



International History, Philosophy and Science Teaching Group

NEWSLETTER

July 2006

www.ihpst.org

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1. *Science & Education* vol.15 no.6

Volume 15 No.6 of the journal '*Science & Education*' has been published and is being mailed to subscribers by Springer in the Netherlands. Its Contents follow.

THE PENDULUM: Scientific, Historical, Philosophical & Educational Perspectives Part III

MICHAEL R. MATTHEWS, COLIN F. GAULD & ARTHUR STINNER / The Pendulum:
Scientific, Historical, Philosophical and Educational Perspectives Part III

C.K. RAJU / Time: What is it That it can be Measured?

FABIO BEVILACQUA, LIDIA FALOMO, LUCIO FREGONESE, ENRICO GIANNETTO &
FRANCO GIUDICE / Interpreting the Pendulum: From Constrained Fall to Potential
Energy

PIERRE J. BOULOS / Newton's Path to Universal Gravitation: The Role of the Pendulum

COLIN F. GAULD / Newton's Cradle in Physics Education

KEVIN DE BERG / Chemistry and the Pendulum-What Have They To Do With Each Other?

YONG-JU KWON, JIN-SU JEONG & YUN-BOK PARK / Roles of Abductive Reasoning and
Prior Belief in Children's Generation of Hypotheses about Pendulum Motion SCED842

Subscription renewals and new subscriptions (USD85 pa, with discount for students, retired faculty and scholars from depressed economies, and discount for multiple-year subscriptions), can be effected at the IHPST web site: www.ihpst.org

2. Science & Education Journal on the Web

The journal *Science & Education* is now available on the web at either:

www.kluweronline.com/issn/0926-7220

or <http://www.springerlink.com/> (then PUBLICATIONS, then S, then 'Science & Education')

Approximately 3,000 institutions around the world have subscribed to the on-line version of the journal, while many institutions have subscriptions to both print and on-line versions.

The on-line version is heavily used. In 2005 there were 22,262 article downloads, in 2004 there were 21,373 article downloads. These figures make '*Science & Education*' the most downloaded of all Springer science education journals.

The web site provides many services to researchers:

1. The 'On Line First' section allows access to all accepted, forthcoming articles in the journal. As soon as an article is accepted for publication, a typeset pdf version of it is posted on the web and can be accessed by individual journal subscribers or by individuals whose institutions subscribe to a Springer package that includes '*Science & Education*'.
2. The Contents of each issue of the journal, back to Volume 1 Number 1 in 1992, are available. These can be downloaded by subscribers and individuals whose institutions subscribe to the journal. They are also available, at a cost, to non-subscribers.
3. Full details of the Editorial Board and Submission process are posted.

3. 2007 IHPST Conference, Calgary

The International History, Philosophy and Science Teaching Group will hold its *Ninth* Conference, at the University of Calgary, June 24 (evening) – 28 (noon), 2007

Conference Chair: Professor Ian Winchester

Conference Secretary: Linda Lentz

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

The Conference Theme is: *Contextual Approaches to Science and Mathematics Teaching*

It is expected that about 200-250 educators, historians, philosophers, teachers, scientists and cognitive scientists from about 30 countries will engage with theoretical, curricular and pedagogical issues in contemporary science education. Prospective participants are encouraged to contact colleagues and put together panels or symposia on these issues.

Proposals (max.1,000 words) and Abstract (max. 150 words) need to be submitted as attachments to programme chair by **15th April 2007**. The files should be named: SURNAME_proposal.doc and SURNAME_abstract.doc.

There will be an opportunity for pre-conference publication of reviewed submissions if they are received by 15th December 2006.

More details, including registration, travel and accommodation, will be available at the conference web site: www.ucalgary.ca/ihpst07/

4. 2005 IHPST Conference, Leeds: Proceedings

Full Proceedings of the Eighth IHPST Conference, held in Leeds, July 2005, are now available on the web at:

<http://www.ihpst2005.leeds.ac.uk/papers.htm>

5. Spanish Anthology on History, Philosophy and Science Teaching

The following 19 chapter, 480 page anthology on 'HPS and Science Teaching' has been published by the Universidad Nacional Autónoma de México. It might be usefully used in teacher education programmes. It is available for USD22.50 from the web address given below.

*S. F. Martínez and G. Guillaumin (ed.) (2005). **Historia, filosofía y enseñanza de las ciencias**. Mexico: Instituto de Investigaciones Filosóficas / UNAM.*

Introducción general

I. HISTORIOGRAFÍA DE LA CIENCIA

Edna Suárez: La historiografía de la ciencia

John R. R. Christie: El desarrollo de la historiografía de la ciencia.

Steven Shapin: Disciplina y delimitación: la historia y la sociología de la ciencia a la luz del debate externismo-internismo.

Rachel Laudan: La "nueva" historia de la ciencia: implicaciones para la filosofía de la ciencia.

Larry Laudan: La historia de la ciencia y la filosofía de la ciencia.

María Jesús Santasmases: Conceptos, instrumentos, contextos: historiografía de la biología molecular.

II. LA RELACIÓN ENTRE HISTORIA DE LA CIENCIA Y FILOSOFÍA DE LA CIENCIA

Godfrey Guillaumin: Historia de la ciencia y filosofía de la ciencia: relaciones inestables e historicidad en la ciencia.

Thomas Nickles: ¿Cuál es la relación entre la filosofía de la ciencia y la historia de la ciencia?

Marga Vicedo: ¿Es pertinente la historia de la ciencia en la filosofía de la ciencia?

Godfrey Guillaumin: De las teorías a las prácticas científicas: algunos problemas epistemológicos de la "nueva" historiografía de la ciencia.

Sergio F. Martínez: La geografía de la razón científica: dependencia epistémica y estructura social de la cognición.

Anna Estany: El papel de la historia de la ciencia en los estudios interdisciplinarios de la ciencia.

III. ALGUNOS ESTUDIOS DE CASO

Carlos López Beltrán: Por una nueva historiografía de los conceptos científicos. El caso de la herencia biológica.

Javier Echeverría: Función heurística de la filosofía para la historia de las matemáticas. Los Elementos de Euclides y las tablas de logaritmos de Neper.

Ambrosio Velasco Gómez: Historicidad y racionalidad de las tradiciones científicas.

IV. EDUCACIÓN, HISTORIA Y FILOSOFÍA DE LA CIENCIA

Sergio F. Martínez: Constructivismo y filosofía de la educación.

Michael R. Matthews: El constructivismo y la enseñanza de las ciencias.

Christopher Winch: El aprendizaje como invención. Educación y constructivismo.

The anthology can be obtained by going to web site:

<http://www.etienda.unam.mx/indexTienda.html?ntienda=libreriafilosoficas/>

This accesses the virtual store of “Instituto de Investigaciones Filosóficas”. Then go to the end where it says “Índice de todos los productos” and select there “Historia, filosofía y enseñanza de la ciencia” then appears the anthology with a price of USD 22.50, edited by Sergio F. Martínez and Godfrey Guillaumin.

6. Sixth International Conference for the History of Science in Science Education, Oldenburg July 2006

The Sixth International Conference for the History of Science in Science Education, was held at Carl von Ossietzky Universität, Oldenburg, Germany during July 10-14, 2006.

Thirty presentations were made, and the conference was attended by about 60 individuals from ten countries.

Conference details, including Abstracts of all talks, can be found at: <http://www.uni-oldenburg.de/histodid/ICHSSSE/> .

Further details can be obtained from Dr Peter Heering (peter.heering@uni-oldenburg.de)

7. Fourth Hellenic Conference on History, Philosophy and Science Teaching

The 4th Hellenic HPS&ST conference will be 14-16 September 2007, in Patras, Greece.

The Conference Chair is:

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

8. Philosophy of Education Society of Australasia Conference

35th Annual Conference, University of Sydney, New South Wales

23 November - 26 November 2006

Theme: Politics, Business and Education: The Aims of Education in the Twenty-First Century

Members of PESA and other persons interested in presenting a philosophically competent paper on the theme or other topic of philosophical and/or educational interest are invited to forward a copy of the paper to the Conference Convenor:

Dr. Jim MacKenzie at j.mackenzie@edfac.usyd.edu.au

Papers to be refereed for inclusion in the Conference Proceedings should be sent to the Convenor by 30 July.

Papers should be 5000 - 6000 words, submitted by email in the style of the Society's journal, *Educational Philosophy and Theory*. Submit in Word format for text only papers. For papers containing diagrams, text boxes etc., please submit in PDF format with diagrams embedded. Working papers should be sent to the Convenor by 30 September for inclusion in the program.

A philosophy of education workshop for graduate students is proposed prior to the opening of the conference on the evening of 23 November.

A grant of AUD\$400 is available for 'graduate student' presenters and for retired full members of PESA who have a refereed paper approved for presentation. Successful recipients will be notified before the conference.

Those wishing to combine conferences may wish to go on to Adelaide for the Australian Association for Research in Education conference 27 – 30 November and to Rotorua for NZARE on 5 - 8 December.

For further information contact the Conference Convenor or the PESA website at:

www.pesa.org.au

9. “Science & Education”, Vol.13, 2004, Copies Available

Complete 8-number sets of Volume 13 of the journal *Science & Education* are available for purchase at the cost of USD25 air mail included. Orders can be placed at the www.ihpst.org web page under ‘Publications for Sale’.

The Contents of the numbers are as follows.

Volume 13 Nos. 1-2 January 2004

POSITIVISM AND SCIENCE EDUCATION: A RE-EVALUATION

MICHAEL R. MATTHEWS / Reappraising Positivism and Education: The Arguments of Philipp Frank and Herbert Feigl

THOMAS E. UEBEL / Education, Enlightenment and Positivism: The Vienna Circle’s Scientific World-Conception Revisited

DENIS PHILLIPS / Two Decades After : “After The Wake: Postpositivistic Educational Thought”

G. KRISHNA VEMULAPALLI & HENRY C. BYERLY / Karl Hempel’s Philosophy of Science: How to Avoid Epistemic Discontinuity and Pedagogical Pitfalls

PHILIPP FRANK / The Place of Philosophy of Science in the Curriculum of the Physics Student (orig. 1947)

HERBERT FEIGL / Aims of Education for Our Age of Science: Reflections of a Logical Empiricist (orig.1955)

Volume 13 No. 3 May 2004

ANTON E. LAWSON / *T.rex*, the Crater of Doom, and the Nature of Scientific Discovery

DOUGLAS ALLCHIN / Pseudoscience and Pseudohistory

STEPHEN BRUSH / Comments on the Epistemological Shoehorn Debate

ISABEL PAIXAO, SILVIA CALADO, SILVIA FERREIRA, VANDA ALVES & ANA M. MORAIS /
Continental Drift: The Crazy Idea of a Meteorologist who Faced Geology as a Hobby
LONE MORRIS JORGENSEN & SUE RYAN / Relativism, Values and Morals in the New Zealand
Curriculum Framework: Implications for Teacher Education
MORDECHAI BEN-ARI / On Random Numbers and Design

Volume 13 Nos. 4-5 June 2004

THE PENDULUM: Scientific, Historical, Philosophical &
Educational Perspectives Part I

MICHAEL R. MATTHEWS, COLIN GAULD & ART STINNER / The Pendulum: Its Place in Science,
Culture and Pedagogy
RANDALL D. PETERS / The Pendulum in the 21st Century: Relic or Trendsetter?
RONALD NEWBURGH / The Pendulum: A Paradigm for the Linear Oscillator
ZVI BIENER & CHRISTOPHER SMEENK / Pendulums, Pedagogy and Matter: Lessons from the Editing of
Newton's *Principia*
COLIN GAULD / The Treatment of the Motion of the Simple Pendulum in Some Early 18th Century
Newtonian Textbooks
PETER MACHAMER & BRIAN HEPBURN / Galileo and the Pendulum: Latching on to Time
ROBERT NOLA / Pendula, Models, Constructivism and Reality
LOUIS B. ROSENBLATT / The Poet and the Pendulum
TREVOR G. BOND / Piaget and the Pendulum
ROBERT J. WHITAKER / Types of Two-Dimensional Pendulums and Their Uses in Education
MARIANNE BARNES, JAMES GARNER, DAVID REID / The Pendulum as Vehicle for Transitioning
from Classical to Quantum Physics: History, Quantum Concepts and Educational Challenges
CATHY MARIOTTI EZRAILSON, G. DONALD ALLEN & CATHLEEN C. LOVING / Analyzing
Dynamic Pendulum Motion in an Interactive Online Environment Using Flash
IGAL GALILI & DAVID SELA / Pendulum Activities in the Physics Curriculum: Used and Missed
Opportunities
MANABU SUMIDA / The Public Understanding of Pendulum Motion: From 5 to 85 Years Old

Volume 13 No. 6 July 2004

NAHUM KIPNIS / Chance in Science: The Case of Electromagnetism
MIKE U. SMITH & HARVEY SIEGEL / Knowing, Believing and Understanding: The Goals of Science
Education
WILLIAM COBERN / Apples and Oranges: A Rejoinder to Smith and Siegel
PETER DAVSON-GALLE / Understanding: 'Knowledge', 'Belief' and 'Understanding'

Volume 13 No. 7-8 November 2004

THE PENDULUM: Scientific, Historical, Philosophical &
Educational Perspectives Part II

KLAUS WELTNER, A. SERGIO ESPERIDIÃO, ROBERTO FERNANDES SILVA ANDRADE &
PAULO MIRANDA / Introduction to the Treatment of non-linear Effects using a Gravitational
Pendulum
CÉSAR MEDINA, SANDRA VELAZCO & JULIA SALINAS / Experimental Control of a Simple
Pendulum Model
RANDALL D. PETERS / Soup-can Pendulum
NORMAN PHILLIPS / What Makes the Foucault Pendulum Move Among the Stars?
COLIN GAULD / The Treatment of Cycloidal Pendulum Motion in Newton's *Principia*
AMIR D. ACZEL / Léon Foucault: His Life, Times and Achievements

MICHAEL R. MATTHEWS / Idealisation and Galileo's Pendulum Discoveries: Historical, Philosophical and Pedagogical Considerations
AGUSTÍN ADÚRIZ-BRAVO / Methodology and Politics: A Proposal to Teach the Structuring Ideas of the Philosophy of Science through the Pendulum
DENNIS LOMAS / Degree of Influence on Perception of Belief and Social Setting: Its Relevance to Understanding Pendulum Phenomena
PAUL ZACHOS / Pendulum Phenomena and the Assessment of Scientific Inquiry Capabilities
ERIN STAFFORD / What the Pendulum can Tell Educators about Children's Scientific Reasoning
MICHAEL FOWLER / Using Excel to Simulate Pendulum Motion and Maybe Understand Calculus a Little Better
ROBERT N. CARSON / Teaching Cultural History from Primary Events
COLIN GAULD / Pendulums in the Physics Education Literature: A Bibliography

10. 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.

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.
- Niaz, M.: 2005, 'An appraisal of the controversial nature of the oil drop experiment: Is closure possible?', *British Journal for the Philosophy of Science*, **56**(4), 681-702.
- 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.
- Dagher, Z., & BouJaoude, S.: 2005, 'Students' Perceptions of the Nature of Evolutionary Theory', *Science Education* **89**(3), 378-391.
- Nola, R. & Irzik, G.: 2005, *Philosophy, Science, Education and Culture*, Springer, Dordrecht.
- Ben-Ari, M.: 2006, 'Whose Final Hour? The Problem of Naive Egocentric Catastrophism in Doomsayers and Catastrophists', *Skeptic* **12**(3), 2006, 40-49.

12. Publications for Sale

The following publications can be ordered from the IHPST Group at www.ihpst.org :

- #1 *CD Proceedings of the 6th IHPST Conference, Denver, 2001*, 100+ papers, W. McComas (ed.), USD10.
- #2 *CD Proceedings of the 7th IHPST Conference, Winnipeg, 2003*, 100+ papers, D. Metz (ed.), USD10.
- #3 *Time for Science Education*, M.R. Matthews, Kluwer, 2000, 440pp, USD20.
- #4 *Science Education and Culture*, F. Bevilacqua, E. Giannetto & M.R. Matthews (eds.), Kluwer, 2001, 362pp, USD20.
- #5 *Challenging New Zealand Science Education*, M.R. Matthews, Dunmore Press, 1995, 256pp, USD10.
- #6 *Science & Education journal Volume 2*, 1993, 382pp, USD10.
- #7 *Science & Education journal Volume 12*, 2003, 808 pps, USD25.
- #8 *Science & Education journal Volume 13*, 2004, 820 pps, USD25.
- #9 *The Pendulum: Scientific, Historical, Philosophical & Educational Perspectives* (Michael R. Matthews, Colin Gauld & Arthur Stinner (eds.)), Springer, 2005, USD30

All above prices include postage.

13. Coming Conferences

- November 2-5, 2006. Philosophy of Science Association (PSA) Conference, Vancouver. Details at: <http://philsci.org/>
- November 23-26, 2006. Philosophy of Education Society of Australasia (PESA) Conference. Details at: www.pesa.org.au , and from Dr Jim Mackenzie, j.mackenzie@edfac.usyd.edu.au
- February 12-17, 2007. EPISTEME-2, Second International Conference to Review Research in Science, Mathematics and Technology Education, Homi Bhabha Centre, Mumbai. Details at: <http://www.hbcse.tifr.res.in/episteme/>
- March 15-19, 2007. Philosophy of Education Society (PES) Conference, Atlanta. Details at: <http://philosophyofeducation.org/>
- April 9-13, 2007. American Educational Research Association (AERA) Conference, Chicago. Details at: <http://www.aera.net/>
- April 14-17, 2007. National Association for Research in Science Teaching (NARST) Conference, New Orleans. Details at: <http://www.narst.org/>
- June 24-28, 2007. 9th IHPST Conference, Calgary. Details at: www.ucalgary.ca/ihpst07

September 14-16 2007. 4th Hellenic HPS&ST conference, Patras. Details from: Dr Dimitris Koliopoulos, dkoliop@upatras.gr

14. Future Newsletter Items

This IHPST Electronic *Newsletter* goes to 1,120 email addresses on the IHPST list, and it is also posted to various science education, philosophy of education and HPS lists. Items for inclusion in the *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:

A/Professor M.R. Matthews, School of Education, UNSW, Sydney 2052, Australia

Email: m.matthews@unsw.edu.au

15. IHPST Email List

The email list is used sparingly, perhaps once a month, to send group information such as contained in this Newsletter. It is a closed list, not an open 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'.