

The International Society for the History of Philosophy of Science

NEWSLETTER

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FROM THE EDITOR

This issue represents my first effort as Editor of the HOPOS Newsletter, having assumed the position from Saul Fisher. I thus find myself in the difficult position of living up to Saul's exemplary standard while also trying to develop the Newsletter and other aspects of the society's news apparatus for the future.

The transition has unfortunately compounded some delays in publication, but I would prefer to present the shift as more an opportunity than a problem. Along with a commitment to bring us back to a semi-annual schedule, I will also be working to institute new mechanisms for better information sharing within the society.

Also, while a year has passed since the last issue appeared, I believe the contents of this edition belie any possible impression of stagnation in the field. In this issue, you will find details of our 2006 Congress as well as 30 other upcoming events of interest. Also announced are a wide array of online resources and new publications. Seven full length book reviews (one in French) examine recent significant contributions to the literature.

I welcome suggestions and contributions of content via email at tstaley@vt.edu. Hopoi interested in participating in book reviewing or in topical reviews of scholarly resources are especially encouraged to contact me.

- Tom Staley



HOPOS 2006 Meeting in Paris

The Sixth Congress of the International Society for History of Philosophy of Science, will take place on June 14-18, 2006, at the École normale supérieure in Paris, France, in cooperation with the Société de Philosophie des Sciences (SPS).

HOPOS welcomes participants to the City of Lights, and the historic Fifth Arrondissement where the meeting will be located, for what we expect to be our most successful meeting yet. The organizing committee, led by chair Anastasios Brenner and co-chairs Jean Guyon and Doug Jesseph, are working to provide a rich and multifaceted program.

We are excited about the cooperation of SPS on this event. Founded in 2003, this young society promotes the study of philosophy of science. While a francophone group, SPS aims at an international constituency of both academics and professionals in related areas. For info, see <http://www.sps.ens.fr>.

We encourage interested scholars to consult the formal Call for Papers included on the following page. Note especially the December 15, 2005 deadline for submission of proposals for either sessions or individual papers.

More information on HOPOS 2006 will be included in our next issue, including details on the program as well as some of the myriad opportunities for sightseeing and research near the conference site and in Paris more generally.

HOPOS 2006 CALL FOR PAPERS

The International Society for the History of Philosophy of Science (HOPOS) will hold its sixth international congress in Paris, France, in cooperation with the *Société de Philosophie des Sciences (SPS)*.

Dates: June 14-18, 2006

Location: École normale supérieure, Paris

Conference languages: English and French

The Congress invites contributions to the history of philosophy of science from all time periods and from all scholarly approaches.

Program Committee

Jean Gayon, Co-Chair, Université Paris I
Doug Jesseph, Co-Chair, North Carolina State University
Roger Ariew, University of South Florida
Bernadette Bensaude-Vincent, Université Paris X
Joël Biard, Université François-Rabelais-Tours
Janet Folina, Macalester College
Dan Garber, Princeton University
Don Howard, University of Notre Dame
Paolo Mancosu, University of California, Berkeley
Marco Panza, CNRS (RESHEIS) & Universitat Pompeu Fabra
Warren Schmaus, Illinois Institute of Technology

Local Organizing Committee

Anastasios Brenner, Chair, Université Montpellier III
Daniel Andler, Université Paris IV & École normale supérieure
Anouk Barberousse, CNRS (IHPST)
Michel Bourdeau, CNRS (IHPST)
Frédéric Fruteau de Laclos, Université Paris I
Jean Gayon, Université Paris I
Michaël Heidelberger, Universität Tübingen
Thierry Martin, Université de Franche Comté
Pierre Wagner, Université Paris I

With the support of the Centre Georges Canguilhem – Université Paris VII (Marthe Tournou, coordination and organizational assistance)

Submission guidelines

1. Symposia: Symposia will comprise 3-4 papers, each 30 minutes (including 10 minutes discussion) on a given theme.

Proposals for symposia should include:

- title of symposium;
- symposium summary statement (maximum 500 words);
- abstracts (maximum 500 words for each paper);
- address of each participant including email, phone and institution;
- identification of symposium organizer, who will serve as contact with the Program Committee.

2. Individual papers (20 minutes plus 10 minutes discussion).

The Program Committee will decide on acceptance of proposals for symposia and individual papers, and assign the place of individual papers within the program. Proposals may be submitted in English or French and must reach the Program Committee by December 15, 2005 at the latest. Submissions should be sent via email (rtf or word format), with “HOPOS Submission” in the “Subject” line, to Jean Gayon gayon@noos.fr or Doug Jesseph doug_jesseph@ncsu.edu. If email is not possible, please direct submissions by regular post to: Société de philosophie des sciences (SPS), 45 rue d’Ulm, 75005 Paris, France. Notification of acceptance will be provided by the Program Committee by February 15, 2006.

Proposals for individual papers should include:

- title and abstract of the paper (maximum 500 words)
- address of the participant including email, phone and institution.

Inscription fee

40 € for HOPOS members and for SPS members (20 € if student or unemployed); 85 € for non members.

Registration and further information

Details regarding registration, housing, etc. will be provided at a later date on the HOPOS 2006 conference website, at <http://www.sps.ens.fr/activites/hopos2006/indexhopos.html>.

If you have further questions, contact Anastasios Brenner anastasios.brenner@wanadoo.fr or Marthe Tournou tournou@paris7.jussieu.fr; please refer to “HOPOS 2006” in your mail.

Oral History & History of Philosophy of Science: Notes from a HOPOS 2004 Workshop/Panel

Introduction

A small workshop convened at HOPOS 2004 to discuss issues and possibilities related to the pursuit of historical issues in philosophy of science using the tools and methods of oral history.

Much HOPOS scholarly work is focused on the twentieth century, and a fair amount of that scholarship looks at mid-to-late twentieth century developments in philosophy of science. Hence a great deal of historical work on relatively recent philosophy of science is ripe for exploration through an oral history approach. Very many leaders of the burgeoning growth of the discipline over the last forty years are still with us, and interviewing those leaders in structured, philosophically-informed ways can help shape our understanding of numerous recent and important developments.

Any number of promising projects might be advanced through oral history; some possibilities include:

1. The rise and fall of logical empiricism.
2. The growth of philosophy of biology in the late 1960s and early 1970s.
3. The internationalization of philosophy of science: tracing the diffusion of teachings of key 20th century figures, in universities outside the 'Anglo-American' world.
4. The interactions of physicists and philosophers since the 1950s.

Yet oral history represents an almost completely novel way to approach the history of this field, and there are several significant challenges to proceeding along these lines. First, we need to understand how the methods of oral history may be relevant to the general domain of history of philosophy of science. Second, particular topical projects may raise specific content-related questions, for example, relative to defining the topic's boundaries. Third, a host of practical issues must be resolved. These include identifying promising projects and participants, sketching work plans, finding oral historians who can collaborate on such projects, and thinking through funding possibilities. Fourth, as the history of philosophy of science to date has been text-based, projects in this domain should be designed so as to easily integrate the oral histories with related written sources, to ensure comprehensive historical treatment.

The workshop presentations focused on benefits of oral history, practical steps to ensure successful projects, risks of approaching the history of the domain in this fashion, and ingredients for compelling projects of this sort. Participants included Saul Fisher (American Council of Learned Societies)(moderator), Babak Ashrafi (Center for the History of Physics), Richard Creath (Arizona State University), Kevin Grau (Indiana University) and Sally Smith Hughes (Oral

History Project, Bancroft Library, UC Berkeley). Creath spoke about the risks and benefits of access to the unpublished thoughts of philosophers with significant published accounts of their views, and Grau spoke about the experience of conducting an oral history of the Indiana University HPS Department. Hughes spoke about practical issues in oral histories of intellectual history, including the scope of the project, use of appropriately trained interviewers, selection of respondents, mechanics of interviewing, ethical and legal issues, and modes of archiving. Ashrafi delved a bit deeper into the general application of oral history for history of ideas; his summary of the talk follows here.

Saul Fisher
American Council of Learned Societies
sfisher@acsls.org

Alternate strategies to oral history interviews, with implications for intellectual history

Scholars in a variety of fields, including history, are familiar with the problems of using memory as evidence. Paul Thompson, one of the leading practitioners of oral history in Britain, describes the process of remembering as one of thinking about experience, as one of conceiving the past in order to express it. This process creates problems for the historian. Contemporary categories are used in narratives about the past. Memories evoking negative feelings are suppressed. The times of events are shifted in order to make more coherent stories. Common and familiar activities and people are substituted for less common and less familiar ones. Information that does not easily fit into a coherent narrative is left out. Interactions with other historical actors, or with an interviewer, alter recollections of an event. In addition to forgetting events, people also recall events that never happened.

None of these complaints prevents the use of oral history interviews as evidence in the careful pursuit of appropriate historical questions. Archival evidence is also susceptible to various forms of bias. Nonetheless, scholars have learned to ask appropriate questions of archival evidence and to have reasonable expectations for its reliability. Using oral interviews productively and reliably as evidence in history requires having appropriate expectations for the evidence and asking appropriate question of that evidence. Alternative approaches are available for fitting the questions and expectations to the evidence.

One way of using oral history evidence is by carefully engineering what Lillian Hoddeson, the historian of physics, calls the conflict between memory and history. The goal of this approach is to achieve a convergent narrative based on all the

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NEWS OF THE PROFESSION.

Call for Reports

The Newsletter features occasional, concise reports on conferences and other events and resources of interest to HOPOI. If you are interesting in submitting such a report, please contact the Editor.

News Briefs

Lost notes on alchemy by Isaac Newton have been rediscovered and put on display at the Royal Society of London. This collection of notes, largely in English and including notes on the work of Pierre Jean Fabre, has been missing since 1936. For more info, see <http://www.royalsoc.ac.uk/news.asp?id=3252>

New consolidated NSF Program: The NSF Science and Society (S&S) Program has replaced the Science and Technology Studies (STS) and Societal Dimensions of Engineering, Science, and Technology (SDEST) Programs, including the following components: Ethics & Values in Science, Engineering & Technology (EVS); History & Philosophy of Science, Engineering, & Technology (HPS); Social Studies of Science, Engineering & Technology (SSS); and Studies of Policy, Science, Engineering, & Technology (SPS). The upcoming August Target Date for proposals is August 23, 2005. For more info, see http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5324&org=SBE&from=home.

EVENTS

Aug 23-26, 2005, Prague, Czech Republic: **Prague International Colloquium: "Dutch Book Arguments"**. For info, see <http://www.flu.cas.cz/Logica/Aconf/col2005.html> or <http://www.uni-konstanz.de/ppm/Events/DutchBooks>.

Aug 25-27, 2005, Amsterdam, Netherlands: **Philosophical Perspectives on Scientific Understanding**. For more info, email understanding@ph.vu.nl or see <http://www.ph.vu.nl/~understanding>.

Aug 29-30, 2005, Lisbon, Portugal: **ECAP5 Workshop: Quantum Information — Epistemological and Logical Lessons**. Papers by March 15, 2005. For more info, see <http://www.uni-konstanz.de/ppm/events/LisbonPhysics2005/>.

Sept 1-3, 2005, Nijmegen, Netherlands: **ESF "From Natural Philosophy to Science": Medicine, alchemy, magic and the study of living beings: 1200-1700**. For info, see http://www.ru.nl/filosofie/center/esf/nijmegen_2005.htm.

Sept 6-10, 2005, Casena, Italy: **VIII Summer School for the Philosophy of Physics** (Sept 6-9: Causality and Chance; Sept 9-10: The Elements and Meaning of Physics). For info, email mario.alai@uniurb.it.

Sept 6-9, 2005, Lisbon/Estoril, Portugal: **EuCheMS History of Chemistry Conference**. For more info, email Sichc-portugal@ulusofona.pt or see <http://Sichc-portugal.ulusofona.pt/>.

Sept 11-14, 2005, Patra, Greece: **3rd Meeting of the International Society for the History of Medicine**. For more info, email ishmgreece@hotmail.com.

Sept 16-17, 2005, Vancouver, British Columbia, Canada: **Pictures, Maps, Graphs: A Workshop on Scientific Imaging and Science**. Applications by June 15, 2005. For more info, email schabas@interchange.ubc.ca.

Sept 21-23, 2005, Paris, France: **Human Sciences and Religion: Conference of the Société Française pour l'Histoire des Sciences de l'Homme**. Proposals by Jan 15, 2005. For more info, email jcarroy@ehess.fr or nrichard@univ-paris1.fr.

Sept 23-24, 2005, Waco, Texas: **South Central Seminar in the History of Early Modern Philosophy at Baylor University**. For info, email Todd_Buras@baylor.edu.

Oct 20-22, 2005, Pasadena, California: **Annual Meeting of the Society for Social Studies of Science**, "The Representation of Controversial Objects: New Methods of Displaying the Unruly and the Anomalous in Science & Technology Studies". Abstracts by May 1, 2005. For info, see <http://www.4sconference.org/>.

Oct 20-22, 2005, Leiden, Netherlands: **"Who Needs Scientific Instruments?"** Proposals by Aug 1, 2005. For info, see <http://www.museumboerhaave.nl/conference>.

Oct 28-29, 2005, Newark, New Jersey: **Mid-Atlantic Seminar in Early Modern Philosophy, 4th Meeting** at Rutgers University. Abstracts by Sept 2, 2005. For info, email gabri@andromeda.rutgers.edu.

Nov 3-6, 2005, Washington, DC: **AAAI Fall Symposium: Explanation-Aware Computing**. Papers by May 6, 2005. For more info, see <http://exact2005.workshop.hm/>.

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Nov 17-19, 2005, Grenoble Switzerland: ESF "From Natural Philosophy to Science": The Mechanisation of Natural Philosophy. For info, see http://www.ru.nl/filosofie/center/esf/grenoble_2005.htm.

Nov 18-20, 2005, València, Spain: 1st (Spanish) Meeting for Postgraduate Students in History of Science. For more info, email jihc@iecat.net or see <http://www.uv.es/jihc/>.

Nov 25-26, 2005, Cesena, Italy: Albert Einstein: Philosopher and Methodologist, sponsored by the Interuniversity Center for Research in Philosophy and Fundamentals of Physics. For info, email mrozik_gm@comune.cesena.fc.it.

Dec 2-4, 2005, Blacksburg, Virginia: The Mind Project: Intersections of Philosophy, Humanities, and Human Science in the Journal, Mind, 1876-1920. Abstracts by July 15, 2005. For info, email staley@vt.edu or see <http://www.mse.vt.edu/faculty/staley/MIND/MINDconfweb.htm>.

Dec 13-14, 2005, Paris, France: Paris/London/Konstanz Workshop on History and Philosophy of Science: Formal vs. Historical Accounts of Scientific Theory Change. For more info, see <http://www.uni-konstanz.de/ppm/events/TheoryChange/index.htm>.

Dec 27-30, 2005, New York, New York: History of Early Analytic Philosophy Society (HEAPS) sessions at 2005 Eastern APA. Abstracts by May 30, 2005. For more info, email rcarey@lehman.cuny.edu or see <http://www.lehman.edu/deanhum/philosophy/heaps/>.

Feb 25-26, 2006, University of New Mexico, Albuquerque, New Mexico: Southwest Seminar in Early Modern Philosophy. Abstracts by Nov 1, 2005. For info, email mdomski@unm.edu or drutherford@ucsd.edu or see <http://www.unm.edu/~thinker/swseminar.html>.

March 21-26, 2006, Portland, Oregon: "Scientific Images" Mini-Conference in conjunction with the 2006 Pacific APA. Papers (<3000 wds) by Sept 1, 2005. For info, email dom.lopes@ubc.ca.

Mar 22-26, 2006, Portland, Oregon: History of Early Analytic Philosophy Society (HEAPS) sessions at 2006 Pacific APA. Abstracts by Sept 30, 2005. For more info, email rcarey@lehman.cuny.edu or see <http://www.lehman.edu/deanhum/philosophy/heaps/>.

March 24-25, 2006, Oxford, England: International Colloquium on "Franco-British intellectual exchanges prior to the XVIIth century" at the Maison française d'Oxford. Papers by Nov 15, 2005. For info email anne.bonnefoy@pictascience.org or see [http://histsciences.univ-](http://histsciences.univ-paris1.fr/sfhst/article.php3?id_article=150)

http://histsciences.univ-paris1.fr/sfhst/article.php3?id_article=150.

Apr 3-5, 2006, Cambridge, England: Philosophy and Historiography. Abstracts by Oct 31, 2005. For info, email c.chimisso@open.ac.uk or m.a.beaney@open.ac.uk, or see <http://www.open.ac.uk/Arts/bshp/confs/historio/historio.htm>.

Apr 26-29, 2006, Chicago, Illinois: History of Early Analytic Philosophy Society (HEAPS) sessions at 2006 Central APA. Abstracts by Nov 15, 2005. For more info, email rcarey@lehman.cuny.edu or see <http://www.lehman.edu/deanhum/philosophy/heaps/>

June 9-11, 2006, Max-Planck Institute for the History of Science, Berlin, Germany: Historical Perspectives on "Erklären" and "Verstehen": An Interdisciplinary Workshop. Abstracts by Sept 30, 2005. For info, email feest@mpiwg-berlin.mpg.de.

July 24-26, 2006, University of Hannover, Germany: 8th International Leibniz Congress: Unity in Plurality. Abstracts by Dec 1, 2005. For more info, email kongress@gwlb.de or see <http://www.gwlb.de/Leibniz/Gesellschaft/Veranstaltungen/Kongress/>.

Nov 2-5, 2006, Vancouver, British Columbia, Canada: Philosophy of Science Association 19th Biennial Meeting. Symposium and workshop proposals by Dec 1, 2005, electronically at <http://philsci.org/PSA06/submit>. For info, email jalex@lse.ac.uk.

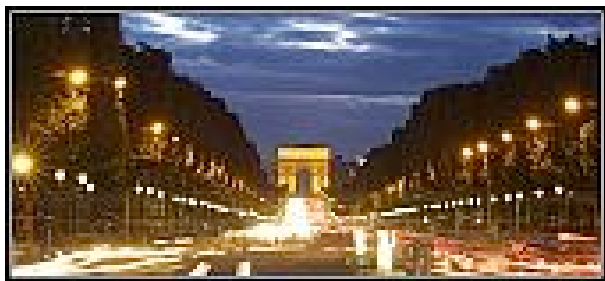
CALLS FOR CONTRIBUTIONS AND REQUESTS FOR ASSISTANCE

Theoria special issue "Scientific Representation". Papers wanted on the question, "what does it mean for a model to represent its target system?". Deadline June 30, 2005. For info, email José Díez (jadc@fll.urv.es) or Roman Frigg (r.p.frigg@lse.ac.uk).

Request for info from the editors of the new edition of the Dictionary of Scientific Biography [DSB]: Questionnaire regarding which articles in the original DSB are in most need of an Addendum, Commentary, or Up-date. For more info, email koertge@indiana.edu or see <http://www.indiana.edu/~newdsb/>.

Request for contributions: Science Studies, an international, peer-reviewed journal for science and technology studies. For subscription and submission info, see <http://pro.tsv.fi/stts/mag/>.

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CFPs & Requests (cont.)

EPISTEME, a journal of social epistemology, invites the submission of papers to be considered for the next two general issues (Oct 05, Feb 06). For info, email l.marsh@sussex.ac.uk or see <http://www.episteme.us.com>.

Call for Chairs: July 24-29, 2006, University of Malta: **10th Conference of the International Society for the Study of European Ideas (ISSEI): The European Mind: Narrative and Identity**. For info, email issei@nachshoSenim.org.il or see <http://issei2006.haifa.ac.il>.

Call for Papers: *Journal of the History of the Neurosciences*, Special Issue: "Visual Images and Visualization." Abstracts by Sept 1, 2005; papers by May 1, 2006. Submission details at <http://www.tandf.co.uk/journals/authors/njhnauth.pdf>. For info, email ione@diatrophe.com or see <http://www.diatrophe.com/jhn-cfp.html>.

MEMORIAL NOTES

Ernst Mayr (1904-2005): Evolutionary Biologist, Historian & Philosopher of Biology.

Mayr's best known work synthesized Darwinian and Mendelian principles to help formulate a synthetic theory of evolution. He was also a pioneer in historical and philosophical studies of biology, heavily influencing the current landscape of the field. Obituaries can be found at http://www.economist.com/people/displayStory.cfm?story_id=3644451 and <http://www.nature.com/nature/journal/v433/n7027/full/nature03435.html>.

Philip Morrison (1915-2005), Nuclear Physicist.

Morrison was a member of the Manhattan Project, and later taught at Cornell and MIT and worked as a popularizer of science. He was also involved in Cold War political controversies, resulting in accusations against him that were later proven to be untrue. For a full obituary see <http://www.timesonline.co.uk/printFriendly/0,,1-45-1589682-45.00.html>

Steven Straker (1942-2004), Professor Emeritus of History of Science, University of British Columbia.

Professor Straker was a key member of the community of history and philosophy of science. His work ranged from studies of Kepler to a biography of biochemist Juda Hirsch Quastel. Straker's papers have been donated to the UBC Archives. For these and a memorial biography see http://www.library.ubc.ca/archives/u_arch/straker.html.

ONLINE RESOURCES

Online Journals and Publications

Special Issues on Nanotechnology, Edited by Davis Baird and Joachim Schummer: Hyle 10-2, "Nanotech Challenges, Part 1" (<http://www.hyle.org/journal/issues/10-2/>); *Techné* 8-2, "Nanotech Challenges, Part 1" (<http://scholar.lib.vt.edu/ejournals/SPT/v8n2/>); Hyle 11-1, "Nanotech Challenges, Part 2" (<http://www.hyle.org/journal/issues/11-1/>); *Techné* 8-3, "Nanotech Challenges, Part 2" (<http://scholar.lib.vt.edu/ejournals/SPT/v8n3/>).

The European Guide to Science, Technology, and Innovation Studies. Edited by Paul Wouters, Jan Annerstedt, & Loet Leydesdorff. Luxembourg: Office for Official Publications of the European Communities, 1999 -- X, 517 pp., ISBN 92-828-5901-0. <http://www.leydesdorff.net/EUGuide/EUGuide.pdf>.

Elektronische Mitteilungen zur Astronomiegeschichte Nr. 74, 29 März 2004, available at <http://www.astrohist.org/aa/ema/>.

Public Understanding of Science, January 2005., v.14, n.1, at <http://pus.sagepub.com/content/vol14/issue1/etoc>.

January 2005 Newsletter of the IHPST Group available at <http://ihpst.org/newsletters/jan2005Newsletter.doc>. Included is information about submission date (Jan 31, 2005) for the IHPST Leeds conference (#1), and about subscriptions for the journal 'Science & Education' (#2).

Special Issue: Foundations of Chemistry: Philosophical, Historical, Educational and Interdisciplinary Studies of Chemistry, v.7, n.1 (2005). Edited by Rom Harré. Available at <http://www.kluweronline.com/issn/1386-4238>.

In French: Issues of La Nature: Revue des sciences et de leurs applications aux arts et à l'industrie (68 vols from 1873 to 1905) online at <http://cnum.cnam.fr/>. This popular science magazine

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has many papers on astronomy (written by Camille Flammarion and others) and is illustrated by delightful engravings. Courtesy of Le Conservatoire numérique des Arts & Métiers. Other items on this site may also of interest. Catalog at <http://cnum.cnam.fr/RUB/fcata.html>.

Available Online: Journal Electronique d'Histoire des Probabilités et de la Statistique (ISSN 1173-0074) is available at <http://www.jehps.net>. Issue 1: The period of the First World War; Issue 2: «Moments romantiques», the period of 1800-1840; Issue 3 (1st semester, 2006): Acts of the CAC 2005 Colloquium on Bernoulli's Art of Conjecture, Oct 20-22, 2005, Foyer des Professeurs de l'Université René Descartes (Paris V).

Archives, Databases, and Research Tools

Website listing recent doctoral dissertations worldwide in the medical humanities, including the history of science and the history of medicine, now available at <http://www.hsls.pitt.edu/guides/histmed/researchresources/dissertations/index.html>. Institutional subscribers to the ProQuest databases can download and print dissertations for free. Others can purchase these titles directly from ProQuest.

Multivariate vector-space citation relations among journals (beta version): Cosine-matrices for the 5714 journals which are processed from the citing side in the most recent Journal Citation Report of the Science Citation Index 2003 available at <http://www.leydesdorff.net/jcr03/citing>. Details of parameters and procedures are provided in the introductory text. Files are organized for import into Pajek, a freeware visualization program. Pajek can be downloaded at <http://vlado.fmf.uni-lj.si/pub/networks/pajek/>, courtesy of the Mathematics Department of the University of Ljubljana.

Echo: Exploring and Collecting History Online – Science, Technology, and Industry, a project of the Center for History and New Media, announces the launch of its redesigned, expanded, and improved Research Center, the most comprehensive portal for the history of science on the Web. See <http://echo.gmu.edu> or email echo@history.gmu.edu.

SciPer Project of the Universities of Leeds and Sheffield is delighted to announce the publication of the first installment of *Science in the Nineteenth-Century Periodical: An Electronic Index*, at <http://www.sciper.org>. For further details of the SciPer Project, see the project website at <http://www.sciper.leeds.ac.uk>.

Philosophy of Science open archives, courtesy of University of Pittsburgh: Online at <http://philsci-archive.pitt.edu/>

A David Hume Bibliography embraces virtually everything published by and on Hume in English since his lifetime: <http://www.students.yorku.ca/~slavasad/Hume/index.htm>

New website dedicated to the work of Gaston Bachelard, created by the Association des Amis de Gaston Bachelard: <http://www.gastonbachelard.org>

Online catalogue of French dissertations in history of science and technology: <http://histsciences.univ-paris1.fr/databases/hst-thesis/>.

An open archive for French social science, including science studies, has been created by the Centre pour la Communication Scientifique Directe. The archive, called HAL-SHS, can be accessed at <http://halshs.ccsd.cnrs.fr>. For further info at http://www.cnrs.fr/SHS/actions/HAL_SHS.php.

Project in Progress: The complete work of Charles Darwin online, based at The Centre for Research in the Arts, Social Sciences and Humanities (CRASSH) at the University of Cambridge. For info email jmv21@cam.ac.uk or see <http://darwin-online.org.uk>.

Now Available Proceedings of the 21st International Congress of History of Science (Mexico City) on CD-ROM. For info, please visit http://www.smhct.org/proceedings_xxiiichs.htm.

POSITIONS AVAILABLE

Faculty and Administrative Positions

University of California – San Diego: Full, Associate, or Assistant Professor of Sociology of Science (UC San Diego). Beginning July 1, 2007. Application deadline September 15, 2005. For info, see <http://sociology.ucsd.edu/> or email ascull@weber.ucsd.edu.

University of Cambridge, England: One-year lectureship in History and Philosophy of Science. Beginning by Oct 1, 2005. Applications by Aug 19, 2005. For info, email th10001@cam.ac.uk.

Yale University, New Haven, Connecticut: Assistant or junior Associate Professor of History of Science or Technology. Beginning July 1, 2006. Review of applications begins Sept 15, 2005. Preference to applicants working in history of experimental life sciences since 1800. For info, email daniel.kevles@yale.edu.

University of Chicago, Illinois: One-year lectureship in History of Science and Medicine, academic year 2005-2006. Review of applications begins Aug 15, 2005. For info, email awinter@uchicago.edu.

Max Planck Institute for the History of Science, Berlin, Germany: Coordinator of International Max Planck Research

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Network "History of Scientific Objects." Five-year half-time position. Beginning Sept 1, 2005. For info, see <http://www.mpiwg-berlin.mpg.de/PDF/network.pdf>.

Technical University of Denmark, Lyngby, Denmark: Assistant or Associate Professor of History of Technology. Applications by Aug 26, 2005. For info, see http://www.dtu.dk/Om_DTU/Ansattelse_paa_DTU/Ledige_stillinger/lektoradjunkt_dtv.aspx.

Cornell University, Ithaca, New York: Assistant or Associate Professor of Science & Technology Studies. Review of applications begins Oct 1, 2005. For info, see <http://www.sts.cornell.edu/>.

Fellowships and Studentships.

University of Illinois, Urbana-Champaign: Illinois Humanities Post-Doctoral Fellowship Awards, 2006-2007 (Annual Theme: "Beauty"). External research and teaching fellows to participate in interdisciplinary humanities program. For info, see http://www.iprh.uiuc.edu/fellowship_programs.htm.

University of Cambridge, England, Department of History and Philosophy of Science. Wellcome Trust Annual Master's Award and Doctoral Studentships in History of Health Sciences. For info about the Department, see <http://www.hps.cam.ac.uk>, and for studentship details <http://www.hps.cam.ac.uk/studying/funding.html>.

Institute for Advanced Study, Princeton, New Jersey: School of Historical Studies Memberships 2006-2007. Applications by Nov 15, 2005. For info, email mzelazny@ias.edu or see www.hs.ias.edu.

University of Bielefeld, Germany: Masters in History, Philosophy and Sociology of Science beginning Winter semester, 2005-06. Applications by September 30, 2005. For info, email nikolow@iwt.uni-bielefeld.de or see <http://www.uni-bielefeld.de/iwt/studiengaenge/hpss/>.

Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy: Intensive research session on "Scientific Revolutions of the 16th and 17th Centuries" (Sept 12 – Dec 14, 2005). For info, email crm@crm.sns.it or see <http://www.crm.sns.it> ("Grants & Open Positions").

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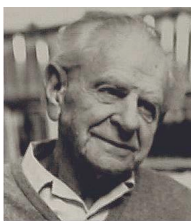
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BOOK REVIEWS



Popper (1902-1994)



Kuhn (1922-1996)

***Kuhn vs. Popper: The Struggle for the Soul of Science.* Steve Fuller. New York: Columbia University Press, 2004. 160 pp. Hardback (\$22, ISBN 0231134282).**

Following on Steve Fuller's controversial book on Kuhn, *Thomas Kuhn: A Philosophical History of Our Times* (2000), his new book focuses on the Kuhn-Popper debate. The book looks at political and moral issues surrounding the debate, from the perspective of Fuller's political social epistemology, rather than from the standard perspective—which ignores political and moral issues. Fuller acknowledges that Kuhn won the debate yet questions “whether it has been for the better” (p.4); in *Kuhn vs Popper*, he provides a further response to the debate on behalf of the Popperians.

Fuller's book is aimed at non-specialists, including a helpful list of readings at the end, and excluding footnotes and endnotes.. The specialist may find of interest Fuller's question, in the last chapter, as to whether Kuhn bears moral or political responsibility for his ideas. What motivates *Kuhn vs Popper* is Kuhn's discussion of the problem of the legitimation of scientific rationality and knowledge, as raised in *Structure of Scientific Revolutions* (1970). Fuller's social epistemology provides a two-pronged response to this legitimation project. The first prong of his response is to provide a *political* legitimation of scientific rationality and knowledge, in terms of a constitution of science and knowledge policy; Fuller has written five books on this first prong. The second prong is to “deconstruct” Kuhn, as attempted in *Thomas Kuhn* as well as in *Kuhn vs Popper*.

This latest book on Kuhn starts off with the suggestion that the standard image of Popper as an authoritarian and Kuhn as a liberal should be reversed. Fuller then explores the historical roots of their dispute. He argues that the rationality of science issue at the center of the Kuhn-Popper debate is prefigured in the Planck-Mach debate. Further historical connections are explored in Lakatos's notion of dialectics for theory choice and Duhem's notion of underdetermination of theories, and Fuller offers a gloss on the relation between history and philosophy of science in Whig and Tory terms. He also proposes that religion has differing influences on Kuhn and Popper, the former viewing scientific revolution like a religious conversion, the latter being influenced by Weber and Bergson's theories of

religion. There is a corresponding difference in their views of belief, Fuller suggests. For Kuhn, fixing belief is compelled by evidence; for Popper, beliefs are arrived at by decision.

Fuller's main concern here, though, is the moral, political, and institutional framework for understanding this debate. While the university is absent in Kuhn and Popper's discussions of science, Fuller sees the clash of their views as having far reaching implications for institutions of higher education. It is in such institutional contexts that one can see how personal moral and political views take on the weight of great responsibility. In this regard, Fuller reviews the debate between Popper and Adorno, and argues that Rorty's elevation of Heidegger (*Philosophy and the Mirror of Nature*, 1979) fails a Popperian test for the intellectual responsibility of one's ideas. Fuller ends the book on a most contentious note, raising the question of whether Kuhn—who Fuller charges with not taking responsibility for his ideas—is the American version of Heidegger, who fails to renounce Nazism.

In *Thomas Kuhn*, Fuller compares Kuhn to Chance from the movie *Being There*—someone who happens to be at the right place at the right time. In *Kuhn vs Popper*, Fuller goes a step further. Popper, for his part, took responsibility during the Vietnam War for his ideas with a call to scientists to avoid harm. By contrast, Kuhn was silent on the dangers of Big Science during the Cold War. Fuller asks whether Kuhn's silence in that context is similar to that of Heidegger, who failed to renounce Nazism. Though the question is bold and polemical, is it valid? Fuller's question tries to draw a parallel between not announcing the dangers of Big Science while the Cold War was ongoing and not rejecting Germany's Nazi rule. I do not see any parallel or even any similarity here. That Big Science was dangerous during the Cold War, even with the arms race, is a debatable point. It is also debatable whether Fuller is right to characterize Kuhn as a Cold War warrior, and whether Kuhn's silence would have been appropriate even if he were. On the other hand, that Nazism is an evil doctrine is not debatable and Heidegger's well-documented failure to reject Nazism can be judged in a far more straightforward manner.

Fuller's book is quite controversial, highlighting issues not generally discussed in the standard Kuhn-Popper debate, especially whether Kuhn was culpable for not drawing attention to Big Science's dangers given the politics of the day. Yet Fuller does not fully explain why his version of the Kuhn-Popper debate is better than others. Moreover, many of Fuller's views already can be found in *Thomas Kuhn*, a more scholarly though no less controversial book aimed at specialists. Some new views are expressed in this book, including those on the Popper-Adorno debate and Fuller's dramatic claims of Kuhn's moral culpability.

Francis Remedios
Edmonton, Alberta, Canada
francisr@shaw.ca

***The Vienna Circle: Studies in the Origins, Development, and Influence of Logical Empiricism* by Friedrich Stadler. xv + 984pp. Wien/New York: Springer-Verlag, 2001. Hardback (\$90/€80, ISBN 3211832432).**

Friedrich Stadler's *The Vienna Circle* is a finely crafted volume, a rich and deep mine of information about the origins and development of the Vienna Circle (VC). It draws on and greatly contributes to recent growth in work on the history of VC, Logical Positivism, and Logical Empiricism. More than any other book available, it can serve as a handbook for the teaching of HOPOS and a springboard for further research into the origins of twentieth century philosophy of science. It is an invaluable reference work.

The book begins with a methodological overview that goes well beyond a strictly philosophical account of the ideas of VC. Initially, Stadler makes a case for what he calls "The Unity of the History and Philosophy of Science"—using the VC's historiography as an example (Stadler, p.9). But he goes further, looking at the ideas in their social and cultural context:

What makes the scope of this book broader than a mere history of ideas is principally the inclusion of the social and institutional conditions surrounding the rise and demise of the thriving culture of science in the Austrian First Republic in its analysis of several intellectual developments. (Stadler, p.3)

Towards this end, Stadler presents biographies of four central VC members in context, revealing both the socio-political aspirations of VC and the impact that social and political changes had on the Circle itself. The most significant facet of this multi-dimensional account of the origins and development of the VC is Stadler's sensitivity to the politico-cultural background, locating it in intellectual and social history of Austria's First Republic. Moreover he refines the history by distinguishing four developmental phases of VC, by analyzing the VC's internal communicative structure, and by distinguishing the various and subtle philosophical differences between its members. Here the book engages with and improves on previous histories.

Stadler divides the VC's history into four phases: (1) the discussion circle of Philipp Frank, Hans Hahn, Otto Neurath, and Richard von Mises from 1907 until WW I; (2) the constitutive phase, in which Hans Hahn played a central role, from the end of WW I to the beginning of the Thursday meetings in 1924; (3) the non-public phase from 1924 to 1928, when Moritz Schlick ran the closed Thursday evening meetings; and (4) the public phase beginning in 1929 with the publication of the Circle's manifesto, the founding of the Ernst Mach Society, and the beginning of public representations of the Circle's views.

The first several chapters discuss historical antecedents to the VC's first phase, beginning with "The Social and Cultural



Hans Hahn (1879-1934) Moritz Schlick (1882-1936)

Situation—Initial Conditions for the Rise of Scientific Philosophy" and proceeding through a discussion of Mach's life, work, and influence. The fourth chapter discusses roots of the VC in the pre-WW I discussion circle of Frank, Hahn, Neurath, and von Mises; the fifth chapter five assesses the VC's socio-cultural framework. Detailed analysis of the VC's origins appear in chapters 6 and 7. Stadler documents as closely as possible internal VC discussions. From Carnap's diaries an overview is established of meetings that took place between July 7, 1927 and January 14, 1932. Detailed notes of meetings that took place from December 4, 1930 until July 2, 1931—the Schlick Circle protocols—appear here, as transcribed from the typescript of Rose Rand, a regular participant who was officially designated to take minutes (Stadler, p.234). The public phase of VC, we learn from Stadler, was inaugurated with three events: the collective appearance of the Schlick Circle members, under the name "Vienna Circle" at the First Conference on the Epistemology of the Exact Sciences in Prague, accompanied by presentation of the manifesto *The Scientific World Conception: The Vienna Circle*; the establishment in 1928-29 of the Ernst Mach Society as the VC's populist arm; and the publication, starting in 1930, of *Erkenntnis*. (Stadler, p.178)

One of the most public manifestations of VC was the Ernst Mach Society. Stadler shows that this was a creation not of the Vienna Circle but of the Austrian Freethinkers' Association, who sent the Society statutes to Vienna authorities on April 11, 1927. The *Allgemeiner Naturwissenschaftlicher Bildungsverein Ernst Mach*—Ernst Mach Society for the Promotion of Science Education—was part of the Freethinkers' programme for social improvement through the education of the population (mainly adults). However the lecture at the first meeting (November 23, 1928) was Philipp Frank's "Travel Impressions on the Scientific World Conception in Russia", Moritz Schlick was elected as chairman, Hans Hahn as vice chairman, Neurath and Carnap as keepers of the minutes, and Zilsel as board member. While VC members had a controlling influence over the Ernst Mach Society, though, the Freethinkers' social ideals were still maintained.

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A program for social reform was also an important part of the VC's worldview, as is clear from Stadler's discussion of the VC manifesto, *The Scientific World Conception: The Vienna Circle*. The manifesto proclaims that:

...endeavours toward a new organization of economic and social relations, toward the unification of mankind, toward a reform of school and education, all show an inner link with the scientific world-conception.... (as quoted, Stadler, p.531)

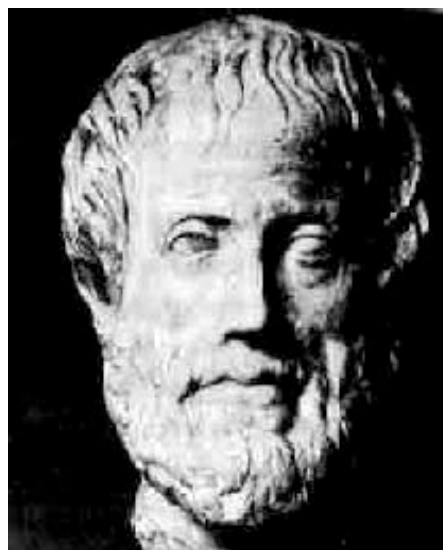
Stadler also provides detailed accounts of subsequent international gatherings, including the Conferences on the Epistemology of the Exact Sciences and International Congresses for the Unity of Science. Further chapters look at other influences, including Menger's "Mathematical Colloquium", communications VC and Wittgenstein, and an additional group organized by Heinrich Gomperz which served provided Popper's initial "theoretical framework".

In Stadler's detailed study of social and institutional conditions of the Austrian First Republic and their impact on VC, he analyses the central European University system, showing that, and why, the scientific world conception was never more than a marginal subject in Vienna, Berlin, and Prague universities. He also discusses the politics of school reform and adult education, and the role VC members, especially Neurath, played in these areas.

In addition to presenting the historical story of the origins, development, and influence of logical empiricism, a large section of the book—256 pages—is devoted to individual biography, bibliography, and literature associated with individuals connected with VC. The biographies are divided into "The Inner Circle" (including 19 individuals) and "The Periphery" (another 18 individuals). There are as well bibliographies of "Bibliographies on Logical Empiricism" and cited literature. Also included in this second part are unpublished and archival materials which illustrate the causes, course, and consequences of the murder of Moritz Schlick.

This is a fine and impressive study of VC, not just in its philosophical analysis but also in its sensitivity to socio-political aspects of this movement. Nonetheless I can envisage two improvements. The first is an index of topics to supplement the book's index of proper names. The second would be to include the VC's manifesto, *The Scientific World Conception: The Vienna Circle*, which though available in Otto Neurath (1979), *Empiricism and Sociology* (edited by Marie Neurath and Robert S. Cohen) is sufficiently important to the present history to warrant its inclusion.

Richard C. Jennings
History and Philosophy of Science
University of Cambridge
Cambridge, UK



Aristotle (384-322 BCE)

***Aristotle's Philosophy of Biology: Studies in the Origins of Life Science* by James G. Lennox. Cambridge, UK: Cambridge University Press, 2001. xxiii + 321pp. Hardback (\$70, ISBN 0521650275). Paperback (\$25.95, ISBN 0521659760).**

Thomas Kuhn claimed in *The Structure of Scientific Revolutions* that Aristotle and Galileo were responding to different worlds. It has been debated whether or not one should take this as a literal claim about perception. But Kuhn's point rests on a truism: Aristotle approached the world in a very different way as compared to the moderns and contemporary science. A corollary to this truism is that it is very difficult for us to think about the world as Aristotle did—to "get inside his head". Even for those of us who have a basic understanding of Aristotle's metaphysics and natural philosophy, it can still be a struggle to peruse some of his writings. And that is because understanding the basic theoretical framework is still not to think about the world as he did.

The most valuable aspect of James Lennox's book, *Aristotle's Philosophy of Biology*, is not its presentation of Aristotle's biological theory or central explanations of biological phenomena—though it has value on this level too. Rather, its greatest value is in helping us understand the method of Aristotle's thought: what it is to approach, analyze, and make inferences about the world, as Aristotle did.

This book, a volume in the Cambridge Studies in Philosophy and Biology series, contains essays originally written for an audience of Aristotle scholars, so the book can be a difficult and technically demanding read for the non-specialist. Yet the scholarship here repays the effort multifold. Despite comprising essays written over a 20 year period (1978-1998)

(continued on page 12)

the book has a strong thematic and interpretive coherence. It is divided into three parts, each with a specific argumentative focus. Short introductions to each part outline central topics and summarize the arguments and state of discourse in the field.

Part I aims to show that Aristotle's biological treatises—primarily *History of Animals* and *Parts of Animals*—represent a scientific practice in accordance with the philosophy of science laid out in the *Posterior Analytics*. In the first chapter, "Divide and Explain", Lennox argues that reading *History of Animals* as a taxonomy or as a systematic description of animal types makes it hopelessly incomplete and inadequate. Instead, he proposes, the work corresponds to the initial stage of scientific enquiry Aristotle works out in the *Posterior Analytics*. That stage aims at analyzing the essential character of general kinds, and distinguishing sub-kinds by identifying their differentia. In the second chapter, "Between Data and Demonstration," Lennox continues this line of reasoning, relating the preliminary work of *History of Animals* to the second stage of enquiry, the working out of demonstrations, which is begun in *Parts of Animals* and *Generation of Animals*. Those works do not contain demonstrations *per se*, yet they present the kinds of claims needed as premises for demonstration. In the fourth chapter, "Putting Philosophy of Science to the Test: The Case of Aristotle's Biology", Lennox argues that the philosophy of biology in *Parts of Animals* I is a development of the general philosophy of science in the *Analytics* that specifically introduces (i) the idea of conditional necessity into contexts of matter/form complexes, and (ii) multi-causal explanations, that is, explanations invoking necessity and teleology at once. The overall argument that the biology adheres to Aristotle's general scientific methodology, while complex and grounded on some novel and unorthodox interpretation, is pretty convincing. It is so because Lennox presents the general method in fine detail and effectively uses textual evidence to show that method at work in the biological treatises. This attention to detail brings the method in Aristotle's thought to light in a dramatic way.

Part II focuses on Aristotle's concepts of 'form', 'matter', and 'kind'. Here too Lennox's argument corresponds to a recent school of interpretation, one central claim of which is that Aristotle's zoology is key to understanding his metaphysics

generally. In this regard, Lennox discusses such issues as the sense in which 'species' are eternal for Aristotle, whether his biology is essentialist, and whether he subscribes to a "global" teleology. In each case, Lennox proposes, many contemporary (and early modern) philosophers have misunderstood Aristotle on these issues. In one striking example, Lennox challenges the standard view that Aristotle's biological theory involved a *typological* essentialism that rules out any possibility of evolutionary change. Compared to the arguments of Part I, the textual evidence for the arguments of Part II seems more indirect, or at least more diffused throughout the corpus. Indeed, at times one feels sympathy for Galileo's frustration (in the *Dialogi*) at the need to piece together Aristotle's arguments using passages from various writings. Lennox's analyses are generally successful, though, at least insofar as they support the claim that "[w]hatever it was that Darwin was up against, it was not Aristotelian essentialism." (162)

Part III contains discussions of teleological explanations in Aristotle. The first two essays (Chapters 10 and 11) address potential inconsistencies in Aristotle's use of the concepts of 'necessity', 'chance', and 'that for the sake of which'. Chapter 12 examines Theophrastus' criticisms against Aristotle's teleological explanations. In the final chapter Lennox focuses entirely on Plato's theistic form of teleology, thus offering an implicit contrast with his exposition of Aristotelian teleological explanation.

Other volumes on Aristotle's biology represent a broader range of views (including Gotthelf and Lennox, eds., *Philosophical Issues in Aristotle's Biology*, and Devereux and Pellegrin, eds., *Biologie, Logique, et Metaphysique chez Aristote*). But the interpretive unity of Lennox's book allows the reader to follow a more sustained and penetrating analysis of Aristotle's philosophical method. This volume is highly recommended for those desiring such a deeper understanding of Aristotle's methodology and the relation between his metaphysics and his philosophy of biology.

Chuck Ward
Millersville University
chuck.ward@millersville.edu

PICTET Marc-Auguste, *Correspondance. Sciences et techniques*, éditée par René Sigrist, Genève, Slatkine. Tome I, *Les correspondants genevois*, 1996; tome II, *Les correspondants français*, 1998.

La correspondance de Marc-Auguste Pictet (1752-1825) constitue un témoignage irremplaçable sur les sciences surtout expérimentales (elle concerne peu les mathématiques) pendant le dernier quart du XVIII^e siècle et le premier quart du XIX^e. Genève possède des scientifiques de valeur, en outre elle jouit d'une position privilégiée en Europe, comme lieu de rencontres,

de passages et de correspondances ; cette ville a aussi un point de vue original sur la France, car elle a "un pied dedans, un pied dehors".

M.-A. Pictet apparaît comme le savant "central" de la vie scientifique genevoise, depuis la mort de Saussure (1799) jusqu'au retour de Candolle (1816).

Les éditeurs publient non sa correspondance générale (qui serait trop volumineuse), mais seulement les lettres ayant un

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(Pictet review, cont.)

contenu scientifique et technique, au sens large de ces termes. Pour les correspondances avec les savants, ils ont à juste titre choisi de reproduire toutes les lettres, ils n'ont procédé à des sélections et coupures que pour les autres personnages liés aux sciences de façon occasionnelle.

Cette correspondance concerne environ 400 savants et amateurs de science, elle comporte entre 2500 et 3000 pièces (lettres, extraits, minutes). Les sources sont bien sûr soigneusement précisées, une grande partie des fonds se trouve à la B.P.U. de Genève. Nous ne rendons compte ici que des tomes I et II. Le tome III est consacré aux correspondants britanniques, le tome IV à ceux des autres pays (Suisse, Allemagne, Italie, etc.).

Le tome I contient plusieurs préfaces très claires, sur l'auteur, ses correspondants, sur les sources, les choix d'édition. Une partie de celles-ci est reprise dans le tome II. Il y a aussi les instruments de travail usuels indispensables (index des noms de personnes, listes de correspondants, biographies, chronologies, etc.).

Parmi les 74 correspondants qui figurent dans le tome I, notons (avec leur nombre de lettres) les principaux: Gosse (118), Saussure (108), Boissier (79), Senebier (61), Prévost (57), Peschier-Fontanes (34).

Parmi les 122 correspondants de France figurant dans le tome II, donnons, dans l'ordre, J.C. Lamétherie (54), Tardy (52), Cuvier (48), Dupin (48), Fourcroy (37), Ampère (36), Dolomieu (33), Charles (25); citons aussi Berthollet (17), Lalande (13), Biot (13), J. Fourier (11), etc.

L'importance de Pictet est liée à sa passion de la diffusion du savoir, surtout dans les sciences naturelles. Il est l'âme de la *Bibliothèque britannique*, créée en 1796, comportant 90 volumes, soit 36000 pages. L'universalité du personnage méritait cette édition qui fait bien revivre cinquante ans de vie scientifique, par un mélange judicieux de "vraie" science et de vie locale, de "terroir" en prise sur la culture et les arts.

Certes, on trouvera dans ces volumes peu de discussions philosophiques approfondies sur la science du temps, on n'y verra que dans quelques cas l'élaboration douloureuse des grands concepts nouveaux, comme apparaît dans les correspondances des savants marquants d'une époque (tels Euler, les Bernoulli, D'Alembert, Lagrange, Ampère, Gauss, etc.).

La préface de J.C. Pont, l'introduction du t. I ((J.M. Pictet) et celle du t. II (R. Sigrist) nous présentent les contenus scientifiques abordés, thème par thème. Nous n'allons pas résumer ici ces textes qui sont fort bien faits, nous nous contenterons d'évocations par groupes de correspondants.

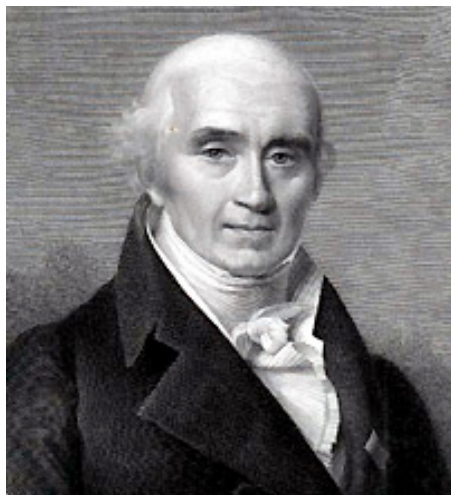
Le tome I

La diversité des sujets apparaît rien qu'à l'énumération de ceux relatifs à une vingtaine de correspondants genevois (t. I) ayant échangé avec Marc-Auguste Pictet un nombre limité de lettres. Voici quelques exemples typiques. Ce sont les inventions et les "pillards d'invention" (avec Argand et Bordier-Marcet), le baromètre, le thermomètre et l'hygromètre (avec Bacle et bien d'autres), les marées et Laplace, la combustion des armes à feu et les difficultés de l'infiniment petit (avec L. Bertrand), les soupes économiques et les explosifs pour creuser les routes de montagne (avec Candolle et Céard), les fulmigrations sulfureuses (avec Chuit), des mesures géodésiques (avec d'Eymar et Eynard-Chatelain), les différents types de marne (avec Gallatin), l'histoire du problème des trois corps (avec Gautier), les abeilles (avec Huber), les hôpitaux (avec Joly), un projet de tunnel sous la Tamise (avec G. Maurice), les water-closet (avec J. Th. Paul), des observations sur les rhubarbes et leurs effets médicaux (avec Peschier), les expériences électriques et leurs difficultés d'interprétation (avec Pictet-Baraban), une construction approchée du nombre pi (avec Schaub), les fossiles d'Estonie (avec Soret), etc.

La correspondance de Pictet nous fournit en outre des informations sur l'organisation des sociétés savantes, celles de Genève, mais aussi l'Académie des sciences de Paris, la Société royale de Londres, sur l'enseignement des sciences et sur ce que nous appellerions la vulgarisation scientifique par les revues, notamment la *Bibliothèque Britannique* (1796-1815) devenue *Bibliothèque Universelle* à partir de 1816, qu'anime Pictet avec son réseau de correspondants.

Indiquons maintenant ce qui nous a frappé dans les lettres entre Pictet et ses correspondants genevois les plus assidus et les plus prolixes. Il s'agit souvent d'échanges prolongés sur une question privilégiée. Avec H. Boissier, il est essentiellement question des tribulations des responsables genevois pour conserver et faire vivre leurs spécificités au moment de la mise en place des lycées et universités par la centralisation napoléonienne. Avec Gosse, le sujet principal est la faïencerie des Pâquis, où nous pouvons lire à la fois des problèmes techniques et divers aspects relatifs à la conduite des affaires. Cette correspondance nous renseigne aussi sur des aspects de sciences plus spéculatives avec l'interprétation des phénomènes de combustion (dans les années 1780), et sur les questions purement politiques liées à la Révolution (en 1792). La correspondance se continue avec Gosse fils en 1816, après la mort du père: on notera tout particulièrement le panorama de la science italienne par ce jeune médecin. Avec Mallet, il s'agit essentiellement de ses lettres de voyages à Paris et Londres en 1775-76, on y évoque surtout les instruments d'astronomie. Avec P. Prévost, Pictet aborde davantage la science spéculative, notamment autour des théories naissantes de la chaleur. De la correspondance très diversifiée avec Saussure, on retiendra tout spécialement les calculs de la hauteur du Mont-Blanc en 1778, puis d'autres montagnes. Enfin, avec

(continued on page 14)



Pictet (1752-1825)

(Pictet review, cont.)

Senebier c'est surtout la confection et la réception de la *Bibliothèque Britannique* en 1796-98 qui occupe l'essentiel des lettres et nous fait pénétrer dans le concret d'une revue de diffusion scientifique.

Le tome II

Le t. II a des caractéristiques analogues au t. I. Nous évoquerons là aussi pêle mêle la diversité des thèmes abordés avec les correspondants plus ou moins occasionnels. Les crétins du Valais (avec Alibert), les lois universelles de la physique et l'impulsion (avec Azaïs), le météorite de l'Aigle et le cercle répétiteur (avec Biot), le gaz hilarant et la caccine (avec Bobé-Moreau), la folie et la mise à mort d'un éléphant (avec Bourdet de la Nièvre), l'Angleterre (avec C. Dupin), les origines volcaniques des minéraux de l'Ardèche (avec Embry), les thermes de Saint-Gervais (avec Gontard), les débuts de l'exploitation de la houille avec ses implications économiques et techniques (avec Héron de Villefosse), la saveur galvanique, les lunettes, la capillarité (avec Lehot), la sécheresse et la comète de 1811 (avec Mathieu de Dombasle), les nouvelles industries britanniques (avec E. de Montgolfier), les ponts en barres métalliques et les ponts en fil de fer (avec Navier), le basalte et les aurores boréales (avec Patrin), la chaux, le mortier et le ciment (avec Prony), l'analyse des météorites (avec Saint-Amans) et la farine de pomme de terre réduite en vermicel (avec Ternaux). Nous ne comptons pas les innombrables discussions de nature météorologique avec de nombreux correspondants.

Le t. II possède aussi un sel particulier, c'est celui de nous faire pénétrer dans "l'âge d'or de la science française" et chez ses savants sacrés : Ampère, Arago, Berthollet, Cuvier, Fourcroy, J. Fourier, Lavoisier, etc. Souvent, cette correspondance se réduit pratiquement à des affaires administratives relatives à l'enseignement secondaire et universitaire, notamment avec

Ampère, Cuvier et Fourcroy, en raison des responsabilités des uns et des autres. Mais elle peut aussi toucher des points scientifiques importants, c'est le cas pour la chimie, puis l'électricité et le magnétisme (avec Ampère), les liens entre feu, chaleur et action chimique (avec Berthollet).

Nous mettons à part trois correspondants assidus, mais moins connus : Dolomieu, Lamétherie et Tardy. Ceux-ci abordent certes avec Pictet des questions scientifiques, comme la géologie et les volcans, la "nouvelle chimie", la dilatation de l'eau ou la météorologie. L'échange avec J.C. de la Métherie, opposant farouche à la révolution chimique de Lavoisier et de ses émules, est d'ailleurs tout à fait intéressant. Cependant, ce qui nous semble le plus précieux ici (comme c'était le cas notamment avec Senebier dans le t. I), c'est de voir devant nous concrètement comment se construit un journal scientifique grand public : correspondants, choix des libraires, intermédiaires, nombre d'exemplaires imprimés, réseaux de diffusion, affaires d'argent, problèmes de censure ou de relations avec les pouvoirs politiques, etc.

Nous espérons avoir, sinon montré, du moins fait sentir l'intérêt de cette publication, et on doit espérer que les t. III et IV nous en apprendront autant (mais souvent de façon imprévue) sur les sciences et arts dans les cinq décennies qui entourent 1800.

Pierre Crépel
CNRS, Université de Lyon I

***The Science of Conjecture: Evidence and Probability Before Pascal.* James Franklin. Baltimore: Johns Hopkins University Press, 2002. 512 pp. Paperback. \$25. ISBN 0801871093.**

If there is any book that historians of the philosophy of science should read this year, it is this one, which is destined to go down as a classic. Students of the history of probability and reasoning will no doubt remember the publication of Ian Hacking's *The Emergence of Probability* in 1975 as a major event in the field. Franklin's book may have an even bigger impact.

It was, in fact, Hacking's book that gave rise to this one. Franklin is gracious about *The Emergence of Probability* but notes that Hacking's claim that the concept of evidential support hardly existed until the end of the Renaissance was itself in need of evidential support, and since 1975 a great deal of scholarship has been carried out to disprove this thesis. Franklin's magnificent achievement has been to synthesize this work from across a large range of diverse disciplines, to provide a coherent and sensible philosophical framework for all of it, and to present it in an eminently clear and readable manner.

By 'probability' Franklin does not just mean probability

(continued on page 15)

(Franklin review, cont.)

associated with dice-throwing ('factual probability') but 'likelihood' or 'logical probability'. In other words, the book addresses the early history of non-demonstrative or 'inductive' reasoning, where some degree of likelihood can be reached from the evidence—though not certainty or logical entailment; the term "reasoning under uncertainty" is also appropriate here.

As non-demonstrative reasoning is used extensively in almost all fields of endeavor, an ideal book about the history of the concept might survey its use across most such fields. While that task might seem impossible, Franklin manages to survey uses of probability in ancient, medieval, and Renaissance law, in Greek and Roman times, in Christianity, Judaism, and Islam, in astronomy, history, cognitive science and artificial intelligence, medicine, witch-finding, the use of torture to extract confessions, philosophy, theology, dice games, medicine, astrology, ethics, and in regard to business, contracts, insurance, and so on. Few other books have this scope and range, while still managing to be a work of the highest intellectual caliber as well. Moreover, the writing is marvelous: direct, clear, and simple but elegant.

This book throws much fresh light upon Aristotle, Aquinas, Ptolemy, Kepler, Nicole Oresme, William of Ockham, and Pascal, amongst others. Aristotle, for instance, is given credit for probabilistic notions appearing in his vast set of experiments and observations, especially in biology. Franklin points out that for Aristotle notions of *rhetorical* probability readily apply to arguments in biology. For example, on the reasons for thinking that semen comes from all parts of the body, Aristotle remarks: "These opinions are made probable by the witness of such facts as that children are born with a likeness to their parents, not only in congenital but also in acquired characteristics".¹ In this context, Franklin notes that the apocryphal *Rhetoric to Alexander*, much despised as an inferior Aristotle forgery, is in fact much clearer on probability than Aristotle ever was on the proportional syllogism. The general picture here is that, despite any later stereotypes of Aristotle as an obstacle to experimental science, in actuality he made key contributions to the early advancement of probabilistic thought.

Other early authors on probabilistic concepts also receive warranted attention. Ptolemy explicitly accepted the principle of economy, declaring that it is "a good principle to explain the phenomena by the simplest hypotheses possible".² Why then was his own theory so complicated? In his view, we should not expect the heavens, which are subject to no hindrance (even by themselves) to be as simple as things on Earth, so if the theory fits, its complicated nature is no barrier to acceptance. Regarding Ockham's razor, it is well known that Ockham did not invent it (it can be traced back to at least Aristotle) but it is less well known that Ockham was more interested in restricting use of the principle than in promoting it. In regard to the Eucharist, for example, Ockham thought that a plurality of miracles is to be postulated, on the grounds that it pleases God.

As Ockham puts it, "God does many things by means of more which he could have done by means of fewer, simply because he wishes it".³

Kepler plays a central role in this story, developing in his 'harmonies of the world' what Franklin identifies as a core methodological concept. The modern term for this concept is 'argument from concomitant variation', where a theory predicts that variations in x will cause proportionate variations in y . The more successful a theory is in finding such 'concomitant variation', the more likely the theory is to be true. Cases amenable to this sort of reasoning may vary, from simple quantitative correlations, to much more complex situations where a 'qualitative' inference to the best explanation must be made. In practice, Kepler was good at both types of reasoning, as we see in his ellipses and solids theories. He further demanded a level of accuracy and agreement in measurement and calculation that was unprecedented for his time—greater than anything found in Galileo, for example. This required, in addition to prodigious calculating skill, a treatment of random errors by averaging the solutions of redundant systems of equations—which treatment Kepler developed. Hence Kepler's probabilistic views, though never stated very clearly, were closer to establishing objective logical relations than to promoting reliance on argument from authority.

One of the most interesting subjects addressed by the book is the role played in the early history of probability by fields outside of philosophy or science. The law is one prominent example. The role of legal thought here has not been widely recognized but it is hardly surprising when one considers that—more than anyone else in those times—lawyers and legal theorists were constantly evaluating evidence that did not yield certainty, in response to which they developed various evaluation methods, and recognized various degrees of strength of evidence. Another fascinating example is how the medieval Church justified its heavy involvement in the buying and selling of annuities. As Franklin explains, as long as the church did not have greatly the better of the deal, once the various risk factors were taken into account, it was not usury. This may sound a cynical move, but it was just as well: if the ban on usury had been taken too literally, then much of modern finance—and numerous corresponding developments in probabilistic thought—would be impossible.

Modern society is dependent upon the ability to spread risk around, and this demands quantification. One of the beginning moves in this direction came from the original maritime insurance industry of the twelfth and thirteenth centuries, which set monetary prices for losses and gains, and assigned probabilities to various events on the basis of the past frequencies in shipping records.

In Franklin's self-confessed 'Whiggish' view of intellectual

(continued on page 16)

(Franklin review, cont.)

progress, our conception of probability has continually improved through developments such as these. Although Fermat's and Pascal's findings were incredibly important, they should be seen in their proper context. By this, I do not mean that their advances depended upon earlier progress by insurance companies; on the contrary, their discoveries were remarkably original. But it is not the case that the world did not understand the idea of partial support—in other words, probability—until Pascal and Fermat got to work. Such a central idea has existed and been developed since ancient times, and thanks to Franklin, our perspective on such prior developments has been immeasurably improved.

Scott Campbell
Department of Philosophy
University of Nottingham, UK
scott.campbell@nottingham.ac.uk

¹ Aristotle, *Generation of Animals* 721b27-30.

² Ptolemy, *Almagest* 3, trans. G. Toomer, ch. 1 at 132-136.

³ William of Ockham, *Scriptum in librum primum Sententiarum ordinato* I dist. 14 q. 2.

THOMAS HARRIOT: An Elizabethan Man of Science, ed. Robert Fox, Aldershot, UK: Ashgate, 2000. xii + 317 pp. Hardback (\$85, ISBN 0754600785).

This is an excellent book. The essays, culled from a seminar, demonstrate a concerted effort to set the body of work left by Thomas Harriot (1560-1621) against the range of 'knowledge practices' of the Elizabethan period. Until recently, Harriot has been appropriated either by the occultism and magic camp or, more narrowly, but no less misleadingly, as a footnote—albeit an important one—in the history of algebra. The contributors to this volume all show the evidential bias and explanatory difficulties involved in so partial a perspective. Perhaps most refreshingly, they do not fudge the problems involved in reconstructing Harriot's "ideas" from his manuscript drafts (for which 'jottings' would sometimes be an appropriate term).

Gordon Batho provides a clear account of the culture of service and patronage against which any consideration of Harriot's relationship to Henry Percy, Ninth Earl of Northumberland must start. Batho himself does not draw any conclusions on the "science and patronage" theme but has provided valuable information for anyone who cares to undertake that work. Hilary Gatti offers an interesting though occasionally tendentious attempt to draw connections between the mathematical innovations and traditions of late Renaissance natural philosophy in Telesio and Bruno. While this is a worthwhile exercise, it should be read together with the excellent essay of Stephen Clucas, "Thomas Harriot and the Field of Knowledge in the Renaissance". Clucas gives a



Thomas Harriot
(1560-1621)

powerful account of Harriot as interested first and foremost in an experimentally-derived mathematicization of the world. This interest of Harriot's jars with many sixteenth century 'natural philosophies' as it is less concerned with linking the logical and the conceptual. Such an account provides far more convincing reason for Harriot's reputation as a

scientific atheist than any involvement with demons, magic, and Christopher Marlowe. A useful accessory to this argument is Mandelbrote's piece, "The Religion of Harriot", which, however, may overestimate the 'Machivellian' nature of religious politics at the time, and discount the evidentially ephemeral late Elizabethan practices of private devotion.

The issue of Harriot's mathematics and its relation to what counted as knowledge in the early modern period is the core of John J. Roche's useful overview of Harriot's place in twentieth-century historiography of science. Roche claims that 'a humanistic history of the mathematical sciences, perhaps the most difficult of all histories' (p. 245) could help bridge the gap between C. P. Snow's two cultures of the arts and sciences. The comment is singularly inappropriate to Harriot. Unlike John Dee or Henry Savile, there seems to be less pressure in Harriot's work to intergrate his mathematical practices into an account of the arts curriculum of grammar, rhetoric, and dialectic. A comparison with Savile's *Praelections on Euclid* makes this abundantly clear. Another essay on Harriot's mathematics—Muriel Seltman's piece on technical aspects of his algebra—is hard to follow without background in the history of polynomial equations (more on Cardano here would have helped) but her conclusions are well supported. Finally, John D. North brilliantly addresses 'astrological atomism', identifying once again interesting predecessors for the central problem of relating mathematical and other conceptual schemes in physical theory.

Naturally, in such a book one finds much repetition, inevitable where the participants do not all speak with one voice. Manifest errors seem few, though one may question why Johannes Wier's *De praestigiis demonum* is offered by Clucas (p. 133) as evidence of a positive interest in the occult. The book offers a survey of Harriot's manuscripts (pp. 286-297), a full bibliography to secondary literature, and an appendix on the iconography of Harriot. This book will help anyone trying to think through historically the boundaries of mathematics and its troubled relationship to other, less abstract scientific modes of exposition.

D. C. Andersson
The Warburg Institute, London

***Can a Darwinian Be a Christian?: The Relationship Between Science and Religion.* Michael Ruse. 242 pp. Cambridge: Cambridge University Press, 2001. Paperback (\$17.99, ISBN 0521637163).**

Ruse's book attempts to defend the thesis that a Darwinian can be a Christian. This thesis is quite controversial given the reductionist and materialist orientation of a typical evolutionist and the non-reductionist approach of a Christian. Ruse's book is an important investigation of relationships between science and religion, and attempts to bridge the gap between the two domains. One of Ruse's important themes is that a Darwinian who is a Christian is a much more serious evolutionist than one who is merely a scientist. Ruse believes that while it is important to defend evolution, religion also plays an essential role in science.

Ruse spends the first several chapters discussing the topics of science and religion separately. After outlining the origins and central tenets of Darwinism and comparing evolutionism and creationism, Ruse discusses central tenets and historical origins of Christianity, preparing the reader for a comparison of Darwinism and Christianity. Ruse's goal in the first part of the book is to show a reciprocal relationship between science and religion. There are some challenges here. To show that there is a relationship or comparison between science and religion, it is difficult not to either trivialize some fundamental aspect of each, or to subsume one into the other.

Ruse next argues that science and religion both consider humans as special creatures within the animal kingdom. Human beings are special because they possess consciousness, which emerged as animals developed bigger and better brains to perform certain complex functions. Further, consciousness acts as a filter and gives human beings the power and flexibility that is not possessed by animals. Thus, from an evolutionary perspective, human beings have a special place in nature because of consciousness, while for the Christian, human beings are special because they are made in the image of God.

On a Christian view, the rational soul makes a person distinctly human. By contrast, Darwinism features a reductionist ontology and methodology, viewing the soul or mind in terms of its physical components alone; human thought is associated with one substance (the physical) instead of two. If the soul is a spiritual substance from a religious perspective, rendering it distinctive and special, this would appear to clash with Darwinism. Ruse's response is to mitigate Darwinian reductionism by viewing the mind and intelligence as being naturally produced parts of the soul, such that the mind must have physical manifestations. This argument for equating Darwinian and Christian views is not wholly compelling.

The middle section of the book is likely the most controversial. As naturalists, Darwinians are sometimes regarded as atheists; Ruse does not believe such an extreme view is accurate. Here he invokes Augustinian science, suggesting that there is no

temptation to a denial of divinity since science makes no reference to God. Christianity is beyond the bounds of science. All knowledge of the world starts with sensation, understanding, and reasoning—God's reality, by contrast, is beyond our apprehension. Ruse concludes that the Darwinian can be a Christian without penalty.

Other concerns include the design of the world and the nature of depravity and morality. Ruse suggests that for a Christian Darwinian, God designed the world through natural selection, accommodating the Christian belief that God designed the world through miraculous intervention. Further, Darwinism and Christianity both allow that human beings suffer and that evil exists—and according to each perspective suffering and evil give human beings an inclination to better themselves. The Darwinian is less repulsed by pain and suffering since she has no choice but to allow them to occur, as part of the human condition.

This leads Ruse to a discussion of social Darwinism, which appeals to the progressive nature of evolution as justification for ethical claims. Such a sociobiological ethics is based on reciprocity and altruism: in the struggle for survival and reproduction, human beings need to cooperate and commit selfless acts. Yet this picture is incomplete, Ruse proposes, and Christianity plugs some important gaps in Darwinism and gives it moral value. For one, the Christian social Darwinian is in a better position than unbelieving social Darwinians, as the religious perspective reinforces the notion of progress in evolution, construed as part of God's plan. Moreover, social Darwinism unites Darwinism and ethics by helping individuals understand obligations towards performing the good.

It is not only feasible and valuable for a Christian to be a Darwinian; this works the other way, too. Ruse suggests that a Darwinian can be a more serious scientist as a Christian because of reciprocal relations between science and religion. In addition, a Darwinian can uphold most important aspects of Christianity without undermining his or her mission as a scientist.

This book will be of particular interest to those committed to the notion that the paradigms of science and religion must remain separate. To the contrary, Ruse proposes, an individual can be both a Darwinian and a Christian, although with some rational and objective restrictions on ontology and method.

Irene Switankowsky
Department of Philosophy
University of Waterloo, Ontario
isswitan@watarts.uwaterloo.ca

(Oral History and HOPOS, cont.)

available evidence. The historian uses documentary evidence to stimulate an interviewee's recall. This often causes the interviewee to rethink, re-express and even alter memories. Interviewee's memories are in turn used to help explore the archives, to uncover alternative interpretations of documents, and to reveal details obscured or missing in documents. Hoddeson's approach is collaborative with interviewees and corrects their false memories.

An alternative approach eschews the notion of false memory. In this approach, historians consider memories themselves as historical facts to be described and explained as the outcome of historical processes. Memories, and the narratives woven from them, are components of personal and community identity. These identities are used to transmit, explain, and justify disciplinary values, methods and exemplars. Memories are used to commemorate the brilliance of the leaders of a field, and thus to articulate the aspirations of members of a community. Both remembering and forgetting come to follow conventions that reinforce community identity and to situate individual identities within the larger narrative. Appropriate questions include: What is remembered and forgotten by individuals? What are the conventions of memory in a community? How do these conventions play into individual and community identity? How do these identities constrain and facilitate particular modes of practice in a discipline?

That memory can be put to the service of commemoration or building identity is not surprising. The problem for historians is that not only are narratives woven from memories, but that memory is often altered in the process. Furthermore, history as memory (or memory as history) lives in tension with history in a critical mode (using either of the approaches sketched above). The latter often reveals mythological aspects of the former and competes with the histories internally generated by the community under study. This tension is particularly important in oral history interviewing because it complicates the relationship between the interviewer and the interviewee.

In order to select between the alternative approaches to oral history interviews, HOPOS members will have to be clear about their goals for the project. Are the community's sense of identity, and the social and disciplinary function of memory in the community to be a subject of the study? To what extent are the interviewers also members of the community under study? Would it be better for the interviewer to be an insider or an outsider? Selecting a specific approach to how interviewees' memories are to be treated, and to be used as evidence, will obscure or illuminate different kinds of historical insights. These choices should be carefully considered before undertaking this project.

Babak Ashrafi
AIP Center for the History of Physics
bashrafi@aip.org

ABOUT HOPOS

HOPOS, The International Society for the History of Philosophy of Science, gathers scholars who share an interest in promoting research on the history of the philosophy of science and related topics in the history of the natural and social sciences, logic, philosophy, and mathematics. We interpret this statement of shared interest broadly, to include all historical periods and diverse methodologies. We aim to promote historical work in a variety of ways, including sponsorship of meetings and conference sessions, publication of books and special issues of journals, dissemination of information about libraries, archives, and collections, and preparation of bibliographies and research guides.

The HOPOS electronic mailing list is a genial virtual forum for the exchange of news, ideas, and queries regarding the history of philosophy of science. Archives of the listserv are available at <http://listserv.nd.edu/archives/hopos-1.html>. For information on HOPOS and the HOPOS listserv, go to <http://scistud.umkc.edu/hopos>. Please note that this website address may be changing in the coming months.

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