

NEWSletter

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of the History of Science Society

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Arizona State University Welcomes HSS to Phoenix

We are eager to welcome our HSS friends to the Phoenix meeting. Just for the record, we were surprised when Jay Malone reported that the HSS had decided to meet here, since the search process through the committees did not involve asking us. We were worried by the slightly dumpy hotel, a city hard to get around without a car, and a dead downtown. That was three years ago, and HA! we were so wrong. Jay had checked things out, and knew that the hotel was to undergo renovations (it has), and that the city was to complete a light rail system (which it has, and it works great). And because of the light rail and a new downtown campus for Arizona State University, the area has come alive. By the time of the meeting, there will be a just-opened grocery store near the hotel, and new restaurants and other shops keep popping up.

When you arrive in November, the weather should be perfect. It might rain a little, so bring a sweater or jacket at night, but we promise no snow or ice or sleet or hail. You are much more likely to need sunscreen. And be prepared for some great food. We'll post information about local eateries, drinkeries, activities, and possible excursions for those of you who care to stay on for a little vacation, as the meeting is the week before the U.S. Thanksgiving. There are great hikes within a 30-minute drive of Phoenix, and some terrific hotels and resorts as well. A bit farther afield lie Sedona; the excellent Museum of Northern Arizona; the mining town of Jerome; the Grand Canyon and Tucson; Saguaro National Monument; the Globe-Bisbee mining area; and the Arizona-Sonora Desert Museum.

The program that co-chairs Cathryn Carson and Jessica Riskin have put together looks great, and we understand they regretted having to turn away quite a number of outstanding proposals. The conference will feature some innovations with receptions and suchlike.

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Notes from the Inside

Your Officers

Having just finished my board meeting with the HSS Executive Committee, I am reminded of (and grateful for) the dedication of our officers. Their commitment lies far beyond the detachment demonstrated by many officials in academic societies. For example, at the recent Executive Committee meeting, Editor, Bernie Lightman; Secretary, Maggie Osler; Vice President, Paul Farber; and President, Jane Maienschein spent three days laboring over a 200-plus page briefing book, discussing everything from the revival of HSS's life memberships, to practical points in planning the annual meeting. Another example of this dedication comes from earlier this year, when Maienschein (from Arizona) and Farber (from Oregon) visited the Executive Office at the University of Florida (a two-hour car ride from major airports). Here they discussed Society business, our future, and provided an intellectual lift for the history of science at the University of Florida.

The latter bit of service was all the more appreciated due to UF's recent decision to suspend its graduate program in the history of science.

The budget crisis here in Florida contributed to the program's suspension and while we are grateful to UF for their continuing support of the HSS (last year, before the suspension vote, we signed an agreement to house the Office through 2013), the lack of a graduate program has prompted us to seek proposals from other universities to host the Executive Office (see the April 09 *Newsletter*). We were surprised and delighted to receive six letters of interest from potential hosts, and we will keep HSS members apprised of our progress. We expect to move in the summer of 2010, and for better or for worse, I plan to follow.

Even though such moves are disruptive, especially for families, the transition will be all the more tolerable due to our active and caring officers. In that vein, I would like to thank Rachel Ankeny, who devoted untold hours to the HSS as Treasurer and welcome our new Treasurer, Adam Apt, a long-time HSS member (see story p. 5). I would also like to welcome and congratulate our Vice President elect, Lynn Nyhart, another dedicated member with many strengths that will take us far.

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Moving?

Please notify both the HSS Executive Office and the University of Chicago Press.

EDITORIAL POLICIES, ADVERTISING AND SUBMISSIONS

The *History of Science Society Newsletter* is published in January, April, July, and October, and sent to all individual members of the Society; those who reside outside of North America pay an additional \$5 annually to cover a portion of airmail charges. The *Newsletter* is available to nonmembers and institutions for \$25 a year.

The *Newsletter* is edited and desktop published in the Executive Office. The format and editorial policies are determined by the Executive Director in consultation with the Committee on Publications and the Society Editor. All advertising copy must be submitted in electronic form. Advertisements are accepted on a space-available basis only, and the Society reserves the right not to print a submission. The rates are as follows: Full page (7 x 9.25"), \$625; Horizontal or Vertical Half page (7 x 4.6"), \$375; Quarter page (3.5 x 4.6"), \$225. The deadline for insertion orders is six weeks prior to the month of publication and should be sent to the attention of the HSS Executive Office. The deadline for news, announcements, and job/fellowship/prize listings is firm: Six weeks prior to the month of publication. Long items (feature stories) should be submitted eight weeks prior to the month of publication. Please send all material to the attention of the managing editor, Michal Meyer: michal@hssonline.org.

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Continued from p. 1

There will be cash bar options in the hotel, there are many informal places within walking distance and others easily accessible by light rail for those who want to arrange alternative get-togethers, and we are planning a big event on Saturday night.

For other evenings, take advantage of being downtown. Across the street from the hotel are the Herberger Theater and the Arizona Opera (<http://www.azopera.com/>), which offers *Salome* that weekend. The Desert Botanical Garden, not far from ASU's Tempe campus, is a world-class attraction, and well worth the short trip (there's even a zoo next door). There are also sporting venues, including the US Airways Center, where the Phoenix Suns basketball team will be active during our meeting. The downtown Arizona State campus offers occasional events as well. Rather than fill this message with more Web links that are not yet fully updated, we'll maintain a Web site with local information as we learn more. For those who would like to know about opportunities for birding, field trips, and other outdoor activities, Matt Chew (matt.chew@asu.edu) and Andrew Hamilton (ahamilton@asu.edu) are prepared to help you learn more.

Instead of the usual hotel dinner with its choice of rubbery chicken and such, we had the option to go off site. We have chosen the excellent Heard Museum, one of the finest anthropological museums anywhere, and which allows guests to tour the museum during the evening. We will have outdoor drinks (cash bar) and entertainment, then a reception-style buffet featuring Southwest foods for dinner and dessert. This lovely site is an easy ride on the light rail or a short cab ride. We will help provide transportation for anyone with special needs. The opportunity to hold this event at this very popular museum site comes thanks to the Center for Biology and Society in the College of Liberal Arts and Sciences at Arizona State, which is serving as host and sponsor.

We also want to highlight another innovation for this dinner. One of the first two Biology and Society graduates from ASU is Melanie Hunter, a long-time HSS member. Melanie will be coordinating the graduate-student volunteers at the meeting. She has also donated \$1000 to allow us to hire Native American

musicians to entertain us during the evening. She offers this as an invitation to others: get involved, help out where you can, with donations or volunteering. She notes that we could have naming opportunities, with sponsors helping to make possible receptions or other events. We look forward to others following Melanie's inspiring lead.

Just a quick note about your hosts. The local arrangements team comes from Arizona State University, where we do things a little differently in our "New American University." Yes, we have first-rate historians and graduate opportunities through the new School of Historical, Philosophical, and Religious Studies, where Monica Green, Paul Hirt, and Hoyt Tillman lead the way in history of science. We have historians of science on the brand new campus of the Barrett Honors College that is part of the ASU Tempe Campus, and others in the School of Evolution and Social Change. The formal History and Philosophy of Science Program resides in the School of Life Sciences, and is directed by Richard Creath, with lively graduate programs directed by Andrew Hamilton and Karin Ellison. That group coordinates closely with the Bioethics, Policy, and Law Program directed by Jason Scott Robert and the Consortium for Science Policy and Outcomes led by Dave Guston and Dan Sarewitz. These programs all connect with the new Human and Social Dimensions of Science and Technology Program directed by Clark Miller. Paul Hirt, Ben Minter, Steve Pyne, and others offer opportunities in environmental history and ethics. The new medical school collaboration in downtown Phoenix brings together scholars from the University of Arizona and Arizona State, and Jason Scott Robert directs the Medicine and Society theme there.

There are even more portals through which graduate students, undergraduate students, post-doctoral fellows, and faculty members come together in scholarship across diverse areas related to the history of science. The Center for Biology and Society coordinates many research projects, including the Embryo Project, Carnap Project, Theoretical Biology Project, and History and Philosophy of Systematics Project. All of these offer training opportunities for graduate students and postdocs.

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(See <http://cbs.asu.edu/> for graduate, research, and other opportunities.)

We are fortunate to be supported by great administrators who are also intellectual colleagues. Robert Page is the Director of the School of Life Sciences and has attended two of the Marine Biological Laboratory Seminars on the History of Biology (now MBL-ASU), and our Senior Vice President and Dean Quentin Wheeler has a current Focus Section essay (with Andrew Hamilton of the School of Life Sciences) in *Isis*. As you can see, this is a tremendously friendly place for our field. We invite you to come visit when you are in Phoenix; we now enjoy being able to say, “it’s just a light rail ride away.”

– *by Jane Maienschein*

From your Local Arrangements Committee

Rick Creath, Chair
With Melanie Hunter, Graduate Student Coordinator
Jessica Ranney, Center for Biology and Society
Program Coordinator
Felicity Snyder, Center for Biology and Society
Program Manager

Brad Armendt
Matthew Chew
Karin Ellison
Andrew Hamilton
Manfred Laubichler
John Lynch
Jane Maienschein
Jason Scott Robert
David Steffes
Jamey Wetmore
Michael White
Grant Yamashita

Graduate Students
Melissa Baker
Jennifer Brian
Lijing Jiang
Matthew Laubacher
Cera Lawrence
Steve Elliott
Mark Ulett
Karen Wellner
Johnny Winston

NEWS AND INQUIRIES

Results of the 2009 Election

The 2009 Nominating Committee of M. Norton Wise, Thomas Söderqvist, Katherine Anderson, Pamela Smith, and chair David Kaiser produced a marvelous slate for the 2009 elections. The quality of the pool was reflected in some of the razor-thin margins of victory. We offer our thanks to all of those who agreed to run and we congratulate our new officers. We also thank the more than 350 members who voted.

Vice President (2010-2011, President 2012-2013), Lynn K. Nyhart, University of Wisconsin, Madison

Council (2010-2012)

John Carson, University of Michigan
Deborah R. Coen, Barnard College
Mi Gyung Kim, North Carolina State University
Helen Rozwadowski, University of Connecticut, Avery Point
Marga Vicedo, University of Toronto

Nominating Committee (2010 slate)

John Beatty, University of British Columbia
Deborah Harkness, University of Southern California, Los Angeles
Pamela O. Long, Independent Scholar
Paul Lucier, Independent Scholar
Liba Taub, Whipple Museum, Cambridge University

New Treasurer for the Society

Many people around the world feel rather unsettled and unsure about their financial futures. Fortunately, the HSS is in good hands. Rachel Ankeny, who stepped down 1 July, has done an excellent job as Treasurer in overseeing the Society's budget

for two-and-a-half years, and we thank her for her diligence. Rachel stepped down for professional reasons, in order to devote more time to research and teaching. We wish to note that beyond her labor getting the everyday details of the Treasurer's job done, she has helped to reconfigure and streamline many processes, which will make the role of Treasurer more sustainable in the long run. She also helped to maintain the Society's strong financial condition, despite current challenges. We offer a warm thanks to Rachel for her tremendous service and wish her well in her many other professional roles.

Our new Treasurer, who will begin by completing Rachel's term, is Adam Apt. Adam has served on the Finance Committee for 13 years and has considerable experience with investment management. In fact, Adam has recently begun his own business, Peabody River Asset Management (<http://www.peabodyriver.com/>), where "the essence of intelligent investing is to achieve a balance of return and risk that is appropriate for the investor." Adam's attention to what is appropriate is important for our Society at this point in time, and we will benefit from his guidance in financial matters. Adam is a perfect example of the diversity of careers open to those with education in the history of science: many years in financial services, as well as a keen interest in hiking the White Mountains of New Hampshire, round out his own portfolio of special skills. The Treasurer serves on the Executive Committee and oversees financial matters, including preparation of the budget, monitoring of operating accounts, and overseeing investment accounts. Adam has served as treasurer for a number of other organizations and brings considerable talent and enthusiasm to the position.

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Furthermore, we are fortunate that another member of the Finance Committee, Spencer Weart, a former HSS Treasurer, has agreed to serve as chair of the Finance Committee. In that capacity he will set up a new investments review to ensure our investments are as safe, as productive, and as appropriate as possible. We are very fortunate to have Spencer's help at this time, and his own work at the American Institute of Physics has been brilliantly successful and has brought us "History that Matters" (<http://www.aip.org/history/historymatters/weart.htm>). Like Adam, Spencer has followed a creative career path that can inspire all of us. We are very fortunate to have the help of these two talented historians of science.

Currently, we have projected workable (though somewhat reduced) budgets into the future. Members who would like to donate to support Society operations or any special funds are encouraged to do so at <https://www.hssweb.org/donate>.

– From the Executive Committee

Oral History Collection

The Chemical Heritage Foundation has created an online oral history collection. Recipients of the Pew Scholars in the Biomedical Sciences Award are interviewed at the end of their four-year program and their oral histories deposited in the collection. The collection contains well over two hundred oral histories and is expanding, with new oral histories being added on a regular basis. See <http://www.chemheritage.org/exhibits/ex-nav2-pew.asp>. In addition, bound volumes of the oral histories are housed in CHF's Othmer Library.

ACLS Humanities E-Book Subscriptions

ACLS Humanities E-Book (HEB) now provides individual subscriptions through standing membership in the History of Science Society as an added benefit of your membership.

Individual subscriptions are USD \$35.00 for a twelve-month, renewable, subscription. \$15 of your subscription will come back directly to the History of Science Society and the balance will help sustain HEB as a resource for the entire scholarly community.

For subscriptions, follow the link below. You will need to choose the History of Science Society from the pull-down menu and provide your membership number.

https://www.humanitiesebook.org/subscription_purchase.html

The subscription offers unlimited access to its collection of cross-searchable, full-text titles across the humanities and related social sciences (<https://www.humanitiesebook.org/titlelist.html>).

Titles have been selected and peer reviewed by ACLS constituent learned societies for their continued value in teaching and researching, and approximately 500 are being added each year.

The collection includes both in- and out-of-print titles ranging from the 1880s to the current year. Titles link to publishers, Web sites and to online reviews in JSTOR, Project MUSE, and other sites.

Individual subscriptions are ideal for those whose school might not yet have an institutional subscription to HEB or for individual members of a learned society who might not be affiliated with a subscribing institution. For inquiries e-mail: subscriptions@hebook.org.

Moving *Philosophy of Science*

The Editorial Office for *Philosophy of Science* has moved from the University of South Carolina to the University of California, Irvine. The Philosophy of Science Association thanks Michael Dickson, his associate editors, and his staff for their service, and welcomes Editor-in-Chief Jeff Barrett, his associate editors, and his staff.

We expect to be able to provide an initial decision on most submissions within six to eight weeks. Submissions to the journal should be made through the Editorial Manager software at <http://phos.edmgr.com>. Detailed information about the journal and the submission procedure can be found at <http://journal.philsci.org>.

In order to review submissions quickly and hence to encourage the submission of the very best work, referees are welcome to make whatever comments they wish, but extensive referee commentary will not be required.

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The July 2009 issue of *Philosophy of Science* will be edited and produced through Michael Dickson's office at the University of South Carolina. We expect that other submissions made to the South Carolina office before April 2009 will be transferred to UC Irvine. Please contact us at philsci@uci.edu concerning the status of your submission, and we will pass along whatever information we have.

International Workshop on Lysenkoism

Co-sponsored by the Harriman Institute for Russian Eurasian and Eastern European Studies at Columbia University, and the City University of New York, the workshop will take place 4-5 December 2009. Trofim D. Lysenko was a Ukrainian agronomist responsible for banning genetics in the Soviet Union and its allies, following a week-long session of the Lenin All-Union Academy of Agricultural Sciences in 1948. The workshop will bring together scholars from over a dozen countries to present their work on the impact and response to Lysenko's anti-genetics campaign in over a dozen countries in Europe, Asia, and Latin America. The sessions on 4 December will be held at the CUNY Graduate Center, 365 Fifth Ave., Room 9204/9205. The sessions on 5 December will be held in the International Affairs Building, at Columbia University, Room 1501. The conference will be free and open to the public. For further information please contact William deJong-Lambert at WRL4@columbia.edu/william.dejong-lambert@bcc.cuny.edu.

Joint Atlantic Seminar in the History of Biology

The Department of the History of Science at Harvard University is pleased to host the 2010 meeting of the JAS. The meeting will be held on 26-27 March in the Science Center, Harvard University. Further information from Janet Browne: jbrowne@fas.harvard.edu.

Metropolitan New York Section of the History of Science Society Reestablished

The Section for History and Philosophy of Science and Technology at the New York Academy of

Sciences concluded its 2008-2009 season of monthly programs on the evening of 21 May with a lecture by Kim Plofker (Department of Mathematics, Union College), who spoke on "Mathematics and Astronomy in India: An evening in honor of David Pingree." A special symposium followed on 22 May, devoted to "Astrolabes: An Evening in Honor of Marjorie and Roderick Webster, and David Pingree," and held at the Metropolitan Museum of Art. The symposium featured Clare Vincent (Associate Curator, Department of European Sculpture and Decorative Arts), Bruce Chandler (The College of Staten Island, City University of New York), and Bruce Stephenson (Curator, History of Astronomy Department, The Adler Planetarium & Astronomy Museum, Chicago).

Following discussion over the past several months and circulation of a revised Constitution and By-Laws, a vote was taken during the meeting at the Academy on May 21 to reestablish the Metropolitan New York Section of the History of Science Society (MNYSHSS), originally founded on September 1, 1953. Elected to serve as President: Matthew Stanley (The Gallatin School, New York University), Vice President: Sheila Rabin (St. Peter's College, New Jersey); Secretary: Luis Campos (Drew University); and Treasurer: Deirdre La Porte (AT&T, retired).

For information about the 2009-2010 schedule of lectures, to be jointly sponsored by The New York Academy of Sciences, the MNYSHSS, the City University of New York, Columbia University and The Gallatin School, New York University, please contact either Joseph W. Dauben at jdauben@gc.cuny.edu, Pamela Smith at ps2270@columbia.edu, or Matthew Stanley at ms5100@nyu.edu.

New Journal

Philosophy & Theory in Biology (P&TB), a new peer-reviewed open-access online journal, will be launched in the fall of 2009. We aim to bring together philosophers of science and theoretically inclined biologists. Instructions for authors can be downloaded at <http://www.philosophyandtheoryinbiology.org>. Further information can be obtained by e-mailing editors@philosophyandtheoryinbiology.org.

ASP Archives

Lloyd Library and Museum and American Society of Pharmacognosy (ASP) announce the agreement for the transfer of ASP Archives to the Lloyd Library and Museum, Historical Research Center for the Natural Health Movement. For more information visit ASP at <http://www.phcog.org/> and the Lloyd Library at <http://www.lloydlibrary.org>.

Thirtieth Anniversary for BSHS Monographs

The British Society for the History of Science is celebrating by creating a digital collection of past monographs. These monographs are available for viewing and download free-of-charge at www.bshs.org.uk/monographs.

Call for Articles: Thematic Issue for *Antropologia Portuguesa*

Antropologia Portuguesa is receiving articles for its next thematic issue, coming out in 2010, which is dedicated to the theme, "151 years of Darwinism." Deadline is 31 December 2009. Go to http://www.uc.pt/en/cia/publica/call_for_papers for more information.

Generation to Reproduction Research Project

The University of Cambridge has secured major funding in the history of medicine from the Wellcome Trust. A strategic award of £785,000 for five years from 1 October 2009 will allow a cross-disciplinary group of researchers to take a concerted approach to the history of reproduction. Entitled, "Generation to Reproduction," the project will provide fresh perspectives on issues ranging from ancient fertility rites to IVF. A strongly grounded account, building on a lively field of historical investigation, will offer a fresh basis for policy and public debate. For more information visit <http://www.hps.cam.ac.uk/generation/>.

Special Issue: Darwin and the Evolution of Victorian Studies Available

Victorian Studies 51:2 (Winter 2009) is a special issue devoted to several essays on the theme of "Darwin

and the Evolution of Victorian Studies." Those essays include: George Levine, "Reflections on Darwin and Darwinizing;" Heather Brink-Roby, "Natural Representation: Diagram and Text in Darwin's 'On the Origin of Species';" Tina Young Choi, "Natural History's Hypothetical Moments: Narratives of Contingency in Victorian Culture;" Jim Endersby, "Sympathetic Science: Charles Darwin, Joseph Hooker, and the Passions of Victorian Naturalists;" and Gillian Beer, "Darwin and the Uses of Extinction." Jonathan Smith authored the introductory essay.

Images from the History of Medicine

The History of Medicine Division of the National Library of Medicine announces the launch of a new image platform for its premier database, Images from the History of Medicine (IHM). IHM is available online, free of charge, at <http://ihm.nlm.nih.gov>.

International Journal of Gender, Science and Technology

The *International Journal of Gender, Science and Technology* is an independent, peer reviewed, open access journal that welcomes contributions from practitioners, researchers and policy makers concerned with gender issues in and of science and technology. For further information, including details of the submission procedures go to <http://genderandset.open.ac.uk>. For enquiries contact Jenni Carr at j.g.carr@open.ac.uk.

Forum for the History of the Mathematical Sciences Luncheon.

The luncheon will be held 12:00-1:15 p.m. on Friday at the 2009 HSS Annual Meeting in Phoenix, AZ. All those who share an interest in the history of mathematics are invited to this complimentary event, sponsored by the Legacy of R.L. Moore Project. Seating is limited, and reservations are required. Contact Karen Parshall at khp3k@virginia.edu if you would like to attend.

Updated APS Fellowship Information

The American Philosophical Society has revised the

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Fellowships and Research Grants section of their Web site for 2009-2010. Please check the "About the Fellowships and Research Grants" section periodically at <http://www.amphilsoc.org/grants/> for more information.

Travel/Research Grants for History of East Asian Science

The D. Kim Foundation for the History of Science and Technology in East Asia offers two Traveling/Research Grants. Established in 2008 the D. Kim Foundation is dedicated to furthering the study of the history of science and technology in East Asia since the start of the 20th Century. For more information visit <http://www.dkimfoundation.org/>.

Annals of Science Offer

Submit your unpublished paper to *Annals of Science* for a chance to win US\$500 and a year's free subscription. This prize is offered every two years to the author of an original, unpublished essay in the history of science or technology, which is not under consideration for publication elsewhere. <http://www.tandf.co.uk/journals/authors/tascauth.asp>

Doctoral Fellowships

A four-university consortium based out of Florida State University will support one graduate student to participate in a 30-month research project on the ways in which historic and contemporary conceptualizations of the Arctic are impacting state and non-state actors' proposals for exercising sovereignty in the region. Please contact Phil Steinberg at psteinbe@fsu.edu or +1 850 644 8378.

MEMBER NEWS

The American Physical Society and the American Institute of Physics have selected **Stephen G. Brush**, past president of the HSS, to receive the 2009 Abraham Pais Prize for the History of Physics for his pioneering, in-depth studies in the history of nineteenth- and twentieth-century physics.

Joshua Blu Buh's *Bigfoot: The Life and Times of a Legend* (The University of Chicago) was published this year. With *Bigfoot*, Joshua Blu Buh traces the story of America's favorite homegrown monster. Buh delves deeply into the trove of lore and misinformation that has sprung up around Bigfoot. Buh's focus is on understanding why Bigfoot has inspired drama and devotion. What does our fascination with this monster say about our modern relationship to wilderness, individuality, class, consumerism, and the media?

David A. Hollinger, University of California, Berkeley, has been elected President-Elect of the Organization of American Historians, and will become President of that 9,000-member professional association in March of 2010.

The Society for History in the Federal Government (SHFG) presented the first Annual Roger R. Trask Award to **Roger D. Launius**, Senior Curator in the Space History Division of the Smithsonian's National Air and Space Museum and SHFG President from 2003-2004. The award is given in recognition of his commitment to federal history at the National Aeronautics and Space Administration and the Smithsonian's National Air and Space Museum, and for his promotion of the mission of the society and his generous mentoring of colleagues.

York University's **Bernard Lightman**, recently received a \$306,000 grant from The Andrew W. Mellon Foundation for his latest research venture, the John Tyndall correspondence project. The objective is to publish the collected correspondence of prominent British physicist John Tyndall (1820-1893).

William R. Newman, Ruth N. Halls Professor of History and Philosophy of Science at Indiana University, received the title of Distinguished Professor on 27 March 2009.

Jahnvi Phalkey won the 2008 Sardar Pate Award for the best dissertation submitted at any American university on the subject of modern India. "Science, State-Formation And Development: The Organization of Nuclear Research In India" is a history of the beginnings of nuclear research and education in India, between 1938 and 1959, traced through the trajectories of particle accelerator building activities at three institutions: the Department of Physics, Indian Institute of Science, Bangalore; the Palit Laboratory of Physics, University Science College, Calcutta, later (Saha) Institute of Nuclear Physics; and the Tata Institute of Fundamental Research, Bombay. John Krige, Georgia Institute of Technology, was Phalkey's supervisor.

The Adler Planetarium's Webster Institute for the History of Astronomy announces the publication of *Eastern Astrolabes* by **David Pingree**. More information can be found at <http://www.adlerplanetarium.org>.

Volume 11 of the *Papers of Joseph Henry*, edited by **Marc Rothenberg**, won the 2009 Thomas Jefferson Prize of the Society for History in the Federal Government for outstanding documentary edition. For further information, go to <http://www.shfg.org>.

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Nicolaas Rupke has been elected to a Lower Saxony Research Professorship in the History of Science. Rupke is one of the first half dozen to be offered a Lower Saxony Chair and the only humanities scholar among them.

The American Council for Learned Societies names **Nancy Sirasi**, Distinguished Professor, Hunter College, City University of New York (retired), as the 2010 Charles Homer Haskins Prize Lecturer. The lecture will take place on 7 May at the 2010 ACLS Annual Meeting in Philadelphia. For more information, <http://www.acls.org/news/Default.aspx?id=4198>.

Jeffrey Sturchio takes up his new position as President and CEO of the Global Health Council on 1 August. For details, see <http://www.globalhealth.org/news/article/11138>. He previously worked as President of the Merck Company Foundation and Vice President, Corporate Responsibility. He continues as Chairman of the Corporate Council on Africa and as a Visiting Scholar, Institute for Applied Economics and the Study of Business Enterprise, The Johns Hopkins University.

C. Michele Thompson has been promoted to Full Professor in the Department of History at Southern Connecticut State University. She was also named the 2008-09 Connecticut State Trustees Research Scholar of the Year for Southern Connecticut State University.

IN MEMORIAM

Martin J. Klein (1924-2009)

Martin Jesse Klein, Eugene Higgins Professor Emeritus of History of Physics and Professor Emeritus of Physics at Yale University and the former Senior Editor of *The Collected Papers of Albert Einstein*, passed away on March 28, 2009.

Martin Klein was born in New York City on June 25, 1924. He graduated from Columbia University at the age of 18 and earned his Master's degree there two years later. After his war service during 1944-46, which primarily comprised sonar research, he completed his Ph.D. in physics at MIT in 1948. In 1949, having declined Edward Teller's invitation to work for the nuclear weapons program, Klein joined the physics faculty at Case Institute of Technology (now Case Western Reserve University), where he served for 18 years and completed his transformation from a theoretical physicist to a historian of physics. In 1967, he moved to Yale University, where he chaired the Department of History of Science and Medicine from 1971 to 1974, and was named Eugene Higgins Professor of the History of Physics and Professor of Physics in 1974. From 1978 to 1980 he also served in Yale's prestigious William Clyde DeVane Professorship.

Klein was an authority on the lives and works of major physicists of the 19th and early 20th centuries, including Albert Einstein, Paul Ehrenfest, Josiah Willard Gibbs, and Niels Bohr. In 1970, he published his magnificent biography of Ehrenfest, which has been widely praised by both physicists and historians of science. He served for ten years (1988-98) as the Senior Editor of *The Collected Papers of Albert Einstein*, further enhancing his reputation as one of the most profound analysts of Einstein's life and work.

Klein lectured widely and published a large number of historical papers on topics ranging from the origins of thermodynamics and quantum theory to 19th-century mechanical explanations. He gave the George Sarton Memorial Lecture at AAAS (1969)

and the Morris Loeb Lectures at Harvard (1975). He also held visiting appointments at the Institute for Advanced Studies in Princeton (1972), University of Amsterdam (1974 and 1993), and Rockefeller (1975-79) and Harvard (1989-90) Universities.

Klein received numerous honors. He was the winner of the first Abraham Pais Prize in 2005, awarded by the American Physical Society and the American Institute of Physics for exceptional accomplishments in the history of physics. The Prize Selection Committee cited Klein's "pioneering studies in the history of 19th- and 20th-century physics, which embody the highest standards of scholarship and literary expression and have profoundly influenced generations of historians of physics."

Klein was a National Research Fellow in Physics (1952-53), a two-time Guggenheim Fellow (1958-59 and 1967-68), and a Fellow of the American Association for the Advancement of Science and of the American Physical Society. He was elected to the Académie Internationale d'Histoire des Sciences (1971), the National Academy of Sciences (1977), and the American Academy of Arts and Sciences (1979). In the National Academy of Sciences, Klein was one of only three members who were not primarily scientists.

Klein is survived by his daughters Rona Klein of Bowling Green, OH, Sarah Zaino of New Haven, CT, Nancy Klein of El Sobrante, CA, and Abby Klein of New Haven, CT. In addition, he is survived by his former wives, Miriam Klein and Linda Booz Klein, and was predeceased by his wife, Joan Warnow-Blewett.

A memorial service is being organized by Martin Klein's family in collaboration with Klein's friends and colleagues. A session in memory of Martin has also been proposed for the upcoming HSS meeting. Notices of these events will be posted on the HSS Web site.

— *Danian Hu*

(In preparing this obituary, I benefited from Roger H. Stuewer's earlier report on Klein's Pais Prize (<http://www.aps.org/units/fhpl/awards/pais/klein.cfm>), from which I have quoted freely. I wish to thank Sarah Zaino, Linda Klein, Diana Buchwald, Daniel Kevles, Roger Stuewer, and Alan Shapiro for their comments and corrections.)

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Marjorie Grene (1910-2009)

Philosopher of science Marjorie Grene passed away 16 March 2009 at age 98 after a brief illness. Marjorie Glicksman Grene, born 13 December 1910, was an important historian of philosophy (with books on Aristotle, Descartes, and various existentialist philosophers), epistemologist (with a special emphasis on perception and the contextual relations of knowers to the world around them) and a philosopher of science, publishing several books in the philosophy of biology.

After obtaining a bachelor's degree in zoology at Wellesley College in 1931, Grene studied with such figures as Heidegger and Jaspers as an American-German exchange student 1931-33 and David Prall, Alfred North Whitehead, and C.I. Lewis at Harvard. Radcliffe awarded her a doctorate in philosophy in 1935 since women were not then formally admitted to Harvard. From 1937-1944 she was an instructor at the University of Chicago, where she participated in seminars run by Rudolf Carnap and Carl (Peter) Hempel. From 1944 to 1957 she continued to publish, but her main occupations were raising her family and running a farm, first in the US, then in Ireland. In 1950 she met Hungarian-British scientist-philosopher Michael Polanyi and served as his research assistant (largely by correspondence) for the conversion of his 1950 Gifford Lectures into his well-known book, *Personal Knowledge*. Her work with Polanyi led her to consider metaphysical and ethical issues in science, particularly biology, tackling questions as fundamental as what constitutes a person. She later was a founding member of the International Society for the History, Philosophy, and Social Studies of Biology, the largest such organization of scientists, historians and philosophers.

Thanks in part to her work with Polanyi, Grene earned temporary positions at the University of Manchester (1957-8) and then at the University of Leeds (1958-60), before becoming a Lecturer in Philosophy at Queens University, Belfast (1960-65). She returned to the US, first as a faculty member, then as Chair of the Department of Philosophy at the University of California, Davis, which she built

into a major department, with strengths in history of philosophy and philosophy of science. Since 1988, she had been Honorary University Distinguished Professor at Virginia Tech.

Marjorie Grene is survived by her daughter Ruth, who is on the Virginia Tech faculty in Plant Pathology, Physiology, and Weed Science, her son Nicholas, who is the Professor of English Literature in the School of English, Trinity College, Dublin, his wife Eleanor, six grandchildren, Sophia, Hannah, Jessica, Clement, Nick and Lucy

Grene and one great-granddaughter, Nazyia Terry.

From the President

When I agreed to run for the position as HSS Vice President/President in 2005, I knew of the NEH fundraising hopes for the HSS Bibliographer and that the Society was in good shape financially and on an even course. I saw three areas for improvement that made it seem worth investing the time and energy to bring some change.

First, I worried that the profession had become so diverse and diffuse that it lacked the energy to carry the field forward. In particular, I saw too much of a swing toward a version of the social history of science that seemed to forget the science. I imagined I might help bring back a balance of interests – science at the core, along with plenty of room for social history, economic history, political history, environmental history, and so many other histories. This is especially true since history of science benefits from connections with philosophy, with the sciences, and with other fields; for history of science to remain a focused field that warrants positions and a professional society it must remember its subject matter – science.

Second, lost opportunities because of our failure to educate our students to communicate effectively to a wide audience. Jed Buchwald and George Smith at the Dibner Institute both pointed out that it has often been the science writers, journalists, and sometimes scientists who sell books and get press coverage with their histories of science. And, it seemed, that history made popular wasn't always the best possible history, or the best possible understanding of science. We can all learn how to communicate our ideas more effectively beyond the academy and into the world. Naomi Oreskes' work with the U.S. Congress and with policy leaders on global climate change – by using historical climate science data and narratives – is an example of what we can do. Science writing programs like the one led by Kenneth Manning at MIT show what we can do in education. We can do much more, and I had visions of helping support such inspiring work.

Third was the goal of moving history of science

beyond history departments. In fact, the field and our young scholars have already moved into various niches beyond history departments: communities in honors programs, science departments, connections with social scientists, science studies programs, working with environmental researchers, national labs and museums, and others. At Arizona State, we are hiring historians and philosophers into the School of Life Sciences, for example, as well as into the History Department, Law School, School of Human Evolution and Social Change, Sustainability, and so many other places. Yet many graduate programs continue to focus on training historians for history departments. Qualifying exams and dissertations are set up to prepare graduates for such positions, with the expectation that their dissertation will turn into their first monograph. This works for a few, but we must be more creative about the skills we give our students, including technical and communication skills. We have to embrace a range of scholarly products, including well-crafted blogs that have more impact and reach a larger audience than the typical academic book, public presentations, and collaborations with scientists.

I agreed to run for HSS office because I have a passion for changing things in productive ways, and was especially interested in implementing more electronic and Web-based support and communication for our community. I hoped to change and inspire the community in small ways. And I hoped to bring back scholars who had become disaffected with our swing toward the social and away from the science.

In my time on the Executive Committee, we have made some progress on all these fronts. Some will be evident at the Phoenix meeting. However, the major energy of my time in office has been spent on financial issues. At first, the emphasis was on bringing the NEH Challenge to a close and on strategic thinking and planning, including financial, for the Society. We were concerned about securing our investments and making sure that the Society was on a solid financial footing. We have expended much

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energy working on budgets and endowment planning – even before the “financial downturn,” as it’s called by optimists. Since then, we have worked even harder to understand every aspect of our budget. Areas that we took for granted have been reviewed, revisited, and reformed as needed.

We report with some pride that the Society is in good shape, though we face challenges ahead. Thanks to the endowment drive, our resources are stronger than they would have been. John Servos, Mike Sokal, and Joan Cadden, as the former presidents, did a great job in leaving a solid financial legacy with the NEH Challenge Grant, as Gerald Holton and others did years ago with other major fundraising efforts. Thanks to Jay Malone, and with the assistance of Virginia Hessels, the Executive Office is in great shape. Jay has had a virtually 100% success rate with grant proposals. Indeed, he has attracted some small unrestricted grants practically without trying. We are convinced that this is because he is charming and because we are all so deserving, of course. Jay has worked effectively to network with others and to pursue every possible avenue of support. He continues to develop great ideas, and we need to ensure that we provide support for his office so that he can continue these efforts. We also need more members to step forward with great suggestions and prospects so that Jay can work his magic.

Bernie Lightman as Society editor has also made important contributions. We think of his innovations with the journal and his scholarship as his major contribution, but Bernie is also a brilliant administrator. Despite labor actions, rising salary costs, aging equipment, and other challenges, he has managed to control costs for *Isis* by persuading York University to invest in the effort. The result is a journal in solid financial and scholarly shape, both of which are important for the Society. Kathy Olesko is completing her long-time editorship of *Osiris* and has also managed excellent financial and scholarly productivity while handing the editorship on to Andrea Rusnock. Stephen Weldon guides the *Current Bibliography* so that the number and quality of entries has risen substantially, and he has taken us in innovative

directions with digital publishing. All of these are important contributions, and they place the Society’s publications on solid ground.

The Society is in good shape. We are solid. Our investments are secure. Our budgets are balanced, though we will have to work to keep them so. Challenges remain. As a Society, and as a profession, the history of science carries far more potential than we have yet realized: we can achieve a stronger role with more places in academia than we have, and greater roles in policy-making and in other government and social roles. We must better educate our students in communication and technical skills so they can go places we have not yet imagined. I wish I had done more as president, but we have excellent leadership for the future.

President Obama gave the commencement address this past May at my institution, Arizona State University, which is providing local arrangements support and will help sponsor the dinner at the November meeting in Phoenix. Obama acknowledged that ASU had chosen not to give him the customary honorary degree since we have a policy of not giving such honors to sitting politicians. He acknowledged that he had not “yet completed his body of work” and that therefore it was premature to award him a degree. He noted that few of us have completed our body of work, and called on all to step forward and engage. And Obama noted that success will require change. “Many of our current challenges are unprecedented,” he said. “There are no standard remedies, or go-to fixes this time around. That is why we are going to need your help.”

Whatever your political preferences, I hope you agree. We need your help. We need donations from those who can afford to contribute. We need volunteers for committees and to carry out Society business. And we need far more of us to engage in the larger communities in which the history of science exists – to carry the message about who we are, what we can do, and why the history of science matters. I thank you in advance for getting involved and helping out. We look forward to seeing you in November in Phoenix.

– Jane Maienschein, HSS President

First Person: Darwin, in a Different Voice

As part of Phi Beta Kappa's visiting scholar program, Betty Smocovitis has spent the past academic year speaking about Darwin throughout the U.S.

Each year, Phi Beta Kappa (PBK), America's oldest academic honor society, sponsors a visiting scholar program, sending some 12 to 13 scholars to approximately 100 American colleges and universities. For two days, the visiting scholars are invited to work with students, faculty and administrators, to teach classes, guide discussions, give department seminars and deliver at least one large public lecture. Since the program was introduced in 1956, 555 scholars have made a total of 4,651 visits. Historians of science who have participated include Marshall Clagett, William B. Provine, Lynn White, Ruth Schwartz Cowan, Richard S. Westfall, Barbara Rosenkrantz, and Steven Shapin, as well as Stephen Toulmin, Harriet Zuckerman, Judith Reppy, Sandra Harding and others in related areas.

This is a stellar list of scholars, yet when I received an invitation to join them for 2008-2009, I was reluctant to accept. It wasn't just the brutal travel schedule of up to eight on-campus visits (mine went up to nine, then ten; see the list of places visited below), it was evolution, my subject of study. As anyone following American news knows, this is an unsettling topic for many audiences; the mere mention of the word can turn off a large segment of the population. In recent years, it has become difficult even for historians to engage the subject in public; virtually anything said that locates evolution in a critical historical context can arm its many opponents (see, for example, the egregious misuse of history in Ben Stein's *Expelled*; see also historians' response, on page 24, to their misrepresentation in a new documentary on Darwin).

The usual set of challenges facing historians of evolution was made more complicated by the fact the invitation came on the eve of 2009, the so-called "year of Darwin." As someone who examined the 1959 centennial celebrations, I was aware of how such anniversaries can serve a number of interests, many of which are questionable in nature. I didn't want to join any attempt at re-inventing the "founding father" as

happened in 1959, and I most certainly did not want to fall into the trap of endorsing "The Great Man of Science," no matter how benign it might appear on the surface. I did, however, want to stress the importance of evolution and to convey something of its rich history. If I refused the invitation, no historian of science would serve as visiting lecturer for the year 2008-2009. That would have been a missed opportunity to convey the excitement of our field to audiences who don't normally get much exposure to it.

I accepted, but only after I figured out what I'd do – something festive, lighthearted, with broad appeal to diverse audiences, yet with enough historical substance to leave audiences thinking a bit differently about evolution and what it has meant to different audiences. A project I had long been contemplating seemed ideal; a study of Darwin and his theory in song and musical production, beginning with a piece of provocative sheet music dated to 1874 I had found over 20 years ago in my thesis advisor's library. The result was a one-hour multimedia presentation titled "Singing His Praises" that demonstrated the creative ways audiences have engaged both Darwin and the implications of his theory since they entered the public sphere 150 years ago. I relied not only on sheet music, but also original historic recordings on "tin-foil" and wax cylinders, working my way through old scratchy gramophone recordings, vinyl albums to CD's and then finally to video productions available on You Tube. I learned to edit some of this musical material, translate it into various programs, and then embed it in PowerPoint (all that proved very challenging). Assuming audience behavior as a good indication, the "lecture" was a success; how often do historians of science stand in front of an audience of toe-tapping, head-bobbing people that included both seniors and children along with garden-variety academics singing along to music? To be honest, the lectures turned out better than I expected, especially since some

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of the material that explored race, class, and gender in Darwinism was truly disturbing.

So much for the public lecture; what about the remaining three to four other lectures expected of Phi Beta Kappa scholars? For department seminars ranging from history to various departments of biology, I used my usual research talks, but for classes I had to be more creative: my invitations ranged from European intellectual history, to gender studies, anthropology, philosophy, a huge range of biology classes (genetics, biodiversity studies, plant biology, molecular biology, and general biology) along with one or two classes in history of science (far too few of those). In these, I pulled out individual lectures from years of teaching and re-crafted them for an audience of diverse students, not assuming that people knew much in advance. That worked fine, I think, but in teaching such a broad range of courses in just two semesters I learned that history of science has far more potential to reach undergraduates than I had ever imagined.

This insight was confirmed multiple times when I met with college and university administrators to discuss undergraduate programs, and interdisciplinary initiatives that draw on the resources of the history of science. For example, at Skidmore College in Saratoga Springs, New York, a school with traditional strengths in the fine arts and humanities, there is a new initiative underway to increase scientific literacy. I was invited to a special workshop with faculty from the sciences, the humanities, and the fine arts to discuss the uses of historical and philosophical approaches to teaching science in a way that would reach students in a wide range of non-science programs. At St. Olaf in Northfield Minnesota, a new undergraduate freshman program titled “The Great Conversation” formally includes the history and philosophy of science in the sequence of courses that introduces them to critical perspectives in the Western intellectual tradition. This program is required of all students and appears to be very successful. In yet another place, Colorado College in Colorado Springs, Colorado, I was able to contribute to an on-going conversation in interdisciplinarity organized to bring faculty and students together. Some of the places I visited had just hired or were planning to hire junior faculty in history of science in these new programs. Others just wanted to

know about the history of science and what it could do to enhance more traditional liberal arts and science educations. In yet another instance, I learned what history of science could offer to institutions with active Honors Colleges. Visiting the University of Vermont as the Michael Zeltzerman Visiting Scholar, I worked closely with students, faculty, and staff in suggesting ideas for courses and programs for the Honor’s College.

In short, in this year of travel I learned that history of science is a far more valuable resource for undergraduate instruction in liberal arts and science programs than many of us appreciate, and that the field has far greater potential to reach public audiences, even with the most contentious subjects. As we continue to face severe cut-backs to our programs in graduate education and as we adapt to hiring freezes, we might work at more creative ways of interacting with our administrations and with national agencies like Phi Beta Kappa that are dedicated to fostering breadth in undergraduate education.

Betty Smocovitis teaches the history of science in the new department of Biology and in the department of History at the University of Florida. She will continue her outreach activities as the 16th Distinguished Alumni Professor during 2009-2011 for the largest student alumni organization in the US.

Schools Visited 2008-2009 for the Phi Beta Kappa Visiting Scholar Program

Skidmore College, Saratoga Springs, New York

St. Olaf College, Northfield, Minnesota

Sweet Briar College, Virginia

Truman State University, Kirksville, Missouri

Colorado College, Colorado Springs, Colorado

University of Wyoming, Laramie Wyoming

University of the Pacific, Stockton, California

San Francisco State University, San Francisco, California

Swarthmore College, Swarthmore, Pennsylvania

University of Vermont, Michael Zeltzerman

Visiting Lecturer Program for the Honors College, Burlington, Vermont

Workspace: John Lienhard and Engines of Ingenuity

John Lienhard has created a long-running history of science and technology radio program.

Music, dyslexia, and a six-week workshop in the history of science, are the threads that bind John Lienhard's history of science and technology radio show on KUHF-FM Houston. Lienhard is turning 79 this year, and his show, *Engines of Ingenuity*, is now in its twenty-first year of broadcast.

Trained as a mechanical engineer – he earned his Ph.D. at Berkeley – Lienhard has spent much of his career teaching mechanical engineering. In 1970, with no plans for the summer, he happened to apply for a workshop at the Smithsonian Institution and spent an intense six weeks studying the history of technology. Those few weeks kindled an interest that expanded into teaching history of technology courses and, eventually, into writing articles.

In 1987, while teaching at the University of Houston, the Dean of Engineering told Lienhard he wanted publicity for his college, specifically, 30-second history-of-technology spots on public radio to advertise engineering at the university. Lienhard said "Let's make this a little more than that; let's make it stand-alone pieces and stories. I took the bit between my teeth and before the college knew what was going on, I had cut a deal with the director of the radio station." *Engines of Ingenuity* went to air 4 January 1988.

The show combines a long-time love of music – off air Lienhard was a long-time singer of liturgical, theatre, and small-ensemble music, and voice strongly informs the program – and the drawback of childhood dyslexia. "I was a very poor student through public school – I clawed my way up. It means that I'm visually driven as far as on-air stuff."

Time constraints mirror the precision required in engineering. The show runs for exactly three minutes and twenty-seven seconds, plus or minus two seconds. "I have become very adroit at densifying. Writing an episode is about adding material and making it fit into the barrel – you wind up learning what fat to cut, when you are saying something that the

listener's ear will patch in anyway. Reading it, the prose might strike you as a little elementary school-ish, and that's because it's spoken prose."

The program has become more fluid with time, says Lienhard, better at weaving the technical and non-technical. As the audience has grown, he explains less. "The public learn," he says. "I didn't believe in the idea of a teaching mission when I first began, but the public knows and hears and remembers more than you might think." Even some of the now grown-up children of the early listeners tune in, telling Lienhard that they got hooked when their parents listened to his show.

The first few hundred episodes were a learning curve. Since then Lienhard has developed threads of interconnection tying a story together. "I find a thread of context and I follow that thread." The preponderance of men in history, led Lienhard to ask, "Are there any women?" "I looked around and there are all these terrific women. Mary Somerville surfaced early. I looked at some of her prose, her background, and more and more she began to assume shape and form as someone who was remarkably influential in her circle in London. You feel the skein, so you pick up other figures. I have several skeins, including airplanes." The on-air program and the Web site for *Engines of Ingenuity* are intimately related, allowing Lienhard to include lots of photographs.

Behind the show lies a long, hard slog. One episode takes approximately 10 hours to research and write. The program runs daily, and Lienhard creates 120 shows a year, filling in the rest with reruns. Since 2002, an increasing number of guest writers and presenters have reduced the load. "I hope as guests gain more and more traction, the show will go on without me," says Lienhard, who is now emeritus at the University of Houston. The one ironclad rule is that the person who speaks is the person who writes and researches the script. Though many

people volunteer, relatively few have what it takes to speak on air create an episode from start to finish. “I’m careful not to coax too much, I want to get people who are driven to do this.”

History plays a utilitarian role on *Engines of Ingenuity*. “I use it not as history for itself but as a way of telling people this is how other people use their minds, this is how other people function – this is how you can function.” The show revolves around stories. Because of his dyslexia the only stories Lienhard knew as a child were read to him by his father, “stuff that really flowed,” says Lienhard, “Kipling and Melville.” Stories, combined with his model airplane building saved him, he says, and gave him strong visual and pictorial sense.

In *Engines of Ingenuity*, stories range from the origins of computing through the industrialization of weaving to Salman Rushdie’s fairytale, *Haroun and the Sea of Stories*, and how his vision of skeins of stories describe modern information networks and their mix and flow.

“All the great writers of history have been storytellers. If you go back to the origins of information theory, Claude Shannon in the 1940s introduced this term ‘surprisal.’” Based on the idea of linking surprise to knowledge transfer, Lienhard says that, “if there is no surprise, then no learning has taken place. This means that in my own episode writing, I absolutely have to get it all together in the writing of the last few sentences.” In those final sentences Lienhard must tell his audience that he is finishing and find a way to reinforce what they are hearing.

The only advice Lienhard will offer is to begin from a point of ignorance. “I have no time for experts; for an expert there can be no surprisal. Nobody learns more than I do from this. I want my audience to appreciate that pushing yourself in the life of the mind is a joyous thing.”

– *Michal Meyer*

Engines of Ingenuity is available online, including web audio or podcast at <http://uh.edu/engines/>

When Speaking as a Scientist is Not Enough: Leo Szilard on Playing with Dolphins

HSS member R. Scott Sheffield's personal reflections on Leo Szilard's allegory of science.

"You must see that in a sense all science, all human thought, is a form of play."

-Jacob Bronowski, *Ascent of Man*¹

Once upon a time scientists learned to communicate with dolphins and the world was never the same again. This was the premise of Leo Szilard's "The Voice of the Dolphins," the title story in his collection of science fiction short stories published in book form in 1961. The cover of the 1992 expanded edition of the book captures the impish essence of Szilard's story by depicting the dolphins at play, with their sonic voices dispersing in ever-widening circles in the water. In "The Voice of the Dolphins" Szilard metaphorically articulates the voice of science, synonymous with the voice of reason for Szilard, in a time of Cold War ideological dogmatism. The absurdity of nuclear annihilation seemed only too possible to him at the time and "The Voice of the Dolphins" was his playful, fictional attempt to show a way out of the morass of mutual assured destruction (MAD). From our vantage point today, however, Szilard's story offers the historian of science a unique opportunity to explore Szilard's conceptualization of science and evaluate the efficacy of his beliefs about the nature of science. To see, in other words, if "The Voice of the Dolphins," when viewed as an allegorical presentation of Szilard's scientific voice, somehow resonates in a post-Cold War world.²

I think it is worth our time to ponder for a moment Szilard's fear of ideological dogmatism and its negative effects on the practice of science. The Cold War may be over, but attempts to control science in the name of ideologically dogmatic beliefs are all too real in this so-called post-ideological world. Szilard's allegory of science as it appears in "The Voice of the Dolphins" speaks to this issue and articulates a belief that we may have forgotten, one that may be worth remembering, the idea of a public discursive space for science. Exactly what this

means is certainly open for discussion, but it might be a discussion worth having.

Inspired by research on dolphin language skills, "The Voice of the Dolphins" is a detailed future history of how man's ability to communicate with dolphins transformed the world between 1960 and 1988.³ Szilard's story begins during the last days of the Eisenhower Administration. After the atomic bomb was developed, an anonymous narrator tells us, the slogan "scientists should be on tap but not on top" guided governmental policy making.⁴ However, a presidential advisory committee made one recommendation that came to fruition in 1963, the establishment of a joint Russian-American Biological Research Institute in Vienna.

The institute attracted a number of young but distinguished Russian and American molecular biologists, so the story goes, who began producing research on a most surprising topic, "the intellectual capacity of dolphins." Scientists at the institute discovered that not only could they communicate with dolphins, if the dolphins were given "Sell's liver paste," but that dolphins were more intelligent than humans.⁵

Soon, with the help of the scientists at the institute, the dolphins began to produce brilliant scientific insights and political guidance. The first great "discovery" made by the dolphins was a mutant alga called "Amruss" that was both a good protein food source and a birth control drug. The profits from "Amruss" enabled the institute to independently fund itself to influence political developments around the world. The institute invested in commercial-free television stations that broadcast programs such as "The Voice of the Dolphins," a program devoted to "clarifying" the world's political problems. According to a bulletin describing the show, political discussions needed to become more like scientific discussions.

After about a year of this new kind of discussion, the dolphins began to make some minor political suggestions, with some success. When a crisis in Iraq in

1970 threatened a catastrophic end to the atomic stalemate that had existed between the United States and Russia, the dolphins took action; the institute issued a list of the cities in the United States and Russia targeted for destruction. The effect of this in both the United States and Russia was to heighten awareness of the cost of nuclear war and, as a result, both countries pulled back from the brink.

Between 1980 and 1985, however, the world again came very close to destruction. The fear of nuclear war became so great in the U.S. that wealthy people moved to Arizona and New Mexico to build elaborate homes equipped with bomb shelters and transferred their money to neutral countries like Switzerland.⁶ The economic and social burden of the arms race slowly convinced many in America that disarmament was the only rational choice, and in 1987 an informal conference was convened in Vienna under the auspices of the dolphins that led to “controlled-arms reduction.” The dolphins, according to the story, had led the world to almost total disarmament, and in this safer world, where money was not wasted on arms, the world economy flourished and a new, utopian age of prosperity began.

The dolphins at the Vienna Institute, unfortunately, succumbed to a mysterious virus, and a little later the institute itself burned down. Inquiries into exactly what had transpired at the institute led many to speculate that there had never been any communication with the dolphins, and that, in fact, the “voice” of the dolphins was that of the scientists at the institute.⁷

As John Canaday has pointed out, the multiple voices in “The Voice of the Dolphins” makes Szilard’s story a literary and personal act of ventriloquism. As literary ventriloquism, the story represents Szilard’s attempt to escape his sense that he, and the voice of science in general, were not being included in Cold War political discussions.⁸ Beyond the immediate Cold War context of the story, however, the story can also be understood as a fictional elaboration on a problem Szilard faced throughout his life: maintaining a discursive space for what he thought of as rational, scientific discourse. As a Jew in Hungary in 1919, he experienced the anti-Semitism of the Horthy regime when he and his brother were harassed at the Budapest Technical Institute.⁹ He escaped this environment

by pursuing a science career in Berlin. As a graduate student at the side of Albert Einstein in Berlin during the Weimar Republic, he again experienced fascist ideological politics. He responded by conceiving of a youth movement inspired by science that he hoped would save science from the irrationality of ideological politics. He called this organization “Der Bund,” and it was Szilard’s first attempt to deal intellectually with the issue of maintaining, in his view, the non-ideological values of science in a highly charged, dogmatic ideological environment.¹⁰ Indeed, the fearful years of Nazi fascism in the Thirties, when coupled with Szilard’s recognition of the importance of James Chadwick’s discovery of the neutron, pushed Szilard to obsess on the idea of “nuclear transmutation” (his early nomenclature for nuclear fission). His fear that the Nazis would come to possess nuclear power moved him first to patent his ideas on the subject with the British Admiralty, then to encourage other scientists like Frederic Joliot to keep their work secret, and finally to persuade the United States government to pursue the development of the atomic bomb. All of this can be seen as attempts by Szilard to save science and the positive fruits of science, atomic power in particular, from the ideological fanaticism of the fascists.¹¹

Inside the bureaucracy of the Manhattan Project, the discursive space of rational science, as Szilard conceived of it, faced another challenge – the secrecy and ultra-nationalism of the United States government, personified in General Leslie Groves. Szilard actively resisted and confounded Groves over the compartmentalization of research related to building the first nuclear fission reactor at the University of Chicago. In addition, during the war and after, Szilard openly confronted bureaucratic, nationalistic, and militaristic views on the use of the atomic bomb and scientific research (American and Russian) whenever they conflicted with his rationalist and internationalist understanding of science. To Szilard, bureaucracy, nationalism, and especially McCarthy-style nationalism and militarism, which echoed Nazi fascism, were all threats to the discursive space of scientific rationalism.

If we see “The Voice of the Dolphins” as the culmination of Szilard’s personal confrontation with political dogmatism, several aspects of the story become

Continued next page

more comprehensible. First, the isolation and insulation of the “Research Institute” in “The Voice of the Dolphins” can be seen as another attempt by Szilard to save the discursive rational space of science from political dogmatism.¹² Second, Szilard’s strange distinction between political “persuasion” and scientific “clarity” in his description of the TV show becomes an important qualifier in understanding Szilard’s allegory of science. It represents Szilard’s attempt to create a sense of separation between the discursive space of scientific rationality and political dogmatism. “Scientists rarely think that they are in full possession of the truth. . .,” according to the story. Instead, they seek “clarity.” Politicians, on the other hand, seek to “persuade” people and often believe that they are in possession of the “Truth,” leading to dogmatic political ideology.

Szilard’s distinction between scientific “clarity” and political “persuasion” begs the question of his conceptualization of scientific rationality, a key component in Szilard’s allegory of science.¹³ While the published version of “The Voice of the Dolphins” does not directly elaborate on this point, an unpublished appendix to the story does. In this appendix Szilard outlines “The Operations of the American Research Foundation” (ARF), a sister research facility set up in the United States, according to the story.¹⁴ Although the thickness of Szilard’s description of the ARF makes it difficult to see, the appendix focuses on science as creative intellectual play. Szilard felt this important aspect of the practice of science was being lost and in the appendix he brainstormed on how it might be fostered within the ARF.¹⁵ Szilard emphasized the importance of scientific creativity more directly in a 1964 interview:

The creative scientist . . . has much in common with the artist and the poet. Logical thinking and an analytical ability are necessary attributes to a scientist, but . . . they are far from sufficient for creative work. Those insights in science which have led to a breakthrough were not logically derived from pre-existing knowledge; the creative processes on which the progress of science is based operate on the level of the subconscious.¹⁶

Both the appendix of “The Voice of the Dolphins” and this interview clearly illustrate that Szilard

understood scientific rationality as an amalgam of logic and creative intuition, with no distinct, logical, *a priori*, dividing line between humanistic and scientific discourse.¹⁷ Because science was essentially a creative exercise for Szilard, it was also an antidote to any system of control, ideological or otherwise, because its logical pursuits were not predetermined by the dogmatic premises of any belief system, only the playful whimsy of the subconscious as it interacted with nature.¹⁸ Scientists, therefore, were not the puppet masters, the social engineers, controlling the world with their knowledge. They were merely a voice of reason interacting with the world and occasionally cajoling the world to seek a better place. After all, who could be afraid of dolphins?

Tragic visions of mushroom clouds and dogmatic nationalist symbolism may make it impossible to again see science in the playful way that Szilard saw it. We may never again be able to have the faith that Szilard had in the power of science to “save the world,” as he put it, nor should we.¹⁹ And certainly it is not possible to forgive Szilard’s scientific elitism, also an inherent part of his vision of science.

I believe that any consideration of a public discursive space for science today should no devolve into a return to an angry, dogmatic belief in scientific infallibility. Philosophy in the latter half of the twentieth century, and, in particular, discourse analysis, has rightly critiqued this belief.

Nevertheless, since the beginning of the Cold War, public discussions that involve science all too often portray science as just another overt discursive political act and all too quickly reduce scientific discussions to political dogmatism. Both of these extremes deny what Szilard thought was essential in science, the tentative nature of truth and creative play. Maybe it is time to reconsider these concepts and create a new allegory of science for the post-ideological world that once again puts truth in play and conceives of science as an important part of public discourse. Perhaps then we may begin to remember the value of public science without visions of mushroom clouds and dogmatic, nationalist (or any other) symbolism prescribing the place of science and the role of scientists in society.

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1 Jacob Bronowski, *The Ascent of Man* (Boston: Little Brown, 1973), 432.

2 This essay is a small part of a much larger article I am writing that analyzes all of Szilard's science fiction. This essay and the larger article owe much methodologically to N. Kathrine Hayes's, *The Science of H.G. Wells*, John Canaday's *Nuclear Muse*, Bruce Clarke's article in *Configurations* entitled "Allegory and Science," and his larger edited work with Linda Henderson, *From Energy to Information: Representation in Science and Technology, Art, and Literature*, and to many others too numerous to list here.

3 Dr. John C. Lily, a NIH marine biologist, is actually mentioned in the story. See also William Lanouette with Bela Szilard, *Genius in the Shadows: A Biography of Leo Szilard, the Man Behind the Bomb* (New York: Charles Scribner's Sons, 1992), 415.

4 Leo Szilard, "The Voice of the Dolphins" in *The Voice of the Dolphins and Other Stories* (New York: Simon and Schuster, 1961), 20. The fact that the Institute was placed in Vienna, not exactly in proximity to any ocean, gives us our first clue that the dolphins may be fictitious.

5 Szilard, "The Voice of the Dolphins" in *The Voice of the Dolphins and Other Stories*, 22.

6 Szilard himself went to Switzerland after the Cuban Missile Crisis.

7 "The Voice of the Dolphins" was Szilard's only utopian work. All the rest of his stories are better characterized as dystopian.

8 John Canaday, *The Nuclear Muse: Literature, Physics, and the First Atomic Bombs* (Madison: University of Wisconsin Press, 2000), 236-237. Because of the absence of humanists at the research institute in the story, Canaday, in the end, reduces the "voice" of dolphins to the elitist, insular, narrative voice of the story that does not seem to recognize the validity of any other type of discourse, especially humanistic discourse. Based on a close examination of Szilard's personal history, his characterization of the process of science in all of his science fiction stories and other writings, his autobiographical "Recollections," and an examination of the sociology of science as Szilard knew it in Berlin in the nineteen twenties, I am presenting a less harsh interpretation of Szilard's understanding of science. Leo Szilard, "Recollections," in *Leo Szilard: His Version of the Facts*, Spencer R. Weart and Gertrude Weiss Szilard, eds. (Cambridge, Mass.: The M.I.T. Press, 1978). Hereafter cited as "Recollections."

9 Lanouette, *Genius in the Shadows*, 48-49. Tibor Frank in particular has argued that the year 1919 was an important year in Szilard's life because of what he experienced in Budapest. See Tibor Frank, "Ever Ready to Go: The Multiple Exiles of Leo Szilard," *Physics in Perspective*, 7 (2005): 204-252.

10 A detailed analysis of Szilard's "Der Bund" is a part of a larger work that I am writing that re-evaluates Szilard's political science. The best analysis of Szilard's political thinking after World War II is found in Michael Bess, *Realism, Utopia, and the Mushroom Cloud* (Chicago and London: The University of Chicago

Press, 1993), 41-90.

11 For Szilard atomic energy was a positive fruit of science in the sense that it could be used to power the world and help humanity escape the inevitability of entropic heat death, the focus of his early work in information theory. Only in the hands of ideological fanatics, like the Nazis or ultra-nationalistic United States capitalists and Russian Marxists, did atomic energy become poison fruit in his view.

12 The Salk Institute was perhaps the closest Szilard ever came to seeing his idea of a research institute become reality.

13 Szilard's thoughts on scientific rationality were mostly aphoristic. He never produced a systematic, analytical account on scientific rationality, as his friend Michael Polanyi did. However, as I argue in my larger work on Szilard's science fiction, Szilard's other science fiction stories and his autobiographical "Recollections" offer important insights into his philosophy of science and the sociological origins of his conceptualization of science.

14 Leo Szilard, "Appendix No. 2" (Unpublished), *The Voice of the Dolphin*, Leo Szilard Papers, Mandeville Special Collections 32, Box 34, Folder 2, 1.

15 This was not a new theme for Szilard. In the late forties, he wrote two short stories which make this same argument. "Science is My Racket," Leo Szilard Papers, Mandeville Special Collections 32, Box 31, Folder 2, and "The Tombstone of Science," Leo Szilard Papers, Mandeville Special Collections 32, Box 32, Folder 7.

16 Tristram Coffin quoting Szilard, "Leo Szilard: The Conscience of a Scientist," *Holiday*, 35 (Feb. 1964): 68.

17 Szilard's reference to the Hungarian classic *The Tragedy of Man* by Imre Madach in his allegorical presentation of science in his "Recollections" and his recognition of H.G. Wells's influence on his thinking about nuclear fission are examples, in my view, of how Szilard continuously blurred the dividing line between humanistic and the scientific thinking in his presentation of scientific rationality. Szilard always recognized the importance, if not the epistemological primacy, of literature. He always acknowledged that H.G. Wells's *The World Set Free* (1914) shaped his thinking about the importance of nuclear power and that Wells's political ideas in *The Open Conspiracy* (1929) converged with his own. In the end, both the logic of his conceptualization of science and his acknowledgement of the connection between his scientific ideas and literature indicate that he understood the nature and importance of subconscious creativity in all human endeavors.

18 Szilard's "Recollections," dictated by Szilard at about the same time he wrote "The Voice of the Dolphins," reveal a metaphorical understanding of science as "childlike" that must be fully analyzed to understand the playfulness of Szilard's allegory of science in his science fiction.

19 Szilard, "Recollections," 3.

The Perils of Publicity

Three historians of science find themselves misrepresented by a film company's selective reconstruction of Darwin's voyage

In Darwin Year 2009 many historians have helped to bring our subject to the general public. Yet we are writing to the *Newsletter* with a cautionary tale. We have recently been featured in a documentary film, "The Voyage that Shook the World," produced by Fathom Media of Australia and directed by Stephen Murray of Synergy Films, New Zealand. We were led to believe that the movie was being made to be shown as an educational film on Australian broadcast television and possibly elsewhere. Fathom Media was revealed to be a subsidiary of Creation Ministries International when publicity for the movie began to appear on the internet. We were alerted to the true nature of the movie by James Williams of the University of Sussex shortly before its release in about April of this year.

"The Voyage that Shook the World" is an expensively produced movie which charts Darwin's life through interviews and reconstructions (docudrama) filmed on location. It is clearly intended to challenge evolutionism, but stops short of openly endorsing the more extreme alternatives favored by some creationists. It is highly critical of Charles Lyell's uniformitarianism and features geologists who point to evidence of limited catastrophes in earth history, but it does not imply that the whole geological record is the product of a single flood. The interviews filmed with us have been edited to highlight certain aspects of Darwin's views and character. Janet Browne's remarks about his childhood delight in making up stories to impress people is used to imply that the same motive may have driven his scientific thinking. Peter Bowler's description of Darwin's later views on racial inequality is used in the film, but not Bowler's account of Adrian Desmond and James Moore's thesis that Darwin was inspired by his opposition to racism and slavery. Sandra Herbert's comment that Darwin's

theory required explanation of many aspects of life was edited down to imply that his theory required explanation of all aspects of life. The overall impression is given that Darwin had an enquiring mind but was led astray by his theoretical preconceptions, a view backed up through interviews with several scientists, including one who expresses open doubts about evolution. The film also suggests that what is ultimately at stake is a clash of world views rather than the resolution of scientific questions.

The Darwin bicentenary has offered many opportunities for historians to reach out to a wider public. The film "The Voyage that Shook the World" is one project that turned out differently than we imagined it would. Academics perhaps do need to be more aware of the fact that the media organizations are not always open about their underlying agendas. Had we known the true origins of Fathom Media, we probably would not have contributed, but the producers do have a point: if academic historians refuse to participate when movements they don't approve of seek historical information, these historians can hardly complain if less reputable sources are used instead. Because this article is available on the Web, we would like to suggest the following links that list works on the history of Darwin and evolution: <http://www.darwinproject.ac.uk> (the Darwin Correspondence Project's Web site which has a section on science and religion), http://www.nsf.gov/news/special_reports/darwin/ (the National Science Foundation's "Evolution of Evolution" Web site which features interviews with historians of science), and <http://www.ncseweb.org> (the National Center for Science Education Web site which has a section on science and religion).

– Peter Bowler, Janet Browne, Sandra Herbert

The Alexandre Koyré Medal of the International Academy of the History of Science awarded to the European Space Agency History Project

The International Academy of the History of Science (IAHS) decided to award the prestigious Alexandre Koyré medal for 2009 to the European Space Agency History Project. The official ceremony is scheduled for September 4th at the Agency's Headquarters in Paris, in the presence of the Director General, Jean-Jacques Dordain, and the members of the Study Team who carried out the project: John Krige, Arturo Russo and Lorenza Sebesta. The event will also include a dinner in honor of Reimar Lüst, a former Director General who initiated the project and then chaired the ESA History Advisory Committee.

During the 1989 International Congress of History of Science in Hamburg, John Krige and I decided to contact Professor Lüst to make a case for a project to write the history of the joint European space effort. His answer was extremely encouraging: not only did he approve the idea, but he also offered to support the project. It took one year to carry out a feasibility study and set up a proper institutional framework. Eventually, the project was based at the European University Institute in Florence and realized by the History Study Team under the supervision of an Advisory

Committee including renowned European science historians and space pioneers.

During the 1990s the ESA History Project helped to establish an important European scholarship in space history, and eventually it produced two important follow-ups. First was the ESA support to historical studies of national space programs in European countries, whose results are now being published under the aegis of the IAHS. Second was the award of the first HSS/NASA fellowship to support my study of the history of ESA planetary missions. Within the framework of the ESA History Project, in fact, I had studied the history of the ESA Science Programme. Therefore, it was an obvious move for me to apply for the first HSS/NASA fellowship, in order to pursue my study beyond the time framework covered by the ESA History Project (1960-1987). I decided, in particular, to focus my new research program on the history of ESA planetary missions. Two main reasons motivated this decision. Firstly, the invitation by Roger Launius to contribute to his planned book on the history of planetary exploration, and I thought that the European effort in this field deserved a chapter in this book. Secondly, the consid-

eration that ESA's major involvement in planetary research started only in the second half of the 1980s, within the framework of its long-term scientific program *Horizon 2000*. It was an honor for me to be eventually selected as the first recipient of the HSS/NASA fellowship, and I think that decision was not only a recognition of my professional record, but also a tribute to the high standard of the whole of the ESA History Project, which is now confirmed by the Koyré medal.

– Arturo Russo
*Dipartimento di Fisica e
Tecnologie Relative
University of Palermo, Italy*

How Telescopes Made Earth a Planet: 400 Years Since Galileo

A session co-sponsored by Section D (Astronomy) and Section L (History and Philosophy of Science) at the annual meeting of the American Association for the Advancement of Science, Chicago, 14 February 2009.

Just about 400 years ago, Kepler and Galileo became the 15th and 16th Copernicans in the world, holding the opinion that a heliocentric rather than geocentric system was veridical as well as a reliable way to describe motions of the sun, moon, and planets. Incidentally, in order of publication, the first Copernican was his student Rheticus, and Copernicus himself only second or third. The session, co-organized and chaired by Saeqa Vr-tilek (Harvard) included five speakers, whose time frames were the 16th (Copernican) century (Dennis Danielson, University of British Columbia); the Galilean, 17th century (Maurice Finocchiaro, University of California, Santa Barbara); the 17th to 19th centuries of increasing astronomical precision (Alan Hirshfeld, University of Massachusetts, Dartmouth); the 20th century in which Mars was gradually eliminated as an abode of advanced life (David DeVorkin, National Air & Space Museum); and the most recent 15 years of exo-planet searches and discoveries (Geoffrey Marcy, University of California, Berkeley).

Galileo himself, whose early astronomical applications of the telescope in 1609-10 are commemorated in the International Year of Astronomy in 2009, is remembered as much for his philosophical point of view and conflict with the Catholic Church as for his astronomical and other scientific achievements. Finocchiaro began with astronomical discoveries (mountains on the moon, moons of Jupiter, phases of Venus, resolution of portions of the Milky Way and some nebulae into stars, spots on the sun, and solar rotation), pointing out that, although most were seen by others in the same time frame, Galileo had more fully appreciated what they meant, saying, among other potentially inflammatory ideas, that scripture should not be regarded as a guide to science. While the astro-

nomical issues have long been settled, the question of whether scientists ought to adhere to standards other than scientific truth has not.

Recent critics of “the tyranny of truth” have included Koestler and Feyerabend, criticized in turn by Finocchiaro, who ended by urging a high standard of behavior in the continuing debates between science and other ways of looking at the world, such as, he felt, both Galileo and his critics had upheld.

The contemporaries and successors of Copernicus were, Danielson pointed out, as distressed by the removal of the sun from among the planets as by the placing of the earth among them (remember Pluto at the 2006 IAU, he remarked!). Also lost was the “two storey universe” of heaven and earth. And, though Copernicus made a point of honoring the sun (in Chapter 10, Book 1 of *De Revolutionibus*), his ideas were slow to catch on. Among his geocentric contemporaries, Regiomontanus and Apian emphasized the importance of triangles, geometry, and gnomons (including obelisks!) at least as much as what goes at the center. The application of earth geometry to the sky perhaps helped pave the way for a more planet-like earth and a central, stationary sun. Of the early Copernicans, the ones you are most likely to have heard of are Harriott (who drew what he had seen of the moon through a telescope before Galileo, but never published the result), William Gilbert (who said the earth was like a sphere of lodestone), and Giordano Bruno (who has a statue on the site where he was burned, though the Vatican statue of Galileo has yet to be erected).

Accustomed as we are to regarding data as paramount, participants were much surprised by the rant of Flamsteed (first Astronomer Royal; and the current one was by then in the session room) against ill-conceived and ill-executed observations

and experiments. But the rest of Hirshfeld's talk dealt with these observations and experiments and the increasing precision of the instrumentation that enabled them. He began with a 17th century "to do" list, on which finding parallax was the most critical item, along with the sizes and motions of the planets, satellites, and comets. The speaker noted that Galileo had looked for parallax; not found it (small wonder with his flawed and poorly-mounted refractors); and not advertised the non-detection. We met the long, skinny telescopes of Hevelius, the zenith instruments of Hooke and Bradley (who set a roughly 1 arc-sec limit to parallax, but found the 29 arc-sec aberration of starlight in the process, an equally firm demonstration of earth's orbital motion), the mural quadrant of John Bird, Troughton's transit circle, and Piazzini's 5" transit circle (built by Jesse Ramsden and still on site in Italy), en route to the 9" Great Refractor of Dorpat and the 4" heliometer of Königsburg, built by Fraunhofer for Struve and Bessel respectively. These yielded, along with a Troughton-like instrument used by Henderson at the Cape, the first stellar parallaxes, all indeed less than 1 arc-sec (Bessel for 61 Cyg, Struve for Vega, and Henderson for Alpha Centauri).

A century ago, a significant subset of observers thought they had seen straight, dark features on Mars, connecting the polar caps with dark surface areas, and that these were canals, built by the intelligent inhabitants of a dying planet. DeVorkin suggested, reluctantly, possible explanations for the illusion and the delusion. Even before that, William Herschel had reported changes in the surface appearance; Huggins had claimed absorption lines in the spectrum of Mars not seen in moonlight and which were strongest at the limb; and changing polar caps and haziness at the limb had been recorded by many observers. All of these things are true, but the surface changes in absorption lines are not aggressive enough to have been seen when first claimed. Efforts to understand the surface and to detect water and/or oxygen in the Martian atmosphere were pursued at Lick and Mt. Wilson observatories as well as at Lowell's own facility in Flag-

staff (and, noted DeVorkin, anybody who worked there had better see the canals! Indeed Lampland even managed to photograph them with the Amherst 18" refractor in Peru).

Lowell died proclaiming that because his site and his eyesight were so much better than Yerkes, Mt. Hamilton, and Mt. Wilson his results should be accepted. But the spectroscopic limits on water and oxygen crept down from at most a quarter of the terrestrial value (Campbell and Keeler at Lick) to 10^{-3} (Dunham and Adams at the 100" in 1932) to, finally, a detection at 0.03% of terrestrial by Kaplan, Munch, and Spinrad with the 100". Their numbers helped to guide construction of instruments for Mariner IV, which found a very inhospitable Mars. This was a sort of relative minimum, and DeVorkin pointed out, briefly, that recent evidence strongly favors (without absolutely proving) a much wetter past Martian climate.

But, after centuries of uncertainty and decades of searching, we now know that our solar system is not the only game in town. Marcy began by noting that the University of California, Berkeley astronomy department is still to be found in W. W. Campbell Hall (seismically unsound, it is to be torn down in the next year and replaced by something that will probably also be called Campbell Hall). He then took us back to 1995, when his group and another in Switzerland reported a Jupiter-mass, short orbit period planet orbiting 51 Peg. By 1996 there were three, and the number of stars with planets now exceeds 300, including 27 multiple systems. Most have been found by careful tracking of changing radial velocities of the host stars, a dozen or so by transits across their stars, and a handful in direct images (some of which still need confirmation).

About 100 planets with masses less than 10 times earth are in the current inventory. Detectable masses will be pushed down and orbit sensitivity into the "habitable zone" by upgrades of current ground-based systems, the Kepler (transit) mission launched 6 March, the Allen Telescope array near Mt. Lassen, and the more distantly future SIM (astrometry) mission.

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Earths are, in other words, within reach, and are likely to be common, given 200 billion stars in the Milky Way with at least 15% of them (in our neighborhood) with one or more planets. Marcy believes that, given the ubiquity of water, organic molecules, and energy, simple life forms should also be fairly common, perhaps like the bacteria and algae that manage to live in the near-boiling, very alkaline waters of Yellowstone. Should at least one in a million of these have intelligent life? If so, then we need an answer to the Fermi question, “where are they?” Marcy suggested several. These include: (1) the bracketing risks of deserts and water worlds (the latter unfavorable to technology – where do you put your car keys?); (2) evolution not favoring intelligence (none of the mesozoic fossil assemblages included chess boards; but, says the discussant, there was a good deal of encephalization through the Mesozoic, reaching the late Cretaceous *Stenonychosaurus*); and much the scariest, short lifetimes of civilizations.

Among the items that came up in the discussion period was the question of whether the eccentricities of exo-planets (many of which are large by solar system standards) are correlated with host star ages in the sense of gradual circularization. Not noticeably, said Marcy, but nearly all the interesting dynamics takes place in the first 10 to 100 million years, and most of their systems are much older. The others items discussed were largely historical. When was the Copernican model generally accepted? What about the near relationship between the sun and other stars (which Kepler did not accept)? Was the significance of Bradley’s aberration generally understood, given that it is hard, even now, to explain it to students? And would Bessel, Struve, and Henderson have received Nobel Prizes if the prizes had existed then? Yes, said Marcy (echoing contemporary praise by John Herschel), even though, by then, noted Hirshfeld, neither the existence nor the small numerical values for parallax were a surprise.

– Virginia Trimble, *University of California, Irvine and LCOGT*

Metropolitan New York Section of the History of Science Society

CUNY Liberal Studies Bioethics, Science and Society Lecture Series
New York Academy of Sciences
Section for History and Philosophy of Science and Technology

All lectures begin at 6:00 PM

2009

Wednesday, October 28 (Columbia University)
Nathan Sivin (University of Pennsylvania)
“Is Chinese Science Really an Exotic Subject?”

Wednesday, December 3 (CUNY Graduate Center)
Roger Cooke (University of Vermont)
“The File on Academician N.N. Luzin”

2010

Wednesday, January 27 (The Gallatin School, New York University)
Bert Hansen (Bernard Baruch College, City University of New York)
“Wonders of Nature and Miracles of Medicine: Popularizing Science in *LIFE* Magazine, 1936-1972”

Wednesday, February 24 (Columbia University)
Peder Anker (New York University):
“History of Spaceship Earth Science”

Wednesday, March 24 (CUNY Graduate Center)
David E. Rowe (University of Mainz, Germany)
“Einstein’s Encounters with Mathematicians: The Swiss Years”

Wednesday, April 28 (The Gallatin School, New York University)
Richard W. Burkhardt (University of Illinois):
“Evolutionary Thought before Darwin: Lamarck’s *Philosophie zoologique*, Frédéric Cuvier, and the Paris *menagerie*”

Wednesday, May 26 (New York Academy of Sciences, 7 World Trade Center, 40th floor)
Naomi Oreskes (University of California, San Diego)
“How the Cold War changed American Science”

For additional information, or to reserve a place for the lecture or for dinner with the speaker after the lecture, please contact either Joseph W. Dauben at jdauben@gc.cuny.edu, Pamela Smith ps2270@columbia.edu, or Matthew Stanley at ms5100@nyu.edu, at least one week in advance of any lecture you plan to attend.

Southern HoST, April 3-4 2009: VCU Department of History and Science, Technology, and Society [STS] Initiative

On one of Richmond's first lovely Spring weekends, Virginia Commonwealth University's Science, Technology, and Society [STS] Initiative hosted the third annual Southern History of Science and Technology [or "SoHoST"] regional meeting. SoHoST's original organizer, Susan Rensing (Mississippi State) attended, as did several dozen faculty and graduate students from throughout the southern U.S. – from the border state of Maryland to as far down as Florida. Florida and frontier history of science received special attention in a well-attended keynote address – "Nature's Enslavement in an Enslaved Land" – delivered on Friday evening by the History of Science Society's Executive Director, Robert J. Malone.

The two-day program featured sessions on "Early Modern Science and Medicine" (with papers by Christopher Carter (University of Virginia) and Andrew Benedict-Nelson (Johns Hopkins)); "The Science & Technology of Music" (with papers by Alexandra Hui (Mississippi St.) and Fred Katz (University of Maryland)); "Technology in the Southern Context" (with a paper on Jefferson and patent law by Virginia patent lawyer Jeffrey Matsuura) and "Consumer Technology" (with papers by Benjamin Cohen (University of Virginia), Matthew Lavine (Mississippi State), and Amy Gangloff (Mississippi State)). Saturday's sessions concluded with papers on "Controversies in Sociobiology" (by Mary Richie McGuire (Virginia Tech) and Erika Milam (University of Maryland)) and "Medicine and Public Health" (by Kelly Joyce (College of William & Mary) and Elena Conis (Center for Health, Culture & Society, Emory University)). After the formal sessions ended, the event's organizers – Karen Rader and John Powers – hosted a conference banquet, featuring Virginia barbecue specialties, at their home.

The organizers wish to thank all the attendees, as well as the following people and organizations, all of whom helped us continue SoHoST's vibrant and well-planned regional meeting tradition: Mary Ann Andrei (University of Virginia, and SoHoST program co-chair); Wanda Clary (STS Administrative Assistant); Marisa Benson (of Emory University, who offered all the organizational materials and strategies she used in last year's meeting) and the History of Science Society, who offered moral support and logistical advice.

– *by Karen Rader*

Program Profile: University of Leeds

When was your program established and how has it developed since its inception?

The origins of History & Philosophy of Science at Leeds date back to 1954 when mathematician Mary Hesse encouraged the newly arrived philosopher Steven Toulmin to set up an HPS group. Three years later Toulmin hired June Goodfield and the historian of science Jerome Ravetz, who became a leading figure in the HPS community. Arriving at the height of McCarthyite inquisitions, Ravetz's long stay at Leeds owed much to the US government's withdrawal of passport rights from left-wing American scholars. Continuing to cultivate radical ferment, Ravetz nurtured a vigorous community of early modernist science, notably Charles Webster and Piyo Rattansi.

The next generation of Leeds HPS scholars: Robert Olby, Geoffrey Cantor, John Christie and Jonathan Hodge shifted research to more recent topics, as epitomized in their edited *Companion to the History of Modern Science* (Routledge 1990). The subsequent history of the program to 2006 has been told by Graeme Gooday in "History and Philosophy of Science at Leeds," *Notes and Records of the Royal Society* 60 (2006), 183–92 <http://www.hps.leeds.ac.uk/HPS/RSNR20050093p.pdf>

At present the Centre for HPS at Leeds includes:

- Stathis Arapostathis – history of electrical engineering and patents
- Geoffrey Cantor (emeritus) – history of science and religion
- Alix Cohen – Kant, anthropology and the history of the human sciences
- Steven French – philosophy of science and history of modern physics
- Graeme Gooday – history of electrical technology and intellectual property
- Gregory Radick – history of biology and human

sciences, especially genetics

Juha Saatsi – philosophy of science and history of physics

Jonathan Topham – book history and history of science communication

Sophie Weeks – Francis Bacon and early modern natural philosophy

Adrian Wilson – history of medicine, philosophy of history.

What are the comprehensive exam fields?

To be admitted to our Ph.D. program, you must normally have a Masters degree in a relevant subject, or at least be on track to complete it. The HPS Centre currently offers three one-year Masters degrees of this sort, principally the M.A. in History & Philosophy of Science. This contains modules in "Modern Science," "Current Research in HPS," a 12,000-word research dissertation, a skills training module (e.g. "Historical Skills and Practices"); students must choose one elective e.g. in history of medicine, science communication, science and religion, history & philosophy of biology, or gender and science. We also offer M.A. programs in Science Communication, with a strong historical focus, and in the Philosophy of Physics.

What are the faculty, program, and resource strengths?

Our program strengths lie in the history of early modern science and medicine; nineteenth century life sciences, physics and technology; history of science communication; history of modern physics; and the history of intellectual property. Ph.D. students are supported by grants from the Arts and Humanities Research Council, the Department's own funds, and University studentships.

Our department has been successful in obtaining funds from the UK's Arts and Humanities

Research Council (AHRC), the Leverhulme Trust and the British Academy (BA) to lead internationally significant collaborative research projects. From 1999-2006 Geoffrey Cantor co-led a project funded by the AHRC and Leverhulme involving Topham and Gooday (among others) “Science in the Nineteenth Century Periodical” that produced two books and the free searchable database <http://www.sciper.org/>. Since 2007 Gooday has led the AHRC funded collaborative project involving Arapostathis and Radick (among others) “Owning and Disowning Invention: Intellectual Property, Identity and Authority in British Science and Technology, 1880-1920.” Gooday also leads the BA-funded Leeds branch of the international Tyndall Correspondence Project while Radick now has his own developing “IPBio Project” on intellectual property rights in contemporary biosciences.

Over the last five years, HPS at Leeds has built up strong working relationships with regional museums, notably the Thackray Medical Museum and the Leeds City Museum, as well as with national museums, such as the National Maritime Museum in London and the Porthcurno Telegraph Museum in Cornwall. We now have six students working on museums-related Ph.D. projects funded by the AHRC’s Collaborative Ph.D. awards. The Leeds program is also developing its own Museum of the History of Science, Technology and Medicine incorporating resources from the Leeds Nobel Prize winner William H. Bragg, the pioneering molecular biologist William Astbury, and the prototype of the MONIAC analog computer for economic computation and modelling. Further nearby museums providing opportunities for collaboration include the Royal Armouries Museum in Leeds and the National Media Museum in Bradford.

Leeds’ vibrant and international HPS community is ideal for graduate students wanting to study history of science, technology and medicine in the modern era, including book history. Our University Libraries hold excellent archival, journal and book collections for historical research, and comparably rich in book holdings is the Leeds Library – set up

by Joseph Priestley in 1768 – which is the UK’s oldest surviving private subscription library.

Our graduate students have excellent job prospects: James Sumner (Ph.D. 2004) is now a lecturer in history of technology at the University of Manchester, and Sophie Weeks (Ph.D. 2007) commences as a lecturer in history of science at the University of Leeds in fall 2009.

What are some recent dissertations that have been produced by graduating students?

Current graduate students work on a wide range of topics, including the development of transatlantic Newtonianism; the development of ultraviolet and X-ray therapies for skin disease; the rise of medical trade catalogues; the development of agricultural genetics; lunatic asylums and sciences of the brain; anthrax in Victorian Yorkshire; nineteenth-century embryology; early telegraph technicians; science communication in Thailand; and the rise of the forceps in midwifery.

Doctoral theses from students graduating in the last five years include:

James Sumner, “The Metric Tun: Standardisation, Quantification and Industrialisation in the British Brewing Industry, 1760-1830”

Sophie Weeks, “Knowledge and Power in Francis Bacon’s *Instauratio Magna*”

Richard Gunn, “A Critical Examination of Lewis Mumford’s *Account of Technics*”

Christopher Renwick, “The British Debate about the Identity of Sociology, 1876-1908”

Josep Simon, “Communicating Physics in Nineteenth-Century France and England: The Production, Distribution and Use of Ganot’s Textbooks”

Further information about our HPS program can be found at: <http://www.hps.leeds.ac.uk/>

Further information about our graduate students can be found at: <http://www.philosophy.leeds.ac.uk/PhilosophyPostgraduate/graduates.htm>

History of Science at Michigan State University

History of science is growing at Michigan State with its launching of a specialization in the history of science and the adoption of the Women in Science Digital Collection.

The Department of History at Michigan State University has long been known for its premier African History program. In the past few years the department has also made a serious commitment to the history of science. Michigan State University now has five historians of the life sciences and boasts courses, conferences, and an online digital collection in the history of science.

Our faculty includes:

- o Mark Largent, a historian of American biology and medicine who teaches history of science and public policy courses in James Madison College.

Mark is the book review editor for the *Journal of the History of Biology* and editor of the Rutgers Series *Studies in Modern Science, Technology and the Environment*. His current project explores the ongoing debates over compulsory vaccinations.

- o John Waller, a historian of science and medicine who teaches the history of disease, health care, and psychiatry. He has written on the development of the British eugenics movement, the conditions of child laborers in early industrial England, outbreaks of collective hysteria, and is currently writing a study of hereditarian concepts in western history.

- o Rich Bellon, a historian of science who divides his attention between the Victorian world of natural history and the modern age of molecular biology. His current research project explores the impact of Darwin's botany on the debate over evolution in the 1860s. Most of his undergraduate teaching, on the other hand, is driven by an interest in contemporary biomedical and biotechnology policy.

- o Georgina Montgomery, a historian of science who teaches the history of animal behavior studies, primatology, and gender and science. Georgina is currently working on her manuscript "Seeing Primates Scientifically," which explores the development of places and practices for the study of natural

primate behavior. She is also working on a new project about the lives of individual gorillas used for science and spectacle in the early to mid-twentieth century.

- o Helen Veit, a historian of the United States in the 19th and 20th centuries whose first book-length project, *Victory over Ourselves: American Food in the Era of the Great War*, explores food and nutrition in the Progressive Era, and their relationship to ideas about individual self-discipline, scientific rationalization, social and racial progress, and international power. Helen is also the general editor for a book series on food and history with Michigan State University Press.

Many of you will already be familiar with Michigan State because of H-Net and MATRIX. The Department of History's relationship with MATRIX has enabled Michigan State to adopt the Women in Science Digital Collection from Judith Zinsser (Miami University). Under the guidance of Georgina Montgomery, the collection is being expanded to include archival documents for a number of women in science with accompanying introductions and articles. Georgina welcomes e-mails about how to get your archival documents and research integrated into the site. The Web site will be a wonderful tool in research and undergraduate education, and represents part of the Department of History's commitment to expanding its focus on the history of science.

The curriculum already includes courses such as 'Evolution and Society,' 'Science and Social Policy,' 'Gender, Sex, and Science in Popular Culture,' 'Animal Histories,' 'Food and Power in American History,' 'A History of Nutrition,' 'A Brave New World? Biology, Biotechnology, and Human Identity,' 'The Human Genome Project,' 'Minds and Madness' and 'Medicine in Society'. In the future, survey courses

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and team-taught classes will be added to the undergraduate and graduate curricula.

Such courses within the Department of History are complemented by a range of opportunities at different colleges on the Michigan State campus. The Science, Technology, Environment and Public Policy Specialization [STEPPS] in James Madison College, for example, requires all students to take two science studies courses, and over a third of the specialization's faculty are historians of science. Similarly, all students in the residential Lyman Briggs College take courses in the history, philosophy, and sociology of science (HPS), which encourage them to explore the connections between science and the wider world. Briggs is a national leader in science pedagogy; its historians actively collaborate in educational innovation, which is generously supported by grants from the National Science Foundation and other agencies. HPS courses, by highlighting the intellectual, social and cultural connections between scientific disciplines, serve as a linchpin in Briggs's core mission to break down conceptual and educational barriers among physics, chemistry, biology and mathematics. History of science at MSU is thus indispensable to one of the nation's most dynamic and grant-winning efforts to reform the education of aspiring scientists and medical professionals.

The interdisciplinarity that characterizes many of the colleges, departments, and programs at Michigan State was exemplified by the "Animals: Past, Present, and Future" conference organized by Georgina Montgomery in April 2009. This interdisciplinary and international conference on human-animal relationships attracted 70 people representing more than seven disciplines and eight countries. Many of the 53 talks were histories of science, including presentations by Erika L. Milam (University of Maryland), Tania Munz (Max Planck), and Ruthanna Dyer (York University). The conference marked the emergence of Michigan State as a leader in Animal Studies, with a graduate specialization in animal studies already established within the Department of Sociology. Georgina is an affiliated faculty with the Animal Studies specialization and will teach one of

the core graduate seminars in 2010-2011.

Looking ahead, Michigan State plans to build on these strengths by adding additional graduate and undergraduate history of science courses to the Department of History curriculum, building up the Women in Science Digital Collection, and expanding our faculty. In the fall, for example, we will be searching for a historian of science and a philosopher of science to fill positions at Lyman Briggs College with joint appointments with the Department of History and the Department of Philosophy respectively. To find out more about how Michigan State is integrating history of science into the undergraduate and graduate curriculum, visit the links below.

Useful Links

Department of History: <http://www.history.msu.edu/>

James Madison College: <http://www.jmc.msu.edu/>

Lyman Briggs College: <http://www.lymanbriggs.msu.edu/>

Animal Studies Graduate Specialization: <http://www.animalstudies.msu.edu/>

SPACEWORK: Labor and Culture in America's Astronaut Corps, 1959–1985

Matthew H. Hersch, a graduate student at the University of Pennsylvania, is this year's recipient of the HSS/NASA Fellowship. He describes his project here.

Fifty years ago, the United States selected its first group of space travelers: men who were part pilot, part field scientist, and part “systems man.” Well-educated, middle-class strivers comfortable maneuvering in large organizations, America's astronauts recognized the changing relationship between humans and technology in the 20th century and created a managerial identity in space not much different from that of the white-collar workers proliferating on Earth. Despite the seemingly inexhaustible public fascination with all aspects of human spaceflight, much remains to learn about how the United States created and maintained its professional astronaut corps, how this professional group influenced space policy, and what it tells us about the evolution of “big science” in postwar America.

These first space travelers were members of a new profession that seemed to be without clear antecedents. The National Aeronautics and Space Administration wasn't sure, at first, exactly who it wanted for the job. Scientists? Combat veterans? or Athletes? Air Force research, though, pointed to a particular kind of person: a keen observer, quick thinker, and skilled aviator—calm, resourceful, able to react quickly even under extreme duress. Such a person would do all of these things, moreover, without a desire for validation or personal aggrandizement. One can scarcely imagine that such a person actually existed, but after examining hundreds of military test pilots in 1959, NASA's Selection Committee thought it had found seven of them.

These first American astronauts did not necessarily enjoy long space careers (only one reached the Moon), but they did define the bounds of a new technical profession. During NASA's first decades, these astronauts (and the pilots they

recruited) constituted a distinct and powerful sub-culture within the organization, with substantial authority over day-to-day engineering, training, and flight operations.

Like other 20th-century engineers, astronauts grappled with questions of professionalization, employee-management relations, working conditions, pay, office culture, gender, and deskilling. Unlike other workers, though, astronauts had to negotiate the hazards of their workplace while satisfying the fickle demands of politicians and the public, and the complex emotions that often accompanied spaceflight and the return to Earth. Astronauts also attempted, with partial success, to police the boundaries of their profession, relying upon membership standards both objective and so intangible that the astronauts themselves did not know what they were. During the 1960s and 1970s, these men (and, eventually, women) found themselves divided by skill and experience, constrained by technology, and besieged by a diffuse national culture that simultaneously embraced spaceflight and starved it of funds. Veteran pilots struggled to fill an ever-smaller number of flights with an ever-larger number of qualified astronauts, including new “scientist-astronauts,” who waged an often bitter battle for acceptance.

Despite the seemingly inexhaustible public fascination with all aspects of human spaceflight, much remains to learn about how the United States created and maintained its professional astronaut corps, how this professional group influenced space policy, and what it tells us about the evolution of “big science” in postwar America.

Thomas Jefferson: Intellectual Property Rights Populist

Thomas Jefferson's status as one of America's leading polymaths is well-known. Less well-known is his role in the development of an American framework for intellectual property rights. Throughout the history of the United States, arguably no single individual has demonstrated the breadth of experience and knowledge concerning the diverse, and often competing, perspectives on balancing intellectual property rights of ownership, access, and use that Jefferson developed. The populist vision of intellectual property that he embraced, based on his experience, remains valuable today.

Jefferson had a thorough understanding of the competing interests associated with intellectual property rights. A founding member of the U.S. Board of Arts, Jefferson played a direct role in awarding the first American patents. The Board of Arts eventually evolved into the U.S. Patent and Trademark Office, and in his capacity as the most active member of that first Board, Jefferson served, in effect, as America's first patent examiner. Believing in the limited use of patents, he feared that the monopoly nature of patents interfered with rapid application of innovations into useful functions. He sought to award patents only to unique and innovative inventions. On the Board, he learned the difficult challenges associated with determining which inventions merited grant of patent rights.

A guiding light in science at the time, Jefferson understood the importance of preserving accessibility of knowledge and information to facilitate research, education, and innovation. A long-time president of the American Philosophical Society, the leading scientific organization in the United States at that time, he was active in America's scientific community. He cherished his membership in that community, and participated in numerous knowledge networks of his time. He firmly believed in the power of those networks to enhance knowledge, foster innovation, and address effectively difficult technical challenges.

He opposed the use of legal barriers, including intellectual property rights, which interfered with the sharing of information and knowledge.

Jefferson experienced the frustration associated with the use of intellectual property rights to restrict access to innovations. With other mill operators of his time, he was involved in a patent dispute against one of America's leading inventors, Oliver Evans. Evans obtained a patent for technology using water to power mill operations. He enforced that patent against many mill operators, including Jefferson. From this experience, Jefferson understood the frustration of technology users confronted by activist patent holders. Ironically, it was his Board of Arts that granted Evans the patent.

A vision of intellectual property rights that differed from Jefferson's ideas developed in his time. It viewed intellectual property rights as economic assets, distinct from the products they enabled. Jefferson did not accept that perspective. For Jefferson, inventors should be free to manufacture and sell products based on their work, permitting them to profit if their inventions improved the quality of the products they sold. Inventors would succeed to the extent that they effectively integrated their inventions into popular products. He did not believe that inventors should benefit from denying access to innovations.

In contrast, inventors such as Oliver Evans made the process of invention a source of commercial revenue, distinguishing that process from the manufacture and sale of final goods. They were in the business of inventing, treating their work as commercial assets to be licensed to others, for profit. They chose not to manufacture and sell their own products, opting instead to use patent law to require others to pay them in exchange for the right to incorporate their inventions into their products. This philosophy of intellectual property as proprietary economic asset grew dominant. Yet, recent initiatives and trends

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highlight some of the potential weaknesses associated with that vision. For example, copyright-law conflicts that involve digital media file sharing and open source software, as well as patent controversies over ownership of genetic sequences, underscore the continuing struggle to balance proprietary control over intellectual property with essential rights of access and use.

As we consider moderating our strongly proprietary vision of intellectual property, Jefferson's more nuanced perspective on those rights has much to offer us. Perhaps the key lesson from his populist vision is the recognition that those rights are means to an end, not the end itself. We establish and enforce intellectual property rights in an effort to advance the public interest. Those rights are tools to help foster innovation, economic development, and the public welfare. Jefferson never lost sight of the fact that intellectual property rights should be enforced in ways that serve the entire public, not only the owners of that property. He insisted that the rights of creators of intellectual property must always be balanced with public rights of access and use. That is a principle we should never forget.

Jeffrey Matsuura is an attorney with the law firm, the Alliance Law Group, specializing in technology law. The author of six books on technology law and policy, his most recent book, Jefferson vs. the Patent Trolls: A Populist Vision of Intellectual Property Rights, was published in 2008 by the University of Virginia Press.

2009 Preliminary Program

Registration hours (see p. 51)
(* indicates session organizer)

Thursday, 19 November

Thursday, 5:30-7:00 p.m.

SPECIAL SESSION: SCIENCE AND RELIGION: CURRENT PERSPECTIVES

*Jessica Riskin, *Stanford University*

Commentator: Ann Blair, *Harvard University*

Chair: Paula Findlen, *Stanford University*

- **The Perils of Physico-Theology in Late Seventeenth-century England**, Stephen Gaukroger, *University of Sydney*
- **The Changing Boundaries of Science and Religion**, Peter Harrison, *Oxford University*

SPECIAL SESSION: PANEL DISCUSSION: HOW SHOULD WE WRITE THE HISTORY OF SCIENCE?

*Jane Maienschein, *Arizona State University*

Chair: Kenneth Manning, *MIT*

Panelists:

Deborah Heiligman, *Freelance Author*

Thomas Levinson, *MIT*

William Newman, *Indiana University*

Naomi Oreskes, *University of California, San*

Diego

Jonathan Weiner, *Columbia School of Journalism*

Thursday, 7:00-7:45 p.m.

First-time Attendees and Mentor/Mentoree Reception

Thursday, 7:30-8:30 p.m.

Opening Reception. Cash Bar only

Friday, 7:30-8:45 a.m.

Women's Caucus Breakfast (Co-chairs: Marsha Richmond & Susan Rensing)

Friday, 9:00-11:45 a.m.

WOMEN'S STRATEGIES FOR PARTICIPATING IN SCIENCE

*Marsha Richmond, *Wayne State University*

- **Twentieth Century Women Scientists through the Decades: Changing Conscious and Unconscious Strategies**, Nancy G Slack, *The Sage Colleges*
- **Strategies of Participation by Subordination: Female Technical Assistants in Biological Research of the 20th century**, Helga Satzinger, *Wellcome Trust Centre for the History of Medicine, University College*
- **Strategies in the Cases of Two Pioneer Women Professors: Kristine Bonnevie and Tine Tammes**, Ida Stamhuis, *Free University of Amsterdam*
- **Sex and Gender in the Lab: The Strategies for Studying Sex Determination Employed by Anna Rachel Whiting and Phineas Wescott Whiting**, Marsha Richmond, *Wayne State University*

BEYOND THE ARGUMENT FROM DESIGN: NATURAL THEOLOGY IN LATE MEDIEVAL AND EARLY MODERN CATHOLIC THOUGHT

Chair/Commentator, Mordechai Feingold, *Caltech*

- **Noel-Antoine Pluche as a Jansenist Natural Theologian**, Ann Blair, *Harvard University*
- **Catholic Natural Theology in Italy after Galileo**, Massimo Mazzotti, *University of California, Berkeley*
- **Atheists, Politicians, and Natural Theology in the Work of Leonard Lessius, S.J.**, *Brian Ogilvie, *University of Massachusetts, Amherst*
- **Astrology as Natural Theology in the Later Middle Ages**, Laura Smoller, *University of Arkansas at Little Rock*

UNDERSTANDING EXTINCTION

Chair/Commentator: Phillip Sloan, University of Notre Dame

- **The Fur Flies over Spotted Cats: Science and the Politics of Endangered Carnivores in the Age of Ecology**, Mark V. Barrow, Jr., *Virginia Tech*
- **Extinction, Nature's Economy, and Natural Theology**, Kevin Francis, *Evergreen State College*
- **Dying Americans: Race, Extinction and Conservation in the New World**, Sadiya Qureshi, *University of Cambridge*
- **Hunting America's Big Game of the Past: Fossil Collecting and the Conservation Ethos**, Lukas Rieppel, *Harvard University*
- **A Victorian Extinction: The Great Auk, Alfred Newton, and Early Wildlife Protection**, *Henry Cowles, *Princeton University*

THE MANY LIVES OF THE PROJECTOR: INVENTORS AND CHARLATANS, PHILOSOPHERS AND STATESMEN IN ELIZABETHAN AND STUART ENGLAND

Commentator/chair: Lesley Cormack, *Simon Fraser University*

- **'The good or bad success of this project': Projectors and the Fens, 1580-1630**, Eric H. Ash, *Wayne State University*
- **Character of a Projector: Vernacular Representations of Technological Invention in Seventeenth-century Comedies, Poems and Pamphlets**, Jessica Ratcliff, *Cornell University*
- **Francis Bacon, the Patent System, and the Utopian Reform of Invention**, *Cesare Pastorino, *Indiana University*
- **Philosophizing Projectors and Projecting Philosophers: The Late Projects of Cornelis Drebbel (1572-1633)**, Vera Keller, *McGill University*

PARAPHRASING HISTORY: NAMING, TRANSLATION, AND SYNONYMY IN EARLY MODERN CHINA AND JAPAN

Commentator/chair: Ruth Rogaski, *Vanderbilt University*

- **Traduttore, Traditore: Constructing Science Via Translation in China 1600-1900**, Benjamin

Elman, *Princeton University*

- **Anatomy of a Textual Monstrosity: Dissecting the Mingli Tan (*De Logica*, 1631)**, Joachim Kurtz, *Emory University & Max Planck Institute for the History of Science*
- **Radicle Translation: Synonymy and the Roots of Resemblance in Qing Natural History**, *Carla Nappi, *University of British Columbia*
- **Indexing Nature: Homonymy and Synonymy in Early Modern European and Japanese Encyclopedias of Natural History**, Federico Marcon, *University of Virginia*

UNDERSTANDING COMPLEXITY IN BIOLOGICAL SYSTEMS

- **From Ecosystem to Complex Adaptive System: Shifting Strategies in Modern Ecology**, Sharon Kingsland, *The Johns Hopkins University*
- **Reassembling the Pieces: Biological Systems and Systems Biology**, James Collins, *National Science Foundation*
- **The Superorganism: How Did We Come to Understand What It Is?** Bert Hölldobler, *Arizona State University*
- **Organisms, Systems, and Networks: Overlapping Paradigms to Explain Complexity in 20th Century Biology**, Manfred Laubichler, *Arizona State University*

DEFINING APPLIED SCIENCE IN THE LONG 19TH CENTURY: ANGLO-AMERICAN PERSPECTIVES IN INTERNATIONAL CONTEXTS

Commentator/chair: James McClellan, *Stevens Institute of Technology*

- **From Art to Applied Science: The Discourse of Science and Industry in the Nineteenth Century**, Eric Schatzberg, *University of Wisconsin, Madison*
- **Scientific Authority and the Civil Model: Science, and the State in Different Branches of Anglo-American Engineering**, Jennifer K. Alexander, *University of Minnesota*
- **Born in Translation: The Origins of the Phrase "applied science,"** *Robert Bud, *The Science Museum, London*

- “Vague and artificial”: The Historically Elusive Distinction Between Pure and Applied Science, Graeme J. Gooday, *University of Leeds*

RESEARCH AND PEDAGOGY: A HISTORY OF QUANTUM PHYSICS THROUGH THE TEXTBOOKS. (I) FROM THE ORIGIN TO THE EVE OF QUANTUM MECHANICS: SESSION I

- *Drude’s Lehrbuch der Optik*, Marta Jordi Taltavull, *University of Barcelona, Max Planck Institute for History of Science*
- *Against the Wind: Otto Sackur and His Daring Lehrbuch der Physikalische Chemie*, *Massimiliano Badino, *Max Planck Institute for History of Science*
- *Fritz Reiche’s 1921 Quantum Theory Textbook*, Clayton A. Gearhart, *St. John’s University*
- *Sommerfeld’s Atombau und Spektrallinien*, Michael Eckert, *Deutsches Museum*
- *Max Born’s Vorlesungen über Atommechanik*, Domenico Giulini, *Max Planck Institute for Gravitational Physics*

THE PSYCHOLOGICAL SOCIETY: ORIGINS, BOUNDARIES, LIMITS

Commentator/chair: Greg Eghigian, *Pennsylvania State University*

- *The Utilitarian Self: The Neurosciences and Political Reform in Nineteenth-century Britain*, Cathy Gere, *University of California, San Diego*
- *On Hans, Rolf, and Others: Wonder Animals in French Psychical Research and Early Psychology*, Sofie Lachapelle, *University of Guelph*
- *Deception, the “Law of Economy,” and the Making of Psychological Americans*, *Michael Pettit, *York University*
- *Escaping the “Alien Framework”: Indigenizing Psychology in India*, Wade Pickren, *Ryerson University*

NETWORKS/COMMUNITIES IN EARLY MODERN SCIENCE

Commentator/chair: Alix Cooper, *SUNY, Stony Brook*

- *Cultivating a Discipline: Marin Mersenne as*

Mathematical Intelligencer, *Justin Grosslight, *Harvard University*

- *The Camel’s Face: Exotic Animals in the Sixteenth-Century Arts and Sciences*, Daniel Margocsy, *Northwestern University*
- ‘Rest assured, I expect some pretty things from Candia’: *Venetian Apothecaries and the World of Collecting*, Valentina Pugliano, *Oxford University*
- *Contradictory Tropics: Columbian Geopolitics in Oviedo’s Official Histories of the Indies*, Nicholas Wey-Gomez, *Brown University*

SPECIAL SESSION: SESSION 1: ROUNDTABLE DISCUSSION ON CLASSIFICATION IN SPECIAL FIELDS IN THE HISTORY OF SCIENCE

- *Stephen Weldon, *University of Oklahoma*
- *History of Science and the Universal Decimal Classification*, Elaine de Souza, *PUC-SP*
- *Sources on Medieval Arabic Science*, Ana M. Alfonso-Goldfarb, *Centre Simao Mathias of Studies in History, PUC-SP*
- *Problems of Classification Considering Chinese Texts in History of Science*, Georges Métaillé, *CNRS*
- *Documents on Latin American Colonial Science*, Márcia H. M. Ferraz, *Centre Simao Mathias of Studies in History, PUC-SP*
- *Issues in Classification and Controlled Vocabulary: Experiences from Work in Nineteenth-Century American Science*, Daniel Goldstein, *University of California, Davis*

Friday, 12:00-1:15 p.m.

FORUM FOR THE HISTORY OF SCIENCE IN AMERICA BUSINESS MEETING

Friday, 12:00-1:15 p.m.

FORUM FOR THE HISTORY OF THE MATHEMATICAL SCIENCES LUNCHEON.

All those interested in the history of mathematics are invited to this complimentary event, sponsored by the Legacy of R.L. Moore Project. Seating is limited, and reservations are required. Contact Karen Parshall at khp3k@virginia.edu if you would like to attend.

Friday, 1:30-3:10 p.m.

MATHEMATICAL GENEALOGIES: ASTRONOMY, GEOMETRY, NUMBER THEORY

- **Realism in Ptolemaic Astronomy: The Case of the Flawed Lunar Model**, Elizabeth Burns, *University of Toronto*
- **Geometrical Loci: Ancient and Modern**, Sabetai Unguru, *University of Tel-Aviv*
- **Irrational Ratios: Music and the Development of the Modern Concept of Number**, Peter Pesic, *St. John's College*
- **“Seeking Our Own Forerunner”: A Reappraisal of the Role of the Idea of “the Intellectual Sameness of Mankind” in Mei Wending’s (1633-1721) Study of Western Mathematics**, Shin Min Cheol, *Seoul National University*

INDUCTION, ERROR, AND CONTEXT: PROBLEMS IN THE PHILOSOPHY OF SCIENCE

- **Jacopo Zabarella’s Real Influence on Early Modern Science**, John P. McCaskey, *Stanford University*
- **On Leaping to Conclusions Inductively: Interpretation and Anticipation in Bacon’s Cosmological Reasoning**, Daniel Schwartz, *University of California, San Diego*
- **Is it Wrong Not to Speak About Errors?** Bart Karstens, *University of Leiden*
- **Autonomy and Delocalisation of Knowledge**, Jouni-Matti Kuukkanen, *University of Leiden*

MANIFOLD FORMS OF NATURAL KNOWLEDGE TRANSMISSION

- **To Popularize Medicine: A Study on Medicine and Society in China (10-12th century)**, Ruixue Yan, *Peking University*
- **How Did Knowledge Circulate in Early Modern Natural History? Aldrovandi’s Building Blocks**, Fabian Krämer, *Max Planck Institute for the History of Science*
- **Receipt Books: Evidence of Non-traditional Alchemy**, Robin L. Gordon, *Mount St. Mary’s College*
- **Botany between Knowledge and Science: Botany in the Romantic Vienna and “Voyages**

into the Flower Fields of Life,” Marianne Kl-
emun, *University of Vienna*

ASTRONOMY AND SOCIETY

- **Hidden Eclipses and Misidentified Comets: Debate and the Extent of Astronomical Knowledge in 10th-12th Century Japan**, Kristina Buhrman, *University of Southern California*
- **On the Boredom of Science: Material Culture in Nineteenth-Century Astronomy**, Kevin P. Donnelly, *Brandeis University*
- **Frederik Kaiser, Popular Astronomy, and the Decline of Natural Theology**, Frans van Lunteren, *Leiden University*
- **Educating Astronomers. The Astronomical Community, 1880-1940**, David Baneke, *Leiden University*

STRAINS OF DEFINITION IN 20TH-CENTURY BIOLOGY: E. COLI, SEX, DEATH, LIFE

- **Cultures of Cultures: Standardizing a Model Organism at the Yale E. Coli Genetic Stock Center, 1968-1990**, Thomas J.H. Reznick, *Yale University*
- **How the X and Y Became the Sex Chromosomes**, Sarah S. Richardson, *University of Massachusetts, Amherst*
- **Researching Aging under Glass: The Discovery of the Hayflick Limit and the Molecularization of Cellular Aging, 1961-1992**, Lijing Jiang, *Arizona State University*
- **Cell Model Experiments, Biosignatures and Microscopy in the 1930s: Wilhelm Reich’s Bion Experiments**, James E. Strick, *Franklin and Marshall College*

TECHNOLOGY TRANSFER: TO, FROM, AND AROUND EAST ASIA

- **The Typing Rebellion: Toward a Global History of the Chinese Typewriter**, Thomas S. Mul-laney, *Stanford University*
- **Engineers as the Agents of Science and Empire, 1880-1914**, Xiao (Shellen) Wu, *Princeton University*
- **Japanese Chemistry and the Russo-Japanese War**, Yoshiyuki Kikuchi, *Chemical Heritage Foundation*

- **Self-Sufficiency for the Colony or for the Empire? Research of Substitutes at Central Research Institute in Korean Peninsula Under Japanese Colonial Rule in the Late 1930s**, Taehee Lee, *Seoul National University*

THEORIES OF MIND, BRAIN, AND COGNITION IN SOCIAL ENGAGEMENT

- **Giving Shape to the Common Brain: Cerebral Organization and Political Unity in the 18th Century**, Nima Bassiri, *University of California, Berkeley*
- **“Crazy, bedeviled, bewitched or something”:** Concepts of Insanity in the United States, 1800-1843, Rachel Ponce, *University of Chicago*
- **Nervous Societies and the Fragmented Self – Sigmund Freud and Biological Psychiatry**, Katja Guenther, *Princeton University*
- **Crisis and Method. Edmund Husserl’s Logical Investigations in History of Economic Thought**, Andreas Georg Stascheit, *Dortmund University of Applied Sciences and Arts*

INDUSTRIAL AND TECHNOLOGICAL RESEARCH COMMUNITIES OF THE MID-20TH CENTURY

- **Where are the I.G. Farben Observatories? The World of Industrial-Scientific Collaboration in German Astrophysics**, Juan Andres Leon, *Harvard University*
- **Fundamental Research at Du Pont in the Interwar Years and the Rise of ‘Microphysical Thinking’**, Augustin Cerveauz, *Université de Strasbourg, France*
- **The Formation of Spectroscopy Users’ Group and the Changing Status of Spectroscopy**, Mina Park, *MIT*
- **Fact, Fiction, and Fortran: Computers Between Science and Engineering at MIT and Carnegie Tech, 1962-1975**, Andrew B. Mamo, *University of California, Berkeley*

TEACHING THE HISTORY OF SCIENCE USING THE WEB, SPONSORED BY COMMITTEE ON EDUCATION

*Michael Reidy, *Montana State University*

- **Online Images and Learning: Going Beyond Visual Aids**, Kerry V. Magruder, *University of Oklahoma*
- **Blogging the Classroom? The Promise and Limits of Web 2.0 for Teaching the History of Science**, Audra J. Wolfe, *University of Pennsylvania*
- **Your Daily History of Science: Blogging a Discipline**, Michael D. Barton, *Montana State University*

Friday, 3:30-5:30 p.m.

SCIENCE AS EMPIRE? NATURAL KNOWLEDGE, POLITICAL ECONOMY, AND IMPERIAL GOVERNANCE IN THE EARLY MODERN ATLANTIC WORLD

Chair: Robert Westman, *University of California, San Diego*

Scientific Practices in the Iberian Atlantic: The Comprehension of the New World and the Construction of a Eurocentric World Picture, Mauricio Nieto Olarte, *Universidad de los Andes*

- **Scientific Practice as Political Economy in the English West Indies, 1650-1688**, Matthew Underwood, *Harvard University*
- **The Order of Nature and Empire at Stake: A Botanical Debate in the Spanish Atlantic (1792-1801)**, *Matthew J. Crawford, *University of California, San Diego*
- **On the Practice of Collecting Natural Objects in the Spanish Context: Old Bureaucratic Devices for New Scientific Aims? 1712-1812**, Marcelo Fabion Figueroa, *European University Institute*

POPULARIZING AND POLICING ‘DARWINISM’ 1859-1900

- **Charles Kingsley: Darwin’s Other Bulldog**, *Piers Hale, *University of Oklahoma*
- **Asa Gray: Design Theorist Among the Darwinians?** T. Russell Hunter, *University of Oklahoma*
- **St George Jackson Mivart: Theistic Evolutionist and Darwinian Outcast**, John M. Lynch, *Arizona State University*
- **Anglo-American Popularisers of Evolution, 1859-1900**, Bernard Lightman, *York University*

BAROQUE SCIENCE

- **Making “Nothing, All”:** Imagination, Passions, and Early Modern Science, Raz Chen-Morris, *Bar-Ilan University*
- **From Divine Order to Human Approximation: Mathematics in Baroque Science**, Ofer Gal, *University of Sydney*
- **The Baroque Nature of Boyle’s New “Physico-Chymical” Science**, *Victor Boantza, *McGill University*
- **Instruments and the Habits of Knowledge**, Jean-Francois Gauvin, *Harvard University*

FROM GIBBS TO EINSTEIN, IN MEMORY OF MARTIN J. KLEIN

Chair: Jed Z. Buchwald, *Caltech*

- **Einstein, Lorentz & M. Klein**, A. J. Kox, *University of Amsterdam*
- **Thermodynamics and Relativity: Einstein and Klein**, Daniel Siegel, *University of Wisconsin, Madison*
- **Fathoming Max Planck: A Personal Account of Klein, Kuhn, and the Shaping of Quantum History**, Allan Needell, *Space History Division, NASA*
- **Martin Klein and Chinese Studies in the History of Modern Physics**, Danian Hu, *The City College of the City University of New York*
- **Fathoming Einstein: M. Klein & The Einstein Papers Project**, *Diana Kormos Buchwald, *Caltech*

BEYOND THE CABINET: COLLECTIONS AND COLLECTING IN TWENTIETH CENTURY SCIENCE

Chair: Robert Kohler, *University of Pennsylvania*

- **Laboratories, Museums, and the Comparative Perspective: Alan A. Boyden’s Serological Taxonomy, 1925-1962**, Bruno J. Strasser, *Yale University*
- **Building a Statistical Laboratory: A Collector’s Tale**, *Dan Bouk, *Colgate University*
- **Taking Stock: Situating and Standardizing Collection Practices in the International Biological Program, 1962-1974**, Joanna Radin, *University of Pennsylvania*

- **Accounting for Taste: Home Economists, Quantification, and Changing Eating Patterns in 20th Century America**, Gabriella M. Petrick, *New York University*

TECHNIQUES OF THE SUBJECT IN THE HUMAN SCIENCES

Sponsored by the Forum for the History of the Human Sciences

- Commentator: Henrika Kuklick, *University of Pennsylvania*
- **Subjects of Delusion: Early Twentieth Century Psychopathological Methods**, *Susan Lanzoni, *MIT*
 - **Seeing the Heart: Feeling Emotions**, Otniel E. Dror, *The Hebrew University of Jerusalem*
 - **The Multiple Psychologies of Subjectivity: Accountings of Experiments in Mid-century America**, Jill Morawski and Nicholas Alt, *Wesleyan University*

MATHEMATICAL RECREATIONS AND THE HISTORY OF MATHEMATICS

- **Having Laid Great Wagers: Mathematical Instruments as Popular Culture in Early Modern England**, *Kathryn James, *Beinecke Library, Yale University*
- **Franklin’s Mathematical Recreations**, Paul Pasles, *Villanova University*
- **Playing Cards and American Mathematical Learning, 1800-2000**, Peggy Kidwell, *Smithsonian Institution*
- **WFF ‘N PROOF and other Mathematical Recreations from the 1960s**, David L. Roberts, *Prince George’s Community College*

TECHNOSCIENCE, PAST AND PRESENT

- **Science and Power: Toward a History of Applied Science**, Ann Johnson, *University of South Carolina*
- **Hybrid Experts in Eighteenth-century Prussia**, *Ursula Klein, *Max Planck Institute for the History of Science*
- **Naturalizing Natural Knowledge in Tokugawa Japan: The Career of Hiraga Gennia (1729-1779)**, Lissa Roberts, *University of Twente*

- **From Private Networks to Bureaucratic Procedures**, Beate Ceranski, *University of Stuttgart*

SMALL GROUPS, BIG SCIENCE

Commentator: Nathaniel Comfort, *Johns Hopkins University*

- **The Board and the Ward: Practicing Ethics at the National Institutes of Health circa 1953**, *Laura Stark, *Wesleyan University*
- **Smokers, Salons, and Small Groups: Modeling Society in Cold War America**, Jamie Cohen-Cole, *Yale University*
- **Between the Doctor and His Plumber: Making Embryo Research Ethics Public**, J. Ben Hurlburt, *Harvard University*

COUGHING IT UP TO EVERYTHING ELSE: THE UNNATURAL HISTORY OF THE TOBACCO INDUSTRY

Commentator/chair: *Angela Creager, Princeton University*

- **Tobacco Industry Research on Smokers and Smokers' Behavior in the Era of the Tobacco and Health Crisis, 1950-1990**, Louis M. Kyriakoudes, *The University of Southern Mississippi*
- **Filter Farce or Filter Frustration? Dashed Faith in Big Science, and the Intractable Cigarette "Filter Problem,"** *Bradford Harris, *Stanford University*
- **"It Has the Potential of Waking a Sleeping Giant": The Tobacco Industry's Private Debate on Publishing Internal Polonium Research,** *Brianna Rego, *Stanford University*
- **Agnotology in Action: The History of Popular Ignorance of Tobacco Harms as Revealed through the Tobacco Industry's Formerly Secret Archives**, Robert N. Proctor, *Stanford University*

Friday, 6:00 - 6:30 p.m.

Announcement of 2009 Awards & Prize Winners

Friday, 6:45-7:45 p.m.

Distinguished Lecture, M. Norton Wise, UCLA, "On Science as Historical Narrative"

Friday, 7:45 - 8:30 p.m.

Reception, Cash Bar only

Saturday, 21 November

Saturday, 9:00-11:45 a.m.

REORIENTING GALILEO IN HIS DIFFERENT INTELLECTUAL TRADITIONS

Chair: Domenico Bertoloni Meli, *Indiana University*

- **Practitioners, Galileo and the Emergence of Pre-Modern Mechanics**, Matteo Valleriani, *Max Planck Institute for the History of Science*
- **Strange Realism: Galileo's Struggle with Astronomical Hypotheses**, Mario Biagioli, *Harvard University*
- **The Information Order of Galileo's 'Dialogue,'** Nick Wilding, *Georgia State University*
- **The Cannon Tables of the 'Two New Sciences': Connections between Galileo's Mechanics and Contemporary Astronomical Practice,** *Renee J Raphael, *University of Cambridge*
- **Rethinking 1633: Writing about Galileo after the Trial**, Paula Findlen, *Stanford University*

PRODUCING KNOWLEDGE FOR POLICY: RESEARCH PROGRAM PLANNING AND SCIENTIFIC ASSESSMENTS

Chair: Naomi Oreskes, *University of California, San Diego*

- **Collapse and Translation: How Scientists Assess the West Antarctic Ice Sheet,** *Jessica O'Reilly, *Princeton University & University of California, San Diego*
- **Constructing Science and Politics in Global Affairs**, Clark Miller, *Arizona State University*
- **Producing Knowledge for Policy: Ozone Depletion Science and Scientific Assessments,** Keynyn Brysse, *Princeton University and University of California San Diego*
- **The Past, Present, and Future of West Antarctica: Research on the Behavior of a Continent, 1957-1990,** William Thomas, *American Institute of Physics*

THE FACES OF NATURAL THEOLOGY: GOD'S BOOK(S) OF NATURE?

Commentator: Christopher Hamlin, *University of Notre Dame*

- **Charles Bovelles: Natural Theology and the Harvest of Late Medieval Mysticism**, *Richard Oosterhoff, *University of Notre Dame*
- **Lutherans Read the Book of Nature**, Kathleen Crowther, *University of Oklahoma*
- **"Ex Naturae Libro Declarabimus": William Harvey and Natural Theology**, Benjamin Goldberg, *University of Pittsburgh*
- **The Credible Audiences of the Natural Theology**, Adam Shapiro, *University of British Columbia*

ENVISIONING AND IMPLEMENTING SCIENCE AND TECHNOLOGY IN JAPAN, 1860-1960

Commentator: James Bartholomew, *Ohio State University*

- **The Origin of Modern Developmentalism in Japan**, Nobuhiro Yamane, *Waseda University*
- **Made For Japan: Sorting Silkworms and Standardizing Cocoons**, *Lisa Onaga, *Cornell University*
- **Japanese Engineers and "Comprehensive Technology" in Wartime "Manchukuo" and China, 1931-1945**, Aaron S. Moore, *Arizona State University*
- **Securing "National" Food and Science: Examining Japan's Science on Whales**, Fumitaka Wakamatsu, *Harvard University*

RISK AND SCIENTIFIC AUTHORITY

- **Science, Certainty, and the "Negro Question": A Narrative of Life at Risk, 1896**, Megan Wolff, *Columbia University*
- **Coronary Artery Disease and the Consolidation of Medical Authority**, Todd Olszewski, *National Institutes of Health*
- **Making the Crash Barrier: Medical Authority, Engineering Culture, and Bureaucratic Practice in American Automotive Safety, 1966-1980**, Lee Vinsel, *Carnegie Mellon University*
- **"These rays that blast and wither but do not**

consume": American Physicists' Evolving Rhetoric on Radiation, 1895-1935, *Matthew Lavine, *Mississippi State University*

- **Mothers and Home Isolation in Early Twentieth Century American Medical Practice**, Bridget Collins, *University of Wisconsin-Madison*

RESEARCH AND PEDAGOGY: A HISTORY OF QUANTUM PHYSICS THROUGH THE TEXTBOOKS (II) QUANTUM BOOKS IN A TIME OF FAST CHANGE: SESSION II

Commentator: David Kaiser, *MIT*

- **Van Vleck's Quantum Principles and Line Spectra (1926)**, Michael Janssen, *University of Minnesota*
- **Teaching Quantum Physics in Cambridge**, *Jaume (James) Navarro, *Max Planck Institute for the History of Science/University of Cambridge*
- **The Infancy of Quantum Statistics**, Daniela Monaldi, *Max Planck Institute for the History of Science*
- **Pauli's 1933 *Die allgemeinen Prinzipien der Wellenmechanik***, Don Howard, *University of Notre Dame*

NOTES FROM UNDERGROUND: DIGGING THROUGH NARRATIVES IN THE EARTH SCIENCES

Commentator: Mott Greene, *University of Puget Sound*

- **Accounts of the New Madrid Earthquakes, Conevery Bolton Valencius**, *Harvard University*
- **"Did You Feel It?" Earthquake Spotters in the Nineteenth-Century Alps**, *Deborah Coen, *Barnard College*
- **The Chilean Earthquake and the Pulse of the Earth**, Matthias Dörries, *University of Strasbourg*
- **Serpentine Histories: Thinking About Assembling California**, Jon Christensen, *Stanford University*

JESUIT SCIENCE AND FAITH AT THE MARGINS OF EMPIRE: FRENCH AND SPANISH MISSIONARY BOTANY, SURGERY, AND NATURAL HISTORY IN THE COLONIAL ATLANTIC WORLD

Commentator/chair: Alan Greer, *University of Toronto*

- **Reevaluating and Assessing the American Sources of Nieremberg's *Historia Naturae* (1635)**, Domingo Ledesma, *Wheaton College*
- **The Natural History of Secrets: The Jesuit Encounter with the Indigenous Knowledge Systems of French North America**, Christopher M. Parsons, *University of Toronto*
- **The Blood of Christ and the Knowledge of Man: Jesuit Natural Philosophy and Medicine Confront Jesus' Sacred Heart in Eighteenth-Century Mexican Anatomical Analysis**, Michelle Molina, *Northwestern University*
- **From the Rhetoric of Savagery to a Science of Race: Humans as a Category of Analysis in Eighteenth-Century Jesuit Natural History, Río de la Plata, 1754-1790**, *Kristin Huffine, *Northern Illinois University*

A QUESTION OF ORDER? STANDARDIZING TIME, SPACE, AND SELF

Commentator: Kenneth Alder, *Northwestern University*

- **Standard Timescales: Between Science and History**, Jimena Canales, *Harvard University*
- **Standardizing Identity Pragmatically: Civil Status Standards in Imperial Germany**, *Deborah A. Brown, *UCLA*
- **Interrupted Narratives: Standardizing Time on Indian Railways**, Ritika Prasad, *University of North Carolina, Charlotte*
- **The Standardization of Space: Cartographic Grids and the Politics of Computation**, William Rankin, *Harvard University*

Saturday, 12:00 12:30 p.m.

Forum for the History of Human Sciences
Business Meeting

Saturday, 12:00 1:15 p.m.

SPECIAL SESSION: I'VE GOT A PH.D. IN THE HISTORY OF SCIENCE, NOW WHAT? HISTORIANS AT WORK IN A DOWN ECONOMY

Sponsored by the Graduate Student and Early

Career Caucus

Chair: *Gina Rumore, *University of Minnesota*
*Jacqueline Wernimont, *Brown University*
Marc Rothenberg, *National Science Foundation*
Liba Taub, *Whipple Museum, University of*

Cambridge

Ronald Brashear, *Chemical Heritage Foundation*

Pamela O. Long, *Independent Scholar*

David Lebrun, *Film Maker*

Saturday, 12:00 1:15 p.m.

Forum for the History of Human Sciences
Distinguished Lecture

Saturday, 1:30-3:10 p.m.

GOD, SOUL, AND MATTER IN EARLY MODERN COSMOLOGY

- **Before Copernicus, Were the Celestial Orbs 'fictions'?** Peter Barker, *University of Oklahoma*
- **Kepler's Astrology and the International Year of Astronomy**, Patrick J. Boner, *The Johns Hopkins University*
- **Newton's Empiricism and the Emanation of Space in *De Gravitatione***, Mary Domski, *University of New Mexico*
- **Newton in North America: The Reception of Newton's Theory of Comets in the Colonies**, Tofigh Heidarzadeh, *University of California, Riverside*

EARLY MODERN ENGAGEMENTS IN THE STUDY OF THE EARTH AND OF LIFE: MAGIC, RELIGION, PHYSICS, AND HISTORY

Chair: Jessica Riskin, *Stanford University*

- **Franciscans at the Boundaries of the Natural and the Permissible in Early Modern Venice**, Jonathan W. Seitz, *Drexel University*
- **The Toad in the Stone: Vitalism, Fertility and Earth History in Early Modern Europe**, Lydia Barnett, *Stanford University*
- **André François Deslandes (1689-1757). History and Physics in Early 18th-century France**, Marita Huebner, *University of California, Berkeley*
- **Secularization of Science? A Case Study**, Monika Gisler, *ETH Zurich*

BOTANY AND ZOOLOGY ACROSS BORDERS

- **Seeds of Knowledge: Dutch Botany in Brazil and Southeast Asia (1596-1696)**, Matthew B. Watts, *University of Alabama*
- **Imagining a Tropical Laboratory: US Science in the Caribbean after 1898**, Megan Raby, *University of Wisconsin-Madison*
- **At Home in the Wild: Ynes Mexia, Naturalist**, Kathryn Davis, *San Jose State University*
- **Birds Over the Borders: Imperial Power and National Pride in U.S.-Colombia Scientific Relations, 1910-1948**, Camilo Quintero, *Universidad de los Andes*

EXTREME PHYSICS: EXPERIMENTAL AND THEORETICAL FRONTIERS, 1860 TO THE PRESENT

- **"No such spectrum as I expected!": William Huggins and the Riddle of the Nebulae**, Barbara J. Becker, *University of California, Irvine (retired)*
- **Leiden's Quest for Cold and the International Temperature Scale 1927**, Dirk van Delft, *Museum Boerhaave/Leiden Observatory*
- **On the Emergence of Deviant Science: The Opposition to the Theory of Relativity in the 1920s**, Milena Wazeck, *Max Planck Institute for the History of Science*
- **The Multiple Ways to Decoherence**, Fabio Freitas, *Universidade Federal da Bahia*

FOOD AND WATER: PUBLIC HEALTH, CA. 1850-1950

- **Reasoning about Cholera: John Snow and the Miasma Theory of Disease**, Dana Tulodziecki, *University of Missouri, Kansas City*
- **A Conflict of Analysis: Milk Adulteration and Analytical Chemistry in Victorian Public Health**, Jacob A. Steere-Williams, *University of Minnesota*
- **"The Science of Living Begins at the Mouth": When Nutrition Became a Part of Food and Eating, 1880-1920**, Chin Jou, *Princeton University*
- **Food Psychology, Food Technology: Ancel Keys and the WW II Development of the K Ration**, Sarah W. Tracy, *University of Oklahoma*

ALTERNATIVE PICTURES OF EVOLUTION

- Chair: Abigail Lustig, *University of Texas*
- **How Darwin Drew the Primate Phylogenetic Tree**, Joy Harvey, *University of Oklahoma*
 - **The Spencer-Weismann Dispute and Alternative Evolutionary Mechanisms in the 1890s**, Trevor Pearce, *University of Chicago*
 - **Morphogenesis, Slime Molds, and Searching for Shared Developmental Processes**, Mary E. Sunderland, *University of California, Berkeley*
 - **Sociobiology and the Superorganism**, Abigail Lustig, *University of Texas*

SECRET, PROPRIETARY, AND PRIVILEGED KNOWLEDGE

- Chair: Cathryn Carson, *University of California, Berkeley*
- **Secrecy and the Bomb, From the Postwar to the Cold War**, Alex Wellerstein, *Harvard University*
 - **Fat Men, Not Little Boys: The Trinity Test and the Use of the First Atomic Bombs**, Bruce J. Hunt, *University of Texas*
 - **Who Owns What? Private Ownership and the Public Interest in Recombinant DNA Technology in the 1970s**, Doogab Yi, *National Institute of Health*
 - **Discriminating Appraisers: A Study in Historical GIS**, Jennifer Light, *Northwestern University*

WORKSHOP-DIGITAL MEDIA AND THE HISTORY OF SCIENCE

- *Dawn Digrius, *Stevens Institute of Technology*
- **What is Digital History?** Trevor Owens, *George Mason University*
 - **NINES**, Dana Wheelles, *University of Virginia/NINES*
 - **History and Digital Technology**, Jeremy Boggs, *George Mason University*
 - **Rethinking Archives, Rethinking Publishing: The Digital Humanities**, Jo Guldi, *University of Chicago*

SPECIAL SESSION: SESSION 2: ROUNDTABLE DISCUSSION ON CLASSIFICATION IN THE HISTORY OF SCIENCE IN DIFFERENT MEDIA

*Ana Alfonso-Goldfarb, *Centre Simao Mathias of Studies in History of Science, PUC-SP*

- **Images as Documents for the History of Science: Some Remarks Concerning Classification**, Maria Helena Roxo Beltran & Vera C. Machline, *Centre Simao Mathias of Studies in History of Science, PUC-SP*
- **Management of Digital Media in History of Science**, Silvia Waisse Priven, *Centre Simao Mathias of Studies in History of Science, PUC-SP*
- **Classification Issues Related to Metadata, Software Archives, and Virtual Objects**, Henry Lowood, *Stanford University Libraries*
- **Information Retrieval in History of Science Resources on Internet: The End of Classifications?** Christine Blondel, *CNRS, CRHST*

SPECIAL SESSION: HISTORY OF SCIENCE IN FILM

- **A Screening of “Proteus” and a Conversation with Director David Lebrun**

*Lynnette Regouby, *University of Wisconsin, Madison*

Film-60 minutes plus discussion

Saturday, 1:30-3:30 p.m.

POSTERS

- **Cognitive Illusions and the Evolution of Science**, Burton Voorhees, *Athabasca University*
- **International Year of Astronomy Celebrating the Publication of Kepler’s *Astronomia Nova*, 1609: Kepler’s Construction of the First-Ever Planetary Orbit**, A.E.L. Davis, *Imperial College (retired)*
- **Computers and the Visual Language of Paleobiology**, David Sepkoski, *University of North Carolina, Wilmington*
- **The Geography of Transnational Scientific Correspondence during the Revolutionary and Napoleonic Era**, Elise S. Lipkowitz, *Northwestern University*
- **Transplantation and Tolerance: Theoretical Study of Organismic Changes and Expertise in**

Tissue Transplantation in Peter Brian Medawar’s Immunological Research, Hyung Wook Park, *University of Minnesota*

- **A New History of the Discovery of the 20 Canonical Amino Acids**, Rachel Rodman, *University of Wisconsin*
- **Historical Scholarship and Digital Archival Collections: The Contagion and Expeditions and Discoveries Websites at the Open Collections Program at Harvard University**, Rebecca H Wingfield, *Harvard University*
- **The Changing Place of Mathematics at U.S. Universities: 1865-1880**, Andrew Fiss, *Indiana University*
- **The Rise of Radio Astronomy in the Netherlands: 1944-1956**, Astrid Elbers, *Leiden University*
- **The Development and Popularization of the Big Bang Theory**, Gustavo Rocha, *State University of Feira de Santana*
- **The Significance of Experience in the Periphery. Engineers from the First World in the Second Half of 19th-century Chile**, Jaime Parada, *Universidad Católica de Chile & Universidad Finis Terrae, Chile*
- **Global Science from a Dutch Perspective: Dutch Participation in 19th-century Humboldtian Networks**, Azadeh Achbari, *Free University of Amsterdam*
- **The Pasteurization of American Mushroom Caves: A Study in Mycological Secrecy**, Greg Brick, *University of Minnesota*
- **The Air-Pump at the Princely Court: Natural Philosophy or Useful Technology?** Peter Schimkat, *Independent Scholar*
- **Domestication & Decline: The Degeneration Thesis of Curt P. Richter**, Nick Blanchard, *Oregon State University*

Saturday, 3:30-5:30 p.m.

THE DUTCH DESCARTES: EMPIRICISM AND MEDICINE

Chair: Lisa Shapiro, *Simon Fraser University*

- **Descartes and Medical Cartesianism**, Harold J. Cook, *Wellcome Trust Centre for the History of Medicine at University College*

- **Cartesian Sex. René Descartes, Dutch Physicians and the Problem of Procreation in the Seventeenth Century**, Eric Jorink, *Huygens Institute*
- **Christiaan Huygens and the Limits of Mechanism**, *Rienk Vermij, *University of Oklahoma*

SPEAKING OF DARWIN: THE MEANING AND APPLICATION OF EVOLUTION IN THE TWENTIETH CENTURY

Commentator/chair: Vassiliki (Betty) Smocovitis, *University of Florida*

- **“The Great Grandfather of Hybrid Corn”: Charles Neo-Darwin & Identity Formation among the Maize Hybridizers**, Theodore J. Varno, *University of California, Berkeley*
- **Evolution in the Biological Sciences Curriculum Study: How the Modern Synthesis Permeated 1960s American Classrooms**, Joy M. Lisi Rankin, *Yale University*
- **Between the Two Biologies: Competing Visions of Molecular Evolution**, *Sage R. Ross, *Yale University*

THE PARIS ACADEMY OF SCIENCES IN PRINT

Commentator/chair: Lawrence Principe, *The Johns Hopkins University*

- **The Histoire des Animaux and the Early Publication Projects of the Paris Academy of Sciences**, Anita Guerrini, *Oregon State University*
- **Paper Voyages: Publishing the Paris Academy of Sciences’ Scientific Expeditions**, *Florence C. Hsia, *University of Wisconsin, Madison*
- **Mathematics, Print Culture, and the Paris Academy of Sciences**, Robin E. Rider, *University of Wisconsin, Madison*

SCIENTIFIC CONVENTIONS IN THIRD REPUBLIC FRANCE

Commentator: Peter Galison, *Harvard University*

- **Conventionalism in Practice: Henri Poincaré’s Analysis of Otto Wiener’s experiment (1890)**, Scott Walter, *Université Nancy 2*
- **On the Conventionality of Simultaneity**, Connemara Doran, *Harvard University*
- **Conventions and the Organization of Scien-**

tific Research at the Turn of the 20th century,

*Alex Csizar, *Harvard University*

PRACTICING BORDERLAND SCIENCE: MEDICAL PHYSICS AND THE PRODUCTION OF BIOLOGICAL KNOWLEDGE

Commentator: Nicholas Rasmussen, *University of New South Wales*

- **Medical Physicists, Biology and the Physiology of the Cell (1920-1940)**, Alexander Schwerin, *Technical University Braunschweig*
- **“Whither Medical Physics”? Medical Physics in Britain, 1943-1960**, Alison Kraft, *University of Nottingham*
- **Circuit Morphology: Interwar Medical Physics and the Excitable Cell**, *Max Stadler, *Imperial College*

THE KNOWN AND THE LIVED: SCIENCE AND EXPERIENCE IN 20TH-CENTURY BIOLOGY, PHYSICS AND EARTH SCIENCES

Commentator: Adhelaïd Voskuhl, *Harvard University*

- **Cell Cultures and the Specificity of Life: From Philosophy of Biology to Histories of the Organism**, Isabel Grabel, *Columbia University*
- **Turbulent Times: Pilots, Physicists, and the Problem of Scale**, Daniela Helbig, *Harvard University*
- **Earthrise, or the Globalization of the World Picture**, *Benjamin Lazier, *Reed College*

LISTENING, ATTENTION: PERFORMANCE AND PERCEPTION IN GERMAN CONCERT CULTURE, 1865-1965

Commentator: TBA

- **The Aesthetics of Attention: Ernst Mach’s Accommodation Experiments, His Musical Aesthetics, and His Friendship with Eduard Kulke**, *Alexandra Hui, *Mississippi State University*
- **Listening to Emotions. Musical Hermeneutics and the Concert Hall in the Culture of the Fin de Siècle**, Hansjakob Ziemer, *Max Planck Institute for the History of Science*

- **Listening to Noise: The Global Village as Concert Hall**, Ute Holl, *Bauhaus Universität Weimar*

PRACTICES OF SCIENCE IN MODERN INDIA

Chair: Asif Siddiqui, *Fordham University*

- **Constructing Bhadrakok Physics: Images and Practices of Modern Science in Early 20th-century India**, Somaditya Banerjee, *University of British Columbia*
- **The Importance of Being Nuclear: Science and State Formation in India**, Jahnvi Phalkey, *Georgia Tech-Lorraine*
- **Ninety: A Story of Indian Thorium**, Jaideep A Prabhhu, *Vanderbilt University*

COLLABORATIONS IN TWENTIETH-CENTURY MATHEMATICS

- **Unwilling Collaborations: Mathematics and the Ethics of Professional Responsibility during the Cold War**, Sarah Bridger, *Columbia University*
- **“If you would consider a woman...” Gertrude Cox and Collaboration in Experimental Statistics 1940-64**, Edith D. Sylla, *North Carolina State University*
- **Gertrude Cox and Ronald Fisher: Two Statistical Pioneers Often Collaborate and Sometimes Collide**, *Nancy S. Hall, *University of Delaware*

PANEL DISCUSSION: FEDERAL FUNDING OPPORTUNITIES IN THE HISTORY OF SCIENCE, NEH, NSF, NIH

*Julia Nguyen, *NEH*

Frederick Kronz, *NSF*

Robert Martensen, *NIH*

Saturday, 6:00-11:00 p.m.

SOCIETY RECEPTION, MUSEUM TOUR AND DINNER

In honor of the 2009 Prize winners.

Heard Museum (<http://www.heard.org>)

Sunday, 22 November

Sunday, 9:00-10:00 a.m.

HSS Business Meeting

Sunday, 10:00 a.m.-12:00 p.m.

DRAWING IN PRINT CULTURE: WHY CARTOONS MATTER TO THE HISTORY OF SCIENCE

Commentator: Constance Clark, *Worcester Polytechnic Institute*

- Chair: Bert Hansen, *Baruch College*
- **Science Most Attenuated: The Entertaining and Educational Development of Television Weather Cartoons**, *Roger Turner, *University of Pennsylvania*
- **Demonizing Evolution: Fundamentalist Cartoons from the Scopes Era**, Edward Davis, *Messiah College*
- **Graphic Tales of Cancer in Modern America**, Michael Rhode, *National Museum of Health and Medicine*

BEYOND EVOLUTION VS. SPECIAL CREATION: THE COMPLEXITY OF THE SPECIES QUESTION IN THE AGE OF DARWIN

- **The Autogenesis of Species in German Science, 1790-1860**, Nicolaas A. Rupke, *Institut für Wissenschaftsgeschichte*
- **“[A]s we rise in the animal scale”: Recapitulation, Progressive Development, and Teaching Comparative Anatomy in 1835 Britain**, James Elwick, *York University*
- **Darwin’s “Conversion” Reconsidered (Again!)**, Paul D. Brinkman, *North Carolina Museum of Natural Sciences*
- **Darwin’s Methodologically Conservative Revolution**, *Richard D. Bellon, *Michigan State University*

KNOWLEDGE AND PRACTICE IN MEDIEVAL AND EARLY MODERN EUROPE

Chair: William Eamon, *New Mexico State University*

- **Translatio as Scientific Practice: Chaucer as “Lewd Compiler” of the Treatise on the Astrolabe**, Elly Truitt, *Bryn Mawr University*
- **Universalizing Nature: Prediction and Observation in Renaissance Astrometeorology**, Darin Hayton, *Haverford College*

- **Making Remedies as Wissenschaft in Early Modern Germany**, *Alisha Rankin, *Tufts University*

FAMILIES, HOUSEHOLDS AND SCIENTIFIC WORK IN FRANCE, 1620-1750

Chair: Andrea Rusnock, *University of Rhode Island*

- **Family Status and Engineering Authority: The Case of Pierre-Paul Riquet and the Canal du Midi**, Chandra Mukerji, *University of California, San Diego*
- **The Family in the Network of Scientific Creativity: The Case of Claude Perrault, 1666-1688**, *Oded Rabinovitch, *Brown University*
- **Natural History Household: Réaumur and Hélele Dumoustier**, Mary Terrall, *UCLA*
- **Scientific Families: Emilie du Châtelet and the Domestic Intellectual**, Meghan Roberts, *Northwestern University*

EUGENICS AFTER 1945

Commentator: Phillippa Levine, *University of Southern California*

- **Swedish Eugenics – Was it Ever Abandoned? The Transformation of the Discourse and Practice on Reproductive Control in the 1960s and 1970s**, Mattias Tydén, *Institute for Future Studies*
- **From Neon Genesis to Ectogenesis: The Phenomenology of Posthuman Eugenics in Japan**, Jennifer Robertson, *University of Michigan, Ann Arbor*
- **Old Eugenics, New Eugenics, and the Long Twentieth Century**, *Alison Bashford, *Harvard University*

PHOTOGRAPHY AND AUTHENTICITY IN NINETEENTH CENTURY SCIENCE

Chair: Jennifer Tucker, *Wesleyan College*

- **W.H.F. Talbot and Roger Fenton at the British Museum. Photographs as Proxy in 19th-century Assyriology**, Mirjam Brusius, *Cambridge University*
- **Is Photography Trustworthy? Depicting**

Antiquity in 19th-century Archaeology, Stefanie Klamm, *Max Planck Institute for the History of Science*

- **Authenticating Nature: Situating Photographic Trust in the Late Nineteenth Century Scientific Periodical Press**, *Geoff Belknap, *Cambridge University*
- **Portraits of a Spark: Authenticating the Invisible in Victorian Physicists' Images of Electricity**, Chitra Ramalingam, *Harvard University*

HISTORICAL SCIENCE IN HISTORICAL SCIENCE: HISTORICAL RECORDS AS SCIENTIFIC EVIDENCE

Chair: David Spanagel, *Worcester Polytechnic Institute*

- **Past as Prediction: Victorian Scientists on Ancient Eclipses and the Power of Science**, Matthew Stanley, *New York University*
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- **Antiquities, Artifacts, and Agriculture: The Intersection of Natural and Human History in Early Modern Britain**, Elizabeth Yale, *Harvard University*

MAKING EARTH SCIENCE: PRACTICES, CONCEPTS, THINGS

- **How American were the 49ers? The Transmission of Prospecting Knowledge from Germany to America**, Warren Dym, *Bucknell University*
- **Earth, Wind, Water and Mining Machines: Leibniz**, Andre Wakefield, *Pitzer College*
- **Archaeology and Erudition: Serapis and Sues**, *Ernst Hamm, *York University*

STATES, INSTITUTIONS, AND CULTURES OF HIGH LATITUDE SCIENCE DURING THE TWENTIETH CENTURY

Chair: Michael Robinson, *University of Hartford*

- **Bona Fides and Indiscretions: Defining Scientists and Explorers in the Interwar Canadian North**, Christine Sawchuck, *Cambridge University*

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- **Ivory Towers and Icy Frontiers: Cambridge and British Polar Exploration, 1920-1958**, *Peder Roberts, *Stanford University*
- **Memory and Legacy: the Divergent Fate of the International Biological and Geophysical Polar Years**, Michael Bravo, *Cambridge University*

MODELS AS TECHNOLOGIES OF CONCILIATION IN THE EARLY MODERN REPUBLIC OF LETTERS

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- **Orreries and Bowling Greens. Real and Imaginary Models in 'familiar' Introductions to Astronomy, c. 1730-1780**, Florence Grant, *King's College, London*
- **Condillac's Exemplary Theory**, Jeff Schwegman, *Max Planck Institute for the History of Science*
- **Restitution, Plans and Knowledge in Architecture and Natural Philosophy, ca. 1650-1750**, Alexander Wragge-Morley, *Cambridge University*
- **Making Philanthropy with Models**, *Kelly Whitmer, *Max Planck Institute for History of Science*

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Registration Desk Hours

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