



International History, Philosophy and Science Teaching Group

NEWSLETTER

December 2005

www.ihpst.org

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1. Science & Education Volume 14 No. 7-8

Volume 14 Numbers 7-8 of the journal 'Science & Education' has recently been published. It is the last issue for 2005. It contains select, reviewed and revised papers from the Second Hellenic HPS and Science Teaching conference held in Athens. The guest editors are Constantine D. Skordoulis ([kkskordul@primedu.uoa.gr](mailto:kskordul@primedu.uoa.gr)) & Krystallia Halkia (kxalkia@primedu.uoa.gr).

SECOND HELLENIC HISTORY, PHILOSOPHY AND SCIENCE TEACHING CONFERENCE
SELECT PROCEEDINGS

Constantine D. Skordoulis & Krystallia Halkia (eds.)

CONSTANTINE D. SKORDOULIS & KRYSTALLIA HALKIA / Introduction: Notes on the
Development of History, Philosophy and Science Teaching in Greece

VASSILIOS KARAKOSTAS & PANDORA HADZIDAKI / Realism vs. Constructivism in Contemporary Physics: Implications of the Debate for Understanding and Teaching Quantum Theory

KRYSTALLIA HALKIA & IPHIGENIA BOTOUROPOULOU / Cultural and Educational Dimensions of Popular Scientific Books: An Examination of *The Sky*, a 19th Century Book Popularizing Astronomy

ATHANASIOS RAFTOPOULOS, NIKI KALYFOMMATOU & CONSTANTINOS P. CONSTANTINOU / The Properties and the Nature of Light: The Study of Newton's Work and the Teaching of Optics

PAVLOS MIHAS & PANAGIOTIS ANDREADIS / A Historical Approach to the Teaching of the Linear Propagation of Light, Shadows and Pinhole Cameras

CHRISTOS DEDES / The Mechanism of Vision: Conceptual Similarities between Historical Models and Pupils' Representations

HELEN A. MANIATI / The Utilisation of Elements History of Science by 19th Century Greek Educators: Highlighting the Cognitive Continuity with Antiquity

VASSO KINDI / Should Science Teaching Involve the History of Science? An Assessment of Thomas Kuhn's Views

IOANNIS RENTZOS / Interdisciplinarity and the Two Cultures: Educational Approaches in a Greek Science Magazine

DIMITRIOS PATSOPOULOS / (Re)constructions of Etymology of the Term 'Electricity' in French, German and Modern Greek Physics Textbooks of the 18th and 19th Centuries

Unfortunately due to administrative and procedural changes within Springer, the journal's publisher, mailing of the journal to subscribers has been disrupted, but these problems are now rectified, and back issues have been mailed where appropriate.

Journal subscriptions - USD85 (1 year), USD160 (2 years), USD235 (3 years) with half rate for students and third-world scholars - can be effected at the IHPST web site www.ihpst.org.

2. IHPST Group Formalisation and Membership Fee: From IHPST President, William F. McComas

Dear IHPST Colleague,

You have no doubt become aware of the conversations that have taken place to formalize the structure of our organization. We have accomplished much since the group was founded and should be proud collectively of our conferences, journal and most importantly the intellectual conversation that has steadily grown stronger as a result of our various interactions.

Currently the group has an informal structure and no membership fee and is run by consensus decision making offered by an interim advisory council of the current and former IHPST presidents,

the executive secretary, and several other interested members representing varying constituencies (See Appendix A). We agreed at the Leeds Conference (Summer 2005) that the Group has achieved a great deal with the current structure and minimal resources, but that more could be achieved, and the Group's long term viability insured, with both structure (including officers and a constitution) and income.

During the conference Business Meeting there was a strong call to "move to the next level" in our evolution as an organization by producing a constitution, develop a more transparent leadership structure, and establish ties between our organization and others in the service of science education.

As a first step the advisory council approved the notion of establishing who are the IHPST members (www.ihpst.org) through the introduction of membership fees. During the past few weeks the council has discussed this issue via an email exchange resulting both in this document and the establishment of the fee levels.

Until we meet at the 2007 Calgary Conference we will begin the process of formally constituting the Group by introducing a membership fee of USD60 per calendar year (USD100 for two-yearly membership) with half rate for students, retired faculty and for scholars from developing economies.

Membership will be effective beginning calendar year 2006.

When we meet in 2007, we will consider making some adjustments as needed both in the level of the dues and categories of membership.

It was recognised that the Group needs a secured income stream in order to:

- Subsidise conference participation and journal subscription for students, and for scholars and teachers from developing economies
- Pay minimal secretarial assistance, web-site maintenance costs, administrative and publicity costs associated with the Group.
- Provide 'seed and/or set up' monies for future conference organisers
- Meet other Group costs that periodically arise including, but not limited to, settling any past IHPST obligations to any person or group who has incurred expenses on behalf of IHPST
- Establish a small reserve fund to meet unexpected contingencies.

Through the payment of dues, individuals will become IHPST members. With the establishment of this membership base, the group can then conduct elections resulting in more formal office holders. Among the first positions to be filled will be a Treasurer who will oversee and administer group funds. Dr Jim MacKenzie (School of Education, University of Sydney, mackenzj@edfac.usyd.edu.au) has agreed to be our treasurer on an interim basis until the group moves to a more formal structure.

All those who have been associated with the IHPST group – journal subscribers, journal editorial committee members, conference participants – and all those who support its research and pedagogical aims, are invited and urged to become official members of the group through the payment of dues.

Financial membership has the following benefits:

- The satisfaction of knowing that you are supporting a group that promotes the utilisation of historical and philosophical research in addressing the theoretical, curricular, and pedagogical problems of science and mathematics teaching.
- Access to the journal *Science & Education* at a personal subscription rate that is considerably less than the commercial rate. The considerably reduced personal subscription rate is only available to IHPST members.
- A discounted registration rate (to be determined) for the IHPST biennial conferences.
- Being able to vote for IHPST office holders and policy initiatives.

Until such time as the Group is formally constituted, with a Constitution and Treasurer, membership fees will be ear-marked for three purposes:

- Subsidising the 2007 conference participation of students and scholars from developing economies
- Subsidising journal subscriptions for students and scholars from developing economies.
- Provide an on-going fund to assist subsequent conferences.

Membership can be enacted at the Group's web site: www.ihpst.org

To put this Formalisation and Membership initiative into context, the following Newsletter item on the history and workings of the IHPST Group might be useful.

William F. McComas
 President IHPST
 Email: mccomas@usc.edu

3. History and Functioning of IHPST Group

The IHPST Group was formed in 1987 when, through informal networks, diverse scholars from many countries began contributing to special issues on the subject of 'History, Philosophy and Science Teaching' that were published by a number of academic journals – *Educational Philosophy and Theory* **20**(2), 1988; *Synthese* **80**(1), 1989; *Interchange* **20**(2), 1989; *Studies in Philosophy and Education* **10**(1), 1990; *Science Education* **75**(1), 1991. These researches lead to the Group's inaugural conference at Florida State University, Tallahassee, in 1989. The very successful conference was partly funded by the US National Science Foundation and co-chaired by David Gruender from the FSU Philosophy Department and Ken Tobin from the FSU Science Education Unit.

Subsequently the group has staged biennial international conferences and is associated with the research journal *Science & Education* initially published by Kluwer Academic Publishers and now by Springer. Scholarly anthologies based on journal contributions have periodically been published.

GROUP AIMS

The group is concerned to improve school and university science education by utilising historical, philosophical and sociological scholarship. It promotes the engagement of these fields with theoretical, curricular and pedagogical issues in science education. It has a particular interest in bringing these fields of knowledge into teacher-education programmes.

The group through its activities and journal promotes:

- (a) The utilization of historical, philosophical and sociological scholarship to clarify and deal with the many curricular, pedagogical and theoretical issues facing contemporary science education. Among the theoretical issues are those raised by Religion, Multiculturalism, Feminism, the Nature of Science, Scientific Inquiry, etc.
- (b) Collaboration between the research communities of scientists, historians, philosophers, cognitive psychologists, sociologists, and science educators; and with school and college teachers.
- (c) The inclusion of appropriate history, philosophy, and sociology of science courses in science teacher-education programmes.
- (d) The dissemination of accounts of lessons, units of work, and programmes in science, at all levels, that have successfully utilized history, philosophy, and sociology.
- (e) Discussion of the philosophy and purposes of science education, and its contribution to the intellectual and ethical development of individuals and cultures; thus a more informed philosophy of education for science teachers.

EXECUTIVE STRUCTURE

The group has a president elected for two years at the conference Business Meeting, a secretary, and an executive council consisting of all past presidents and conference convenors. The current president is Professor William McComas (University of Southern California), the secretary is A/Professor Michael Matthews (University of New South Wales).

Former presidents have been Professor Ian Winchester (University of Calgary), Professor Fabio Bevilacqua (University of Pavia), Dr Douglas Allchin (University of Minnesota) and Professor Art Stinner (University of Manitoba).

CONFERENCES

The group stages biennial conferences. The first in Tallahassee, Florida in 1989, second in Kingston, Ontario in 1992, third in Minneapolis, Minnesota in 1995, fourth in Calgary in 1997, fifth in Pavia, Italy in 1999, sixth in Denver, Colorado in 2001, seventh in Winnipeg, Manitoba in 2003, and the eighth in Leeds, England in 2005. The ninth conference will be in Calgary in 2007, and the tenth at Notre Dame University in 2009.

The conferences are attended by about 200 researchers and teachers. Usually about 30 countries are represented at each conference. Full Proceedings for each conference have been printed, or made available on CD Rom,. The conferences have been enthusiastically received, with participants remarking that no other scholarly conference brings together the spread of philosophers, historians, educators, scientists and teachers that the IHPST conference does.

JOURNAL

The group is associated with the journal *Science & Education* which commenced publication in 1992. It is now published eight times per year by Springer in the Netherlands. Volume 15 will appear during 2006.

The *Editorial Committee* is a distinguished group of forty science educators, historians and philosophers of science, cognitive psychologists, scientists and philosophers of education. The committee members are drawn from fourteen countries; they include two past presidents of the US History of Science Society, five past presidents of the US Philosophy of Education Society, a former president of the US Philosophy of Science Association, and eighteen current or former editors of major international journals in science education, philosophy of education, and the history and philosophy of science. Submitted manuscripts are normally reviewed by two members of the Editorial Committee plus one member of a 'Reserve' group of reviewers.

A feature of the journal has been the publication of *Special Issues* on important and topical subjects. The Group has arranged for these to be overprinted and made available to non-subscribers as independent publications.

- 1994, 'Science and Culture', *Science & Education* **3**(1).
- 1995, 'Hermeneutics and Science Education', *Science & Education* **4**(2).
- 1996, 'Religion and Science Education', *Science & Education* **5**(2).
- 1997, 'Philosophy and Constructivism in Science Education', *Science & Education* **6**(1-2).
- 1997 'The Nature of Science and Science Education', *Science & Education* **6**(4).
- 1999, 'Values in Science and in Science Education', *Science & Education* **8**(1).
- 1999, 'Galileo and Science Education', *Science & Education* **8**(2).
- 1999, 'Children's Theories and Scientific Theories', *Science & Education* **8**(5).
- 2000, 'Thomas Kuhn and Science Education', *Science & Education* **9**(1-2).
- 2000, 'Constructivism and Science Education', *Science & Education* **9**(6).
- 2003, 'History, Philosophy and the Teaching of Quantum Theory', *Science & Education* **12**(2-3)
- 2004, 'Science Education and Positivism: A Re-evaluation', *Science & Education* **13**(1-2)
- 2004, 'Pendulum Motion: Historical, Methodological and Pedagogical Aspects', *Science & Education* **13**(1-2, 7-8)

Special issues in preparation include ones on: 'Science Teaching in Early Modern Europe', 'Feminist Theory and Science Education', 'Socio-scientific Issues and Science Education', 'Nature of Science Goals and Assessment' and 'Thought Experiments in Science and in Science Education'.

Additionally the journal *Interchange* (Ian Winchester, ed.) has published special issues associated with the Group's biennial conferences.

ANTHOLOGIES

The Group has cooperated with the publisher in the production of three anthologies of papers that have appeared in the journal.

Constructivism and Science Education: A Philosophical Examination, M.R. Matthews (ed.), 2000.

Science Education and Culture: The Contribution of History and Philosophy of Science, F.

Bevilacqua, E. Giannetto & M.R. Matthews (eds.), 2001.

The Pendulum: Scientific, Historical, Philosophical and Educational Perspectives, M.R. Matthews,

C.F. Gauld & A. Stinner (eds.), 2005

These books have made the research of the group more widely available. They can be purchased from the 'Publications' section of www.ihpst.org

NEWSLETTER

The Group publishes a periodic (6-8 times per year) electronic newsletter which is posted on the Group's web site and is announced on the IHPST list serve (1,100 emails) and a number of other science education and history and philosophy of science list serves. Each newsletter would be brought to the attention of perhaps 4-5,000 email addresses.

WEB PAGE

The group maintains a web page and email list at www.ihpst.org

FUNDS

The group's funds have come from occasional small surpluses from biennial conferences and from a small surcharge on personal journal subscriptions. These funds have consistently failed to meet group running costs.

4. IHPST-Kindred Groups Liaison People

The Leeds Conference Business Meeting recognised that the IHPST's aims would be better advanced by strengthening links with other kindred education and HPS groups. One easy way of doing this is to seek IHPST members to volunteer as 'contact' or 'liaison' people for these groups. The role of such contact people would minimally be to:

1. Provide to the IHPST newsletter information about the other group's activities, conferences and publications likely to be relevant to IHPST members. The latter would appear in the 'Recent Research' column of the newsletter.
2. Identify scholars in the other group who might be able to contribute to IHPST conferences, or who might wish to link up with the IHPST group. In part this would involve looking over the other group's conference programme and identifying sessions on IHPST themes and maybe making contact with presenters. An 'IHPST Information' file can easily be forwarded to such people.
3. To provide the other group with information about IHPST, perhaps through their newsletter, web site, or sending on to the group the IHPST newsletters.

Although important, the role of liaison person is not meant to be onerous; basically just disseminating, from time to time, information back and forth from one group to the other, and making email contacts where appropriate. The term might be 2-3 years, more or less depending on circumstances.

Some of the other groups might be:

NARST (National Association for Research in Science Teaching)

ESERA (European Science Education Research Association)

ASERA (Australasian Science Education Research Association)

PSA (Philosophy of Science Association, USA)

HSS (History of Science Society, USA)

BHSS (British History of Science Society)

AERA (American Educational Research Association)

PES (Philosophy of Education Society, USA)

AAPT (American Association of Physics Teachers)

HPSSBS (History, Philosophy and Social Studies of Biology Society)

DHS/IUHPS (Division of the History of Science of the International Union for History and Philosophy of Science <http://ppp.unipv.it/DHS>)

ESHS (European Society for History of Science <http://www.eshs.org/>)

NSTA (National Science Teachers Association, USA)

There are other disciplinary, national, and non-English scholarly groups that can be added to this list, as well as science teachers' associations. It is anticipated that the web addresses for all the above groups, and for others that are suggested, will be listed under 'Links' or 'Related Groups' on the IHPST web site (www.ihpst.org).

In all of these groups, and in others, scholars are doing research, and producing teaching material, that relates to the aims and interests of IHPST members. The purpose of asking for IHPST liaison or contact people is to maximise the extent to which scholars can interact with each other and benefit from each other's work and experience.

If you can provide details of groups to be added to the above list (name, web address) or if you could offer to be the liaison person for any of the groups, that would be very much appreciated. Suggestions and offers to the IHPST secretary, m.matthews@unsw.edu.au

5. Future IHPST Conferences

Arrangements have already been made for the 9th (2007) and 10th (2009) IHPST conferences.

9th IHPST Conference, June 25-28, 2007, University of Calgary (note change of date from that previously announced).

Conference Chair: Professor Ian Winchester

Conference Secretary: Linda Lentz

Programme Chair: HsingChi Wang (ihpst07@ucalgary.ca)

10th IHPST Conference, June 24-28, 2009, University of Notre Dame,

Conference Chair: Professor Don Howard (email: dhoward1@ND.EDU).

You might like to schedule these meetings into future writing and travel plans, and bring them to the attention of related groups that might like to schedule meetings so as to enable participation at IHPST and their own conference.

6. NARST 2006 Conference, Strand 8 (HPS) Sessions

National Association for Research in Science Teaching (NARST), Annual Conference, San Francisco, April 3-6, 2007

Strand 8 of the conference is devoted to research contributions dealing with History, Philosophy and Epistemology. The strand coordinators are Sibel Erduran (Sibel.Erduran@bristol.ac.uk) and Renee Schwatz (r.schwartz@wmich.edu). The strand sessions are as follows.

Setting an Empirically Supported and Synergistic Agenda for Research on Nature of Science

Organizer: Fouad Abd-El-Khalick, University of Illinois at Urbana–Champaign
Presider: Fouad Abd-El-Khalick, University of Illinois at Urbana–Champaign

Factors mediating the development of preservice elementary teachers' views of nature of science:
Explicit, reflective instruction embedded in a learning-as-conceptual-change Framework
Fouad Abd-El-Khalick, University of Illinois – UC; Valarie Akerson, Indiana University-Bloomington

An explicit and reflective approach to the use of history of research on sickle-cell anemia to promote understanding of nature of science
David Rudge, Western Michigan University; Eric Howe, Assumption College

Content-embedded versus generic contexts for explicitly teaching about nature of science
Rola Khishfe, Loyola University; Norman Lederman, Illinois Institute of Technology Teachers' professional development related to NOS and their students' understandings: Closing the circle in explicit, reflective instruction about NOS
Norman Lederman, Judith Lederman, Illinois Institute of Tech.

Exploring contextually-based views of NOS and scientific inquiry: What scientists say
Renee Schwartz, Western Michigan University

Issues and Trends in Science Education: An Historical Perspective

Organizer: Sandra Abell, University of Missouri-Columbia
Fouad Abd-El-Khalick, University of Illinois
Robert Yager, University of Iowa
Glen Aikenhead, University of Saskatchewan
Peter Fensham, Monash University
Jane Kahle, Miami University

Symposium: The Ohio Evolution Controversy

Organizer: David Haury, The Ohio State University
Presider: David Haury, The Ohio State University
Discussant: David Haury, The Ohio State University

Excavating The Layers And Reconstructing The Story Of Teaching Evolution.
Pelin Yalcinoglu, Duygu Sonmez, Robert Day, David Haury, The Ohio State University

Creationist Critiques Of Evolution Education: Research Or Advocacy?
David Haury, The Ohio State University
Ohio Department Of Education L10h23 "Critical Analysis Of Evolution"; Innovative

Lesson Plan or Stealthy Advocacy Tool?

Robert Day, Pelin Yalcinoglu, Duygu Sonmez, David Haury, The Ohio State University

Conflict, Concerns And Challenges; Ohio Teachers Struggle To Teach Evolution

Duygu Sonmez, Robert Day, Pelin Yalcinoglu, David Haury, The Ohio State University

Paper Set

Presider: Renee Schwartz, Western Michigan University

Influence of an 18 Month Professional Development Program on Elementary Teachers' Views of Nature of Science and Teaching Practice

Valarie Akerson, Deborah Hanson, Theresa Cullen, Indiana University (207854)

Scientific Modeling for Inquiring Teachers Network (SMIT'N): The Influence on Elementary Teachers' Views of Science Content, Nature of Scientific Inquiry, and Modeling

Jeffery Townsend, Valarie Akerson, Orvil White, Praweena Tira, Lisa Donnelly, Deborah Hanson, Indiana University (209150)

Ideas about the nature of science in pedagogically relevant contexts: insights from a situated perspective of primary teachers' knowledge

María Guerra-Ramos, Centro de Investigación y Estudios Avanzados Unidad Monterrey, Instituto Politécnico Nacional (209807)

Development of a Valid and Reliable Protocol for the Assessment of Early Childhood Students' Conceptions of Nature of Science and Scientific Inquiry

Judith Lederman, Norman Lederman, Illinois Institute of Technology (209147)

Representations and perspectives of NOS: Exploring relationships and impacts

Presider: Jim Ryder, University of Leeds

Representation of Nature of Science in High School Chemistry Textbooks Over the Past Four Decades

Mindy Waters, An-Phong Le, Fouad Abd-El-Khalick, University of Illinois at Urbana-Champaign (207905)

Relationship between students' views about knowing and learning physics and their understanding of physics

Saouma BouJaoude, Faten Masri, American University of Beirut (208100)

The Nature of the Boundary Crossing between Domains of Science in Scientists' Graph Interpretation

Jin Yoon, Wolff-Michael Roth, University of Victoria (211730)

The Impact of Idealist and Relativist Philosophy of Science on Science Education: Lessons from Peter Fensham's "Defining an Identity"

Michael Matthews, University of New South Wales (209531)

Interactive Poster Session

Presider: Saouma Boujaoude, American University of Beirut

Turkish In-service Elementary and Secondary Science Teachers' Views about the Nature of Science
Behiye Akcay (Bezir), Isil Koc, University of Iowa (207803)

Cultural Border Crossing in Science Education and Public Reason
Albert Zeyer, University of Zuerich (208514)

The Cultural Purpose of Science Education at the Present Time: Reaffirming the Enlightenment
Michael Matthews, University of New South Wales (209519)

Improper Use of Statistical Methods in Science Education Papers
Dan Edelman, Illinois Institute of Technology (209708)

Development of Teachers' Nature of Science Understandings through Meaningful Interactions with
Historical Non-fiction Texts
William Straits, California State University Long Beach (211007)

Probing preservice teachers' understandings of scientific knowledge by using a vignette in
conjunction with a standard instrument
Mehmet Tasar, Gazi Universitesi (211343)

Influence of Nature of Science Instruction on Students' Decision Making
Rola Khishfe, Loyola University Chicago (211379)

A Study for Developing a Meteorological Story Instructional Module to Promote Students'
Understanding of the Nature of Science
Huey-Lien Kao, Department of Natural Science Education, National Pingtung
University of Education; Ming-Chou Su, Tajen University of Technology, Chung- Mou Wu,
Pningtung Jiou-Ru Elementary School (211658)

"Disaster Movies: Is the Earth Science Real?": Exploring the Nature of Science in a University
Intercession Course
Alice (Jill) Black, Missouri State University (211721)

Acceptance of Biological Evolution among Turkish Preservice Biology Teachers
Hasan Deniz, Lisa Donnelly, Indiana University; Irfan Yilmaz, Dokul Eylul
University (209495)

How do French teachers perceive their role in the teaching of controversial socioscientific issues?
Laurence Simonneaux, Jean Simonneaux, ENFA (207812)

Argumentation, socioscientific issues, and NOS

Presider: Dana Zeidler, University of South Florida

Using an argumentation-instrumental reasoning discourse to facilitate teachers' understanding of
the nature of science

Meshach Ogunniyi, University of the Western Cape (211829)

An analysis of the implementation of scientific argumentation and nature of science preservice elementary chemistry course

Christine McDonald, Campbell McRobbie, Queensland University of
(209948)

Patterns Of Student Engagement With Socioscientific Issues

Hyunju Lee, SungAh Bae, University of Illinois at Urbana-Champaign

The Development and Validation of the Nature of Science as Argument Questionnaire (NSAAQ)

Victor Sampson, Douglas Clark, Arizona State University (210485)

Roundtable

Presider: Michael Matthews, University of New South Wales

Students' Sociological Understanding of Science and the Peer Review

Bugrahan Yalvac, Northwestern University; William Carlsen, Wenda Bauchspies,
The Pennsylvania State University (210476)

The Influence of Training in Metacognitive Strategies on Preservice Elementary Teachers'
Conceptions of Nature of Science

Fouad Abd-El-Khalick, University of Illinois at Urbana-Champaign; Valarie
Akerson, Indiana University-Bloomington (207896)

Botanical Garden Education: A Hidden History?

Dawn Sanders, King's College, London (208175)

Facilitating Chemistry Teachers' Understanding of Alternative Interpretations Of Conceptual
Change

Mansoor Niaz, Universidad de Oriente (208577)

Conflicts of Interest, an Indispensable Element of Environmental Education

Iann Lundegard, Per-Olof Wickman, Stockholm Institute of Education (210020)

Secondary pre-service teachers' intellectual and ethical development, views of NOS and authentic
research experiences

Teddie Phillipson-Mower, Indiana University (210563)

Predominant paradigms of beginning secondary science teachers: The development of a nature of
science rubric

Michelle Brown, The University of Texas at Austin; Gillian Roehrig, Anne Kern, University of
Minnesota; Julie Luft, Arizona State University; Steven S. W. Fletcher, The University of Texas at
Austin (210995)

The Science Teacher as the Organic Link in Science Learning

Konstantinos Alexakos, Brooklyn College-CUNY (211175)

The Realist-Instrumentalist Debate: Implications for the 'Intelligent Design' Controversy

Obed Norman, Morgan State University (211181)

On Two Unproductive Binaries in Science Education Research

Wendy Sherman, Kent State University (211595)

Students' epistemic modes while making sense of action movie clips

Carina Poltera, Ball State University; Peter Fletcher, N. Sanjay Rebello, Kansas State University (211649)

Development of a Decision Making Instrument Addressing Controversial Socioscientific Issues

Rola Khishfe, Loyola University Chicao (211811)

Secondary students' and teachers' epistemological views

Presider: Sibel Erduran, University of Bristol

The assessment of secondary school students' understandings about the nature of science

Jim Ryder, School of Education, University of Leeds (210170)

Developmental Patterns in Secondary School Students' Epistemological Views

Fouad Abd-El-Khalick, University of Illinois at Urbana-Champaign (207893)

Investigating Science Teachers' and High School Students' Views on The Nature of Science in Turkey

Nihal Dogan Bora, Orhan Arslan, Gazi University; Jale Cakiroglu, Middle East Technical University (210053)

Project ICAN: A Program to Enhance Teachers and Students' Understandings of Nature of Science and Scientific Inquiry

Norman Lederman, Judith Lederman,

Paper Set

Presider: Richard Duschl, Rutgers University

Preparing Future Science Teachers (SIGT): A Study in Exploring Girls' Interest and Conceptual Knowledge in Science

Kendra Walters, Natalie Warren, Texas Tech University (207965)

Young Children's Images of Being Scientists: Proximal and Distal Identities and Differentiations

Eli Tucker-Raymond, Maria Varelas, Christine Pappas, University of Illinois at Chicago (208244)

High School Students' Ideas about Scientific Work and School Science Work

Leah Bricker, University of Washington (208469)

Students' Conceptions of Engineering and Technology

Christine Cunningham, Cathy Lachapelle, Museum of Science, Boston; Meredith Knight, Tufts University; Kate Bielaczyc, Museum of Science, Boston (209114)

Impact of Teachers' Conceptions of the Nature of Science and the Use of Textbooks on Students

Sufian Forawi, University of Akron (209630)

Measuring the long-term impact of an engineering-based GK-12 program on elementary students' perceptions of engineering

Stephen Thompson, University of South Carolina (210551)

Increasing the use of science and mathematics knowledge: Student views on technical careers and the role of academics

Lawrence Flick, Tim Collins, Oregon State University; Spencer Hinkle, Portland Community College (210689)

Science experiences and NOS views

Presider: Cathy Loving, Texas A&M University

Laboratory versus Lecture – The History of the Credit Difference

Keith Sheppard, Teachers College, Columbia University (211751)

Theory vs. Experimental Evidence: Undergraduate Students' Laboratory Practice Illuminated by the Philosophy of Science

Rachel Havdala, Guy Ashkenazi, Hebrew University, Jerusalem (210527)

Developing teachers' understanding of the nature of science through a case study on the scientific research in Severe Acute Respiratory Syndrome (SARS)

Siu Ling Wong, Jenny Kwan, Benny Hiu Wai Yung, Derek Hodson, The University of Hong Kong (210287)

Differences in the Scientific Epistemological Beliefs of College Students

Shiang-Yao Liu, National Kaohsiung Normal University; Chin-Chung Tsai, National Chiao Tung University (210068)

7. 'Inquiry in Science Education' Conference, Rutgers University

Richard Duschl (Rutgers University, rduschl@rci.rutgers.edu) and Richard Grandy (Rice University, rgrandy@rice.edu) organized an NSF-sponsored conference whose purpose was to synthesize developments in three domains:

- (1) science studies, e.g., history, philosophy and sociology of science
- (2) the learning sciences, e.g., cognitive science, philosophy of mind, educational psychology, social psychology, computer sciences, linguistics, and
- (3) educational research focusing on the design of learning environments that promote inquiry and that facilitate dynamic assessments.

The conference provided a rich structure for interaction between participants and their disciplines. A plenary paper was circulated before hand and discussed the first evening. The second day had four papers with comments and a four-person panel discussion and was devoted to Philosophical Issues and Next Steps for Research; the final day had a similar format and was devoted to Policy, Practice and Next Steps for Educational Research.

The participants and topics were:

Day One

Inquiry: The Child as Scientist

William Brewer, University of Illinois

[*In What Sense Can The Child Be Considered to be a 'Little Scientist'?*](#)

Commentator: Leona Schauble, Vanderbilt University

Inquiry: How Science Works

Nancy Nersessian, Georgia Tech University

[How science works](#)

Commentator: Fouad Abd-El-Khalick, University of Illinois

Inquiry: Knowledge as Social Processes

Miriam Solomon, Temple University

[Social Epistemology of Science](#)

Commentator: Nancy Brickhouse, University of Delaware

Inquiry: Conceptual Change and Constructivism

Greg Kelly, Penn State University

[Inquiry, Activity, and Epistemic Practice](#)

Commentator: John Rudolph, University of Wisconsin

Panel A — *Philosophical Issues and Next Steps for Research*

Richard Grandy (Chair), Rice University; Harvey Siegel, University of Miami; Stephen Stich, Rutgers University; Helen Longino, University of Minnesota

Day Two

Inquiry: Epistemic Practices in Classrooms

David Hammer, University of Maryland, (with R. Russ, J. Mikeska & R. Scherr)

[Identifying Inquiry and Conceptualizing Abilities](#)

Commentator: William Sandoval, UCLA

Inquiry: Engineering the Design of Learning Environments

Dan Edelson, Northwestern University

[Engineering Pedagogical Reform: A Case Study of Technology Supported Inquiry](#)

Commentator: Janice Bordeaux, Rice University

Inquiry: Learning to use Data, Models and Explanations

Clark Chinn, Rutgers University and Ala Samarapungavan, Purdue University

[Learning to Use Scientific Models: Multiple Dimensions of Conceptual Change](#)

Commentator: Joe Krajcik, University of Michigan

Inquiry: Literacy Practices and Science Communication

Stephen Norris, University of Alberta (With Linda Phillips, University of Alberta)

[Reading as Inquiry](#)

Commentator: Philip Bell, University of Washington

Panel B- Policy, Practice and Next Steps for Educational Research

Drew Gitomer (Chair), University of Chicago, Cindy Hmelo-Silver, Rutgers University; Eugenia Etkina, Rutgers University; Mark Windschitl, University of Washington

The papers and comments are on the conference website
<http://www.ruf.rice.edu/~rgrandy/ConferenceInfo.html>.

8. Report: Second International Pendulum Conference, UNSW, 2005

The Second International Pendulum Conference was held at the University of New South Wales, Sydney, Australia from Wednesday evening October 13 to Saturday evening October 15, 2005. The conference was part of the International Pendulum Project (www.arts.unsw.edu.au/pendulum/)

The conference consisted of two days of research presentations, overlapping with one day of a teachers' meeting. Contributions came from Canada, USA, England, Argentina, Greece, Israel, India, Japan and Australia; they dealt with scientific, historical, methodological, horological and pedagogical aspects of pendulum motion.

Full *Proceedings* (32 papers, 312 pages) are available for sale for USD20 (postage included). For order form, see 'Publications' section of www.ihpst.org web site.

Proceedings Contents are:

MICHAEL R. MATTHEWS / Introduction

AMIR D. ACZEL / The Life, Times, and Science of Léon Foucault, Physicist Extraordinaire

JENS VON BERGMANN & HSINGCHI A. WANG / Understanding Foucault's Pendulum through Elementary Geometry

ROBERT N. CARSON / Measured Time, Measured Lives – How the Pendulum Transformed Our Consciousness of Time.

SONIA BEATRIZ CONCARI, SILVIA MARÍA GIORGI, CRISTINA NOEMÍ CÁMARA, & ROBERTO LUIS POZZO / Teaching Scientific Skills by Using Pendulums

KEVIN C DE BERG / To What Extent can the Pendulum be Used as an Analogy for a Chemical Reaction?

SOTIRIS DOSSIS & DIMITRIS KOLIOPOULOS / The Problem of Timekeeping with the Help of the Simple Pendulum: An Empirical Study of 14-15-year-old Greek Students

ALAN EMMERSON / Things are Seldom What They Seem - Christiaan Huygens, the Pendulum and the Cycloid

NAGARJUNA GADIRAJU / From Archimedes to Galileo: The Balance or the Pendulum?

COLIN GAULD / Newton's Cradle Pendulum in Physics Education

NORMAN R. HECKENBERG / Using a Pendulum to Teach Experimental Design and Error Analysis

MICHAEL R. MATTHEWS / Cultivating a Sense of Tradition in Science Education: The Pendulum and the Enlightenment

DON METZ / People, Pendulums and Time: A Manitoba Senior Integrated Course

C.K. RAJU / Time: What is It that It can be Measured?

C.K. RAJU / Time Measurement in Classical Indian Tradition and the Present-Day
Representation of Time as a Continuum

CONSTANTINE SKORDOULIS, VASILIS TOLIAS & DIMITRIS STAVROU / Teaching
Chaos with a Pendulum to Greek Secondary School Students

IVAN SLADE / A Note on the Pendulum in Phase Plane

SUMIDA MANABU, WAKIMOTO KOJI, ISHII MASAYUKI & SUGIYAMA SHIGEO /
Teaching the Pendulum in Japanese Primary Schools

MARGARET J. WEGENER / The Measurement Gravity Using a Rolling Pendulum for
Embedded Learning of Fundamental Laboratory Skills

9. Pendulum Anthology

The International Pendulum Project (IPP) has been functioning since 2002 when the first pendulum research conference was held at UNSW in Sydney. The IPP promotes scientific, historical and methodological studies of the pendulum, and supports enriched teaching of pendulum-related topics in school.

Springer have now published a 540 page anthology of 31 papers arising from the first research phase of the IPP:

The Pendulum: Scientific, Historical, Philosophical & Educational Perspectives (Michael R. Matthews, Colin Gauld & Arthur Stinner eds.)

Book contents and order details (cost USD35) can be seen at 'Publications' section of www.ihpst.org and at www.arts.unsw.edu.au/pendulum/.

10. Books Received

Williamson, J.: 2005, *Bayesian Nets and Causality: Philosophical and Computational Foundations*, Oxford University Press, Oxford. (ISBN 0-19-853079-X, 240pp)

Malcolm, N. & Stedall, J.: 2005, *John Pell (1611-1685) and His Correspondence with Sir Charles Cavendish: The Mental World of an Early Modern Mathematician*, Oxford University Press, Oxford. (ISBN 0-19-856484-8, 658pp)

Russ, S.: 2004, *The Mathematical Works of Bernard Bolzano*, Oxford University Press, Oxford. (ISBN 0-19-853930-4, 696pp)

Dupré, L.: 2004, *The Enlightenment and the Intellectual Foundations of Modern Science*, Yale University Press, New Haven.

Butterfield, J. & Halvorson, H. (eds.): 2004, *Quantum Entanglements: Selected Papers of Rob Clifton*, Oxford University Press, Oxford. (ISBN 0-19-927015-5, 462pp)

Flick, L.B. & Lederman, N.G. (eds.): 2004, *Scientific Inquiry and Nature of Science: Implications for Teaching, Learning and Teacher Education*, Kluwer, Dordrecht.

Gratzer, W.B.: 2005, *The Undergrowth of Science: Delusion, Self-deception and Human Frailty*, Oxford University Press, Oxford.

- Lacey, H.: 2005, *Values and Objectivity in Science: The Current Controversy about Transgenic Crops*, Rowman & Littlefield Publishers, Lanham, MD.
- Mellor, D.H.: 2005, *Probability: A Philosophical Introduction*, Routledge, London.
- Hodgkin, L.: 2005, *A History of Mathematics from Mesopotamia to Modernity*, Oxford University Press, Oxford.
- Outram, D.: 2005, *The Enlightenment*, Second Edition, Cambridge University Press, New York.

11. Current Research

Apart from contributions to *Science & Education* the following are some papers published in recent years that bear upon the research concerns of the IHPST Group. Suggestions for up-dating this list should be sent to the Editor at m.matthews@unsw.edu.au

- Mamlok-Naaman, R., Ben-Zvi, R. & Hofstein, A., Menis, J., & Erduran, S.: 2005, 'Influencing Students' Attitudes towards Science by exposing them to a Historical Approach', *International Journal of Science and Mathematics Education* **3**(3)
- Niaz, M.: 2005, 'The Quantitative Imperative vs the Imperative of Presuppositions', *Theory & Psychology* **15** (2), 247-256.
- Niaz, M.: 2005, 'Do General Chemistry Textbooks Facilitate Conceptual Understanding?', *Química Nova* **28**(2), 335-336.
- Brito, A., Rodríguez, M.A. & Niaz, M.: 2005, 'A Reconstruction of Development of the Periodic Table Based on History and Philosophy of Science and its Implications for General Chemistry Textbooks', *Journal of Research in Science Teaching* **42**(1), 84-111.
- Abd-El-Khalick, F. 2005, 'Developing Deeper Understanding of Nature of Science: The Impact of a Philosophy of Science Course on Preservice Science Teachers' Views and Instructional Planning', *International Journal of Science Education* **27**(1), 15-42.
- Lawson, A.E.: 2005, 'William Harvey, Predicting Capillaries, and the Nature of Science: One More Time', *The American Biology Teacher* **67**(4), 202-203.
- Lawson, A.E.: 2005, 'Conducting High Quality Research', *International Journal of Science and Mathematics Education*, **3**(1), 1-5.
- Lawson, A.E.: 2005, 'What is the Role of Induction and Deduction in Reasoning and Scientific Inquiry?' *Journal of Research in Science Teaching* **42**(6), 716-740.

12. Coming Conferences

- March 26-30, 2006. Symposium on "Science History and Its Applications to Chemical Education", as part of American Chemical Society meeting in Atlanta, GA. Details from: Seth C. Rasmussen, seth.rasmussen@ndsu.edu.
- April 3-6, 2006, NARST conference, San Francisco. Details at: <http://www.educ.sfu.ca/narstsite/>
- April 8-12, 2006, AERA conference
- April 21-24, 2006, PES conference, Puerto Vallarta, Mexico. Details at: <http://cuip.net/pes/>
- November 2-5, Philosophy of Science Association conference, Vancouver.
- June 25-28, 2007, 9th IHPST Conference, Calgary. HsingChi Wang (ihpst07@ucalgary.ca)
- October 2007, 4th Hellenic HPS&ST Conference, Dimitris Koliopoulos, (dkoliop@upatras.gr)

13 Science & Education Special Issues: Prospective Theme Topics

The journal *Science & Education* has over the years published a number of thematic issues.

Special Issues are planned for 2006, and contributions are invited. Manuscripts are reviewed in the normal manner (usually three reviewers). Authors can contact the guest editors listed below, or the journal editor, for further details.

- ‘Women, Science Education, & Feminist Theory: An Appraisal’,
(Cassandra Pinnick email: cassandra.pinnick@wku.edu) 1st October 2005
- ‘The Nature of Science: Identifying, Teaching and Assessing NOS’ (Joanne Olson & Michael Clough emails: jkolson@iastate.edu, mclough@iastate.edu) 1st October 2005
- ‘Thought Experiments in Science and in Science Education’,
(Miriam Reiner email: miriamr@stanford.edu) 1st October 2005
- ‘The Centenary of Relativity Theory: Historical, Philosophical and Pedagogical Reflections’
(Fabio Bevilacqua email: bevilacqua@fiscavolta.unipv.it) 1st November 2005
- ‘Social and Ethical Issues in Science Education’ 1st June 2006
(Dana L. Zeidler email: zeidler@coedu.usf.edu & Troy D. Sadler, email: tsadler@coe.ufl.edu)

14. Publications for Sale

The following publications are available from the IHPST Group:

- #1 *CD Proceedings of the 6th IHPST Conference, Denver, 2001*, 100+ papers, W. McComas (ed.), USD10 (postage included).
- #2 *CD Proceedings of the 7th IHPST Conference, Winnipeg, 2003*, 100+ papers, D. Metz (ed.), USD10 (postage included).
- #3 *Time for Science Education*, M.R. Matthews, Kluwer, 2000, 440pp, USD20 (postage included).
- #4 *Science Education and Culture*, F. Bevilacqua, E. Giannetto & M.R. Matthews (eds.), Kluwer, 2001, 362pp, USD20 (postage included).
- #5 *Challenging New Zealand Science Education*, M.R. Matthews, Dunmore Press, 1995, 256pp, USD10 (postage included).
- #6 *Science & Education* journal Volume 12, 2003, 808 pps, USD25 (postage included).
- #7 *Science & Education* journal Volume 2, 1993, 382pp, USD10 (postage included).
- #8 *The Pendulum: Scientific, Historical, Philosophical & Educational Perspectives* (Michael R. Matthews, Colin Gauld & Arthur Stinner eds., USD30

To purchase any of the above, send letter or email, with complete mailing address and indication of what publications are required, to address below. Cheques payable to ‘IHPST’, or send full credit card details (visa, or mastercard). Alternatively order from IHPST web site: www.ihpst.org

15. IHPST Email List

This list is newly created. It is anticipated that it will be used sparingly, perhaps once a month, to send group information such as contained in this Newsletter. It is a closed list, not a discussion list.

If you receive this email message and wish to remove yourself from the IHPST list, send a message to: majordomo@explode.unsw.edu.au. In the body of the message, not the subject line, simply write: ‘unsubscribe ihpst-group’.

Alternatively, if you have friends or colleagues who would like to subscribe to the list, tell them to send a message to: majordomo@explode.unsw.edu.au . In the body of the message, not the subject line, simply write: 'subscribe ihpst-group'.

16. Future Newsletter Items

Items for inclusion in the IHPST *Newsletter* are appreciated. These can be items for the 'Recent Research', 'Recent Books', 'Books' or 'Conferences' sections.

Please email newsletter material (or journal subscriptions or publication orders) to:

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Email: m.matthews@unsw.edu.au