more things than I could have thought about earlier.

Virginia Bacay

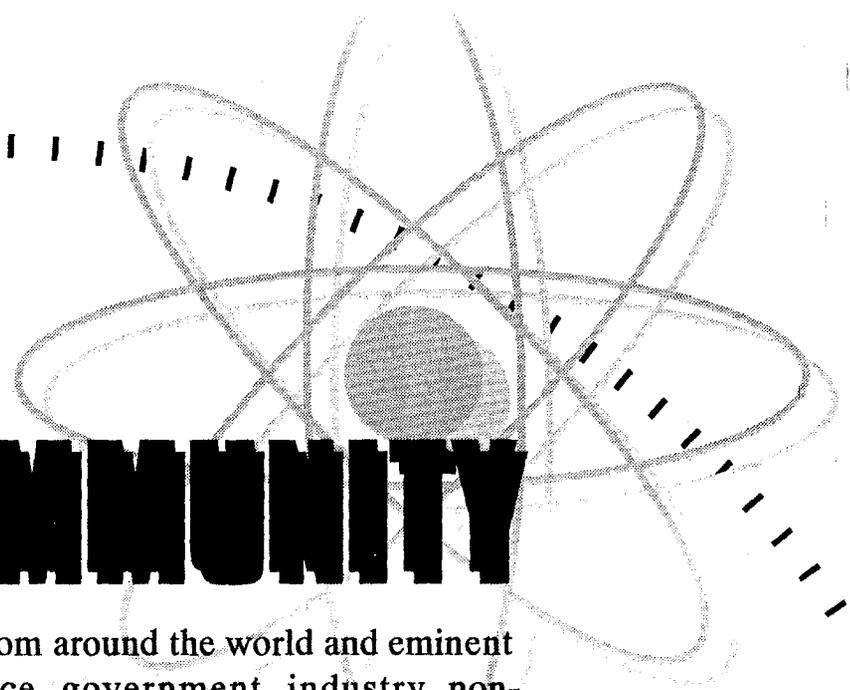
Graduate Student at University of Denver, from Philippines

[I]t was the genuine friendliness, warmth, and concern of the staff for the conference participants that impressed me the most. On the more "cerebral" side, I appreciate the attempts made by the staff for championing not only cultural but intellectual diversity as well.

**EIGHTH
INTERNATIONAL
CONFERENCE**

MEETING THE NEEDS OF THE

GLOBAL COMMUNITY



Join one hundred talented students from around the world and eminent professionals representing science, government, industry, non-governmental organizations, and academe to design strategies to achieve a secure and prosperous global community. Examinations of the interactions of technology, society and world affairs will provide the foundation for discussion throughout the week-long forum.

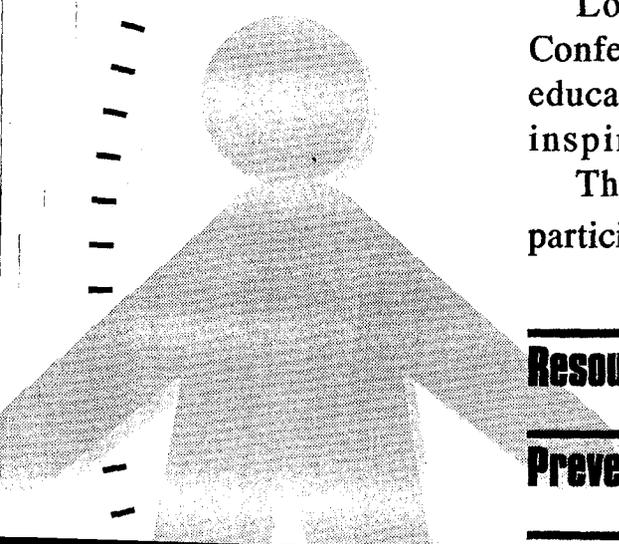
Long-term impacts of Student Pugwash USA's International Conferences are achieved through the development of policy alternatives, educational programs, and national and international initiatives that are inspired by the Conference participants.

Through involvement in interactive "working groups," Conference participants will explore creative solutions to global challenges concerning:

Resource Stewardship for Environmental Sustainability

Preventive Diplomacy and Conflict Resolution for a Secure Future

The Social, Safety and Medical Benefits of Human Genetic Information



**SCIENCE
AND
TECHNOLOGY
FOR THE
21st
CENTURY**

**Johns Hopkins
University,
Baltimore,
Maryland, USA
June 12-18, 1994**

Overcoming Barriers to Health Care Education and Delivery

Designing the Future—From Corporations to Communities

Meeting Societal Needs Through Communications and Information Technologies

All on-site costs will be covered by Student Pugwash USA. (Students are responsible for securing their own travel expenses, although limited travel assistance may be available.) Undergraduate, graduate, and professional students in all disciplines are eligible and encouraged to apply. Student Pugwash USA seeks participation that represents a diversity of race, age, gender, religion, sexual orientation, and national origin.

Selection to the Conference will be based upon applicants' submission of a brief "issue paper" addressing a component of one of the six working group themes outlined above. Issue papers prepared for the conference will be published in the resulting *Global Issues Guidebook*, to be produced in fall 1994.

For an application or further information, please contact the local representative or

Nicky Short, Conference Coordinator
Student Pugwash USA
1838 R Street NW, Suite 32
Washington, D.C. 20009
(202) 328-8555
1-800-WOW-A-PUG
uspugwash@lge.org

Preliminary Application Deadline: December 20, 1993

Final Application Due: February 15, 1994

Local Representative: _____ Please refer to posted throughout the academic year.

Working Group Senior Participants

Resource Stewardship for Environmental Sustainability

Dann Sklarew (Facilitator) - Director, Chesapeake Bay Bioregional Information Online Service
Richard Collins - Director, Institute for Environmental Negotiations, University of Virginia
Timothy Foss - Wilderness Coordinator, Wenatchee National Forest, U.S. Forest Service
Vibha Gupta - Senior Social Scientist, Centre of Science for Villages, Maharashtra, India
Susan Jordan - Supervising Attorney/Program Coordinator, Environmental Law Foundation
Alexander Kalinin - Visiting MacArthur Scholar, University of California-Berkeley
Jean True - Community Activist, Barriers and Bridges Task Force, Western North Carolina Alliance
Francis Weill - Manager, Social Investments, Public Affairs and Communications, Ciba-Geigy Corp.

Preventive Diplomacy and Conflict Resolution for a Secure Future

Carola Weil (Facilitator) - Executive Director, Women In International Security
Ashok Kapur - Professor of Political Science, University of Waterloo, Ontario, Canada
Sahr Kpundeh - Program Officer, Issues in Democratization, National Academy of Sciences
Lora Lumpe - Director, Arms Sales Monitoring Project, Federation of American Scientists
Michael Shuman - Executive Director, Institute for Policy Studies
Dan Volman - Free Lance Researcher and Writer
Steve Fetter - Special Assistant to the Assistant Secretary of Defense for International Security Policy, U.S. Department of Defense

Overcoming Barriers to Health Care Education and Delivery

Raphael Hernandez (Facilitator) - Department of Sociology, CUNY-Hunter College
Ellen Benevides - Director of Health Policy, Hennepin County Board of Health, Minnesota
Lorelei Decora - Founder, Porcupine Clinic, Pine Ridge Reservation, South Dakota
Kaja Finkler - Professor of Medical Anthropology, UNC-Chapel Hill
Paul Jellinek - Vice President, Robert Wood Johnson Foundation
Linda King - Executive Director, Environmental Health Network
Yasmin Tyler-Hill - Assistant Medical Director, Total Health Care

Meeting Societal Needs Through Communications and Information Technologies

Kay Johnson (Facilitator) - Program Associate, Benton Foundation
Susan Brummel - Director, Clearinghouse on Computer Accommodations
David Fleming - Co-Chair National Students' Support Council for Africa
Lisa Kimball - Senior Consultant and Corporate Manager, Meta Systems Design
Edison Pereira - Satellite Systems Engineer, SatelLife
Victoria Verana - Co-Coordinator, Network of East-West Women

Designing the Future - From Corporations to Communities

Alexander Laszlo (Facilitator) - Director of the Doctoral Program, Monterrey Institute of Technology, Mexico
Karen Aberley - President, Aberley Unlimited
Nancy Brennan - Executive Director, Baltimore City Life Museum
Karen Childress - Executive Director, Rural Resources
Jeffrey Leifer - President, Leifer Capital; Founder, Student Pugwash USA
Sandy Nelson - President, Sanford M. Nelson Architecture & Design
John Salmen - President, Universal Designers and Consultants, Inc.

The Social Costs and Medical Benefits of Human Genetic Information

Barbara Bowles Biesecker - National Center for Human Genome Research, National Institutes of Health
Barbara Bernhardt - Instructor, Department of Pediatrics, Johns Hopkins School of Medicine
Paul Billings - Chief Medical Officer, San Jose Satellite Outpatients Clinic; Acting Chief of General Internal Medicine, Palo Alto Medical Center
Donald Hadley - National Center for Human Genome Research, National Institutes of Health
Dean Hamer - Chief of the Gene Structure and Regulation Division, National Cancer Institute, National Institutes of Health
Victor McKusick - University Professor of Medical Genetics, Johns Hopkins University
Robert Murray - Professor of Pediatrics and Genetics, Howard University; NAS/IOM/NIH Fellow
Angela Pattatucci - Associate Investigator, National Cancer Institute, National Institutes of Health
Steven Selden - Professor of Education and Policy, College of Education, University of Maryland
Marie Trotter - Director, Office of Disability Services, Harvard University; Little People of America

Student Pugwash USA

Student Pugwash USA is a national, educational program dedicated to building a commitment among young people through the responsible use of science and technology. It is an international and interdisciplinary program that focuses on the relevance of science and technology to the ability to influence the future of the globe. It took its name from Pugwash, Nova Scotia, where scientists gathered at the behest of Albert Einstein to address pressing issues at the forefront of technological development. In this tradition, Student Pugwash USA began in 1982, beginning with an International Conference held at the University of California at San Diego. Subsequent Conferences, held at Yale, Michigan, Princeton, and Emory have led to the development of the Student Pugwash Program, which currently extends to over 100 campuses nationwide, and to the establishment of Student Pugwash organizations in 18 countries throughout the world.

Student Pugwash USA also offers a New Careers program for students with mentors and career opportunities in the use of technology. We publish *THE NEW CAREERS DIRECTORY: Internships in Technology and Social Change*, a *Directory of Resource People and Advisors*, and a Professional Pugwash program for non-student individuals through which Student Pugwash USA members can continue or commence their careers. Further information on Professional Pugwash and New Careers services may be obtained from the National Office at (202) 328-6555.

Student Pugwash USA Board

Nicholas Steneck, Chair
Ruth Adams
Dave Andersen
Michael Berger
Taft Broome
Richard Bryant
Anne Cahn
Peter Carpenter

Student Pugwash USA Supporters

Jacob and Hilda Blaustein Foundation*
Ciba-Geigy Corporation*
Ciba-Geigy Limited*
Commonwealth Fund
Eaton Family Foundation
First National Bank of Maryland*
John Hopkins University*
W. Alton Jones Foundation
Legg-Mason Corporation*
The John D. and Catherine T. MacArthur Foundation
Morton and Sophia Macht Foundation*
Mercantile Bank*
Stewart Mott Foundation
National Institutes of Health
National Science Foundation*
New-Land Foundation
Ploughshares Fund*
Rockefeller Family Associates*
Samuel Rubin Foundation*
Trust for Mutual Understanding*
U.S. Department of Energy*
U.S. Institute of Peace*
Individual Contributors

*denotes Conference supporters

 Printed on recycled paper.

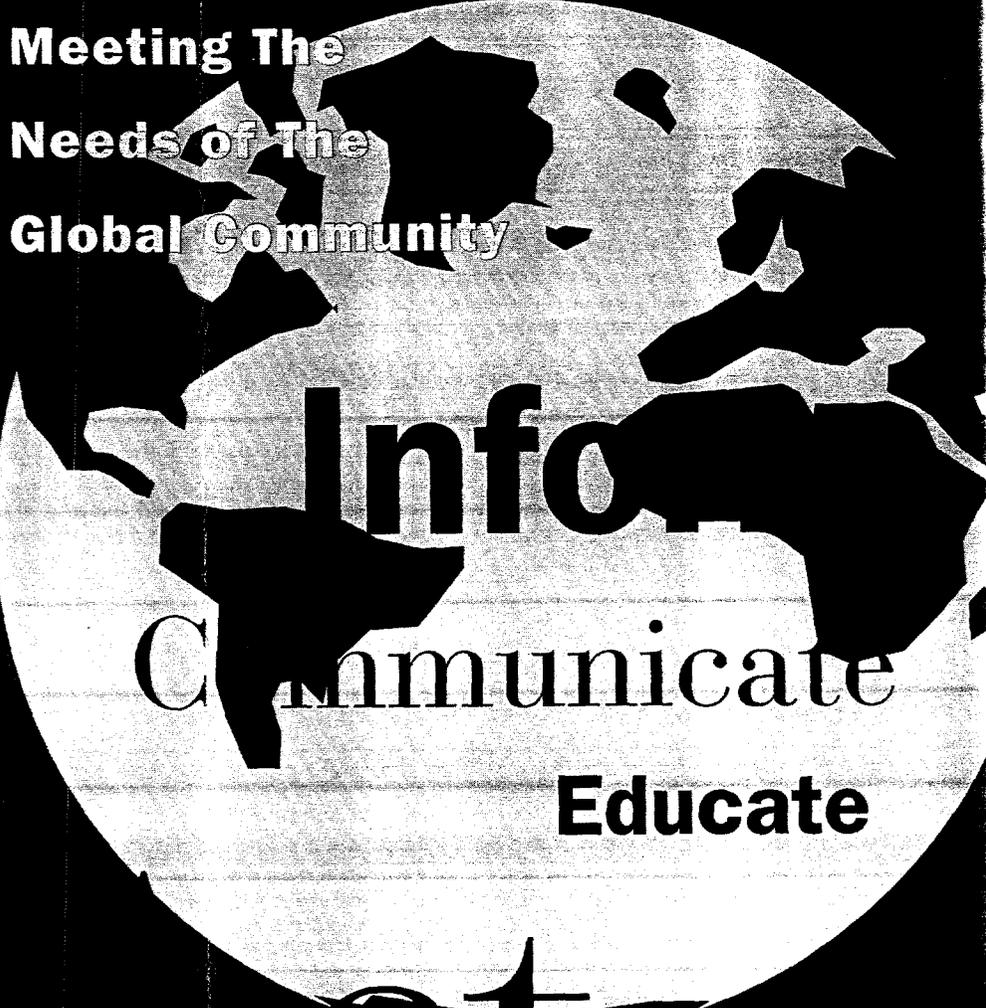
non-profit organization dedicated
solve critical global problems
ology. Through interactive,
ent Pugwash USA educates young
y to their own lives, and on its
unity. Student Pugwash USA draws
957 several of the world's leading
in and Bertrand Russell to address
d global security. Following this
ng educational programs in 1979,
chnology and ethical responsibility
Subsequent International
Stanford, the University of Colorado
ent of our campus-based Chapter
iversity, college and high school
of Student/Young Pugwash
rd.

s Program, designed to link
that emphasize the responsible
RS DIRECTORY: Jobs and
d The Mentorship Guide: A
ocial Change. A developing
and professionals provides a
umni" and other interested
olvement with the organization.
he campus-based Chapter Program
contacting the Student Pugwash USA

Directors

ary Chalk
a Clarke
Krishnan
Lee
Leifer
McGowan
Nair
t Rosenzweig

ers



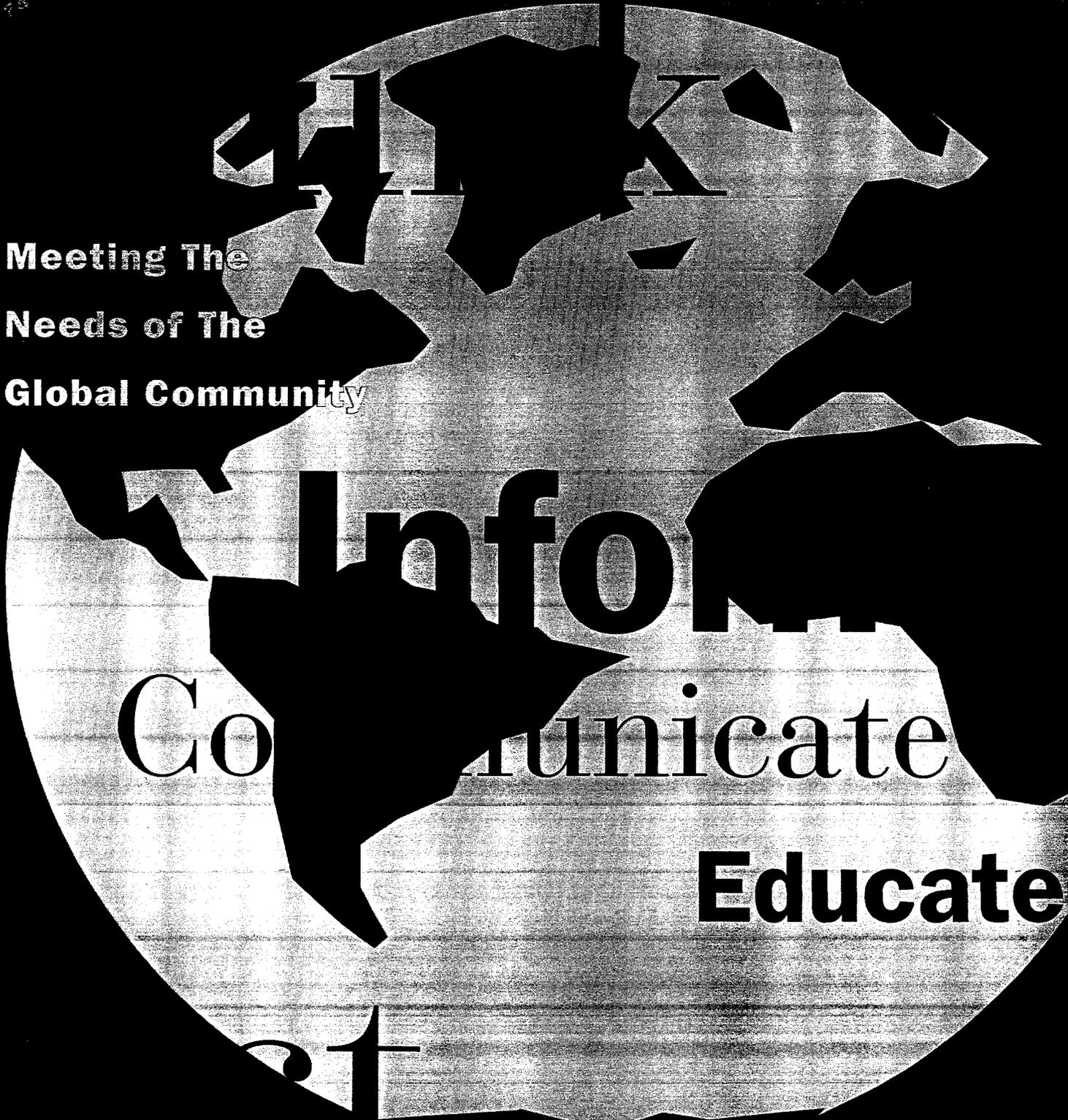
**Meeting The
Needs of The
Global Community**

Info
Communicate
Educate

**Science and
Technology for
The 21st Century**

Student Pugwash USA
1638 R Street, NW, Suite 32
Washington, DC 20009
(202) 328-6555
email: uspugwash@igc.org

**Student Pugwash USA • Eighth International Conference • Program
Johns Hopkins University • June 12-18, 1994**



**Meeting The
Needs of The
Global Community**

**Inform
Communicate
Educate**

**Science and
Technology for
The 21st Century**

**STUDENT
PUGWASH USA
Eighth Biennial
International Conference**

Science and Technology
for the 21st Century:
Meeting the Needs of the
Global Community

**Johns Hopkins University
Baltimore, Maryland, USA**

June 12-18, 1994

Table of Contents

Welcome Letter	4
Student Pugwash USA Welcome Letter	5
Student Pugwash USA	6
History of Student Pugwash USA	7
Student Pugwash USA Programs	8
Introduction to the Pugwash Movement	9
Pugwash Manifesto	10
Keynote Speakers	12
1994 International Conference Working Groups:	
Resource Stewardship for Environmental Sustainability	14
Preventive Diplomacy and Conflict Resolution for a Secure Future	23
Overcoming Barriers to Health Care Education and Delivery	31
Meeting Societal Needs Through Communications and Information Technologies	38
Designing the Future— From Corporations to Communities	45
The Social Costs and Medical Benefits of Human Genetic Information	53
Student Pugwash USA Board of Directors	60
Student Pugwash USA National Staff	62
Student Pugwash USA Supporters	64



THE VICE PRESIDENT
WASHINGTON

May 13, 1994

Student Pugwash USA
1638 R. Street N.W. Suite 32
Washington, D.C. 20009

Dear Friends,

Thank you for your invitation to participate in Student Pugwash USA's International Conference *Science and Technology for the 21st Century: Meeting the Needs of the Global Community*. I regret that I am unable to join you in person, but I am pleased to provide this message.

The role of technology in our lives is expanding every day. Communications technologies already are changing the way we live, learn, work and communicate with each other. Because our world is increasingly dependent on the free flow of information, the President and I strongly support the development of a Global Information Infrastructure -- an information superhighway on which all people can travel.

Young people are an important part of this communications revolution. Each of you have the opportunity to help develop and eventually benefit from a Global Information Infrastructure. For example, I announced on Earth Day the GLOBE initiative (Global Learning and Observations to Benefit the Environment). It is a program to bring together young people, educators, and scientists from around the world to monitor the worldwide environment and report findings to an international database. GLOBE will provide significant new data for scientific investigations, and will enhance learning and understanding about environmental issues. It is just one example of how young people can contribute to a Global Information Infrastructure.

I know you will work hard in your week-long forum to address these and other important issues of our future. Congratulations on all of your success so far. Best wishes.

Sincerely,



Al Gore

Welcome

June 12, 1994

Dear 1994 International Conference Participant,

It is our pleasure to welcome you to Johns Hopkins University for Student Pugwash USA's 1994 International Conference, *Science and Technology for the 21st Century: Meeting the Needs of the Global Community*. The week promises to be a challenging, exciting and fulfilling experience for all involved. Over the next six days, you will be sharing your ideas, visions and experiences with nearly 100 outstanding students from 25 countries, and eminent professionals from a variety of disciplines and nations. You will find that the interactive exploration of global challenges found at this 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 technological issues and the safety of humankind.

All of humanity must be encouraged to envision the global community of the future, to determine if and how scientific and technological understanding can help to create a more secure, just, sustainable world in the 21st century. The changing global landscape, together with rapid technological advancement, demand that we look beyond traditional disciplinary boundaries in responding to societal, economic, and environmental issues. As concerned citizens, we share in the responsibility for addressing and, hopefully, resolving these inter-related global challenges. The 1994 International Conference is intended to inspire education and participation toward this end, to help each of us better understand what we as individuals and groups can do to meet the needs of the global community.

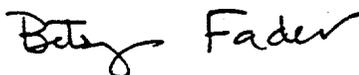
Now that you have arrived at the Conference, we encourage you to make the most of this unique experience. Take the opportunity to ask difficult questions, challenge your assumptions, and learn about cultures different from your own. And, in sharing of yourself and your ideas, you are likely to form lasting friendships that span the globe. The Conference now belongs to you, and its success will be determined by your enthusiasm and participation.

As the Conference commences and the energy 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 Professor Gordon "Reds" Wolman, Director of Development Erwin Sekulow, Dean Matthew Crenson, and the administration, faculty and staff of Johns Hopkins University for all of their support and assistance in making this Conference a reality.

We could never forget the tireless efforts of the National Office staff, who were called upon to do double duty as Conference staff for this important event. The 1994 International Conference is truly a collaborative effort which rests on the commitment and contributions of Marshall Boak, Cathy Coughlan, Evelyne Delori, and Anne Freeh. Special thanks to Laura Gaines, for her spirited dedication in creating this Conference community; and to Tim Larson (*Global Issues Guidebook* Editor and organizer of the 1992 International Conference) for the unforgettable experience two years ago that served as inspiration in the planning of this Conference, and for his invaluable mentorship, assistance, and encouragement.

We are incredibly excited to have you here, and hope the impact of the experience you have in the coming week will last throughout your lifetime.

Peace!



Betsy Fader
Executive Director



Nicola Short
Conference Coordinator

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 educational 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 posi-

tions 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, technology 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 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. The International Conference provided an intensive educational forum that is 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 In-

ternational Conferences, held at UCSD, Yale, Michigan, Princeton, Stanford, the University of Colorado at Boulder, and Emory University have served as the catalyst for the formation and initiation of Student/Young Pugwash organizations in over 18 countries around the world, including Canada, Germany, Ghana, Nigeria, Poland, and Russia.

The 1994 International Conference, **Science and Technology for the 21st Century: Meeting the Needs of the Global Community**, marks Student Pugwash USA's eighth biennial conference. Held at Johns Hopkins University in Baltimore, Maryland, the Conference focuses on the following themes:

- Resource Stewardship for Environmental Sustainability
- Preventive Diplomacy and Conflict Resolution for a Secure Future
- Overcoming Barriers to Health Care Education and Delivery
- Meeting Societal Needs Through Communications and Information Technologies
- Designing the Future—From Corporations to Communities
- The Social Costs and Medical Benefits of Human Genetic Information

Student Pugwash USA Programs

Over the past fifteen years, Student Pugwash USA programs have broadened in scope to include support for a network of chapters and student representatives on over 175 university, college and high school campuses nationwide, and a New Careers program providing professional opportunities and mentors in the areas of technology and social change. 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 Program

Developed as a direct result of our International Conferences, the Chapter Program extends to thousands of students on over 175 college, university, and select high school campuses across the nation. Through Student Pugwash USA chapters, students organize a wide range of events including educational conferences, alternative jobs fairs, recycling programs, and lecture series on issues at the juncture of science, technology and society. Since the inception of the Student Pugwash USA Chapter Program in 1983, student chapter members have organized more than 1,000 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 is-

ues. Other services provided 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 careers that incorporate social responsibility and ethical considerations. To this end, Student Pugwash USA publishes *THE NEW CAREERS DIRECTORY: Internships and Professional Opportunities in Technology and Social Change*, which profiles nearly 300 organizations working in the areas of health and medicine; population and development; food and agriculture; peace and security; environment and energy; and communications. The *Directory* has proved to be an invaluable resource for individuals from all academic backgrounds who are searching for meaningful professional and volunteer opportunities, both in United States and abroad.

Our commitment to educating students about New Careers—together with growing student demand—has led to the creation of a database of mentors and resource people who are interested to share their expertise with students and recent graduates. Containing profiles of Student Pugwash alumni and other socially-concerned professionals, the database is a powerful resource for students seeking speakers for local and regional events; advisors to locate resources or organizations; or mentors to discuss graduate school, career or internship options.

Professional Pugwash

While Student Pugwash USA has long recognized the need for young people to address the impacts of science and technological developments on society, a similar and pressing need exists within the professional community, where many of the decisions affecting society are made. Launched in 1992, Professional Pugwash provides a unique forum for Student Pugwash alumni and other interested

individuals to engage in interdisciplinary dialogue within a community of socially-committed professionals and current students. The Washington, DC Chapter sponsors bi-weekly events and now boasts more than 60 participants; its success has sparked interest in chapter development in both Los Angeles and New York. For more information on how to join or participate in the activities of Professional Pugwash, please contact 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 ex-

panded 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.

The 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, overshadowing 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. Bridgmen
Albert Einstein
Leopold Infeld
Frederic Joliot-Curie
Herman J. Muller

Linus Pauling
Cecil F. Powell
Joseph Rotblat
Bertrand Russell
Hideki Yukawa

Keynote Speakers

Adele Smith Simmons

Adele Simmons is President of the John D. and Catherine T. MacArthur Foundation, one of the nation's largest philanthropic foundations. She is a member of the Commission on Global Governance, and the United Nations High-Level Advisory Board on Sustainable Development. She also serves on the Board of Directors of the First Chicago Corporation, the Marsh & McLennan companies, the Union of Concerned Scientists, and Synergos. Dr. Simmons served as President of Hampshire College from 1977-1989, and has served as Dean at both Princeton and Tufts Universities. She has chaired the Board of Trustees of the Carnegie Foundation for the Advancement of Teaching, and served on President Carter's Commission on World Hunger and President Bush's Commission on Environmental Quality. Dr. Simmons received a B.A. from Radcliffe College and a doctorate from Oxford University.

Timothy E. Wirth

As Under Secretary of State for Global Affairs at the U.S. Department of State, Timothy Wirth is responsible for a broad group of programs dealing with population, environment, science, counternarcotics, terrorism, democracy, human rights, and refugees. Dr. Wirth was Senator from Colorado until 1993, when he chose not to run for re-election. His Senate Committee assignments included the Armed Services, Budget, Banking, and Energy and Natural Resources committees. Prior to his election to the Senate, Dr. Wirth served for twelve years in the U.S. House of Representatives, where he Chaired the House Subcommittee on Telecommunications and was voted one of the 25 most effective members of the House. Previously, he served as a White House Fellow in the Johnson Administration, as Deputy Assistant Secretary for education under Richard Nixon, and was Co-chair of the Clinton-Gore presidential campaign. Dr. Wirth earned his B.A. and M.A. from Harvard and his Ph.D. from Stanford.

Student and Senior
Participants

1994
International
Conference
Working Groups

Resource Stewardship for Environmental Sustainability

In recent years, public awareness of the environment has blossomed as the degradation of natural resources has intensified. 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 areas, while fresh water supplies are increasingly contaminated or depleted. At the same time, high or growing unemployment rates have fueled support for greater economic development which, traditionally, has been accompanied by environmental degradation.

Effective resource management increasingly involves balancing the difficult trade-offs posed by resource conservation, environmental protection, economic development, and social equity. The working group on Resource Steward-

ship will examine the role of technology in alleviating stresses on the environment, and explore the ecological problems which can result from poorly managed or misapplied technology.

Issues to be examined include:

- Can there be balance between the environment and economic development? What role should technology play in the jobs/environment equation?
- Will new agriculture, transportation, and energy technologies support or undermine progress toward "sustainable development"?
- What are the ethical and social impacts of these possible technologies when applied across national borders, and to other cultures?
- What effects does technology have on the size and direction of global resource flows?

Senior Participants

Richard C. Collins

Professor Collins' major teaching and research interests for nearly 30 years have been in environmental and natural resource planning and policy processes. Since his founding of the Institute for Environmental Negotiation (IEN) at the University of Virginia, where he still remains Director, he has been engaged as an environmental mediator in over 75 disputes, most of which have had a scientific-technical component that was significant to the dispute. Dr. Collins was already active at the University of Virginia prior to his work with IEN as Chair and Professor of the Department of Urban and Environmental Planning as well as Professor of Public Policy and Administration at the Federal Executive Institute. Previously, at the University of Oregon, he was Associate Professor of Public Administration and Chair of the Interdisciplinary Master's Program in Public Affairs. He received his B.A. from the University of Wisconsin and his Ph.D. in political science and public administration from the University of Colorado.

Tim Foss

Tim Foss is an advocate for reform of the forestry profession and has written and spoken widely on the need to commit to sustainability in all its forms. His definition of sustainable forestry includes a wide range of actions, from careful selection harvesting in appropriate places, to promoting resource building technologies, to helping halt the worldwide population explosion. According to Mr. Foss, "[This] is fundamentally a different mind-set than the commodity-output thinking that has always been his profession's underpinning." Mr. Foss, who is deeply involved in the U.S. Forest Service's ecosystem management, seeks to involve others in discussions about how we might more respectfully relate to our forests. He received a B.S. in forestry from Michigan Technological University and currently serves as the Wilderness Coordinator for Wenatchee National Forest in the Cle Elum Ranger District.

Vibha Gupta

Vibha Gupta is a senior social scientist and founding member of the Centre of Science for Villages (CSV), a major Indian non-governmental organization concerned with rural technologies. Dr. Gupta is also an assistant editor of the journal *Science for Villages*, an expert committee member of the Science and Society section of the Ministry of Science and Technology of the Indian government. She organized a six week UNESCO course in rural technologies for other non-governmental organizations, and consults for UNICEF on rural sanitation programs. In addition, Dr. Gupta runs awareness camps for rural women, workers, and school teachers. She received a Ph.D. from the Indian Institute of Technology in New Delhi, and has pursued post-graduate studies in the social sciences in Canada, the Netherlands, and Israel. Dr. Gupta is the author of several books; her book on technologies for women is now in its third printing.

Alexander V. Kalinin

Dr. Kalinin is a consultant for the Lawrence Berkeley Laboratory and Visiting Professor at the Monterey Institute of International Studies and the Monterey Peninsula College. Dr. Kalinin previously served as the Executive Secretary for Research at the Institute for High Temperatures, and directed departments of the Center for Scientific and Technological Information and the Research Center for Surface-Vacuum Physics Studies in the former Soviet Union. Dr. Kalinin received a full Professorship in Natural Resources and Environmental Protection by the U.S.S.R. Academy of National Economy. He holds a D.Sc. in physics/mathematics from the Lebedev Physical Institute, a Ph.D. in thermophysics from the Institute for High Temperatures, and Master's degrees from Moscow Lomonosov State University and the Moscow Power Engineering Institute.

Dann Sklarew (Facilitator)

Dann Sklarew has been involved with Student Pugwash USA in various capacities since he joined the University of Pennsylvania chapter in 1987. He holds a Master's degree in neural networks from Boston University, and is pursuing a Ph.D. in environmental science and public policy at George Mason University. His research focuses on the interface of ecology, technology, and cognition. He has presented and published papers on environmental database design, fuzzy logic and remote sensing. He is founding director of the Chesapeake BIOS Project, and serves on the Board of Advisors for the "ECO 2000" study of environmental curricula and career opportunities. Dann is presently studying watershed nitrogen cycling as a Graduate Fellow at the Smithsonian Institution.

Jean True

Jean True is a homemaker and volunteer community organizer. She has spent most of the last 10 years in Kentucky working for Kentuckians for the Commonwealth of the Southern Empowerment Network. She currently is a committee member with the Barriers and

Bridges Task Force of the Western North Carolina Alliance where she works to help people understand the importance of community organizing as a means of empowerment and social involvement. Her activities focus on bridging the barriers of race, religion, economic status, and region as well as demonstrating the common links between diverse issues such as race and the environment, and farming and military spending.

Francis Weill

Francis Weill is the Social Investment Manager of Public Affairs and Communications at Ciba-Geigy Corporation, USA. He has worked extensively with S.A. Ciba-Geigy, Paris, France as Manager of Corporate Public Relations, Personal Assistant to the Chief Executive Officer, Specialist in the Legal Department, and Assistant to the Director for EEC Relations. Mr. Weill was awarded both his Master's degree, in business law, and his Bachelor's degree, in private law from the University of Paris-Sorbonne. He speaks French, English, and German and has traveled throughout Europe, Russia and India.

Resource Stewardship for Environmental Sustainability

Student Participants



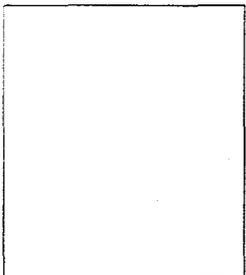
Kim Anderson
Washington, District of Columbia, USA

Kim is a first year graduate student studying public policy with a focus on regulatory policy in energy and environment. She works part time as a research assistant concentrating on urbanization and transportation at the World Resources Institute. Music, aerobics, foreign films, and weight training occupy her recreational time. With sufficient funding, rollerblading will become her next hobby.



Bustanul Arifin
Madison, Wisconsin, USA

Bustanul is a Ph.D. student at the Institute for Environmental Studies at the University of Wisconsin, Madison. He received a Master's degree from the same school in 1991 and a Sarjana Degree from Bogor Agricultural University, Indonesia in 1985. His interests include land use and natural resource management in developing countries. He has published 10 articles in national and international journals and has participated in several academic conferences.



Rose Danso Baafi
Kumasi, Ghana

Rose is a Ghanaian second year undergraduate student, studying biological science at the University of Cape Coast, Ghana. Her hobbies include singing and reading.



Virginia S. Bacay
Denver, Colorado, USA

Virginia is a Ph.D. candidate at the Graduate School for International Studies, at the University of Denver in Colorado. Her program focuses on international technology and management, and public policy concentrating in comparative politics. She received her Master's in Asian studies from Cornell University. Virginia originally hails from the Philippines.

Resource Stewardship for Environmental Sustainability

Student Participants



Clayton Alan Bond
Detroit, Michigan, USA

Clayton is a graduating senior at Cass Technical High School in Detroit, Michigan. He has been awarded a Presidential Scholarship to attend Hampton University in Virginia where he plans to major in marine and environmental science. Clayton eventually hopes to become an attorney, specializing in environmental law.



Shantanu M. Dixit
Pune, India

Shantanu, an electrical engineer, is pursuing a M.B.A. degree at Pune University. Since completing his engineering degree he has been conducting research on electrical planning issues. His recent work has focused on analyzing the impact of power policy on society and methods for reducing its adverse impacts. After receiving his M.B.A. Shantanu plans to continue pursuing his interest in electrical planning.



Kenneth Fair
Huntsville, Texas, USA

Kenneth is currently a senior at Rice University where he plans to stay for a fifth year. Formerly a physics major, he has switched his major to mathematics and is now planning to attend law school. Kenneth first became interested in the topic of sustainable development after participating in the Houston Area Model United Nations Program.



Elizabeth Filauri
Beaver Falls, Pennsylvania, USA

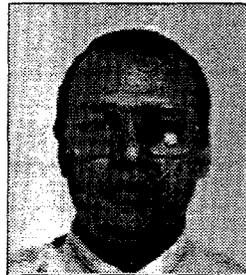
Elizabeth is currently a junior at Pennsylvania State University working toward a degree in chemistry with a minor in science, technology and society. She is an active member of the Association for Women in Science. When she is not busy managing a local McDonalds, she enjoys social and outdoor activities, sports, and reading.

Student Participants



Gunhild Gurlich
Darmstadt, Germany

A 1993 graduate of Justus Liebig University in Germany, Gunhild studied botany, zoology, ecology, and phytopathology. She now is pursuing her Ph.D. at the Institute for Biological Control.



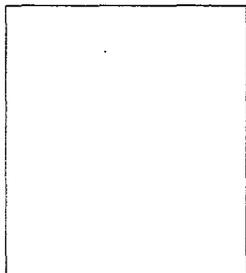
Abdul Hakim
Helsinki, Finland

Abdul, a 33 year old Bangladeshi post-graduate student at the University of Helsinki, Finland is studying plant production and horticulture. He obtained his Bachelor's and Master's degrees from the Bangladesh Agricultural University before undertaking significant field experience in agriculture.



Amzad Hossain
Dhaka, Bangladesh

Amzad is a student in the Social Science Department at the University of Dhaka. He is a member of the Development Council for Youths and the Treasurer for the Dhaka University Branch of the Bangladesh Red Cross. Amzad won the International Youth Village Award in 1990 (Tokyo, Japan) and the Best Young Artist Award from Bangladesh television in 1991.



Fumie Kuroko
Ashikaga, Japan

Fumie is a graduate student studying in the U.S. at the University of Wisconsin at Madison. Her interests include development and environmental sustainability, meeting people from various backgrounds, and understanding cultural differences. She invites you to visit her home in Japan.

Resource Stewardship for Environmental Sustainability

Student Participants



Stephen Kyei-Boahen
Accra, Ghana

Stephen attended the University of Ghana, Legon-Accra from 1982-86, graduating with a B.Sc. crop science option. He has worked with the Council for Scientific and Industrial Research in Ghana from 1986-88. Stephen was also a special student of Ben-Gurion University/Boston University Joint Program working for a Master of Science Management. Currently, he is in a Master's program at the Plant Production Department, University of Helsinki, Finland.



Lilia Maliar
Zaporozhye, Ukraine

For the past year, Lilia has been studying economics at the Central European University in Prague on a Soros Foundation Scholarship. After graduating with honors from Dnipropetrovsk State University in 1991, Lilia taught economics and finance at Zaporozhye State University where she is pursuing a Ph.D. in environmental economics.



Susanne C. Moser
Schliengen, Germany

Susanne is currently working on her Ph.D. in geography at Clark University in Worcester, Massachusetts. Her research interests include hazard and resource management and global environmental change both from a natural and social science perspective. Having received training in both physical earth sciences and the social sciences, she believes the path to sustainability will be an interdisciplinary one.



Christopher M. Nolte
Tallahassee, Florida, USA

Christopher, originally from Ohio, now resides in Tampa, Florida where he is a fifth year student at Florida State University. He is pursuing a Bachelor's degree in biology and philosophy and is conducting honors research for the F.S.U. program in neuroscience.

Student Participants



Jennifer Powers
Corvallis, Oregon, USA

Jennifer is completing her M.S. in forest ecology at Oregon State University. She received her B.A. in biology from Reed College and attended the United World College of the Adriatic for 2 years. Jennifer enjoys traveling, quilting, cooking, languages, and thinking about forest management issues locally and internationally.



Stephen Schlett
El Paso, Texas, USA

A graduate student at the University of Texas at El Paso (UTEP) in interdisciplinary studies, Stephen's key areas of focus are in archaeology and public policy. With a keen interest in compliance issues related to cultural resource management, he is working as a Research Assistant for UTEP's Center for Resource Management. Through the Student Pugwash seminar Stephen hopes to focus his interdisciplinary background on environmental stewardship issues.



Dana Seaman
Woodbridge, Virginia, USA

Dana is a biology and environmental science major at Ferrum College and hopes to use this degree along with a minor in Spanish to pursue a career in ecology and conservation. Dana would like to work towards developing sustainable harvesting programs to protect parrots in Latin America. Having lived in Virginia most of her life, she has been actively involved in 4-H clubs which have enabled her to travel to Japan, work at summer camps, and to concentrate on horticulture projects.



Ian Stone
San Jose, California, USA

A full-time student at San Jose City College, Ian is about to obtain an Associate of Arts degree. As a social welfare major, Ian plans to move on to a school which offers a strong program in this field, such as the University of California-Berkeley, San Francisco State University, or San Jose State University.

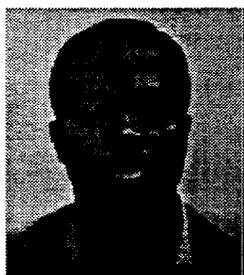
Resource Stewardship for Environmental Sustainability

Student Participants



Silvia Vriesen
Darmstadt, Germany

A 1991 graduate of WWU-Munster and TH Darmstadt, Silvia studied botany, biochemistry, immunology, and geography. She is currently studying at the Institute for Biological Control to obtain her Ph.D.



Joe Wemin
Boroko, Papua New Guinea

Joe comes from the Simbu province of Papua New Guinea. He has a teaching diploma and a Bachelor's degree in education from the University of Papua New Guinea and is currently finishing his final semester in political studies. Joe has a strong interest in sustainable management of Papua New Guinea's tropical rain forests and is proud to be representing his family, university, and country at the conference.

Preventive Diplomacy and Conflict Resolution for a Secure Future

The end of Cold War rivalries has led to a vastly complex and dynamic global security environment. Tension between the superpowers has given way to regional and intra-state conflict. More contemporary conflicts, such as in the former Yugoslavia and Somalia, employ the conventional weapons of the old bipolar paradigm, ironically without the commiserate commitment to avoiding conflict leading to world war. Although fears of certain types of nuclear conflict have retreated, the dissolution of the Soviet Union states has effectively meant an increase in the number of nuclear states. Several states in other areas of diplomatic tension are on the precipice of developing nuclear weapons. Nonetheless, the destructive impact of the military on the social fabric and physical environment of many countries has prompted some to question the ability of force and violence to effectively resolve conflict. Evidence increasingly suggests 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 "re-

definition" of international security and its impact on conflict resolution, taking into consideration issues of economic development, social needs, and environmental sustainability.

Issues to be examined include:

- What role should the international community play in intra-state war?
- When is international intervention justified and useful?
- Can a viable system of cooperative security exist without vesting more authority and resources in the United Nations?
- What effect will the spread of religious fundamentalism have on global security?
- How can conflict stemming from ethnic tension be averted before it starts?
- Who pays for the environmental costs of war?
- How can resources allocated for the military be effectively shifted to meet basic human needs?

Senior Participants

Steve Fetter

Steve Fetter is Associate Professor and Director of the International Security Program in the School of Public Affairs at the University of Maryland. He is currently on leave to the U.S. Department of Defense, where he serves as Special Assistant to the Assistant Secretary of Defense for International Security Policy. Prior to this position, he was the Council on Foreign Relations Fellow at the Bureau of Politico-Military Affairs, U.S. Department of State. Dr. Fetter holds a B.S. in physics from the Massachusetts Institute of Technology and a Ph.D. from the University of California, Berkeley. Before coming to the University of Maryland, he was a post-doctoral fellow at Lawrence Livermore National Laboratory and at Harvard University's Center for Science and International Affairs. Dr. Fetter is author of *Toward a Comprehensive Test Ban*.

Ashok Kapur

A Professor of Political Science at the University of Waterloo, Dr. Kapur has an extensive background in lecturing, research, and teaching. He is a member of the Editorial Board of *Contemporary South Asia*, and a guest editor of the *Journal of Asian & African Studies*. Dr. Kapur received a commemorative Medal of Honor from the American Biographical Association, and is a member of the International Advisory Board for the Institute for Resources & Security Studies. He has held visiting faculty positions at numerous institutions including the Jawaharlal Nehru University, The Australian National University, the University of London, and the Center for Arms Control and International Security at the University of Pittsburgh, and has been widely published. Dr. Kapur received his B.A. from Punjab University, his M.A. from George Washington University, and his Ph.D. from Carleton University in Ottawa, Ontario.

Sahr John Kpundeh

Dr. Kpundeh is Program Officer for the Panel on Issues in Democratization of the National Academy of Sciences' (NAS) National Research Council (NRC), as well as a consultant for Associates in Rural Development, Inc. He has consulted for the Board on Science and Technology in International Development of the NRC, as

well as for two joint NAS/NRC committees: the Committee on AIDS Research and the Social, Behavioral, and Statistical Sciences, and the Committee on Contraceptive Development. Dr. Kpundeh has also written numerous articles and papers on politics, corruption, and democratization in Africa. Dr. Kpundeh received his M.A. in international relations and his Ph.D. in comparative politics and international relations from Howard University.

Lora Lumpe

Lora Lumpe is a Senior Research Analyst at the Federation of American Scientists in Washington, D.C., where she directs the Arms Sales Monitoring Project and co-directs the Zero Ballistic Missiles Project. Ms. Lumpe administers the Federation's work on chemical and biological arms control and produces the quarterly *Chemical Weapons Convention Bulletin*. She also compiles and edits the monthly *Arms Sales Monitor*, which reports on and analyzes U.S. arms sales and arms sales policies. Prior to working at FAS, Ms. Lumpe was a Research Assistant on arms control issues at the Center for Defense Information and the Committee for National Security. She has also taught English and computer word processing to Salvadoran refugees in Washington. She earned a B.A. in political science and Soviet studies from Indiana University in Bloomington, Indiana.

Michael Shuman

Michael Shuman, an attorney, is Executive Director of the Institute for Policy Studies, a leading progressive think-tank in Washington, D.C. He has written numerous articles and co-authored three books: *Towards A Global Village: Community Based Development Initiatives*; *Security Without War: A Post-Cold War Foreign Policy*; and *Citizen Diplomats: Pathfinders in Soviet-American Relations*. Mr. Shuman has also co-edited two additional works, *Conditions of Peace: An Inquiry and Technology for the Common Good*. Mr. Shuman founded the Center for Innovative Diplomacy, helped to create PeaceNet, published a quarterly Bulletin of Municipal Foreign Policy, and has mobilized nearly 3,000 local and elected officials on behalf of

various foreign policy issues. He received an A.B. with distinction in economics and international relations from Stanford University and a J.D. from Stanford Law School.

Daniel Volman

Dr. Volman's work examines the U.S. role in African conflict resolution, the African arms trade, and security requirements for effective peace-keeping operations. Mr. Volman developed his interest in African security issues and U.S. defense policy vis-a-vis Africa as a research associate with the Institute for Policy Studies' Program on National Security. He received a B.A. in history from University of California-Berkeley and a Ph.D. in African history from University of California-Los Angeles. He is currently a freelance researcher and writer, and serves on the Board of Directors of the Association of Concerned African Scholars.

Carola Weil (Facilitator)

Carola Weil is the Executive Director of Women In International Security (WIIS) at the Center for International and Security Studies at Maryland. She administers all aspects of WIIS's program, including the WIIS seminar and conference series, the annual Summer Symposium for graduate students, a computerized databank, WIIS publications, and international outreach in the international security field. Prior to joining WIIS, Carola was Senior Program Associate at the Friedrich-Ebert Foundation, a German not-for-profit political foundation. Ms. Weil received her Master's degree from the School of Public Affairs at the University of Maryland in national security policy, and her Bachelor's degree in history from Bryn Mawr College.

Preventive Diplomacy and Conflict Resolution for a Secure Future

Student Participants



I. Suleman Alasan
Kano, Nigeria

Suleman will soon complete a combined honors degree in common law and Islamic *Shari'a* law at Bayero University in Kano. Having grown up in a polygamous Muslim family, and attended a Catholic mission school, Suleman has spent much of his formal education attempting to eliminate misunderstanding and tensions among Christians and Muslims on his campus and in his community. He has served as the Chairman of the Committee for Peaceful Religious Co-existence, in addition to numerous positions in student government and law school organizations.



Dave Andersen
Palo Alto, California, USA

Dave is a fourth year peace and world securities concentrator at Hampshire College. He will be writing his thesis in the fall on U.S. intervention and the role of force after the Cold War. He is very involved in Pugwash and is currently serving as the Student Pugwash USA Chapter Advisory Council Co-chair. He likes bowling, miniature golf, and corndogs.



Jesper Engman
Karlstad, Sweden

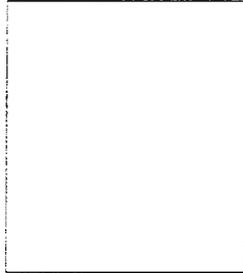
Having recently finished his undergraduate studies in Sweden, Jesper is currently working at the Pugwash Conferences on Science and World Affairs in Rome, Italy. He began work there after volunteering at the 43rd Pugwash Conference in Stockholm. During his free time, Jesper takes classes at the American University of Rome and tries to improve his command of Italian.



Victor D. Fiawoo
Accra, Ghana

Victor recently began his graduate studies in human resource management at the University of North London, England. In 1992, he completed his B.A. in political science and religion at the University of Ghana in Accra. Victor's interests include current events and politics, soccer, cooking, and architecture (Baroque and Gothic). He is also the co-founder of the Accra Anti-Drug Club, a youth volunteer organization dedicated to discouraging the use of drugs.

Student Participants



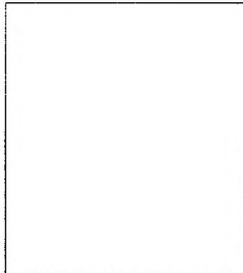
Christopher Fitz
York, Pennsylvania, USA

Christopher expects to receive a B.A. in Peace and Conflict: Mediation and International Relations from Hampshire College in 1995. He has worked as an environmental activist, a camp counselor, and for the Admissions Office of his college. Christopher is interested in people, religion, cycling and theater.



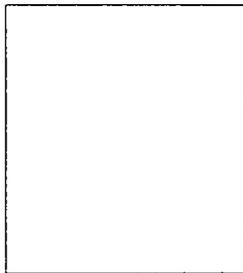
Lisa Hare
Tempe, Arizona, USA

Lisa is a second-year law student at the Arizona State University College of Law. This summer she is working at the Cleveland law office of Squire, Sanders, & Dempsey. Lisa has been preliminarily accepted for a fall internship with the Department of State's Bureau of Politico-Military Affairs in Washington D.C.



Stanimira Hristova
Sofia, Bulgaria

Stanimira is a junior, pursuing business administration and journalism at the American University in Bulgaria. He was born on [REDACTED]. He is a graduate of the English Language School in Sofia.

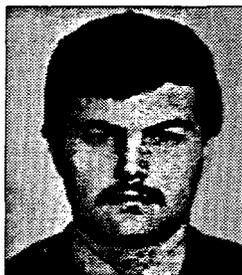


Merle Jacob
Port of Spain, Trinidad

After receiving a B.A. in political science and sociology at the University of West Indies in Trinidad, Merle is currently pursuing a Ph.D. in the theory of science at the University of Gothenburg in Sweden. Her dissertation will address "Sustainable Development: A Critique from the Perspective of Theory of Science." Merle has participated in several international student conferences focusing on technology and international relations.

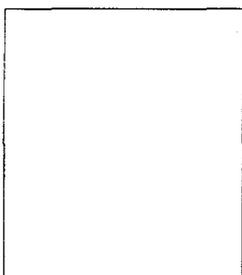
Preventive Diplomacy and Conflict Resolution for a Secure Future

Student Participants



Yuriy Lakh
L'viv, Ukraine

Yuriy majors in economics at the Central European University in Prague. He holds a degree in applied mathematics from L'viv State University, where he also studied Polish, English and Czech. Yuriy previously worked as an engineer and a junior research assistant with the Institute for Applied Problems of Mechanics and Mathematics at the Ukrainian Academy of Sciences.



Iwona Lesnik
Warsaw, Poland

After spending a year in Grand Rapids, Michigan as an exchange student, Iwona returned to Poland where she is studying law at Warsaw University. She has attended courses in international human rights law as well as English law. Iwona speaks five languages in addition to her native Polish. She aspires to help Poland successfully weather its present major political and economic transformations.



Munira Majmundar
Los Angeles, California, USA

Munira hails from India and is currently pursuing a doctorate in international security at the University of California-Los Angeles. The topic of her dissertation is the "Source of Selective Proliferation." She is studying how countries devise strategies to meet the challenges to their military doctrines posed by developments in science and technology.



Stephanie Mitchell
Pasadena, California, USA

Stephanie is a senior at the University of Southern California majoring in international relations with a minor in economics. She holds a strong interest in exploring the problems confronting the developing world, and particularly those challenges which require a multidisciplinary approach. In the future, Stephanie hopes earn a Ph.D. so that she may teach at the university level, and is also interested in working with governmental and nongovernmental organizations.

Student Participants



Hindowa Momoh
Freetown, Sierra Leone

Hindowa currently studies modern history and political science at Fourah Bay College at the University of Sierra Leone, Freetown. Hindowa pursues his interests in human rights and development through work for the Civic Education Programme and the Sierra Leone Branch of Amnesty International. He has been active in student politics, serving as both the Director of Foreign Affairs and, most recently, as President of the National Union of Sierra Leone Students in 1993.



Laurence Nardon
Paris, France

Laurence is a Ph.D. student in defense sociology at Ecole des Hautes Etudes en Sciences Sociales in Paris. Her previous studies at the University of Kent in Canterbury (U.K.) and La Sorbonne (Paris) have focused on European defense politics and nuclear weapons. In her dissertation Laurence plans to explore observation satellites and deterrence. She has also been active with two humanitarian organizations working in the former Yugoslavia and several less-developed countries, "Aide et Action" and "Médecins du Monde."



Richard Ponzio
Pittsburg, Pennsylvania, USA

Richard studied international political economy at Columbia University and will pursue a master's degree at Tufts University's Fletcher School of Law and Diplomacy. Richard, a "United Nations reform fanatic," loves cycling, and pasta. Richard is coordinating a student conference on the 50th anniversary of the Bretton Woods Institutions (World Bank and IMF) to be held in Washington, DC in August, 1994.



Rosalind Reynolds
University Park, Maryland, USA

Rosalind is a Ph.D. student in the Government and Politics Department at the University of Maryland, concentrating on international relations and national security policy. She has held graduate assistantships with the Government and Politics Department of the Center for International Security Studies at Maryland, and Women in International Security. Rosalind received her B.A. in political science from Wellesley College.

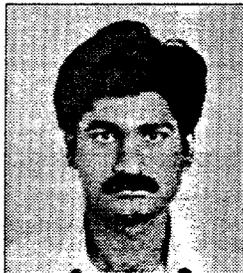
Student Participants



Eran Singer

Upper Nazareth, Israel

Eran is finishing his first year at Technion, the Israeli Institute of Technology, where he studies physics. In 1992 he graduated from the first class of the Israeli Arts & Science Academy. The significant diplomatic changes currently underway in the Middle East have greatly intensified Eran's interest in peace and security issues. He is also interested in genetic engineering and ecology.



Abdul Hameed Toor

Lahore, Pakistan

Abdul has a Bachelor's and Master's degrees in physics from Quaid-i-Azam University in Islamabad, Pakistan, where he is currently working for his Ph.D. in laser physics. His main research interest is in laser theory and quantum optics. He is also highly interested in social issues, and has lately started to explore peace and security issues.

Overcoming Barriers to Health Care Education and Delivery

Health care systems throughout the world are coming under increasingly severe pressure. Limited financial resources, the mounting costs of medical technologies and drugs, deteriorating infrastructure, environmental degradation, and military conflict have combined to adversely affect public health around the world. Broader social conditions, such as illiteracy and cultural and gender differences, also stand as obstacles to health care delivery within and between nations. Western concepts of health itself are changing to recognize other types of medical systems, and to examine broader elements of well-being: disease prevention, mental health and the impacts of societal violence. With the growing awareness that even some affluent states have not provided adequate health care to some of sections of their populations, a number of students in the Health Care Education and Delivery working group are examining the potential and limitations of community-based health care programs

in their papers. The working group will explore the challenges to, and creative solutions for, achieving healthy populations across the globe.

Issues to be examined include:

- What impacts does the environment around us, including our work environments, have on health care?
- What role does preventive medicine play in health care education and delivery?
- How do health care challenges vary from community to community, and how do these variations impact health care services?
- What role should the state play in health care education and delivery? What are the ethical decisions associated with this determination?
- What cultural factors impact health care services?

Senior Participants

Ellen Benevides

Ellen Benevides is the Director of Health Policy for Hennepin County's Bureau of Health. She developed the County's health policy, and designed the county's Assured Care Program, a multi-year pilot program to provide health care services to low income, uninsured county residents. Previously, Ms. Benevides was the Director of the Medicaid Demonstration Project in Hennepin County, a federal initiative examining the impact of the transition from a fee for service to a prepaid health care system on Medicaid recipients, and Executive Director of the Mental Health Association in Hennepin County, a non-profit advocacy/education organization. She has also served as a member of the working groups advising the Clinton Health Care Reform Task Force. Ms. Benevides holds a M.A. in hospital and health care administration from the University of Minnesota.

Lorelei Hope DeCora

Lorelei DeCora, a member of the Winnebago Tribe of Nebraska, is the co-founder and Administrative Consultant at the Porcupine Clinic, the first community-owned primary health care program on the Pine Ridge Indian Reservation, South Dakota. She presently serves as both the Public Health Nurse and Clinical Supervisory Nurse at Rosebud Health Services. Ms. DeCora assisted in making Native treaty rights a tribal priority, and in forming the International Indian Treaty Council, the voice of Indigenous People in the international community. Additionally, Ms. DeCora is the co-founder of both the Black Hills Alliance, an organization responsible for stopping plans to mine uranium in the southern Black Hills, and the Dakota Woman of All Red Nations, a grassroots Indian women's organization focused on devising solutions to current threats to the health and wellness of Native Americans.

Kaja Finkler

Kaja Finkler is a Professor of Anthropology at the University of North Carolina-Chapel Hill. She has done extensive field work in developing nations, especially in Mexico and Latin America. Her areas of specialization include medical anthropology, gender and health, and

Latin American Studies. Dr. Finkler is the author of four books and numerous articles dealing with alternative medicine, Western medical practice and women's health. Her most recent publications are *Physicians at Work, Patients in Pain: Biomedical Practice and Patients Response in Mexico*, and *Women in Pain: Gender and Morbidity in Mexico*. Her book *Spiritualist Healers in Mexico* is currently being republished in a new edition.

Ayham Y. Haddad

Ayham Haddad, born in ██████████ studied medicine at the Aleppo University in northern Syria. In 1988, during his final year in medical school, Dr. Haddad was arrested for being a member of the political opposition. In 1991, still incarcerated as a political detainee, he finished his studies and was awarded his M.D. After Dr. Haddad was released on December 14, 1991, he moved to the U.S. He is currently preparing for the American Medical Boards for Foreign Graduates.

P. Rafael Hernandez (Facilitator)

Rafael Hernandez is a Master's degree candidate studying applied social research in medical sociology at the City University of New York with a dissertation examining ethnicity, population clustering and medical research. Mr. Hernandez has conducted several studies on the health care systems in Nicaragua, Cuba, and Guyana focusing on community participation, political will, and alternative health care planning. He has also researched Latino health conditions in the United States. He is a Research Associate for Medical and Health Research Association, Inc., a Consultant on Latino health issues for QualiData Research, Inc., and the Graduate Student Representative to the Latin American Sociological Association. Mr. Hernandez teaches sociology, edits *NOTAS* (the Latino journal of the American Sociological Association), and received a national fellowship in support of his graduate studies from the National Institute of Mental Health.

Linda Price King

As founder and Executive Director of the Environmental Health Network (EHN), Linda King is a national leader and primary spokesperson for communities and individuals who are suffering from toxic exposures. Her work has been featured in a number of publications including *The Nation*, *The National Law Journal*, *Parenting Magazine*, *Food and Water*, and *The Earth Island Journal*. She has received numerous awards including Environmentalist of the Year from A.C.T.I.O.N., the 1993 Service Award from the Citizens' Clearinghouse for Hazardous Waste, and the Seeds of Success Award from the Sierra Club Legal Defense Fund. Ms. King sits on the Advisory Board for the Louisiana Department of Health, is a Board Member of the Environmental Occupational Medical Research Institute, and is a Board Member of the Deep South Environmental Equity Institute.

Paul S. Jellinek

Paul Jellinek, Vice President of The Robert Wood Johnson Foundation, has been involved in the development and management of many of its initiatives in the areas of child and adolescent health, AIDS, and substance abuse. Prior to joining the Foundation, Dr. Jellinek was a fellow at the Bush Institute for Child and Family Policy in North Carolina, Coordinator of the World Growth Policy Group at Duke University,

and Executive Committee member of the Triangle Chapter of the Society for International Development. His publications have appeared in *The New England Journal of Medicine*, *The American Journal of Public Health*, and *Issues in Science and Technology*. Dr. Jellinek received a Master's in health administration and his Ph.D. in health economics from the School of Public Health at the University of North Carolina at Chapel Hill.

Yasmin Tyler-Hill

Yasmin Tyler-Hill received her B.A. in biology from Princeton University before pursuing a medical degree in her home state at the University of South Carolina. Dr. Tyler-Hill completed her residency in General Pediatrics at Boston City Hospital where she cultivated an interest in designing a primary care practice for inner-city populations. After four years at a public health service site in Pennsylvania she moved her practice to the Children's Hospital in Pennsylvania and later became a Fellow with the American Academy of Pediatrics. Dr. Tyler-Hill joined Total Health Care as a staff pediatrician and subsequently was promoted to Assistant Medical Director overseeing the organization's largest medical delivery site.

Overcoming Barriers to Health Care Education and Delivery

Student Participants



Agbesi Korku Agbe-Lae
Accra, Ghana

Agbesi is pursuing a degree in science education and chemistry at the University of Cape Coast. He is interested in energy and the environment, the African diaspora, and women's studies. Agbesi is Vice-President of the Cape Coast Chapter of Student Pugwash Ghana.



Matthew Wireko Boampong
Accra, Ghana

Matthew is currently a fifth year student at the University of Ghana Medical School. In 1993 he was elected the Health Education Officer of the University of Ghana Medical Students' Association and became the National Health Officer of the Federation of Ghana Medical Students' Association. During his tenure, Matthew has mounted several health care educational campaigns and helped devise various community-based health projects, including the Ghana Village Project.



O. Jamiu Busari
Maastricht, The Netherlands

Jamiu, born in [REDACTED], received his primary education there followed by a secondary and post-secondary education in Nigeria. Jamiu graduated as a medical practitioner in 1991 in Nigeria and is completing a post-graduate program in health professions in the Netherlands. His interests include meeting people through academe, work, and sports.



Elora Dasgupta
Perryville, Maryland, USA

Elora is a sophomore at University of Maryland at Baltimore (UMBC), where she is pursuing a pre-pharmacy program. During the summer, she will serve as a student contractor at the government-run Medical Research Institute of Chemical Defense. Ultimately, Elora hopes to be involved in pharmacology research. She is a member of the UMBC tennis team and enjoys volleyball and traveling.

Student Participants



Diane M. Kondratowicz
Bloomington, Illinois, USA

A graduate student in the Political Science Department at Loyola University in Chicago, Diane has recently initiated work on a doctoral dissertation concerning the political implications of technology. Diane's academic background also includes graduate work in philosophy and health care ethics. Her professional interests include research, consultation, administration, and teaching about medical ethics.



Walter Lee
Hoopeston, Illinois, USA

Walter hails from the "Sweet Corn Capital" of the world: Hoopeston, Illinois. He is a graduate of the Illinois Mathematics and Science Academy high school, where he first became involved with Student Pugwash USA. Walter is studying philosophy with an ethics concentration in the 7-year B.A./M.D. Integrated Liberal Arts Medical Program at the George Washington University (GW). As well as being the founder of the SPUSA chapter at GW, Walter currently serves as a student representative on the Student Pugwash USA Board of Directors.



Ann Moore
Chubbuck, Idaho, USA

A sophomore at Smith College, Ann is majoring in Latin American studies and economics though her main interest lies in reducing the Earth's overpopulation crisis through the empowerment and education of women. Originally from Pocatello, Idaho, Ann spent several months last summer in Michoacan, Mexico building latrines, and in Managua, Nicaragua as a soup kitchen worker where she "fell in love with the culture!"



Loretta Lynn Morales
El Paso, Texas, USA

Loretta is a senior pursuing a B.S. in clinical laboratory science at the University of Texas-El Paso. A native of El Paso, she would like further understanding of the unique problems encountered by cities located on the U.S.-Mexico border. Loretta is particularly concerned with the lack of economic infrastructure in border communities.

Overcoming Barriers to Health Care Education and Delivery

Student Participants



Lissette Ortiz
Roxbury, Massachusetts, USA

A student at Xavier University in Louisiana, Lissette is pursuing studies in preparation for medical school which she finds rewarding beyond her expectations. Lissette is a member of the university's environmental club and "Black Magic Volleyball Club." She has also been active in a number of volunteer efforts in the area of health care delivery.



Mercy Ozaeta
Bakersfield, California, USA

Mercy, age 27, is near the completion of a M.S. in health care management with a pre-med emphasis at California State University, Bakersfield following a B.A. in psychology and Spanish. Mercy's ultimate goal is to obtain a position of national leadership in health care, focusing specifically on the design and implementation of health care systems in the United States and in developing countries world-wide.



Candace Parker
Randallstown, Maryland, USA

Candace, an energetic optimist, is currently a sophomore medical student at Meharry Medical College in Nashville, Tennessee. She is active in the Student National Medical Association, the American Medical Student Association, and has aspirations to be one of the many committed individuals who will encourage, educate and affect those around her.



Raj Ponnaluri
Durham, North Carolina, USA

Raj holds a Bachelor of Science in civil engineering from Jawaharlal Nehru Technological University in Huderabad, India and is currently pursuing a Master's in transportation engineering at Duke University in North Carolina. Raj describes himself as "a proud son of humble parents, and a proud brother of two engineer sisters." He adds that he is "committed to being a professor par excellence."

Student Participants



Linda Tello
Delano, California, USA

Linda was born and raised in the small farming community of ██████████ ██████████ in the central region of the San Joaquin Valley. She graduated in 1989 from California State University, Bakersfield (CSUB) with a Bachelor of Science in biology. Currently, Linda is completing a M.S.A. in health care management at CSUB and works as a health educator for a private, community-based clinic.



Teng-Pin Wang
Scranton, Pennsylvania, USA

Teng-Pin majors in biochemistry at Pennsylvania State University where he participated in the Pennsylvania Governor's School, the Independent Research Program and his school's microbiology club. This winter Teng-Pin toured London while researching the British National Health Service.

Meeting Societal Needs Through Communications and Information Technologies

The explosion of new computer and communications technologies are fundamentally altering the speed, scope, and effects of human interaction around the world. Computer analyses of data play a vastly increasing role in public and private decision-making, while telecommunications has enabled individuals from many countries and cultures to share ideas and information, breaking down traditional boundaries. By bringing relevant information to disadvantaged groups, as well as peoples in remote areas of the developed and developing world, new opportunities and pitfalls are opened. The current laying of global communications infrastructure and policies will have profound implications for who will use and benefit from the technologies well into the next century. The working group on information technology will examine the ways in which these communications and information technologies are transforming the global political, economic, scientific and cultural landscapes.

Issues to be examined include:

- How do communication networks and accessibility to new information affect international relations and cooperation?
- What effects do telecommunications have on the survival of indigenous peoples and cultures?
- Can computers help us re-think institutional boundaries through information-sharing?
- How can an individual's rights to privacy and free speech be ensured in the electronic medium?
- What benefits can information technology bring to education? To environmental problem-solving?
- How does access to information technology affect economic equity and democratization?

Senior Participants

Susan Ann Brummel

Susan Brummel established and directs the Clearinghouse on Computer Accommodation (COCA) of the U.S. General Services Administration. COCA is a model government-wide technical resource center helping federal agencies to adopt policies and practices ensuring equal access to citizens with disabilities. As a private practitioner, she worked to establish effective service delivery systems for disabled clients requiring customized computer-based systems. Ms. Brummel has a B.S. in speech pathology and audiology from the University of Michigan and an M.S. in communicative disorders from the University of Wisconsin, Madison. She has received many awards for her work with access issues for the disabled.

Lisa Kimball Carlson

Lisa Kimball Carlson, Senior Consultant and Corporate Manager at Metasystems Design Group, is an internationally recognized leader in the field of communication technology and its educational and training uses. She has developed programs to train K-12 teachers to use computers in the class room, national on-line networks of educators, distance education courses, and workshops for executives and managers on the strategic use of technology. Ms. Carlson received her B.A. from Sarah Lawrence College, M.A.T. in social science from Wesleyan University, M.S. in education from Wheelock College, is a graduate of the School for Strategic and Management Studies at the Western Behavioral Sciences Institute, and is a Ph.D. candidate this year at The Catholic University of America.

David Fleming

David Fleming, a Ph.D. candidate in mechanical engineering at the University of California-Irvine, is Principal Investigator for a project exploring the use of telephones for more universal computer access. He hopes to meet the needs of some of the world's technologically disadvantaged communities by providing a means for widespread telephone access to computerized information. While at Stanford, working toward his Bachelor's degree in electrical engineering and his Master's in mechanical engineering, he studied sign language. He subsequently co-designed a robotic finger-spelling hand which serves a communication tool for the deaf-blind. Mr. Fleming is the 1993 winner of the Walt Disney Imaginations Design Contest for his design of amusement park attractions which address disabled access. He is also founding Co-Chair of the National Students' Support Council for Africa.

Kay Johnson (Facilitator)

Kay Johnson is Program Associate at the Benton Foundation, a private foundation that encourages the use of communications technologies to advance the democratic process. Her recent work focuses on Children First, a joint project of ABC Television and the Coalition for America's Children and the Communication Policy Project. Previously, Ms. Johnson was the Program Development Coordinator for Public Interest Video Network (PIVN)/New Voices Radio, a non-profit media organization known for its innovative use of satellites, television and radio to expand audiences for information from the public interest community. She also served as Public Relations liaison for the Smithsonian Institution's Marine Systems Laboratory in

Townsville, Queensland, Australia for a joint environmental education project of the Smithsonian Institution and Australian Great Barrier Reef Marine Park Authority.

Edson W. Pereira

Edson Pereira currently is a Satellite Systems Engineer at SatelLife where he is involved in the development of satellite ground stations and systems to be used in the HealthNet project. HealthNet creates an electronic network connecting health professionals in the developing world with their colleagues on networks like the Internet, JANET, and EARN. HealthNet presently connects 16 countries in Africa and four in the Americas. Mr. Pereira previously worked in telecommunications at the Brazilian Electric Energy Research Center as Research Electronic Technician. His main field of activities include digital networks communications through fiber optics and radio. Mr.

Pereira was awarded his A.E. in computer engineering technology and is expecting his B.A. in the same field from Wentworth Institute of Technology in Boston, MA.

Victoria Verana

A University of California-Davis comparative literature graduate, Victoria Verana is one of three Special Projects Coordinator at the Network of East-West Women (NEWW). NEWW is a communication network designed to create international discussion among feminists about gender issues in the political and social life of countries in transition in East and Central Europe and the former Soviet Union. Her current project is the development of an internet network connecting women globally. Previously, Ms. Verana interned at the Amnesty International Government Affairs Office and spent a semester studying in Eotvoslor and Lorraine University in Budapest, Hungary.

Meeting Societal Needs Through Communications and Information Technologies

Student Participants



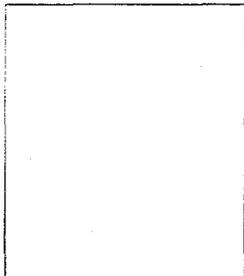
Mohammad Al-Amin
Dhaka, Bangladesh

Having received his B.S. in architecture from Bangladesh Engineering University, Mohammad is working on his Master's in urban planning. He is also the President of the Development Council for Youths, a center for sustainable development. In addition to several years experience as a professional architect, Mohammad has spoken and written widely about environmental education.



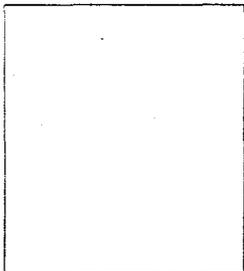
Ajay Darshan Behera
New Delhi, India

Ajay is a Ph.D. student at the School for International Studies at Jawaharlal Nehru University. His dissertation will focus on "Insurgency in South Asia: A Study of the Janatha Vimukthi Peramuna (JVP) in Sri Lanka." Ajay has served as a Research Assistant for a project of the Oslo, Norway-based Peace Research Institute and as a Research Fellow at the Indian Institute of Federal Studies.



Fernando Botelho
Washington, District of Columbia, USA

Fernando, a Brazilian citizen who has lived throughout Latin American and Spain, is interested in management consulting. He received his B.A. in sociology and international relations at Cornell University. Fernando is currently a Master's student in international business at Georgetown University. He enjoys reading, computers, technology, and music.

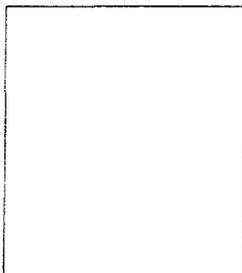


Mohammad Butt
East Lansing, Michigan, USA

Mohammad received a M.S. in crop and soil science from Michigan State University, where he is currently working towards a Ph.D. He has coordinated the MSU Student Pugwash USA chapter since 1991 and includes educating the farming community about sustainable agriculture as one of his professional goals. Mohammad has worked in agricultural extension and the department of education in both Jammu and Kashmir, Pakistan.

Meeting Societal Needs Through Communications and Information Technologies

Student Participants



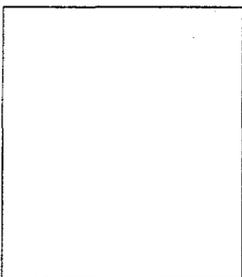
Hewitt Chizyuka
Lusaka, Zambia

Hewitt received his B.A. in mass-communication and economics from the University of Zambia from in 1992. Now completing his Master's degree thesis in international relations from the University of Zimbabwe, he recently traveled to South Africa to pursue research for his thesis. In the process, Hewitt participated in the vote-counting for the May elections. He is now looking forward to commencing study toward a Ph.D.



Lisa M. Covi
Santa Ana, California, USA

Lisa, who has just completed her second year of doctoral study at the University of California-Irvine in the Department of Information and Computer Science, is currently doing research on the use of networked electronic resources. She has also earned two Master's degrees: in higher education administration from Columbia University, Teachers College, and in information and computer science from the University of California-Irvine. Lisa received her Bachelor's degree in mathematics and computer science from Carnegie Mellon University.



Robert T. DiNardo
Darien, Connecticut, USA

Robert will receive his B.A. in political science and classical studies from Duke University this year. His previous activities include working on the Wayne Taylor for Mayor Campaign, with *Campaigns and Elections Magazine*, and for Abrams' 1992 U.S. Senatorial campaign in New York. He is pursuing a professional career in public policy, focusing on new communications policy and education. He hopes to play an integral part in helping government and industry reach socially responsible and pragmatic solutions.



Sacha Hare
Wynnewood, Pennsylvania, USA

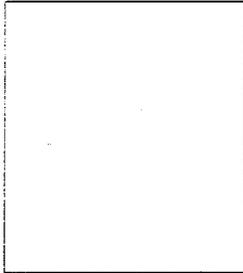
Sacha is currently a graduate student at New York University, where she is studying interactive telecommunications. Her research focuses on "Information Technologies Serving Society: Educational Equity and Intercultural Understanding."

Student Participants



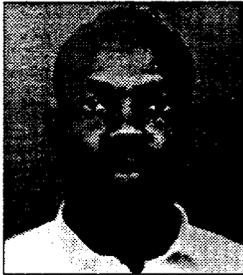
Wynship Hillier
Santa Cruz, California, USA

Wynship is an honors undergraduate student at the University of California-Santa Cruz, studying computer and information sciences. His academic interests also include post structuralist literary theory, feminist theory, critical theory, history of large technical systems, and sociology of scientific knowledge. His professional experiences include work as a computer programmer/analyst, trainer, and consultant.



Shanin Islam
Dhaka, Bangladesh

Shanin is currently a student in the Computer Science Department at the Bangladesh Engineering University. Shanin recently received an award for his performance at the Inter University Debate Competition. He is a member of the Development Council for Youths, a center for sustainable development.



Adekunle Kuku
Ogun State, Nigeria

Adekunle is presently a second year clinical student at the College of Medicine at the University of Ibadan. He is the former President of his University's Medical Students Association, and was recently involved in a project studying environmental pollution in developing countries. Adekunle enjoys reading, politics, and traveling.



Henry Amo Mensah
Cape Coast, Ghana

Henry is a post-graduate student at the University of Ghana, studying library and information science. His area of interest is the role of information and communication technology in rural development in Ghana. Henry likes discussing political issues, particularly issues relating to the resolution of conflicts.

Student Participants



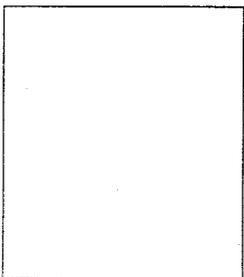
Robert Notzon
Austin, Texas, USA

After working for a year in Henan, China, on the World Bank-funded Yellow River Basin Economic Modelling Study, Robert returned to University of Texas to pursue a dual JD-MPA degree from the Law School and LBJ School of Public Affairs. He holds a B.S. in engineering from Vanderbilt University and has worked in environmental engineering. This summer, Robert will be a Law Fellow at the Texas N.A.A.C.P. Chapter. He enjoys cycling, sculpting, and baking.



Douglas Ruuska
Allston, Massachusetts, USA

Douglas is presently completing the requirements for a B.S. in physics and mathematics. He is involved with particle detector research and development for the Northeastern University High Energy Physics group. His interests include motorcycling, hiking, rock-climbing and the absurd.



Carla J. Shafer
Ithaca, New York, USA

Carol, a graduate student in development sociology, is currently working for the Cornell Local Government Program as a community network development specialist. She also directs the Cornell Participatory Action Research Network, an international program working on research for social change. Carol holds a B.S. in international agriculture and soil science and spent several years working for private development organizations in Zambia, Africa.

Designing the Future: From Corporations to Communities

The organization of institutions, both systems and physical spaces, reflect particular values. Historically, Western corporations were designed to value the "bottom-line". American cities tend to be organized around valuing the perceived freedom and independence of automobile travel. The increasing intricacy of modern institutions, which must address the complexity of rapidly growing technological and scientific understanding, makes the challenge of environmentally and socially responsible design even greater. The design working group will examine the creative process as it relates to human organization, and explore design processes that can better meet the needs of all members of the global community.

Issues to be examined include:

- What values do the institutions dealing with increasing flows of information, goods and technology across the globe reflect?
- How can corporations be organized to address needs of workers, communities and the environment?
- How has technology impacted, and how may it improve, the human and environmental health of communities?
- What can systems theory teach us about community and corporate design?
- What impacts will technology have on designs and the design process in the future?

Senior Participants

Karen Aberle

Karen Aberle is a coach and trainer working with individuals and teams to improve business performance through the development of leadership and collaborative competencies. Over the past 10 years her programs have trained thousands of people in companies like Aetna, AT&T, EDS, General Motors, and Planned Parenthood to be more responsive to their customers' needs. Her current work is in the development of organizational coaches who can carry facilitate shared understanding in diverse groups, and fresh thinking to meet the needs of the new communities. Ms. Aberle is a co-founder of the NYU Dialogue Project, a program committed to ending adversarial relationships in corporate and community leadership.

Nancy Brennan

Nancy Brennan is the Executive Director of the Baltimore City Life Museums where she is responsible for the administrative and financial management of seven historic attractions. She serves as a member of the Governor's Commissions for Historic St. Mary's City and Aesthetic Properties, Reviewer for the Maryland Museum Assistance Program and the National Endowment for the Humanities, and serves on a number of boards and committees throughout the community. Previously, Ms. Brennan coordinated the creation of Baltimore's History Alliance, a consortium of 23 historical sites, and operated a private consulting practice specializing in interpretive exhibits, museum education, and audience development. Ms. Brennan received her B.A. from the University of Pennsylvania and her M.A. in Teaching-Museum Education from George Washington University.

Karen Childress

Karen Childress holds her M.A. in public affairs from Princeton University's Woodrow Wilson School. She has worked on grass-roots environmental education campaigns in rural areas both domestically—in the coal fields of Kentucky, and abroad—in Costa Rica and Bolivia. In 1993, Karen was selected as an Echoing Green Fellow to continue her work with environ-

mental education and local economic development in her home state of Tennessee. Together with family members, she has returned to a fourth generation family farm and started Rural Resources. Rural Resources is a not-for-profit organization working on sustainable agriculture and environmental education projects, laying the groundwork for a locally-based, land-based, sustainable economy for Southern Appalachia.

Alexander Laszlo (Facilitator)

Alexander Laszlo is Director of the Doctoral Program in Management at the Monterrey Institute of Technology in Monterrey, Mexico. Dr. Laszlo earned his Ph.D. in history and the sociology of science from the University of Pennsylvania, and his Bachelor's degree in political science and biology from Haverford College. At both institutions, he was actively involved with Student Pugwash as chapter founder and coordinator. His academic interests have been divided between the social and natural sciences, and in studying the social impact of the advancement of technology in a systematic framework. Dr. Laszlo seeks to unify the understanding of the impact and implications of development policy and social systems with the issues that arise from the interaction of science, technology and society.

Jeffrey Leifer

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 M.B.A. 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 for many years was instrumental in the development of the organization.

Karl Linn

Karl Linn's pioneering work as an educator and innovator cultivating community and peace has spanned three and a half decades. He is well known among participatory environmental designers, community gardeners and social activists as a down-to-earth visionary. He is an educator, landscape architect, psychologist, and creator of community spaces and spirit. He has an extremely long list of accomplishments including being a successful landscape architect, professor at several universities, founder of several community building organizations such as Architects/Designers/Planners for Social Responsibility and the Urban Habitat Program. Most recently, he joined the Board of the San Francisco League of Urban Gardeners, and co-founded East Bay Urban Gardeners. In June 1993 at a surprise celebration, Berkeley's Mayor dedicated the Karl Linn Community Garden.

Sanford M. Nelson

Mr. Nelson, a graduate of the New School of Architecture at the University of Tennessee, practices architecture and urban, product, and graphic design for Sanford M. Nelson Architecture & Design. Here, and through his premedical education at Oxford College of Emory University, he began incorporating philosophical, social, scientific, artistic and business disciplines into his design approach. His products range widely in scale and character, from his urban Underground Atlanta project to his own line of home furniture. Mr. Nelson has practiced

with the firm of Cooper Carry and Associates, Inc. and several other firms in the U.S. and Great Britain, and received the Silver Medal for Design Excellence from the Atlanta Chapter of the American Institute of Architecture. He has written book reviews and articles for professional journals, and is currently working on a book exploring the role of architecture and design as both a reflection and definer of cultural values and trends.

John P.S. Salmen

John Salmen is a registered architect who has specialized in barrier-free and universal design for almost 20 years. His personal interest in this work stems from his own partial hearing loss, and from his many close friends and acquaintances with disabilities. Mr. Salmen is an expert in the technical aspects of the Americans with Disabilities Act (ADA) and its Accessibility Guidelines (AG) and served on the committee to write the basic provisions for the ADA. The author of *Accommodating All Guests*, he has presented over 100 ADA seminars, and has taught hundreds of continuing education courses for the American Society of Interior Designers, the American Institute of Architects, and the American Society of Landscape Architects. Mr. Salmen received his Bachelor of Architecture degree from the University of Minnesota in 1976 and is a Certified Association Executive. He also frequently volunteers for local and national charitable organizations.

Designing the Future: From Corporations to Communities

Student Participants



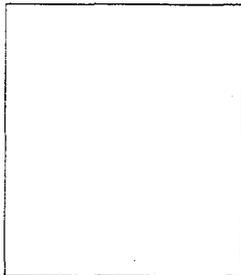
Janet Gerilyn Anderson
Detroit, Michigan, USA

Janet has lived in Detroit all of her life, except for one year spent in Baltimore completing course work towards a Ph.D. in policy sciences from the University of Maryland. She has worked for Detroit's Budget Department for four years after obtaining her B.A. and M.P.A. from Wayne State University. Janet's primary concern centers around the decreasing vitality of central cities; her dissertation investigates patterns of investment in metropolitan development.



Abigail Mary Baker
Newcastle Upon Tyne, England

Abigail graduated from Oxford University in 1994 with an honors B.A. degree in engineering, economics and management where she undertook an industrial plant waste minimization program and coordinated the Oxford Student Environmental Group. After leaving school, she spent 3 months living in Spain in a community dedicated to sustainable living and appropriate technology development. She is currently helping organize Manchester's One World Center, a resource center for environmental and peace groups.



Janie Casey
Takoma Park, Maryland, USA

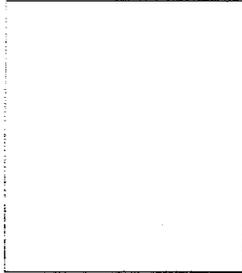
Janie is a graduate student in Science, Technology and Public Policy at George Washington University. She holds a bachelor degree in the philosophy of science and public policy from the same institution. Janie has worked in health policy for the Executive Office of the National Institutes of Health and with the National Commission on AIDS. She has also interned at the U.S. Office of Technological Assessment and worked as a lobbyist on Capitol Hill on energy issues.



Kathia Castro
Monterrey, Mexico

Kathia is presently pursuing a Masters degree in education in the Advancement of Educational Systems at the Center for Strategic Studies at the Monterrey Institute of Technology. She holds a B.A. in marketing and has worked as a small business consultant. Kathia's interest in sustainable development inspired her to pursue research on the teaching of values in universities in Mexico and around the world.

Student Participants



Alexander Chvorostov
Moscow, Russia

Alexander graduated from Moscow State Lomonosov University in 1993 with a Candidates Degree in philosophy and sociology. He is now working as a senior sociology lecturer at the Moscow State Institute of Culture. Alexander has published a number of articles on philosophical and sociological issues of modern education.



Pamela Clarke
Milton, New York, USA

Pam is a 1994 graduate of the College of William and Mary where she majored in anthropology. As an undergraduate, Pam was actively involved in the William and Mary Chapter of Student Pugwash, serving as the chapter's coordinator and a key planner of regional conferences held at the college. Pam currently serves as a Student Pugwash USA Chapter Advisory Council Co-Chair, a position she has held since January 1993.



Arthur Daemmrlich
Ithaca, New York, USA

Arthur Daemmrlich is currently a Ph.D. student in science and technology studies at Cornell University, where he is focusing on 19th and 20th century science policy and health care issues. He has a B.A. from the University of Pennsylvania and spent his junior year studying at the University of Munich.



Ugenyi Ekenna
Abia State, Nigeria

Ugenyi obtained his General Certificate of Education from the Methodist College Uzuakoli in 1983. Currently, An accounting major, he is in his final year at Abia State University.

Designing the Future: From Corporations to Communities

Student Participants



Greg Harris
Shaker Heights, Ohio, USA

Since his return from the People's Republic of China, Greg has established a company that assists foreign governments with improving the quality of medical care abroad. Recently Greg has been working as a securities broker. He will begin law school at Case University in Cleveland, Ohio this fall.



Lena Johnson-Davis
Lawrence, Kansas, USA

Lena holds Bachelors degrees in architecture from the University of Kansas, and environmental health sciences and interior design from the University of Georgia. She recently received her Masters degree with honors in architecture from the University of Kansas.



Stephen A. Lacroix
Houston, Texas, USA

Stephen recently graduated from Trinity University in San Antonio, Texas with a B.S. in business administration and a minor in environmental studies. As an undergraduate, Stephen participated in the Washington Semester for International Environment and Development, and undertook three weeks of field study in Kenya.



Michael Neff
Whitby, Ontario, Canada

Michael is a Computer Engineering and Society major at McMaster University in Hamilton, Ontario, Canada. He is also completing a minor in theater, to which he reports he gives too much time. In the summer, when not at conferences, Michael works at the Toronto Zoo teaching children about animals.

Student Participants



Aaron Panofsky
Rehoboth, Massachusetts, USA

Aaron has just completed his sophomore year at Amherst College. While his academic interests are diverse, Aaron hopes to transform his current biology major into an interdisciplinary major connecting science to its philosophical and social implications. Outside of Pugwash and science, Aaron is interested in art and is the Program Director of WAMH Amherst College Radio.



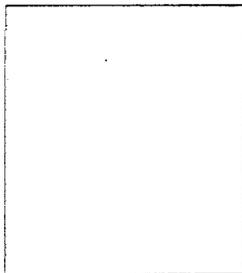
Andrey Petrichtche
Voronej, Russia

Andrey graduated with a degree in social science from Moscow Lomonosov State University. He is currently involved in the European studies postgraduate program at the Central European University in Prague. In the future he hopes to teach university economics, consult for the Russian government, and do policy analysis for multi-lateral economic organizations. Andrey's academic interests lie in the area of the economics of disarmament.



Michael Putnam
Centerville, Utah, USA

Currently finishing up his sophomore year at Stanford University, Michael is majoring in electrical engineering. He has a keen interest in development economics and international policy studies. Michael reports that, on the side, he loves to dance, sail, rock-climb, travel, and otherwise "milk life for all its worth."



Nazrul Huq Tapan
Dhaka, Bangladesh

Nazrul is studying for his Bachelors degree in economics at the University of Bangladesh. He is a member of the Development Council for Youths and presently serves as the Secretary for the Dhaka University Branch of the Bangladesh Red Cross. In 1993, Nazrul received the Best Photographer Award from the Bangladesh Photographic Society.

Student Participants



Deyan Vassilev
Rousse, Bulgaria

Deyan is a senior majoring in Applied Economics at the American University in Bulgaria. His academic interests include economies in transition, the establishment of financial markets, and privatization.



Carol Welker
New Concord, Ohio, USA

Carol Welker is a Ph.D. student in rural sociology at Ohio State University. She holds master degrees in city and regional planning, and business management. A native of Appalachia, she has worked for two governors, a number of local governments, and served as Chief Financial Officer for the corporate real estate division of Bank of America.

The Social Costs and Medical Benefits of Human Genetic Information

Ihere are over 3000 genetic diseases that afflict humankind, and many more diseases in which genetic predisposition may play a significant role. Many people hope that by locating and isolating the genes that carry an illness, the Human Genome Project will enable the possibility of gene therapy — removing the offending genes, replacing them with normal ones, and thus treating an illness before it even develops. This world-wide research effort, which seeks to sequence the approximately three billion pairs of nucleotide bases that compose and carry the information of these genes, will have profound effects on the future of medical care. The genetics working group will address the benefits that genetic knowledge has and could continue to produce, while investigating the social, ethical, and legal ramifications of the Human Genome Initiative.

Issues to be examined include:

- What effects will genetic testing have on access to insurance, employment, and privacy?
- What long-term benefits and impacts will genetic technologies have upon society, public health, and the human gene pool?
- How can effective mechanisms be developed to incorporate the views and concerns of the general public into genetic research and policy making?

Senior Participants

Barbara Bernhardt

Barbara Bernhardt is currently working on three projects funded by the Ethical, Legal and Social Implications project of the National Center for Human Genome research. She is also coordinator of a project exploring the factors influencing the use of cystic fibrosis carrier testing by reproductive-age adults, co-principal investigator on a study of obstetrical-provider-patient communication regarding prenatal genetic testing, and co-investigator on a project to study the diffusion of new genetic technologies from the consumer, provider and payers points of view. Dr. Bernhardt has served as Genetic Associate at Buffalo Children's Hospital, and Medical Genetics Clinic Coordinator and Genetic Counselor at Johns Hopkins Hospital. She received her B.S. in biology from Cornell University and her M.S. in epidemiology at the State University of New York at Buffalo.

Barbara Bowles Biesecker

Ms. Biesecker is Genetic Counselor and Section Head in the Medical Genetics Branch of the National Center for Human Genome Research at the National Institutes of Health. She will soon be co-directing a genetic counseling training program and a multi-disciplinary research effort focusing on counseling methodologies and effectiveness. Ms. Biesecker obtained her M.S. degree from the University of Michigan in 1981 and has held genetic counseling positions at several universities. She has served as President of the National Society of Genetic Counselors and Associate Director of the Genetic Counseling Graduate Program at the University of Michigan. Her other areas of interest include research in genetic counseling, the psychological ramifications of genetic disorders, and the implications of gene testing.

Paul Richard Billings

Dr. Billings is Chief Medical Officer of the San Jose Satellite Outpatient Clinic, Acting Chief of General Internal Medicine at the Palo Alto Medical Center, and Associate Clinical Professor of Medicine at Stanford University. He also serves on the staff of the Veterans Affairs Medical Center. Dr. Billings founded the Clinic for Inherited Diseases at New England Deacon-

ess Hospital, and served as Chief of Medical Services at Massachusetts Mental Health Center. He has been called upon to testify before the U.S. Congress on genetic information and insurance issues. He received an A.B. in American history *summa cum laude* from the University of California at San Diego, and received both his M.D. and Ph.D. in immunology from Harvard University. Dr. Billings has published numerous articles and book chapters and recently authored, *DNA on Trial: Genetic Identification and Criminal Justice*.

Dean Hamer

Dean Hamer is a molecular biologist who is interested in the role of genes in complex human behaviors and conditions. Last year his laboratory discovered a genetic linkage for male sexual orientation. That finding set off an important and continuing ethical debate on how society should interpret and use the results of human genetic research. Dr. Hamer has been at the National Institutes of Health for 17 years, and is currently the Chief of the Section on Gene Structure and Regulation at the National Cancer Institute. In the past he has studied the role of genes in both sexual orientation and in complex medical conditions, including progression of HIV and Kaposi's sarcoma. Dr. Hamer was awarded his Ph.D. in biological chemistry from Harvard in 1977.

Victor A. McKusick

Victor McKusick is University Professor of Medical Genetics at Johns Hopkins Hospital. He has served as Director of the Division of Medical Genetics, William Osler Professor in the Department of Medicine, and Physician-in-Chief of the Johns Hopkins Hospital. While Editor-in-Chief of *MEDICINE*, Dr. McKusick co-founded *GENOMICS*, an international journal of gene mapping and nucleotide sequencing. He is a member of the National Academy of Sciences' Committee on Mapping and Sequencing the Human Genome, Chairman of the National Academy of Science Committee on DNA Technology in Forensic Science, as well as Founder and President (1988-90) of The Human Genome Organization (HUGO). Dr. McKusick received his M.D. from Johns Hopkins School of Medicine

and has since received honorary degrees at New York Medical College, the University of Liverpool, and Tel Aviv University.

Robert Murray

Robert Murray is Professor of Pediatrics and Medicine, Chief of the Division of Medical Genetics in the Department of Pediatrics and Child Health at the College of Medicine, and Graduate Professor and Chairman of the Graduate Department of Genetics and Human Genetics at Howard University. He is a Fellow and Board Member of the Hastings Institute, an American Association for the Advancement of Science Fellow, and Member of the Governing Council at the Institute of Medicine at the Academy of Sciences. Dr. Murray has been active in almost two dozen committees and organizations including the Working Group on Ethics for the Task Force on National Health Care Reform chaired by Hillary Rodham Clinton. He has authored or co-authored more than 70 publications including three books.

Angela M.L. Pattatucci

Angela Pattatucci is a Post-doctoral IRTA Fellow at the National Institutes of Health where her present research focuses on the psychology and genetics of human sexual orientation. Dr. Pattatucci has been an Associate of the National Research Council, Associate Instructor of Biology at Indiana University, and Educational Consultant of the Chicago Public Schools. She received a B.S. in biology/education from

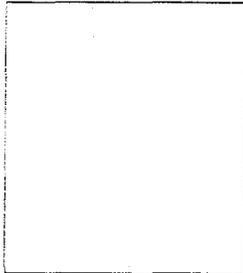
Northeastern Illinois University and a Ph.D. in genetics from Indiana University. Dr. Pattatucci has been featured in national publications, published numerous articles, and delivered over a dozen scholarly presentations on the genetics of sexual orientation.

Steven Selden

Steven Selden received his doctorate from Columbia University Teachers College in 1971. He is currently Program Coordinator of the Curriculum Theory and Development Program at the University of Maryland at College Park. Professor Selden has consulted with the National Education Association, the Smithsonian Institutions, the State of Louisiana, various education agencies throughout the United States, and has made professional presentations in the People's Republic of China, the Czech Republic, Israel, and numerous presentations at the annual AERA and ASCD research conferences. His publications have appeared in the Encyclopedia of Educational Research, Teachers College Record, Phi Delta Kappa, Educational Leadership, and Educational Forum. Professor Selden is the 1988 recipient of the Education Press of America Distinguished Achievement Award for Excellence in Educational Journalism. He is currently completing the manuscript for the book, *The Capturing of Science: Eugenics, Race Betterment, and Education*, which links American education and the Popular Eugenics Movement during this century's first three decades.

The Social Costs and Medical Benefits of Human Genetic Information

Student Participants



Sunita Bhamidipaty
Huntington, West Virginia, USA

Sunita is a junior at George Washington University majoring in philosophy and minoring in biology. She is deeply interested in genetics and is also concerned with ethics in the medical field (bioethics). She enjoys both reading and writing poetry, and she is a student of the Indian arts of music and dance.



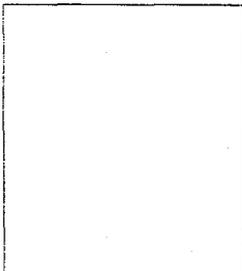
Sara Chandros
Baltimore, Maryland, USA

Sara has completed her first year of the doctoral Law, Ethics, and Health program at the Johns Hopkins University School of Hygiene and Public Health. She is primarily interested in how emerging genetic technologies will impact reproductive rights and expectations.



Sarfo Kwaku Frederick
Ashanti, Ghana

Sarfo is working towards his Bachelor's degree in psychology at the University of Ghana-Accra, specializing in clinical and industrial psychology. He has financed his own schooling through the university level, and is interested in exploring the social cost and medical benefits of the human genome project from a psychological perspective.



Jacquelyn Jackson
Tuskegee, Alabama, USA

Jacquelyn will be a junior this Fall at Tuskegee University, majoring in plant and soil sciences. She is working as a Research Assistant for the National Aeronautics and Space Administration (NASA) in the Plant Molecular and Cellular Genetics Lab at Tuskegee, where she is helping to improve the nutritional quality of sweet potatoes. She is also a Youth Minister at her church and is involved in the Prison Ministry.

Student Participants



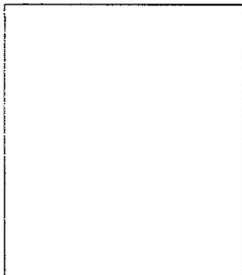
Per Jambeck
Ridgefield, Connecticut, USA

Per is a cartoonist with a keen interest in molecular biology. He also studied child language acquisition for several years. A native of Connecticut, Per graduated from the Johns Hopkins University's Cognitive Science Program in May, 1994.



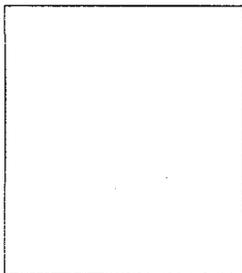
Anne Joseph
Fairfax, Virginia, USA

Anne is currently pursuing a Master's of philosophy in the History and Philosophy of Science Department at Cambridge University. Her research focuses on genetic fingerprinting, scientific expertise in trials and the construction of identity. Anne completed her B.A. in mathematics at Williams College. Her primary interests include science and technology policy research and analysis.



David Kurtz
Ithaca, New York, USA

David is a biology and society major in the College of Human Ecology at Cornell University. When he is not studying genetics, he enjoys watching Melrose Place and Nova. He also loves squash and Australian rules football.



Olaleye Dada Olateju
Lagos State, Nigeria

Olaleye is a general medical practitioner and a graduate of the College of Medicine at the University of Lagos, Idi-graba in Nigeria. His book, *Medical Handbook on Common Tropical Diseases in Nigeria and West Africa* will be made available in Nigeria in July, 1994.

The Social Costs and Medical Benefits of Human Genetic Information

Student Participants



Adjodeji Adedayo Onitilo
Lagos, Nigeria

Adjodeji is a medical student at Ogun State University, Nigeria, where he has been awarded the University Student Union's Certificate of Academic Excellence for best medical student. Outside of the classroom he enjoys traveling, making new friends, and playing sports.



Lycely del Sepulveda
Mayaguez, Puerto Rico

Lycely earned her B.S. in biology in industrial microbiology at the University of Puerto Rico, Mayaguez Campus. She will pursue a Ph.D. in microbiology at Michigan State University. Lycely wishes to become a researcher who performs both good science and good ethics. She likes to sing, dance, and meet new people.



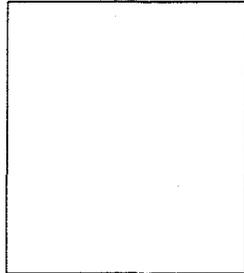
Benjamin Sun
North Potomac, Maryland, USA

Ben is currently an undergraduate student majoring in biochemistry at Harvard College in Cambridge, Massachusetts. In the Fall of 1994, Ben will be coordinating a regional conference on the Human Genome Project with students at the Massachusetts Institute of Technology.



Caroline Thomason
Mobile, Alabama, USA

Caroline will graduate from Spring Hill College this May, where she has been working towards a double major in biology and philosophy with a minor in chemistry. When she is not taking tests, she is the assistant editor of the science division's newsletter, the *Mobius Strip*, and is the president of the Philosophy Club. Next year, Caroline will attend law school at St. Louis University.



Evette Weil
Willowdale, Ontario, Canada

Evette is currently an undergraduate student at Cornell University in Ithaca, New York. Through her academic and extracurricular work, she endeavors to explore genetics from diverse perspectives, including biology, law, ethics, and philosophy. She has done research at the Department of Radiology at the Hospital for Sick Children, and volunteered for several organizations including Cornell's Emergency Medical Service.

Student Pugwash USA Board of Directors

Ruth Adams

Ruth Adams served as the Director of Program on Peace and International Cooperation of the John D. and Catherine T. MacArthur Foundation from 1985 to 1991, and now serves Special Advisor to the Foundation. Prior to her work at MacArthur, Ruth spent nearly 30 years as Editor and Managing Editor of the *Bulletin of Atomic Scientists*. She has been involved with the Pugwash Conferences on Science and World Affairs since 1959, serving both as a Participant and as a Member of the Pugwash Committee of the American Academy of Arts and Sciences.

David Anderson

Dave, a fourth year student at Hampshire College, is studying peace and global security. He will soon begin writing his senior thesis on U.S. intervention and the role of force in a post-Cold War world. Dave is the founder and coordinator of the Hampshire College chapter of Student Pugwash, and also serves as a Chapter Advisory Council Co-Chair.

Michael Berger

Michael's involvement with Student Pugwash spans fifteen years, beginning with his participation in the first International Conference at the University of California-San Diego in 1979. Michael later became the Coordinator of the 1983 International Conference, held at the University of Michigan-Ann Arbor. Michael currently serves as Program Analyst in the Office of Economic Security, U.S. Department of Defense. He has also served as an analyst for the U.S. Congressional Budget Office and U.S. Naval Air Systems Command.

Taft Broome

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

Richard Bryant, Jr.

Rick serves as the Coordinator of College Counseling and Career Development at the Illinois Math and Science Academy (IMSA). Prior to IMSA, Rick worked with the North Carolina School of Science and Mathematics and the North Carolina Mathematics and Science Education Network. He is a member of the Board of Directors of the National Consortium for Specialized Secondary Schools of Mathematics, Science, and Technology. Rick helped establish the first high school chapter of Student Pugwash USA at IMSA in 1988 and has served as the chapter's sponsor since that time.

Anne Cahn

Anne is currently a Senior MacArthur Scholar at the Center for International Security Studies at the University of Maryland. She is Vice President of the Herbert Scoville Jr. Peace Fellowship and 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 Carpenter

Peter is currently a Visiting Scholar at the Center for Biomedical Ethics at Stanford University and is an advisor to the Strategic Planning Committee of the ALZA Corporation, where he previously served as Vice President. He co-chairs a subcommittee of the California AIDS Leadership Committee and serves on the board of California Leadership. He is an Advisor of the International Medical Benefits/Risks Foundation, and is founder of the Mission and Values Institute.

Rosemary Chalk

Rosemary has worked with many aspects of the social and ethical implications of science and technology. Editor of the American Association for the Advancement of Science anthology, *Science, Technology, and Society: Emerging Relationships*, Rosemary has also contributed to many articles and reports on topics addressing the social responsibilities of scientists, the ethics of military research, whistle-blowing, and government controls on scientific information. Her primary position is

with the National Academy of Sciences as Study Director of the Panel on Research on Child Abuse and Neglect. She has also served as Study Director of the Panel of Scientific Responsibility and the Conduct of Research.

Pamela Clarke

Pam is a 1994 graduate of the College of William and Mary where she majored in anthropology. As an undergraduate, Pam was actively involved in the Student Pugwash USA chapter of William and Mary, serving as the chapter's coordinator and a key planner of Student Pugwash regional conferences held at the college. Pam currently serves as a Chapter Advisory Council Co-Chair, a position she has held since January 1993.

Rajesh Krishnan

Rajesh, a native of Long Island, New York is a junior at Stanford University studying Science, Technology, and Society with a focus on Computer Science. After graduating, Rajesh plans to work in government for a few years before going on to graduate school. Rajesh organized Student Pugwash USA's 1994 National Chapter Conference, *Technology and the Future*.

Walter Lee

Walter hails from the "Sweet Corn Capital" of the world, Hoopston, Illinois. He is a graduate of the Illinois Mathematics and Science Academy, where he first became involved with Student Pugwash USA. He is currently a student at George Washington University studying philosophy with an ethics concentration in the school's 7-year B.A./M.D. Integrated Liberal Arts Medical Program. Walter is the founder of the George Washington University chapter of Student Pugwash.

David Leifer

David has been actively involved with Student Pugwash USA since the organization's inception, and served as Executive Director from 1983-85. A graduate of the University of California-Berkeley and Yale Law School, David is a member of the California Bar, and is currently working in the field of municipal finance, as Vice President of Leifer Capital.

Alan McGowan

Alan is president of the Scientists' Institute for Public Information (New York), a position he has held since 1974. For the past 24 years, he has also been Executive Editor of *Environmental Magazine*. Alan has spent a considerable portion of his career in academia, serving in various capacities at Washington University (St. Louis), Tilton School (New Hampshire), Pace University (New York) and as a teacher of mathematics and the sciences in various secondary schools.

Indira Nair

Indira is the Associate Department head and Senior Lecturer in the Department of Engineering and Public Policy at Carnegie Mellon University. She has conducted extensive research and published numerous articles in the areas of engineering and public policy, and science and technology education. Indira 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.

Robert M. Rosenzweig

From 1983-93, Bob served as President of the Association of American Universities in Washington, DC. The AAU, founded in 1900, represents the concerns of fifty-five leading U.S. research universities on matters of educational and research policy. Bob recently returned to California to pursue educational consulting and writing. He has spent more than twenty years in teaching and administration at Stanford University, the last eight as Vice President for Public Affairs. Bob has written two books on the politics of education and research, and has published numerous articles on the subject of research policy.

Nick Steneck (Chairman)

Nick is a Professor of the History of Science at the University of Michigan-Ann Arbor, and has developed new courses for the University including *Ethics and the Professions* and *Science, Technology and Society after the Bomb*. He is also the founding Director of the Histori-

Student Pugwash USA Board of Directors

cal Center for the Health Sciences at the University of Michigan. A fellow of the American Association for the Advancement of Science, he is currently the chair of the Public Health Service Advisory Committee on Scientific Integrity, and has been a member of the Task Force on Science and Technology Education for the Year 2000 of the National Science Teachers Association. Nick's involvement with Student Pugwash spans more than a decade, and began with his role as faculty advisor for the 1983 International Conference.

Student Pugwash USA National Staff

Nicky Short, International Conference Coordinator

A 1992 graduate of Georgetown University, Nicky majored in Science, Technology and International Affairs with a concentration in African Studies. She was a student participant in SPUSA's 1992 International Conference, in the Energy Options: Their Social and Environmental Impacts working group. Before joining the staff at SPUSA, Nicky was a National Network of Environmental Management Studies Fellow at the Environmental Protection Agency, focusing on pollution prevention education and a publications assistant at a small environmental non-profit. Ultimately she is interested in pursuing an advanced degree in women's studies and resource conservation.

Betsy Fader, Executive Director

Betsy has served as Executive Director of Student Pugwash USA for five years. She is a 1985 graduate of Vanderbilt University where she studied political science and communications. Betsy served on the University's Board of Trustees and received 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), as Legislative Assistant in a Washington, DC law firm (1987) and as Legislative Assistant at the Association of American Universities (1988-89).

Evelyne Delori, National Chapter Coordinator

Evelyne has coordinated the activities and expansion of the Chapter Program since she graduated from Barnard College of Columbia University two years ago. In addition to her coursework in her major cultural anthropology, Evelyne also took courses in Spanish, studio art, and geology. During college, Evelyne spent five summers working on public health and environmental projects in Latin America. Her current volunteer activities include training high school students who will serve as public health workers in Latin America over the summer and she serving as a Spanish translator in a local health clinic.

Student Pugwash USA National Staff



Anne Freeh, Management Director

A graduate of Carleton College, Anne majored in South Asian history, with a special focus in international development and women's studies. As SPUSA Management Director, she is working to create new Professional Pugwash chapters and expand the New Careers Program to better link students with organizations, individuals, and jobs in the fields of science, technology, and social change. Prior to joining SPUSA, Anne spent a year on the road as a Watson Fellow studying the economic and societal roles of women entrepreneurs in East Africa, South Asia and Southeast Asia. She has also worked at the National Foundation for Women Business Owners and the Montgomery County High Technology Council.

Timothy Larson, Global Issues Guidebook Editor

A 1991 graduate of the University of Pennsylvania, Tim studied the links between technology, environment, and international development. Before joining SPUSA, he worked for the World Game Institute and a private consulting firm focusing on energy conservation and defense conversion. Tim coordinated SPUSA's 1992 International Conference in Atlanta, and is currently developing the *Global Issues Guidebook*. In the Fall of 1994, Tim will attend the Woodrow Wilson School for Public and Interna-

tional Affairs at Princeton for a Master's degree in regional environmental planning and development studies.

Marshall Boak, Publications Editor and Project Assistant

Marshall, a 1993 graduate of Hamilton College, joined SPUSA in January of 1994, happily resigning from a position at a DC law firm where his work focused on issues of energy and the environment. He is the Editor of *Tough Questions*, and the International Conference *Facebook*. Marshall hopes to eventually pursue an advanced degree in international environmental/energy management.

Cathy Coughlan, New Careers Directory and Marketing Coordinator

Cathy, who hails from England, is a Business Studies major at Coventry University. Working with SPUSA from November through June of 1994, her primary responsibilities include coordination of the *New Careers Directory* and product marketing. While uncertain as to her future plans, Cathy considers law school a strong possibility. She is particularly interested in the societal implications of information technology.

Laura Gaines, International Conference Assistant

An Environmental Science graduate from the School of Public Health at the University of North Carolina at Chapel Hill, Laura joined SPUSA to help coordinate the International Conference and the production of the *Global Issues Guidebook*. Prior to working at SPUSA, Laura worked at the National Institutes of Environmental Health Sciences researching the effects of occupational exposure to female reproductive system toxicants. She is currently applying to medical school where she hopes to begin a career in family medicine and women's health.

Student Pugwash USA Supporters

- Jacob and Hilda Blaustein Foundation*
- Ciba-Geigy Corporation*
- Ciba-Geigy Limited*
- Commonwealth Fund
- Eaton Family Fund
- First National Bank of Maryland*
- W. Alton Jones Foundation
- Legg-Mason Corporation*
- John D. and Catherine T. MacArthur Foundation *
- Morton and Sophia Macht Foundation*
- Mercantile Bank*
- Stewart Mott Foundation
- National Institutes of Health
- National Science Foundation*
- New-Land Foundation
- Ploughshares Fund*
- Rockefeller Family Associates
- Samuel Rubin Foundation*
- Trust for Mutual Understanding*
- U.S. Department of Energy*
- United States Institute of Peace*
- Individual Contributors

*Denotes supporters of the 1994 International Conference.