



International History, Philosophy and Science Teaching Group

NEWSLETTER

November 2005

www.ihpst.org

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1. “Science & Education”, Vol.14, No. 6

Volume 14 No.6 of the journal *Science & Education* has recently been published.

The contents are:

FRITZ KUBLI / Bakhtin’s Narrative Theory as a Tool for the Analysis of Science Teaching

SAMI PAAVOLA & KAI HAKKARAINEN / A Knowledge Creation Metaphor: An Emergent Epistemological Approach to Learning

GUILLERMINA WALDEGG / The Prevalence of the Paradox of Infinity

RENEE M. CLARY & JAMES H. WANDERSEE / Through the Looking Glass: The History of Aquarium Views and Their Potential to Improve Learning in Science Classrooms

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 will shortly be rectified, and back issues 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. 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.

3. 'Inquiry in Science Education' Conference, Rice 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>.

4. Danish Research on HPS Games

At the Center for Learning Games at the Learning Lab Denmark (www.lld.dk), we are interested in developing a game (and/or a framework) to enhance the learning and teaching of history and

philosophy of science. The Center for Learning Games has been established to investigate how games can support different types of learning, it is a component of Learning Lab Denmark's vision of design-based research, integrating theory and practice.

The game/framework to be developed has two main audiences: one being high school students and another being college science students. The purpose is to create space for informed and engaged discussions, in a combinatorial way of theme, approach and format. It will be IT-supported but focused on social interaction (role-play). We would like to collaborate with interested researchers specially to gather information in experiences of HPS teaching and possible content to be transformed into the game/framework.

If you think this is an interesting project and/or you have something to contribute, please contact Ruth Jesus (rut.ild@dpu.dk) or Robin Engelhardt (ren.ild@dpu.dk).

5. Fourth Hellenic History, Philosophy and Science Teaching Conference, October 2007

The 3rd Hellenic Conference on “History, Philosophy and Science Teaching” was held in Athens 19-25 September 2005. Approximately 200 teachers and researchers participated.

The 4th Hellenic Conference on ‘HPS&ST’ will be held in October 2007. The conference chair is:

Dr Dimitris Koliopoulos
University of Patras
Department of Early Childhood Education
Rion 26500 Patras
GREECE
e-mail dkoliop@upatras.gr

6. 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

7. 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 USD30) can be seen at 'Publications' section of www.ihpst.org and at www.arts.unsw.edu.au/pendulum/.

8. Book Notes

Ben-Ari, M.: 2005, *Just a Theory: Exploring the Nature of Science*, Prometheus Books, Amherst NY. ISBN 1-59102-285-1; 238 pps; USD21

This is an excellent and timely book for science teachers and for science education students. Its aim is to 'provide a modern overview of the nature of science' (p.ix) – a topic that is increasingly written into school science curricula. Ben-Ari recognises that 'research on the nature of science [is] traditionally divided into the philosophy, history, and sociology of science' (p.ix) and he very successfully provides a contemporary introduction to each of these fields, providing numerous examples that science students can identify with to illustrate the points being made.

The book has 13 chapters. Additionally there are biographical vignettes of famous scientists interspersed between the chapters. Apart from the philosophical, historical and sociological chapters, there are chapters on 'Postmodernist Critiques of Science', 'Science and Religion', 'Statistics', 'Logic and Mathematics', and 'The Future of Science'. These are all clearly written, well referenced, and illustrated with historical and contemporary episodes – including, for instance, the text of the Alabama State Board of Education sticker that had to be pasted into school physics textbooks. This illustrative material will be welcomed by teachers.

9. Books of Interest

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

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

Butterfield, J. & Halvorson, H. (eds.): 2004, *Quantum Entanglements: Selected Papers of Rob Clifton*, Oxford University Press, Oxford. (ISBN0-19-927015-5, 462pp)

Zemplén, G.A.: 2005, *The History of Vision, Colour, & Light Theories*, Bern Studies in the History and Philosophy of Science, Universität Bern,

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)

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.

10. 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.

11. 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, PSA conference, Vancouver. Details at: <http://philsci.org/>

12. 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'
(Dana L. Zeidler email: zeidler@coedu.usf.edu & Troy D. Sadler, email:
tsadler@coe.ufl.edu) 1st June 2006

13. 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

14. 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:

Professor M.R. Matthews, School of Education, UNSW, Sydney 2052, Australia
Email: m.matthews@unsw.edu.au

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'.