

15th National #16 STS Meeting #7 the annual conference for NASTS

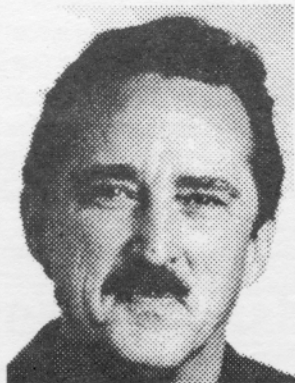
"Action Strategies for the Millennium" 2-4 March 2000 • Baltimore, MD

Of special interest for Interdisciplinary Thinkers Concerned About the Impact of Science and Technology on Society - Teachers and Educators, Scientists and Engineers, Ethicists, Environmentalists, Business Leaders

Featured Speakers



George Bugliarello
Chancellor, Polytechnic University, former president of NASTS



John Byrne
University of Delaware



Susan Cozzens
Georgia Institute of Technology



Wally N'Dow
Ian Barbour Lecturer
Secretary General of UN
Human Settlements
Habitat II, Istanbul

Conference Highlights

- Plenary sessions
- Contributed papers, panels, workshops, and roundtable discussions
- Opportunities to interact with learners of all ages and diverse backgrounds
- Thursday evening social hour
- Continental breakfast
- Graduate student paper competition
- Special NASA presentation on global state of environment
- Saturday evening banquet
- Field trip to National Aquarium
- Tour of Baltimore Harbor



The theme of STS-15 is "Action Strategies for the Millennium." The strengths of previous conferences have been exciting presentations, time for exchange of ideas, and the opportunity to network with other STS'ers, outside of our own disciplinary areas. Our intent this year is to highlight these latter two elements, while still including refereed contributed papers, panels, and workshops.

Our overarching theme will include two major elements, both of significance to all members. We will look forward in terms of visions to where we wish to go as a society and then examine the actions necessary to move in those directions. These visions and recommendations for action will be complemented by discussions with groups and individuals already "on the road."

As a new millennium is a time for taking personal stock of vision and actions needed to be taken, we also need to do the same for our organization. Time for the rudiments of this personal NASTS organizational dialog/vision will be found as well within the program and can be a primary topic for our assembly group meetings. We hope that STS-15 will initiate this discussion for a dialog with direction for STS-16 and STS-17 and to strengthen and further define our NASTS identity.

Robert E. Yager, President, 1992-93, 1996-2000

STS-15 Program Schedule at a glance

Thursday, 2 March 2000

1-8 p.m.	Registration
2 p.m.	Trip to National Aquarium
6-7:30 p.m.	Evening Reception
8-9 p.m.	PLENARY I: Yorum Kaufman

Friday, 3 March 2000

8 a.m.-5 p.m.	Registration
7-8:30 a.m.	Continental Breakfast
8:30-8:45 a.m.	Welcoming Remarks
8:45-9:45 a.m.	PLENARY II: Dr. Wally N'Dow
9:45-10:00 a.m.	Exhibits/Coffee
10:00-11:00 a.m.	Concurrent Sessions I
11:15 a.m.-	
12:15 p.m.	Concurrent Sessions II
12:15-1:45 p.m.	Lunch (on your own)
1:45-3:15 p.m.	Visions Panel

3:15-3:30 p.m.	Exhibits/Coffee
3:30-4:30 p.m.	Concurrent Sessions III
4:30 p.m.	NASTS Membership Meeting

Saturday, 4 March 2000

8 a.m.-noon	Registration
7-8:30 a.m.	Continental Breakfast
8:30-9:30 a.m.	PLENARY III: George Bugliarello
9:45-10:45 a.m.	Concurrent Sessions IV
10:45-11:00 a.m.	Exhibits/Coffee
11:00 a.m.-12 n.	Concurrent Sessions V
12 n.-1:30 p.m.	Lunch (on your own)
1:30-2:30 p.m.	Concurrent Sessions VI
2:30-3:30 p.m.	Concurrent Sessions VII
3:45-5:15 p.m.	Solutions Panel
6 p.m.	Cocktail hour-cash bar
7 p.m.	Banquet

Guide to Papers, Panels, and Workshops

The above Schedule-at-a-glance lists the three plenary sessions, Visions and Solutions Panels, and the seven concurrent session periods of contributed presentations. You can choose the presentations you wish to attend during the concurrent session periods by using the data base listed below, referring to the details about each presentation found in the center of this program.

Session	First Name	Last Name	Title	Room
1	Susan	Blunck	UMBC Egyptian-Teacher Scholar Program	Har IA
1	Yda	Schreuder	Planning for Sustainable Development	Har IB
1	Tom	Osher	Collaboration for Community Contingency	Har IIA
1	Jason	Pearson	Conversion of Los Angeles River into Linear Park	Har IIA
1	Antoinette	Sherman	Portland's City-Wide System of NBOs	Har IIA
1	Stacey	Rossi	Feminist Political Ecology and Int'l Political Economy	McHenry
1	Charles	Guenther	Coopting Ethics Education	McHenry
1	Margaret	Gilleo	Paradigm Shifts in Western World Views	McHenry
2	Stacey Rossi	Global Gov. .	Prospects for Sustainable Development	Ches I
2	Peter	Meisen	Linking Renewable Energy Resources Around the World	Ches I
2	David	Barkin	Wealth, Poverty, and Sustainable Development	Ches I
2	David	Kumar	STS Research	Har IIA
2	Peter	Stine	The College Student and the Computer	Har IIB
2	Robert`	Wauzzinski	Technology: Messiah or Frankenstein?	Har IIB
2	Franz	Foltz	Ups and Downs of Peer Review: Funding Choices	Har IIB
2	Robin	Freedman	Diversity and Equity	McHenry
2	Barbara	Spector	STS Teacher Preparation: Multi-University Initiative	Camden
2	R. and L.	Monhardt	Academic Controversy in Elementary Methods Class	Camden
2	Mike	Robinson	Teaching Engineering Using Role Playing	Camden
3	Beverley	Britton	Visions and Art for Learning	Ches I
3	Blake	Isaac	Visions and Art for Learning	Ches I
3	Young-Doo	Wang	Renewable Energy for Sustainable Development	Har 1B
3	Georgia	Dendrinis	Coupling Science Research and Teacher Education	Har IIA
3	Richard	Stivers	Technology and the Humanities I	Har IIB
3	Bernice	Hauser	Shoes!	McHenry
3	Stephen	Adams	Views About Science/Uncertainties of Climate Change	McHenry

<u>Session</u>	<u>First Name</u>	<u>Last Name</u>	<u>Title</u>	<u>Room</u>
3	Bob	Hudspeth	Breaking from Problem Solving	Camden
4	Robert	Hoffman	Sustainable Millennium Visions I	Ches I
4	Robin	Freedman	Image Processing & Performance-Based Assessments?	Har IA
4	John	Wilkes	Live Role Playing Games as Social Context	Har IB
4	Rustum	Roy	Quintessential Interdisciplinarity	McHenry
4	Fred	Amram	A Woman's Place is in the Patent Office	Camden
5	Robert	Hoffman	Sustainable Millennium Visions II	Ches I
5	Robin	Freedman	Image Processing & Performance-Based Assessments?	Har IA
5	J. Lynne	Brown	Genetic Engineering: Sense or Antisense	Har IB
5	Donna	Sterling	Collaborative Action Research	Har IIA
5	W. H.	Vanderburg	STS as a Vita Ecumenism	McHenry
5	Jane	Konrad	Content-Context-Conation: Using the C 3 Approach	Camden
6	Thomas	O'Brien	Implementing Modified Pedagogy to Teach Science	Har IA
6	Stephen	Cutcliffe	Sustainable Communities I	Ches I
6	Luis	Martinez	Pre-Modern Muslim Irrigation System	Har IIA
6	Nagasu	Namio	Views on the Nature of Science and Technology	Har IIB
6	Richard	Stivers	Technology and the Humanities II	McHenry
6	Fred	Amram	Cool Stories About African-American Inventors	Camden
7	Susan	Blunck	Community Connections: Service Learning Practica	Har IA
7	Stephen	Cutcliffe	Sustainable Communities II	Ches I
7	Robert	Yager	STS in Education - Change over Time	Har IIA
7	Irma	Jarcho	Who Have Influenced Us the Most?	Har IIB
7	Rustum	Roy	Why Integrative Medicine Will Overthrow Reductionism	McHenry
7	Rafael	Balderrama	Politics of Secrecy and Knowledge Trading	McHenry
7	Constantine	Hadjilambrinos	"Peaceful" Applications of Nuclear Explosives	McHenry

Thursday, 2 March 2000

1-8 p.m., Registration

Holiday Inn Inner Harbor Lobby

2 p.m., Field Trip to National Aquarium

meet in Holiday Inn Inner Harbor Lobby

6-7:30 p.m., Evening Reception

Chesapeake II

PLENARY I

Thursday, 2 March 2000

8 - 9 p.m.

Chesapeake I

Introduction: Sylvia Washington, Chair, Science, Technology, and Public Policy Assembly

Speaker: Yorum Kaufman, NASA Goddard Spaceflight Center, Greenbelt, MD

Topic: "Global Sustainability"

Friday, 3 March 2000

8 a.m.-5 p.m., Registration

Holiday Inn Inner Harbor Lobby

7-8:30 a.m., Continental Breakfast

Chesapeake I

8:30-8:45 a.m., Welcoming Remarks

Chesapeake I

Robert E. Yager, NASTS President
Gary Varrella, NASTS President Elect

PLENARY II
Ian Barbour Lecture

Friday, 3 March 2000
8:45 - 9:45 a.m.
Chesapeake I

Introduction: Deva Beck, Chair, Ethical and Sociocultural Issues Assembly

Speaker: Dr. Wally N'Dow, Secretary General of UN Human Settlements, Habitat II, Istanbul

Topic: "The Courage to Care"

"How do we create a pathway to a new human civilization, where these centres that we call cities and towns are livable? That is the question."

Taking his cue from *Ethics in an Age of Technology* (Ian Barbour, 1992), Dr. N'Dow will review the lessons from the UN Habitat Summit, and examine the growing importance of ethics, values and spirituality for the millennium. He will invite participation from teachers and students in the debate for broader curricula and nobler visions for our local and global civilizations; and calling for an examination of our common values as the basis for improving of our relationships with each other and our planet.

9:45-10:00 a.m., Exhibits/Coffee

10:00-11:00 a.m., Concurrent Sessions I

Workshop

Harbor IA

STS Teacher Leaders for a Diverse and Dynamic World: The University of Maryland Baltimore County (UMBC) Egyptian-Teacher Scholar Program

Susan M. Blunck, University of Maryland Baltimore County, Baltimore, MD 21250
blunck@umbc.edu

Osama M. Zaki (Egyptian Cultural and Education Bureau)
Beverly Bickel (UMBC)
Patrick Campbell (UMBC)
Paul Taylor (UMBC)
Egyptian-Teacher Scholars

The University of Maryland Baltimore County Egyptian Science and Mathematics Teacher-Scholar Program is a model for teacher development which is supported by the Egyptian Ministry of Education and the Egyptian Cultural and Education Bureau. This award-winning program is focused on helping teachers create a vision for excellence in science and mathematics education worldwide. Science, mathematics, technology, pedagogy, and English language instruction are blended in this English for Specific Purposes program. Teachers involved in this program are challenged to integrate Science, Technology, Society and constructivist dimensions into their teaching and curricula.

Papers

Planning for Sustainable Development

Presider: Yda Schreuder, University of Delaware, Newark, DE

The concept and practice of sustainable development remain elusive. By a comparative examination of applications in the Netherlands, South Korea, and the U.S., important trends can be ascertained.

An Integrated and Holistic Approach to Environmental Planning: The Dutch Green Plan

Yda Schreuder, Geography and Center for Energy & Environmental Policy, University of Delaware, and Emilius van Sambeek, University of Groningen (Netherlands)

A Spatially-Integrated Energy Planning Model for Korea's Sustainable Development

Young-Doo Wang, Kyung-Jin Boo, Sun-Jin Yun and Yongkyeong Soh, Center for Energy & Environmental Policy, University of Delaware, Newark, DE

State Climate Change Action Planning in the US: A Global-Local Perspective on Sustainability

Matt Clouse, Leigh Glover and John Byrne, Center for Energy & Environmental Policy, University of Delaware, Newark, DE

Papers

Local Applications of STS

Presider: Sylvia Washington, Elgin Community College

Citizen Collaboration for Community Contingency

Tom Osher, Through the Bagel Hole, San Francisco, CA 94124

One way to help create substantive contingency is to use low-tech methods of indigenous people. An additional way is to create 10,000 sq.ft. passive solar greenhouses synergistically operating in a self-sustainable manner, modeled from the greenhouses of New Alchemy out of Cape Cod, with Anna Edey. These greenhouses produce an incredible amount of organic food at the lowest possible costs, at the same time utilizing all of the best techniques that have been developed so far: aeroponics — a way of growing plants without soil, in a vertical manner, fed by nutrients thru a looped tubing.

Harbor IB

The Conversion of the the Los Angeles River into a Linear Park

Jason Pearson, Princeton University, Princeton, NJ 08544

I have designed a proposal for the conversion of the Los Angeles River (now an unused and fenced-off concrete channel) into a linear park whose vegetation is part of a complex system of water filtration that actually transforms the river into a park-as-treatment-facility. I see this project as an example of the way in which architecture (and architects), through their insistence on the importance and validity of aesthetic and imaginary themes in public life, might play a visionary role in the burgeoning discourse on sustainable design and construction.

Portland's City-Wide System of NBOs : An Alternative Solution

Antoinette Sherman, Portland State University, Portland, OR 97214

Neither the state nor the market is uniformly successful in enabling individuals to sustain long-term use of natural resource systems. Recognizing these limitations, the City of Portland has implemented a formal political system that uses the neighborhood based organization (NBO) — an institution resembling neither the state nor the market — to govern some of the city's resource systems. Should neighborhood-based organizations be made into formal instruments of the state, and if so, how successful are they in enabling individuals to sustain long-term use of natural resources? This paper addresses this issue in its historical and theoretical context using Portland's interaction with NBOs as a case study.

Papers

Global Aspects

Presider: Paul Durbin, University of Delaware, Newark, DE

Feminist Political Ecology and the International Political Economy

Stacey Elin Rossi, New York, NY 10003

This paper examines the ways in which ecological decay and the international political economy reinforce gender inequalities by restricting women's reproductive freedom, self-determination, independence and autonomy; increasing the value of virginity and the frequency of infanticide, rape, battery, and polygamy; and intensifying the sexual division of labour and double standard. Empirical and theoretical explanations are offered by observing changes in women's labour and social status, their participation in terms of political and economic empowerment, the erosion and devaluation of knowledge systems that women control, and the increased dependence of women on men on all levels.

McHenry

Harbor IIA

Conference Planning Staff

National Conference Chairperson: **E. Joseph Piel**, State University of New York, Stony Brook

Local Cochairs: **Gary Varrella**, George Mason Univ.; **Susan Blunck**, Univ. of MD-Baltimore

Field Trips: **Sara Anderson**, Northern Virginia Community College

Special Events: **Deva Beck**, Wellness Foundation

Exhibits: **David Wetzell**, George Mason University

Registration: **Rebecca Monhardt**, Utah State University

Scheduling and Program Layout: **John L. Roeder**, The Calhoun School

Coopting Ethics Education

Charles J. Guenther, Jr., St. Louis Community College,
St. Louis, MO 63122-5799
cguenther@mcmail.stlcc.cc.mo.us

In a society that is increasingly reliant on complex technologies, there are vital interests at stake in the ethics education of technical professionals. This paper examines the "industry perspective" on ethics education offered by two major aerospace corporations and reviews Lockheed Martin's "Ethics Challenge" board game. In order to promote professional behavior that will enhance the long-term well-being of all citizens and their environment, ethics education must be free of industry bias and use resources developed by independent academic and professional organizations.

Paradigm Shifts in Western World Views

Margaret Gilleo, Maryville University, 40 Willow Hill,
St. Louis, MO 63124
mgilleo@maryville.edu

For centuries, science and religion have frequently appeared to have irreconcilable differences in explaining the origins and development of the world and the human role within it. In the thirteenth century, Thomas Aquinas, drawing on Aristotle, interpreted the universe in Christian theological terms. Three centuries later, Isaac Newton developed a scientific explanation based on logic, observation, and mathematics. Today, astrophysicist Brian Swimme and theologian Thomas Berry combine scientific and theological insights to explain the evolving universe. This paper will discuss the aforementioned world views in an effort to understand contemporary attitudes toward the natural world and our place in it.

11:15 a.m.-12:15 p.m., Concurrent Sessions II

Papers

Chesapeake I

Sustainable Development

Presider: Constantine Hadjilambrinos, Florida International University, Miami, FL 33199

Global Governance, the Global Division of Labor and the Prospects for Sustainable Development

Stacey Elin Rossi, New York, New York 10003

In this paper, concepts of international law and of order are examined in the context of their influences on the various and contradictory manifestations of global governance. Since the dominant mode of foreign policy and international diplomacy remain entrenched in power politics, the costs of eschewing vital nontraditional security interests such as economic and environmental refugees lead to cyclical erosion of natural and human capital as increasing amounts of labor are subsumed to the needs of the global division of labor.

Linking Renewable Energy Resources Around the World:

A Compelling Global Strategy

Peter Meisen, Global Energy Network International (GENI), San Diego, CA 92138

Through the "trinitab effect," electricity, its sources, and distribution system can increase the standard of living for everyone, cut fossil fuel demand and its resultant pollution, stem the population explosion, reduce world hunger, cut deforestation, topsoil erosion, and desertification, open markets and enhance world trade, and promote international cooperation and peace.

Wealth, Poverty and Sustainable Development

David Barkin, Profesor de Economia
Universidad Autonoma Metropolitana/Unidad
Xochimilco, 16000 Xochimilco, D.F. MEXICO

For the good fortune of serious and committed thinkers, a firmly grounded theoretical reflection about sustainable development continues to grow. A really transformative or "subversive" version is possible, with an enormous potential for a new type of social mobilization and political struggle.

Papers

Harbor IIA

STS Research

Presider: David Devraj Kumar, Florida Atlantic University, Davie, FL 33314

STS in the USA: What Research Says

David Devraj Kumar, Florida Atlantic University, Davie, FL 33314
James W. Altschuld, Ohio State University, Columbus, OH 43210
david@acc.fau.edu

Results and implications of a reanalysis of selected national and state STS implementation studies are presented. STS in Florida showed that approximately half the school districts has STS in science, nearly a third in social studies, with the majority being at the middle and secondary levels. Implications are drawn for teacher education, curriculum materials, and policy.

Analysis of Web-Based STS Instructional Resources in the USA

David Devraj Kumar, Florida Atlantic University, Davie, FL 33314
Lisa J. Libidinsky, Pembroke Pines Charter School, Pembroke Pines, FL 33029
david@acc.fau.edu

Of 51 K-12 STS instructional websites analyzed, 12% addressed 25% or more of the STS competencies in the *National Science Education Standards*. 20% aimed at the K-12 level, 10% each at the high school and middle grade levels, while the elementary grades received very fragmented attention.

Membership Dues Due 1 April

Why not renew your membership while you're here at the Conference?

Computers, Technology, and Peer Review

Presider: Sara Anderson, Northern Virginia Community College

The College Student and the Computer

Peter Stine, Bloomsburg University, Bloomsburg, PA 17815
stine@planetx.bloomu.edu

Do college students use computers primarily for academic work or as a leisure device? Does the computer help or hinder students in their academic pursuits? What participants think college students use computers for will be compared with quantitative data based on surveys of students.

Technology: Messiah or Frankenstein?

Robert Wauzzinski, Ball State U., Muncie, IN 47306
Wabber15@aol.com

This paper is based on the presenter's book, *Discerning Prometheus*, a work in the philosophy of technology presented from an interdisciplinary perspective.

The Ups and Downs of Peer Review: Making Funding Choices for Science

Franz A. Foltz, Rochester Institute of Technology, Rochester, NY 14623-5604
fafgsh@osfmail.rit.edu

Most of the literature surrounding Peer Review comes from individuals who have experienced specific problems with the system. The one detail that stands out is that though policy makers and researchers seem to view Peer Review as a specific process, no single form exists. In fact, almost every agency and foundation has its own unique process. This presentation will explore the concept of peer review and highlight its strengths and weaknesses.

RoundtableMcHenry**Diversity and Equity**

Robin Freedman, Buffalo State Coll, Buffalo NY 14222
freedmrl@buffalostate.edu
Arturo Sierra, U of New Mexico, Albuquerque, NM 87131-2031
asierra@unm.edu

Following a series of essential questions, participants will engage in structured discussion around the topics of diversity and equity.

Teacher Preparation

Presider: E. Joseph Piel, State University of New York, Stony Brook, NY

STS Teacher Preparation: A Collaborative Multi-University Initiative

Barbara S. Spector, University of South Florida
Ruth Burkett, University of South Florida
Marianne Barnes, University of North Florida
Judith Johnson, University of Central Florida
spector@typhoon.coedu.usf.edu

Three universities in Florida collaborated to develop a web-enhanced STS course to be taught at each institution. The course, designed to meet the state's secondary science certification requirements, built on previous experiences at each institution where other models of STS courses for prospective and experienced teachers had been tested. This presentation will describe the course, how it was developed, what decisions were made, and what lessons were learned.

Academic Controversy in Elementary Science Methods Classes

Rebecca Monhardt, Utah State University, Logan, UT 84322
Leigh Monhardt, Westminster College, New Wilmington, PA 16172
beckym@coe.usu.edu, monharlc@westminster.edu

Academic controversy was used as a teaching strategy with 80 elementary science methods students at two different universities. Students were found to demonstrate a high level of task commitment as they participated in an academic controversy activity, had a positive attitude toward the science content necessary to engage in the controversy, perceived a high level of content attainment, and exhibited positive attitudes toward other members of their controversy group.

Teaching Engineering to K-12 Students Using Role Playing

Mike Robinson and Sami Fadali, University of Nevada, Reno, NV 89557
robinson@equinox.unr.edu, fadali@cc.unr.edu

There is insufficient coverage of engineering and technology in our school systems, and many K-12 students do not consider engineering and technology as career options. To rectify this situation, we need to introduce our students to engineering practice, concepts, and ideas as early and extensively as possible. We propose the use of role-playing to teach K-12 students ideas from engineering fields and explain why we believe it is particularly suited to doing this. Examples of role playing games we have used will be provided.

The future of NASTS depends on you.

Why not join a NASTS committee?

12:15-1:45 p.m., Lunch (on your own)

VISIONS PANEL

“Visions for Science, Technology, and Society”

Friday, 3 March 2000

1:45 - 3:15 p.m.

Chesapeake I

Presider: Dr. Wally N'Dow, Secretary General of UN Human Settlements Summit, Istanbul

Panelists: Robert E. Yager, University of Iowa, Iowa City, IA 52242, President of NASTS
John Byrne, University of Delaware, Newark, DE
Deva Marie Beck, Wellness Foundation, Washington, DC, Chair, Ethical and Sociocultural Assembly
David Burke, Elgin Community College, Elgin, IL

3:15-3:30 p.m., Exhibits/Coffee

3:30-4:30 p.m., Concurrent Sessions III

Panel

Chesapeake I

Visions and Art for a Healthy and Sustainable Millennium

Blake Isaac, in collaboration with Middle School Panelists, Rancho Santa Fe School, Rancho Santa Fe, CA, and Beverley Britton, Lifeline Network for Peace/ Children's Peace Quilt Project, in collaboration with participants and students from the Baltimore area

World Health Organization Director-General Gro Harlem Brundland has recently expressed her vision that “health be at the core of Sustainable Development.” This interactive session expresses Dr. Brundland's multidisciplinary vision in an art form — the visioning creation of quilt squares — developed in Bosnia as a therapeutic and expressive tool for healing from the ravages of war and used in many other settings all over the world. Participants use their creativity to express their visions both individually — in their own quilt square — and collectively, by seeing the composite that their square helps to create.

Papers

Harbor IB

Renewable Energy for Sustainable Development: Meeting Needs, Not Creating Demand

Presider: Young-Doo Wang

With the theme of Earth Day 2000 on renewable energy, the panel will focus on an assessment of this energy source not as technology, but as a social project.

Fifteenth National STS Meeting, 2-4 March 2000

Women-Led Renewable Energy Projects for Sustainable Development

Johanna Gregory, Center for Energy and Environmental Policy, University of Delaware, Newark, DE

Renewable Energy for Rural Development: A Comparative Perspective

Ken Wicker, Subid Wagley, and Aiming Zhou, Center for Energy and Environmental Policy, University of Delaware, Newark, DE

Beyond Techno-Fix: Renewable Energy and the Critique of Development

John Byrne, Jon Rosales, and Young-Doo Wang, Center for Energy and Environmental Policy, University of Delaware, Newark, DE

Workshop

Harbor IIA

Coupling Science Research and Teacher Education: The Use of Artificial Substrates to Monitor Water Quality

Georgia Dendrinis, University of Maryland Baltimore County, Baltimore, MD 21224
gdendr1@umbc.edu

This presentation will describe the science research internship of a UMBC teacher candidate, who will share his assessment of water quality by examining the epiphytes that grow on the surfaces of both seagrasses and artificial substrates. Participants will be involved in an activity which involves epiphyte removal, filtration and qualitative assessment of the water. Strategies for doing these quantitative assessments in secondary science classrooms will be discussed.

Friday, 3 March 2000

Panel

Technology and the Humanities I

presider: Richard Stivers, Illinois State University,
Normal IL 61790-4660

**Impact of Technology on Memory, Mind, and the
Perception of Reality**

John Paul Russo, U of Miami (FL): "The Great
Forgetting: Humanities,

Technology, and Social Change"

Walter Mead, Ill State: "Technology's Impact upon
Mind and Reality"

The papers and discussion will center on the impact of technology upon culture, specifically in regard to memory, mind, and the perception of reality.

Papers

Working with Students

Presider: Irma S. Jarcho, Trevor Day School, New York,
NY

Shoes!

Bernice Hauser, Horace Mann School, Riverdale, NY
Bernice_Hauser@horacemann.org

A miniunit, "Come Walk With Me," incorporates tenets of economics, manufacturing, geographical concepts, occupational art and design, laws and patents, diversity, religious and cultural customs, past and present rituals, seasonal shoe gear, health matters and advice, traditions, materials, leather tanning, molds and lasts, new shoe terminology, whims of fashion, status in society, endangered animals, hand-made versus mass-produced, truth in advertising, surveys and interviews, trips to shoe stores and to the shoe-

Saturday, 4 March 2000

8 a.m.-noon, Registration

7-8:30 a.m., Continental Breakfast

Harbor IIB

maker, readings of stories and poems, occupational and recreational footgear, diseases of the foot, use of x-rays, mythology, ethnic customs, and advances in technology. Although designed for young children, it can be adapted for older students as well.

**Views of High School Students About the Science
and Uncertainties of Climate Change**

Stephen Adams, CSULB-Educational Psychology, Long
Beach, CA 90840

sadams2@csulb.edu

This paper will present results from interviews with 17-year-olds about their views of the causes and consequences of climate change, the nature of the scientific uncertainties involved, and issues of decision making in view of the uncertainties.

Workshop

Camden View

Breaking from Problem-Solving

Bob Hudspith, McMaster University, Hamilton, ON L8S
4L7

hudspith@mcmaster.ca

Out of our desire to "empower" students and stress that they can "do something," we try to equip them with a set of problem-solving skills. But, more often than not, we focus on the symptoms and not the underlying issues, because we don't first struggle to understand what the real problems are. This workshop will practise some of the skills involved in problem-defining in the context of issues that are typical to STS studies.

**4:30-5:15 p.m. NASTS Membership Meeting
- Harbor IA**

Holiday Inn Inner Harbor Lobby

Chesapeake I

PLENARY III

Saturday, 4 March 2000

8:30 - 9:30 a.m.

Chesapeake I

Introduction: Irma S. Jarcho, Trevor Day School, New York, NY, Chair, Education Assembly

Speaker: George Bugliarello, Chancellor, Polytechnic University, former President of NASTS

Topic: "The Indissoluble Biology-Society-Machine Combination and the Future of Our Species"

Workshop

Chesapeake I

Supporting Sustainable Millennium Visions I

Robert Hoffman, Robert and Associates, Ottawa, Canada

A global systems simulator, based on an upgraded model of the original Club of Rome, has been developed for educational and community planning purposes to allow students from middle school through university to examine the linkages through time among population growth, production, consumption, family formation, urban transport, and their impact on the environment and sustainability. The overall model will be demonstrated along with an urban and bioregional simulator for local urban and rural planning.

Workshop

Harbor IA

Image Processing and Performance-Based Assessments? You Betcha!

Robin Freedman, Buffalo State College, Buffalo, NY 14222

Amy Galeza, Lancaster High School, Lancaster, NY 14086

Eric Duma, East Aurora High School, East Aurora, NY 14052

Miranda Marcinelli, Kenmore East High School, Kenmore, NY 14215

freedmrl@buffalostate.edu, amy_galeza@yahoo.com, ericduma@aol.com, ddolce@pcom.net

During this interactive session, science teachers who work with Image Processing will share their performance-based lessons/assessments. This interactive session includes a quick introduction to Image Processing, presentation of standards-friendly lessons/assessments, and time for participants to try out our classroom activities. (Continued in Session V)

Panel

Harbor IB

Live Role Playing Games as Social Context in Physical Science Units and Technical Context in Social Studies Units

Presider: John Wilkes, Worcester Polytechnic Institute, Worcester, MA
jmwilkes@wpi.edu

These three papers all report the reception given STS-oriented live role-playing games. One involves a middle school using a nuclear power siting dispute game as part of a four-week unit, and a second involves a space policy issue (asteroid deflection) game which a high school physics unit was designed to accompany. The last reports the results of six rounds of the asteroid game played in a college sociology class.

Introducing A Space Policy Live Role Playing Game Into Secondary Schools that are Ambivalent about STS

Richard Miyasaki and Adam Davis, Worcester Polytechnic Institute, Worcester, MA
bobbfett@wpi.edu, adavis@wpi.edu

For five years a Live Role Playing Game developed for a social science class at WPI has been under revision for incorporation into a secondary school physics curriculum unit. The sixth team to participate in this quest tells its story of the resistance to innovation in science education despite what seemed to be a massive state reform initiative mandating change and encouraging the introduction of Science, Technology and Human Affairs materials into the curriculum.

The Magic Moment When Massive Curriculum Change is Possible

Patrick Kaplo, Worcester Polytechnic Institute, Worcester, MA

Brian Cote, Lancaster Middle School
pat.kaplo@yahoo.com

Nuclear Navy veteran Patrick Kaplo rescued an eighth grade Nuclear Power Debate curriculum unit from the library shelf at Worcester Polytechnic Institute as a means of manipulating knowledge about nuclear power in a study of the relationship between nuclear knowledge and opinion. Rebuffed by one school system and ignored by another, Kaplo happened into the perfect time and place to get a warm reception by a third system. All three systems operate under that same state-mandated curriculum guidelines, in theory. How they are interpreted and the timing in terms of faculty turnover make all the difference in terms of the reception given an STS curriculum unit.

When Education Becomes Policy Research: Six Rounds of the Aegis Game at WPI

John M. Wilkes, Worcester Polytechnic Institute, Worcester, MA
jmwilkes@wpi.edu

Students taking introductory sociology at WPI know that they will get to try to save the world from asteroids by trying to get delegations representing the US, China, Russia, Europe, and Japan to work together on an asteroid deflection device. What they do not know is that every year the game becomes a little more elaborate, and a little more like the actual social context in which such a negotiation would take place. For the last few years the social structure of the UN has been made more and more accurate, one step at a time. This year a seemingly modest revision changed the outcome dramatically. Would this feature of the UN really undercut the changes of such a negotiation? How much havoc on international cooperation has it already wreaked? Can one extrapolate from a game played by students to a real international negotiation carried out by professional diplomats?

Grad Student Paper Contest

Presentations of 15-minute papers (followed by a five-minute Q & A) in the First NASTS Graduate Student Contest will be made on Saturday, 4 March, in Harbor IIB from 9:45 a.m. through noon and in Harbor IB from 1:30 through 3:30 p.m.

WorkshopMcHenryWorkshopHarbor IB**STS: Quintessential Interdisciplinarity: a Machiavellian Strategy for its Institutionalization**

Rustum Roy, University of Arizona and Arizona State University
rroy@psu.edu

STS, without a near competitor, covers the widest range of disciplines among all interdisciplinary aggregations within mainstream academia. Its modest success has been based on a Machiavellian strategy: 1) collegial faculty in charge of all decisions; 2) senior science and engineering faculty involved; 3) STS seen as core of effective general education. Discussion will be focused on this strategy and future applications.

WorkshopCamden View**A Woman's Place is in the Patent Office**

Fred M. B. Amram, University of Minnesota, Minneapolis, MN 55455
amram001@maroon.tc.umn.edu

With slides, stories, and activities, participants will learn the personal stories of women inventors. Although women are still a minority of American patentees, this workshop offers an opportunity to motivate women (and to educate the men with whom they will work) while teaching creativity, inventing, science, and engineering as well as the arts, humanities, and social sciences.

10:45-11:00 a.m., Exhibits/Coffee

11:00 a.m.-12:00 n., Concurrent Sessions V

WorkshopChesapeake I**Supporting Sustainable Millennium Visions II**

Robert Hoffman, Robert and Associates, Ottawa, Canada

(Continued from Session IV)

WorkshopHarbor IA**Image Processing and Performance-Based Assessments? You Betcha!**

Robin Freedman, Buffalo State College, Buffalo, NY 14222

Amy Galeza, Lancaster High School, Lancaster, NY 14086

Eric Duma, East Aurora High School, East Aurora, NY 14052

Miranda Marcinelli, Kenmore East High School, Kenmore, NY 14215

freedmrl@buffalostate.edu, amy_galeza@yahoo.com, ericduma@aol.com, ddolce@pcom.net

(Continued from Session IV)

Genetic Engineering: Sense or Antisense

J. Lynne Brown, Penn State University, University Park, PA 16802
f9a@psu.edu

In this presentation you will learn about an STS school enrichment unit that explores the uses of genetic engineering to resolve the issue, "What should be the role of genetic engineering in plant food production?" Come and experience constructing a bottle biology apparatus, demonstrating steps in making recombinant DNA, listing the elements of controversy, and debating the consequences of using genetic engineering to produce your food.

PanelsHarbor IIA**Collaborative Action Research**

Presider: Donna R. Sterling, George Mason University, Fairfax, VA 22030
dsterlin@gmu.edu

Collaborative Action Research: Assessing Conceptual Understanding in Elementary School Science

Melissa King, Join Hands, Washington, DC 20006
Wendy Goldfein, Newington Forest Elementary School, Springfield, VA 22153
Donna R. Sterling, George Mason University, Fairfax, VA 22030
dsterlin@gmu.edu

The depth of conceptual understanding of elementary students in grades 4 and 5 for selected Virginia Standards of Learning was investigated with a variety of diagnostic, formative, and summative assessments. This session will share samples of assessment tools, scoring guidelines and rubrics, and student responses and will conclude with an open discussion of whether teaching to science standards is causing us to lose an STS focus.

Collaborative Action Research: Assessing Student Understanding of Middle School Science Standards

Bill Van Evera, H. B. Woodlawn Program, Arlington, VA 22207
Sean Duffy, Cooper Middle School, McLean, VA
Beth Checkovich, Harper Park Middle School, Lessburg, VA 20176
Donna R. Sterling, George Mason University, Fairfax, VA 22030
dsterlin@gmu.edu

Three middle level science teachers will describe their collaborative action research on students' understanding of selected Virginia Standards of Learning. In addition to multiple diagnostic, formative, and summative tools, they will show samples of scoring guidelines and rubrics, student responses, and reflective analyses and will conclude with an open discussion of whether teaching to science standards is causing us to lose an STS focus.

Collaborative Action Research: Using Technology to Improve the Learning of Virginia Standards in Secondary School Science

Sue Sarber, Williamsburg Middle School, Arlington, VA 22207

Dan Carroll, Yorktown High School, Arlington, VA 22207

Richard H. Priest, Robert E. Lee High School, Springfield, VA 22150

Sylvia Perez Fasano, Robinson Secondary School, Fairfax, VA 22032

Donna R. Sterling, George Mason University, Fairfax, VA 22030

dsterlin@gmu.edu

This panel presents the results of using LOGAL interactive simulation software to learn atomic structure, thermodynamics, and ecology (three Virginia Standards of Learning) in secondary school. In addition to formative assessment, pre- and post-tests were administered to determine how well students understand science and demonstrate technology. Samples of assessment tools, scoring guidelines and rubrics, student responses, and analyses of student conceptual understanding will be shared, and the session will conclude with an open discussion of whether teaching to science standards is causing us to lose an STS focus.

Workshop

McHenry

STS as a Vital Ecumenism

W. H. Vanderburg (with Namir Khan), University of Toronto

vanderb@mie.utoronto.ca

As the new editor-in-chief of BSTS, I will review the state of the art in order to outline an appropriate editorial response for the future. Our civilization and our schools and universities are threatened by an intellectual fundamentalism, and STS is an essential heresy that can help us regulate technology to enhance the quality of life, promote peace and justice, and ensure a humane common future. Intended to provoke audience discussion.

Workshop

Camden View

Content-Context-Conation: Using the C³ Approach in STS by Green Design

Jane Konrad, Pittsburgh Regional Center for Science Teachers, Pittsburgh, PA

Katherine Atman, University of Pittsburgh, Pittsburgh, PA

konrad+@pitt.edu

The Pittsburgh Regional Center for Science Teachers (PRCST) has responded to the clarion call for addressing development of the whole student by adding a new component — the C³ Approach™: Content-Context-Conation — to its STS by Green Design professional development program, an Iowa Chautauqua Professional Development Program being implemented in Pennsylvania by PRCST. Without motivation and the ability to manage personal time and responsibility, students may never be able to make the necessary conceptual connections, regardless of how hard teachers work to place this content into meaningful context.

12:00 n.-1:30 p.m., Lunch (on your own)

1:30-2:30 p.m., Concurrent Sessions VI

Workshop

Harbor IA

Implementing Modified Pedagogy to Teach Science

Thomas G. O'Brien, Nassau Community College, Garden City, NY 11530

cacomom@aol.com

Active learning coupled with other instructional strategies such as collaborative learning benefits the teaching of information literacy in the sciences. This technique does not abandon course content but does require reorganization of instructional strategies. This workshop will demonstrate how a lesson plan can be organized and will also provide insight into implementation of specific active learning exercises.

Papers

Chesapeake I

Sustainable Communities I

Moderator: Stephen Cutcliffe, Lehigh University, Bethlehem, PA 18015

shc0@lehigh.edu

What does it mean to say that a city or community is sustainable? Presenters will offer a series of perspectives based on communities as diverse as Cincinnati, OH; Bethlehem, PA; and Huntersville and Selma, NC. Presenters will draw upon what is sometimes referred to as the "triple bottom line" approach that incorporates ecological, economic, and social factors into appropriate management and development decision making.

Land Use, Growth Management, and the Politics of Sprawl

Robert L. Freeman, Pennsylvania State Representative, Easton, PA

This presentation will discuss the problems of sprawl development, including its social, economic, political, and environmental effects on society. It will further examine such specific planning and development factors as comprehensive plans, zoning, and the influence of infrastructure. And it will look at the revival of city centers, alternatives to sprawl such as that proposed by the New Urbanism, and offer comparisons with development patterns in Europe and Canada.

Building a Sustainability Readiness Index for Communities

O. Homer Erikson, Miami University, Oxford, OH
eriksooh@muohio.edu

This presentation will build around the triple bottom line approach common in sustainability discussions, looking at ecological, economic, and social imperatives for sustainable development. This project involves consideration of what it would mean to conceive of the Cincinnati metropolitan area with the framework of a sustainable systems framework. It would focus on development of a "Sustainability Readiness Index" that would provide a framework for measuring the success of Cincinnati in achieving sustainability.

Workshop

Harbor IIA

2:30-3:30 p.m., Concurrent Sessions VII

The Pre-Modern Muslim Irrigation System and Palm Plantation in Elche, Spain

Luis Pablo Martinez Sanmartin, Culture Ministry, Alicante (Valencia), Spain
Luis.P.Martinez@uv.es

The palm plantations in and around Elche (near Alicante in the Valencia region of Spain) are a remarkably well preserved example of a Muslim irrigation system that still functions substantially as it did in the eleventh century. There are also remnants of Muslim architecture, including the foundations of a mill for the irrigation system. There are ongoing efforts to preserve the site, and these will be the focus of the presentation by one of the officials working on the preservation effort.

Papers

Harbor IIB

Views on the Nature of Science and Technology among the Japanese People

Nagasu Namio, Institute of Education, University Tsukuba, Tsukuba-shi, Japan 305-8572
Yoshisuke Kumano, Faculty of Education, Shizuoka University, Shizuoka-shi, Japan 422-8017
nnagasu@human.tsukuba.ac.jp,
edykuma@ipc.shizuoka.ac.jp

These papers will analyze and discuss the views on science and technology of 500 teachers and 500 other adults in Japan, as gathered in questionnaires modifying the Iowa Assessment Package and materials from NAEP, AAAS, and VOSTS for the Japanese context.

Panel

McHenry

Technology and the Humanities II

presider: Richard Stivers, Illinois State University, Normal IL 61790-4660

Technology and Modern Literature

Kim Goudreau, Highland Community Coll: "Poetry and Technology"
James Van der Laan, Ill State: "Goethe's Faust as a Commentary on Technology"

The papers and discussion will center on how technology is represented in modern literature.

Workshop

Camden View

Cool Stories About African-American Inventors

Fred M. B. Amram, University of Minnesota, Minneapolis, MN 55455
amram001@maroon.tc.umn.edu

Five illustrated stories about African Americans and several activities in this interactive presentation will teach about the inventing process. Highlights include the super soaker, refrigerated trucking, hair curling devices, gas masks, and traffic signals. Could a slave in the United States of 1860 own a patent? Learn about "the real McCoy" and the origin of the ice cream truck.

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Workshop

Harbor IA

Community Connections: Service Learning Practica in UMBC Elementary and Secondary Teacher Preparation Programs

Susan M. Blunck, University of Maryland Baltimore County, Baltimore, MD. 21250
Kendra Wallace (UMBC)
Flavio Mendez (Maryland Science Center)
Tracy Lane (The Choice Middle School Project)
blunck@umbc.edu

The University of Maryland Baltimore County teacher candidates are involved in sharing their teaching talents as community volunteers. Through these unique practica partnerships teacher candidates work with The Choice Middle School Project tutoring students in after school settings and at The Maryland Science Center with the SpaceLink project. This session will provide a forum to discuss the insights realized from linking teacher education programs with needs of the community. Find out how UMBC students are earning service learning credit for their participation in the experiences.

Papers

Chesapeake I

Sustainable Communities II

Moderator: Stephen Cutcliffe, Lehigh University, Bethlehem, PA 18015
shc0@lehigh.edu

What does it mean to say that a city or community is sustainable? Presenters will offer a series of perspectives based on communities as diverse as Cincinnati, OH; Bethlehem, PA; and Huntersville and Selma, NC. Presenters will draw upon what is sometimes referred to as the "triple bottom line" approach that incorporates ecological, economic, and social factors into appropriate management and development decision making.

Will Selma and Huntersville Survive? A Comparative Study of Small Municipality Development Strategies from a Sustainability Perspective

Thomas Martin Wiggins and Joseph R. Herkert, North Carolina State University
herkert@social.chass.ncsu.edu

In the mid-1990s, the North Carolina towns of Huntersville and Selma were both located near rapidly-growing areas of urban sprawl. Each was faced with a common development dilemma — how to remain economically viable in order to control growth and avoid merger with neighboring municipalities (which would mean loss of town identity). This paper describes the social, economic, and political motivations, as well as environmental and geographical factors, which led to the radically different plans implemented by these towns, and evaluates the short-term success and long-term sustainability of each strategy.

Membership Dues Due 1 April

Why not renew your membership while you're here at the Conference?

Fifteenth National STS Meeting, 2-4 March 2000

Paving Paradise? (Sub)urban Sprawl and the Public Interest

Albert H. Wurth, Lehigh University, Bethlehem, PA
ahw1@lehigh.edu

This presentation will discuss some of the key political issues that communities face when dealing with issues of sprawl in the face of sustainability ideals. In particular, it will draw upon specific examples developed around issues pertaining to Bethlehem, PA, and the broader surrounding Lehigh Valley identified through student research projects in a new Lehigh University course.

Tutorial

Harbor IIA

STS in Education — Growth and Change Over Time

Robert E. Yager, University of Iowa, Iowa City, IA
robert-yager@uiowa.edu

Robert Yager, a long-time leader in the STS movement will discuss the historical development and contemporary influences of STS from an educator's perspective. This one-hour interactive session will be of interest to those new to STS in general and to those with an interest in reform and change in education.

Roundtable

Harbor IIB

Who Have Influenced Us the Most?

John L. Roeder, The Calhoun School, New York, NY 10024

Irma S. Jarcho, The Trevor Day School, New York, NY 10024

JLRoeder@aol.com, IrmJar@aol.com

Given the last 75 on the Arts & Entertainment (A&E) cable network's tabulation of the 100 Most Influential People of the Past 1000 Years last October, who do you feel should be in the top 25? Who should NOT be on A&E's list? Come to discuss this list, learn how we have used it in our classrooms and how you can use it too. It has some interesting things to say about science, technology, and society.

Post-Deadline Papers

McHenry

The Intellectual and Social Sins of Science and Why Integrative Medicine Will Overthrow Reductionism

Rustum Roy, University of Arizona and Arizona State University
rroy@psu.edu

More and more informed citizens have learned 1) Science never made any country rich; rich countries do science; 2) Science is applied technology; 3) Reductionist approaches, like science, obviously cannot lead to wholistic truths; 4) The vast majority of the world's leaders in politics, business, eleemosynary organizations are very successful even though scientifically illiterate. Distrust of science is now personally justified by hundreds of millions of users of integrative medicine because they believe their personal direct evidence, not science's changing "theories."

The Politics of Secrecy and Knowledge Trading: The Case of Rollover Protection for Farm Tractors

Rafael Balderrama, University of Texas - Pan American
baldemar@panam.edu

A detailed case study in the development of rollover protection as a new safety feature for U.S. farm tractors in the period 1959-1985 shows how some product innovations depend on industrywide knowledge trading and the importance of some formal structure that sustains interaction, discourages opportunistic behavior, and provides continuity and legitimacy to innovators' agreements.

Plowshares, Chariots, Gasbuggies, and Other Atomic Earth Blasters: History and Social Implications of the U.S. Program for "Peaceful" applications of Nuclear Explosives

Constantine Hadjilambrinos, Florida International University, Miami, FL 33199

For almost 20 years between the mid-50s and early 70s the U.S. Atomic Energy Commission (AEC) pursued the development of nonweapons applications of nuclear explosives. From canal digging to harbor and road building and from the development of water resources to the extraction of natural gas and geothermal energy, these applications on one hand reflected a vision of earth-moving technology while on the other embodied an effort to promote the social acceptability of nuclear weapons. Thus, this program brings together the "megatechnic" ideals of humanity's relationship with nature and of technology's relationship with society.

NOTES

SOLUTIONS PANEL

Saturday, 4 March 2000

3:45 - 5:15 p.m.

Chesapeake I

Presider: Gary Varrella, George Mason University, NASTS President Elect

Panelists: George Bugliarello, Chancellor, Polytechnic University, former President of NASTS
Susan Cozzens, Georgia Institute of Technology, Atlanta, GA
Sherman Hicks, Senior Pastor, Trinity Lutheran Church, Washington, DC
Curt Peterson, Elgin Community College, Elgin, IL

6 p.m., Cocktails - cash bar available

McHenry

7 p.m., Banquet

Presentation of Graduate Student Contest Awards: Franz Foltz

Introduction: E. Joseph Piel, Conference Chairman

Speaker: Rustum Roy, Founder and First President of NASTS

Topic: "Science, Technology, and Society (STS) — its Roots and its Fruits"

NOTE: Because the harbor ship is not operational, the Harbor Tour originally scheduled for Sunday, 5 March 2000, will not be held.



NASTS

National Association for Science, Technology and Society

An Association With a Mission

- To re-integrate western culture to include Technology and Society
- To create a *technologically* literate citizenry
- To help human societal values direct an evolving technology
- To provide a radically new approach to education concerned with science and technology at all levels

Congratulations and Best Wishes to the

NASTS Board for 2000-2001

Gary Varrella, President, George Mason University

Robert E. Yager, Retiring President, Science Education Center, The University of Iowa

Sara Anderson, Secretary, Northern Virginia Community College

Michael Robinson, Executive Director, University of Nevada at Reno

Irma Jarcho, Education Assembly Chair, The Trevor Day School and Teachers Clearinghouse

Deva Beck, Ethics and Sociocultural Issues Assembly Chair, The Wellness Foundation

Franz Foltz, Interdisciplinary Research/Scholarship Assembly Chair, Rochester Institute of Technology

Sylvia Washington, Science, Technology, and Public Policy Assembly Chair, Elgin Community College

Barbara Spector, At-Large Director, University of South Florida

Rebecca Monhardt, At-Large Director, Dept. of Elementary Education, Utah State University

Susan Blunck, At-Large Director, University of Maryland at Baltimore