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Controversies in Science, Health, and the Environment

Lehigh University

Jour/STS 323

Spring 2005

Class: Tues.-Thurs. 10:45 a.m.-12:00 p.m.

Prof. Sharon Friedman

Dept. of Journalism and Communication

The Course:

This is an advanced course focusing on controversial scientific, health, and environmental topics, their impacts on society, and how they are reported in the mass media. It has four main purposes.

- The first is to help you learn more about some scientific controversies, although the number we will explore will be limited. You also will examine how the media covered them.
- The second is to explore the role of scientific uncertainty in controversies and media reporting.
- The third is to learn what constitutes a good scientific study, including evaluating the statistics generally used in these studies.
- The fourth is to learn more about writing major research papers and working in teams. As a member of a team, you will be researching and writing a final paper on a controversial scientific topic. This work will go on throughout the semester with writing an individual research prospectus, a team preliminary oral and written report, and a final team oral and written report. For this semester, you can choose to research and write about aspects of the “New Genetic Era”—aspects of human genome engineering or biotechnology primarily related to food but also with environmental and drug implications.

This course starts with two weeks about how scientists, journalists, and the public respond to scientific uncertainty to give you a basic understanding of some of the issues involved in scientific controversies. Then it moves to readings about genetic engineering and biotechnology and their implications for society so you can have information to help you decide about topics for your term papers. After we get most of that information read and discussed, we will switch to other controversies and other issues and case studies related to scientific uncertainty. A tentative course schedule is at the end of the syllabus. However, this schedule is **VERY** tentative as this course often evolves as we go along.

You will find both a class website and a Blackboard site for this course. The website has some hotlinks for readings as well as writing hints. The Blackboard is where you will post information under the Discussion Board. The syllabus and course schedule are on both sites. The course website: www.lehigh.edu/~ddjour/J-STIS-323/ (Available only to Lehigh registered students, Ed.)

Class Sessions:

This class will meet on Tuesday and Thursday from 10:45 a.m. to 12:00 p.m. I plan to run it as a seminar, meaning that there will be lots of class discussion and no lectures. In a seminar, everyone pulls his/her own weight and keeps the class running. Because this is a seminar class, we need everyone there and on time. **Therefore, attendance in class is mandatory and you will receive an automatic F for the assignment if you miss a class when you are assigned to be a discussion leader.**

More than three unexcused absences will lower your final grade one letter. Additional absences will lower your final grade even more. Since late arrivals disrupt discussions, two late arrivals will count as an absence. Leaving and returning to the classroom during discussions also is disruptive and, if you do so, it will count as a late arrival. So come to class prepared to stay the full time and come on time.

Role of Discussion Leaders and Classmates:

To help achieve a seminar style, each student will be assigned 3 to 4 times during the semester to ask the class questions about an assigned chapter and she/he will be graded on those questions and the answers turned in to me. **Every student** will be responsible for reading the assigned material, answering these questions, and keeping the discussion going. Class discussion will be weighted heavily in the course. **If it appears that students are not doing the readings, I will give pop quizzes.** A separate set of instructions for discussion leaders and classmates is on the class Blackboard and websites.

Readings:

Three books are required for the course and should be available at the bookstore:

1. Dorothy Nelkin and M. Susan Lindee, *The DNA Mystique: The Gene as a Cultural Icon* (Michigan: University of Michigan Press, 2004) (There may not be enough copies for the class in the bookstore; I have extra copies purchased by the Journalism Department that you can buy.)
2. Bill Lambrecht, *Dinner at the New Gene Café: How Genetic Engineering is Changing What We Eat, How We Live, and the Global Politics of Food* (New York: St. Martin's Press, 2002)
3. Sharon M. Friedman, Sharon Dunwoody and Carol L. Rogers eds., *Communicating Uncertainty: Media Coverage of New and Controversial Science* (Mahwah, N.J.: Lawrence Erlbaum Associates, Inc., 1999)

Two main websites on the Human Genome Project are good sources of information for the human genetics part of the class as well as any research projects on related topics. They are:

www.ornl.gov/hgmis/project/about.html, which is the website for the Department of Energy's (DOE) Human Genome Project, but it contains far more than that. I consider this the richer and more varied website of the two, but you will probably need to consult both sites for some your readings and projects.

www.genome.gov, which is the website of the National Human Genome Research Institute at the National Institutes of Health (NIH).

Several good websites on biotechnology include:

United Nation's Food and Agriculture Organization at www.fao.org/biotech/index.asp?lang=en

Pew Initiative on Food and Biotechnology at www.pewagbiotech.org .

Council for Biotechnology Information at www.whybiotech.com .

In addition, you will be expected to keep up to date on what is happening in genetic engineering and biotechnology, and public policies related to them. I suggest that you put a tracking alert on a publication's website that will alert you to developments in these field by e-mail. I use the *NY Times*, and it is very convenient, but just about any media website has e-mail alerts available. Often, I will e-mail you with articles to look up on the Web and perhaps even give you some handouts.

Assignments:

There will be two short research assignments using the Web or Lexis to explore or update genetic and non-genetic controversies about which we will read. Other than that, all assignments will involve work on the research project on some form of genetic engineering or biotechnology. For your major research project, you will produce a research prospectus and a preliminary and final research report. The latter two will be done in teams. These reports will be both written and oral. We also can put the information the teams gather on a Blackboard discussion board for your classmates to review and discuss if the class wants to do so. The final research report will be written to help Lehigh students and laypersons understand some aspect of genetic engineering or biotechnology. There will be no midterm or final exams. As already noted, pop quizzes will be given if it appears no one is reading assignments.

All papers must be printed double-spaced, and corrected for spelling and grammar. Please leave about 2 to 3 inches at the top of your papers so I can write comments there. Assignments should be turned in on time to receive the maximum possible grade. Papers turned in up to one week late will lose one letter grade. Papers turned in after one week lose two letter grades. **ALL ASSIGNMENTS MUST BE TURNED IN TO PASS THE COURSE.**

Grades:

Grades will be distributed as follows:

Short Papers (Web research and Dioxin)	6%
Research Prospectus	2%
Preliminary Team Report	10%
Final Team Report	45%
Team written grade (20%)	
Individual written grade (25%)	
Team Oral Report grade	5%
Discussion Leader Activity	12%
Weekly questions	3%
Class Participation	17%
(and pop quizzes if necessary)	
	<hr/>
	100%

Class Blackboard and Website:

The class Blackboard site is the prime site for this class.

- It has the class syllabus, schedule, discussion leaders’ instructions and hotlink to the class website under Course Information.
- Class assignments will be posted in the Assignment section.
- Discussion leader questions and answers will be posted under Discussion Board in the appropriate sections.
- *News and Numbers*, Chapter 9, is under Course Documents.

The class website has a list of excellent external links you might want to use for this course and a very large “Writing Helpers” section with a ton of information you will find helpful. **There is a very important section in “Writing Helpers” on plagiarism and how to avoid it.**

Professor and office hours:

I am Sharon M. Friedman, Professor and Director of Lehigh’s Science and Environmental Writing Program and Director of its Environmental Studies Major and Minor. My office is in 209 Coppee Hall. Office hours are Monday, 9:30-10:45 am; Tuesday, 1-3 and Thursday, 1-2 pm. Other times by appointment. I can be reached at the office at 8-4179 or by e-mail at smf6@lehigh.edu.

If you have a disability for which you are or may be requesting accommodations, please let me know as early in the semester as possible. You may also wish to contact the Office of Academic Support Services, University Center Room 212, 610-758-4152.

Everyone in this class should feel free to come see me or contact me by phone or e-mail with any comments, problems or questions you have.

TENTATIVE CLASS AND READING SCHEDULE
 Class Website, <http://www.lehigh.edu/~ddjour/J-STS-323/>

(Subject to Change)

Date	Topic	Readings and Assignments Due
1/18	What is a Controversy?	
1/20	Scientists, Journalists and Uncertainty	<i>Communicating Uncertainty</i> , Introduction and Chapters 1-2
1/25	Interpreting Uncertainty	<i>Communicating Uncertainty</i> , Chaps. 4-5
1/27	The Public and Uncertainty	<i>Communicating Uncertainty</i> , Chaps. 3 & 11
2/1	The Human Genome Project: Introduction and History	<p>www.ornl.gov/hgmis/project/about.html Read “What is the Human Genome Project?” Then go to history link and under Publications Summarizing Various Aspects, link to and read this article: “Controversial From the Start” by Leslie Roberts, <i>Science</i>, 2/2001.</p> <p>www.ornl.gov/sci/techresources/Human_Genome/publicat/primer2001/primer11.pdf Read: “Genomics and its Impact on Science and Society.” If you can’t get it directly, go to the above site and click on the third item on the left side panel under Publications called “Primer Molecular Genetics.”</p> <p>www.ornl.gov/sci/techresources/Human_Genome/project/50yr/press4_2003.shtml Read: Press Release: “International Consortium Completes Human Genome Project.”</p>
2/3	Controversies Related to Genetic Engineering: Stem Cells and Cloning	<p>Cloning Fact Sheet www.ornl.gov/sci/techresources/Human_Genome/elsi/cloning.shtml</p> <p>Stem Cell Basics from I. Introduction through VI. Potential Uses.... http://stemcells.nih.gov/info/basics/ Find and print out two articles using mass media websites that relate controversial information or events about cloning or stem cell research that occurred within 2004. Write a 2-page summary of these articles to turn in, noting controversial aspects and parties involved in the controversy, if any, and be prepared to discuss the articles in class. Be sure to include their URLs.</p>
2/8	Introduction to Biotechnology Issues	<i>Dinner at the New Gene Café</i> , Chaps. 1-3
2/10	Some Biotechnology Issues	<i>Gene Café</i> , Chaps. 4-5 & 14
2/15	Planning the Research Project; Review Prospectuses; Decide on Topics	Prospectuses Due
2/17	Genetic Testing Video—Guest professor	
2/22	DNA and Popular Culture Issues	<i>DNA Mystique</i> , Chapters 1,3

2/24	Research Project Assignments and Discussion	
3/1	DNA and Popular Culture Issues	<i>DNA Mystique</i> , Chapters 5-6
3/3	DNA and Popular Culture Issues	<i>DNA Mystique</i> , Chapters 8-9
3/8-3/10	Spring Break	
3/15	Biotechnology: Pharms	<i>Gene Café</i> , Chapters 7-8,11
3/17	Biotechnology: European Backlash	<i>Gene Café</i> , Chapters 12-13, 16-18
3/22	Biotechnology: Coming to Grips	<i>Gene Café</i> , Chapters 19-21, Afterword
3/24	Preliminary Team Reports	
3/29	Media Coverage of Biotechnology and Human Behavior	<i>Communicating Uncertainty</i> , Chaps. 6 & 9
3/31	Dioxin and Panel Discussion	<i>Communicating Uncertainty</i> , Chaps. 7 & 10
4/5	Dioxin Update Report	Web search for recent happenings about dioxin in the U.S. and various countries.
4/7	Explaining Uncertainty to the Public	<i>Communicating Uncertainty</i> , Chap. 12
4/14	Statistics and Uncertainty	<i>Communicating Uncertainty</i> , Chap. 13; <i>News and Numbers</i> , 2 nd ed., Chap. 9 (on Blackboard and website)
4/19	Journalists and Scientific Uncertainty	<i>Communicating Uncertainty</i> , Chap. 14
4/21	Team Oral Presentations	
4/26	Team Oral Presentations	
4/28	Course Review	

SCHEDULE OF WRITTEN WORK DUE (*team project)

Summary of Two Media Articles on Recent Genetic Events (2 pages)	2/3
Research Prospectus (2 pages)	2/15
Preliminary Research Report (4-6 pages)*	3/24
Dioxin Update Paper (2 pages)	4/5
Final Paper Oral Presentations*	4/21-26
Final Paper (30-40 pages)*	5/2

Readings That Help

This section of the *Newsletter* is meant to guide the reader to books or articles that someone recommended to me because they are useful, provocative, or enjoyable—at best, all three. Suggestions of other materials to be reviewed would be most welcome, with or without comments, but I hope you feel free to comment on my opinions as well.

Barrett Hazeltine

Division of Engineering, Brown University

Ahamed, Syed V. and Victor Lawrence. *The Art of Scientific Innovation: Cases of Classic Creativity*. Upper Saddle River, N.J.: Pearson Prentice Hall, 2005. Pp. xiv + 274. Paperback, \$46.95.

The major focus of this book is on sixteen original patents, from an improvement in telegraphy by Alexander Graham Bell to using packets for computer communication by Norman Abramson. The patents are all in the electrical engineering areas—Tesla, Farnsworth, Shockley, Townes, and so forth. The reader is urged to analyze the patents to discover the inventors' thought processes, and I gather one of the authors does just that in a graduate course. I found it difficult to uncover the inventors' reasoning behind the legal phrasings of the patents, although it was striking how much more mathematics were used in the later patents compared to, say, Tesla's. The patents do illustrate the existing state-of-the-art and the "basic social need and driving force" behind the invention. A taxonomy of scientific creativity is presented, ranging from "Breakthrough" at one end to "CAD/CAM" at the other; the top three types—"Breakthrough," "Invention," and "Innovation"—the authors consider truly creative. A distinction is made between "Unstructured Creativity with Genius and Talent" and "Structured Creativity with Rigor and Discipline" with expected special admiration for the former. Computer databases, AI, and computers in general have done much to support structured thinking. More than most books about innovation, this one describes what are probably the two most important venues for scientific research—graduate students, mentors, and corporate laboratories. Ways to foster collaboration between graduate students and mentors is pursued in some depth. One observation is that graduate students need a passion for detail and for perfection but not an obsession. This chapter could usefully be printed separately and given to beginning graduate students and theses advisors. Management of research in a corporate setting is also discussed. One insight is that good re-

search managers usefully serve two functions: at the beginning of the process they allocate resources, and at the end of the process they integrate inventions from different people. As might be expected in a book written by accomplished research engineers, most of the discussions are illustrated by flowcharts, some elaborate. The observations presented seem to ring true and are provocative. Parts are a difficult read; another round of editing would have helped. The authors have chosen to consider all of the innovations described as science rather than engineering. Most engineers or scientists will find something stimulating in *The Art of Scientific Innovation*, and will also question some parts.

Columbia Accident Investigation Board Staff. *Report of the Columbia Accident Investigation Board*. Burlington, Ontario, Canada: Collector's Guide Publishing, 2003. Pp. iii + 261.

The spacecraft *Columbia* broke up on re-entry on February 1, 2003. The physical cause of the accident had taken place about two weeks earlier, 81 seconds into the ascent, when a piece of insulating foam broke off from the external fuel tank and collided with *Columbia's* wing, damaging the thermal protection tiles. During re-entry superheated air penetrated the wing and melted its aluminum structure. The foam covering the tank provided thermal insulation for the liquid oxygen and liquid hydrogen fuel. The foam piece, after breaking off, moved much more slowly than the accelerating rocket/spacecraft so the wing basically ran into the foam; the relative velocity at impact was about 500 miles per hour. The report gives much technical detail on the insulating tiles, the spacecraft structure, and a reconstruction of the accident. The detail will probably be of special interest to engineers but will be understandable to most readers. The most puzzling question is why NASA managers allowed the accident to occur. Foam had been lost on more than 80% of the seventy-nine previous flights for which imagery is available. On 10% of these flights foam had been lost from the same region of the tank; only two flights earlier a piece of foam had caused damage to the insulation of the solid rocket booster. During the 16-day flight of *Columbia* several engineers on the ground, realizing the foam had impacted the wing, asked whether it would be possible to have the Air Force take pictures of the (possibly) damaged area. Their request was denied, with an implied rebuke for going outside the chain of command. Boeing had in fact created a computer program for estimating the amount of damage caused by an impact on the wing; the program was written for much smaller pieces of foam or other debris, but its ambiguous results were used as justification for not being concerned.

Another justification was that nothing could be done anyway, but the Report describes two possibilities—an emergency repair in orbit or a rescue mission from another orbiter. The NASA managers' inaction took place despite the example of the *Challenger* accident seventeen years before. Much of the Report deals with NASA's organization and culture: over-confident, lacking a mission as compelling as *Apollo's*, determined to adhere to a tight schedule to deliver people and goods to the space shuttle and to a very tight budget, the bureaucracy which comes with maturity, tight budgets, and unrealistic schedules. This is an absorbing story, clearly written, with important lessons. The many photos and diagrams make the Report a pleasure to read, and space exploration exciting. The Report has much to say to a wide range of readers.

Greenbaum, Joan. *Windows On The Workplace: Technology, Jobs, and the Organization of Office Work.* 2d ed. New York: Monthly Review Press, 2004. Pp. iii+176. Hardcover, \$48.00.

Office work has changed since the dawn of the computer age. Joan Greenbaum believes the transformation has generally made office workers' lives more precarious and less fulfilling. Information Technology has directly caused some of the change but not all—reengineering of how office work is done is responsible for much of the change. The popular myth, when office automation began, was that computers would give most office workers more skills and more control—they have not. (An analogous myth was propagated later about the Internet.) The story begins in the 1950s and goes to the present. Much of it is based on interviews; it may be worth noting that the jobs of most of those interviewed seem to have disappeared since the interviews. The themes are familiar—outsourcing, free lancing, deskilling, the home office, and temporary work force—to mention a few. The modern day professoriate, described in one section, has also developed into a highly temporary work force—three out of five faculty positions are now held by non-tenure track people, few of whom have an appointment lasting more than two semesters. Greenbaum goes to lengths to point out these negative changes were not inevitable; computer technology could have been used to uplift office workers, but people elected not do so. As is the case in many situations of technology change, certainly many have suffered, but it is not clear if the net effect on the entire society, however measured, is positive or negative. I suspect one's reaction to the book will depend partly on one's predisposition about labor-management conflicts.

Langins, Janis. *Conserving the Enlightenment: French Military Engineering from Vauban to the Revolution.* Cambridge, Mass.: MIT Press, 2004. Pp. xiv + 532. Hardcover, \$60.00.

A history of the engineering of French fortifications from approximately 1650 to 1800, including insights about the engineering profession, engineers as conservative protectors of the *status quo*, and the social and physical obstacles to making change. The social obstacles in this narrative generally were more difficult than the technological ones. Much of the book is about conflict between the corps of military engineers and an outsider well connected at the court with different ideas. A reflection of the nascent professionalism of engineering was that the outsider was taken seriously, although the military engineers finally prevailed. Background on the design of contemporary fortifications is given; "Vauban" of the title was the eminent authority in their design. Mathematics, mostly geometry, was an important part of the design, leading on the one hand to the development of rigorous educational institutions—the *Grand Ecoles*—and on the other hand to significant science and mathematics work by people starting as military engineers. Overall, the focus of the narrative is on the personalities rather than on technological change or the influence of technology on societal issues. The need for engineers of large projects to master both technology and management is well illustrated.

McLuhan, Marshall, Stephanie McLuhan and David Staines, eds. *Understanding Me: Lectures and Interviews.* Cambridge, Mass.: MIT Press, 2003. Pp. xxvii + 317. Illus. Hardcover, \$30.00

As the subtitle suggests, this volume consists of a collection of interviews with, and lectures by McLuhan—the last in 1979—with an entertaining and somewhat helpful Foreword by Tom Wolfe. McLuhan is noted, of course, for insights on how technology has changed the human condition. Printed text encourages the reader to think in a certain linear way; television—auditory, tactile, and simultaneous—forces another way of thinking. The kind of thinking stimulated by television has roots in preliterate societies, in villages. The medium and the message, perhaps McLuhan's best-known observation—is dealt with explicitly in only two or three articles but implicitly in most articles. In our faster paced society, humor consists of one-liners, mostly produced by people with a grievance; an ethnic group grievance created "How would a Newfie have handled Watergate? Same way." McLuhan has original thoughts about education, architecture, art, and much more. Not all was clear to me, and I gather not all was intended to be clear. In

response to an interviewer, McLuhan says: "...I don't think clarity is necessarily the thing to discover in beachhead. We've really established a beachhead." After several decades, McLuhan still has some very provocative ideas, and the Internet has brought us closer to being the global village he expected.

Nye, David. *America as Second Creation: Technology and Narratives of New Beginnings.* Cambridge, Mass.: MIT Press, 2003. Illus.; bibliog. Hardcover, \$40.00.

Nye analyzes the stories that Americans "told to make sense of their world," dealing with technology and how it accomplished a second creation, assimilating and improving nature. The technologies Nye describes are hand axes building cabins in the wilderness, mills using the power of running water, canals and railroads overcoming distances, and irrigation creating farms in the arid west. The dominant version of the story is that an individual or a group comes to an empty wilderness with a new technology, that technology transforms the wilderness and brings more settlers, creating wealth for all—especially the original settlers. Four fundamental assumptions underlay these second creation stories: land was divisible into a rectangular grid of 640 acre equal value squares; land and raw material were abundant and accessible; markets were free; and force (the word seems to be used synonymously with "energy") is conserved—thus inexhaustible. According to the narrative, a person irrigating a farm is engaged in "finishing the world," and thereby advancing evolution. Counter-narratives have now developed focusing on the original presence of Native Americans, the establishment of monopolies suppressing a free market, pollution, the implications of entropy, and other issues. A serious look at the potential of irrigation in the West made clear that each 640-acre plot had a different value, that the total amount of water available was insufficient for the amount of land, and that a free market probably would not allocate the water fairly to small holders. A current counter-narrative is of wilderness protection and conservation; the fate of the Artic National Wildlife Refuge depends on the strength of the counter-narrative compared to that of second creation. This book is a readable and illuminating synthesis of cultural ideas and technological artifacts.

Shane, Scott. *Finding Fertile Ground: Identifying Extraordinary Opportunities for New Ventures.* Upper Saddle River, N.J.: Wharton School Publishing, 2005. Pp. xiii + 219. \$27.95

Success comes to a high technology startup by identifying a fruitful opportunity. One dimension of an

opportunity is the industry; another is whether barriers against imitation can be created. Ten rules for identifying the attractiveness of an opportunity are given. Besides the industry and the feasibility of erecting barriers, these rules involve technological evolution, real market needs, patterns of customer adaptation, exploiting existing companies' weaknesses, managing intellectual property, choosing the right organizational form, and managing risk and uncertainty. An example cited of the importance of technological evolution is the present growth of Voice-Over-Internet, which was unsuccessful when first introduced because the technology was not ready. A characteristic of technological evolution is emergence of a dominant design as a technology matures; new firms tend to do better before the dominant design is established. A basic question about organizational form involves the desirability of owning all stages of the value chain—product development, manufacturing, and distribution and so forth. It is generally better for entrepreneurs to use contractual modes, such as licensing and strategic alliances, when a short time-to-market is important or when establishing the whole chain is expensive. Building the whole chain may be necessary, however, when the product concept and the hardware are inextricably linked, as they were for early video games. Other situations where building the whole chain is appropriate is when the knowledge required to manufacture is not understood well enough to be written down, as in the case of some pharmaceuticals, or when specialized equipment or sales force is needed. The intended reader is an entrepreneur and helpful lists of questions are given for an entrepreneur, to ask herself/himself. Also given are lists of warnings—"Don't expect a linear rate of adoption, it will probably follow an S-curve." The book would be worthwhile to anyone seeking an introduction to the strategic ideas that hi-tech entrepreneurs should understand. It comes with an audio CD containing a summary and also an interview with the author; the latter adds different insights than the text.

Stefik, Mark and Barbara. *Breakthrough!: Stories and Strategies of Radical Innovation.* Cambridge, Mass.: MIT Press, 2004. Pp. xiii + 294. Hardcover, \$29.95.

The subtitle is accurate. Much of the book is based on interviews—stories—with innovators, inventors, and managers of innovation. The author directed the Information Sciences and Technologies Laboratory at PARC—the former Xerox Palo Alto Research Center. The "S-curve" is used to explain the breakthrough zone between university research and the development of a usable product; corporate research centers are effective in working in this zone. Innovation is taking an invention all the way

to a product, a long road. Successful innovation requires answers to two questions “What is possible?”—the technology question—and “What is needed?”—the business question. Inventions can be driven by theory, data, method, and needs. Inventors, whether artists, scientists, designers, or engineers, either work on the patron model, where the funder does not try to manage the research directly, or the client model, where particular needs of the funder are addressed. Graduate school is where people learn to be inventors or researchers through a process of mentorship and apprenticeship. Inventions are popularly thought to be products of a flash of insight, the “Aha!” moments; not everyone realizes that such flashes often call for prepared minds. For novel problems, leading to breakthroughs, a beginner’s mind, unencumbered by previous approaches, is effective. In any case, play helps. Experienced inventors, especially when frustrated by a problem, realize the importance of balancing trying too hard with not trying hard enough. An important aspect of managing a research group is to avoid frequent interruptions and, worse, changes in direction. Managing down is partly maintaining an environment where researchers think they can succeed. Managing up is maintaining the confidence of upper management in the research group. Obstacles to radical innovation, besides the inherent difficulty in creating something new, arise from the required changes in economic or social structure needed to implement an innovation—thought by many to have been a serious problem at PARC. Open innovation, using ideas and resources from outside the organization, will be needed in the future. This bare bones outline of some of the insights presented does not do justice to the rich collection of stories included. Not all the insights are fully developed, but the relatively short text is an effective entrance to the very important issue of creating new products, and it is fun to read.

Weitekamp, Margaret. *Right Stuff, Wrong Sex: America’s First Women in Space Program.* Baltimore, Md.: The Johns Hopkins University Press, 2004. Pp. xi + 223. Hardcover, \$45.00.

In 1961 nineteen women, mostly in pairs, went through a weeklong testing program identical to that taken by male astronauts. Testing was in pairs because the facilities could not test more than two at a time; the women who had taken the tests thus never got together as a group. The program was not officially sponsored by NASA but was conducted by a doctor who had served *de facto* as NASA’s medical department. Thirteen women passed the tests. Second stage testing was not done because the Navy refused to allow the women to fly jet aircraft. In the next few years much political maneuvering ensued but was not successful. Not until 1983

did Dr. Sally Ride become the first U. S. woman in space, and not until 1999 did Colonel Eileen Collins command a U.S. spacecraft, even though a Russian cosmonaut had made a space flight as early as 1963.

Three of the characters in the story stand out. Jacqueline Cochran came from a foster family in northern Florida to win major airplane races and own a successful cosmetics company. She paid personal expenses, for the women who needed the money, to attend the testing, and she and her husband contributed generously to the foundation doing the testing. Jerri Cobb, another prizewinning woman pilot, politicked strongly for the inclusion of a woman astronaut in the Apollo program and came the closest of the tested women to becoming one. She spent much of the rest of her life doing missionary work, as a pilot, in the Amazon basin. Dr. Randy Lovelace was the M. D. doing the testing. He had a sterling reputation in space medicine; for example, he had invented the standard issue oxygen mask for high altitude flight. Not one to put another in danger, he tested the mask by jumping from a B-17 at 40,200 feet; the jolt of the parachute’s opening tore the gloves from his hand, severely bent the parachute frame, and knocked Dr. Lovelace unconscious—he barely recovered at 8,000 feet.

The book also gives a short review of NASA’s history; its antecedents were in the military but not widely respected. During Eisenhower’s administration a general was admonished for speaking publicly about space—his feet were not considered squarely on the ground. Kennedy’s challenge “to put a man on the moon in this decade” changed all that, but the resulting focus on the challenge diminished the possibility that the cause of women astronauts would be taken seriously. Another piece of history included is women’s aviation. Many of the early women aviators came from wealthy families—ones that could afford airplanes. Others had to scrape together money to support their hobby. Women flew for the military in World War II, although not in combat, but were excluded after 1944. The willingness of those selected for testing points to the lack of opportunity for women in aviation through 1961 and ever later. It is striking how recent this history is. Eleven of the thirteen women who had passed Lovelace’s test were alive for Colonel Eileen Collins’s space mission. A picture in the book shows seven of the thirteen gathered to watch the launch. The story corresponds in many ways to that told in Tom Wolfe’s *The Right Stuff*, but the characters seem more appealing. Weitekamp’s depiction of the women is generally very positive, while NASA and others in the government fare less well by comparison.

Other Books Recently Received

Brown, Elspeth H. *The Corporate Eye: Photography and the Rationalization of American Commercial Culture, 1884-1929*. Baltimore: Johns Hopkins University Press, 2005. Pp.viii + 334. Illus.; bibliog.. Hardcover, \$ 49.95.

The introduction of mass photography in the late nineteenth century was quickly adopted by corporate managers for a wide range of things from motion studies to employee selection to advertising. Brown explores the work of Frederick W. Taylor, Eadweard Muybridge, Frank Gilbreath, and Lewis Hines among others for what it reveals about increased economic and workplace rationalization during the Progressive era. Among the themes she analyzes are racial hiring discrimination, gender assumptions in marketing, and photographic realism.

Cahill, Kevin M., ed. *Technology for Humanitarian Action*. New York: Fordham University Press, 2005. Pp. xii +319. Illus. Paperback, \$22.00.

Essays cover technologies that can help relief and aid workers, for example personal identification and tagging systems, radios, wireless networks, and computer-aided language translation. Other topics include how technology can assist in land mine removal, water purification, and energy generation.

Cantor, Geoffrey and Sally Shuttleworth, eds. *Science Serialized: Representations of the Sciences in Nineteenth-Century Periodicals*. Cambridge: MIT Press, 2004. Pp. 358. Illus. Hardcover, \$40.00.

Cantor and Shuttleworth examine how the expanding periodical literature of nineteenth-century Britain disseminated then current scientific discoveries and ideas. Among the topics covered are botany in women's magazines, the mind-body problem, energy, and Charles Darwin.

Conway, Erik M. *High Speed Dreams: NASA and the Technopolitics of Supersonic Transportation, 1945-1999*. Baltimore: Johns Hopkins University Press, 2005. Pp. xvii + 369. Hardcover, \$49.95.

Conway's focus is on NASA's commercial supersonic transport (SST) research, including its most recent third generation High Speed Research program of the 1990s, and the political, especially environmental, and commercial-economic factors responsible for its rise and ultimate fall. He concludes that, "The inability to bring about an SST...is at least as much a product of American market fundamentalism as it is a result of environmental constraints" (p. 305).

Crowther-Heyck, Hunter. *Herbert A. Simon: The Bounds of Reason in Modern America*. Baltimore: Johns Hopkins University Press, 2005. Pp. xi + 420. Hardcover, \$49.95.

A biographically-oriented study that utilizes Herbert A. Simon, a political scientist, Nobelist in economics, and the founder of the Carnegie Mellon Dept. of Computer Science, as a window into understanding the development of the social sciences, and especially systems science, in post-war America. Simon's work sought to model human problem solving and then apply it in widely varied areas including the design of complex scientific and technical systems.

DeGroot, Gerard J. *The Bomb: A Life*. Cambridge: Harvard University Press, 2005. Pp. xv + 397. Illus. Hardcover, \$27.95.

The history of "The Bomb" since its earliest conceptions, through its development and WWII use on Hiroshima and Nagasaki, to its cultural implications as revealed in artifacts such fall out shelters to its depiction in song, film, and fiction. DeGroot's focus is on the 1950s, based on his assessment that by the time of the Cuban Missile Crisis, most of the important decisions had in fact been made, and that during the period of subsequent proliferation, "the world (or at least most of it) had stopped worrying and had learned to love the Bomb" (p. ix).

Hu, Danian. *China and Albert Einstein: The Reception of the Physicist and His Theory in China, 1917-1979*. Cambridge: Harvard University Press, 2005. Pp. xiv + 257. Illus. Hardcover, \$39.95.

Hu traces the initial Chinese reception and subsequent rejection of Einstein's theory of relativity during the Cultural Revolution as a way to analyze the history of science in China. He argues that China's lack of a physics education and research tradition accounts for both these reactions.

Huisman, Frank, and John Harley Warner, eds. *Locating Medical History: The Stories and Their Meanings*. Baltimore: Johns Hopkins University Press, 2004. Pp. x + 507. Hardcover, \$45.00.

Twenty-one essays reflexively explore the field of medical history and its historiography in an attempt to assess the nature of the field, what its aims should be, and in what future directions it might head. Organized as a "triptych," the volume analyzes the field's 19th-century-oriented 'traditions,' its transformation under the impetus of the 'new social history' and 'cultural turn' since the 1970s, and where the field should be headed in terms of relevance and responsibility, both with regard to the medical profession and history more generally, as well as to the general reading public.

Kinney, Thomas A. *The Carriage Trade: Making Horse-Drawn Vehicles in America*. Baltimore: Johns Hopkins University Press, 2004. Pp. xi + 381. Illus. Hardcover, \$49.95.

Kinney explores development of the largely heterogeneous carriage industry from its early pre-industrial shop phase to its general demise with the arrival of the automobile. Throughout much of this history the carriage industry was characterized by a batch-production approach to manufacturing, making it an interesting counterpoint to larger mass production businesses. Studebaker Co. is one of the case studies analyzed. Kinney also examines the worker experience.

Lefèvre, Wolfgang, ed. *Picturing Machines: 1400-1700*. Cambridge: MIT Press, 2004. Pp. 347. Illus.; bibliog. Hardcover, \$40.00.

Nine authors examine why early technical drawing developed, the style and techniques of early modern machine depiction, and how these early illustrations of mechanical devices were actually utilized by Renaissance practitioners and thus helped to shape the practice of early modern engineering. This is a very nicely illustrated volume including drawings by Leonardo da Vinci, Francesco di Giorgio, Albrecht Durer, and many others less well known.

Lyall, Catherine, and Joyce Tait, eds. *New Modes of Governance: Developing an Integrated Policy Approach to Science, Technology, Risk and the Environment*. Burlington, Vt.: Ashgate Publishing Company, 2005. Pp. xii + 196.

Ten essays explore governance issues that transcend traditional compartmentalized mechanisms regarding science and technology policy when dealing with risk and the environment. The focus tends to be on the UK and the EU, but broader international and globalization trends are discussed as well.

Misa, Thomas J., Philip Brey, and Andrew Feenberg, eds. *Modernity and Technology*. Cambridge: MIT Press, 2003. Pp. ix + 421. Bibliog. Hardcover, \$40.00; Paper, \$27.00.

Fourteen essays lay out the methodological parameters of a new interdisciplinary sub-field by exploring the 'co-construction' of technology and modernity. The inevitable 'tangle' of technology and modernity is examined through multiple lenses including modernist, critical, and feminist theories, technological examples such as the Internet and surveillance technologies, and critiques of modern international development, medicine, and environmental and technology policy.

Mosco, Vincent. *The Digital Sublime: Myth, Power, and Cyberspace*. Cambridge: MIT Press, 2004. Pp. ix + 218. Bibliog. Hardcover, \$29.95.

An examination of the myths, which are much more than simple falsehoods, that surround computers and the digital age and how they relate to the materiality of the technology and to the culture that support them both. Mosco is interested in the political economic context that helps to explain, indeed 'mutually constitutes' these myths. He also compares these myths to those that previously surrounded such supposedly revolutionarily transformative technologies as the telegraph, electricity, radio, and television.

Norberg, Arthur L. *Computers and Commerce: A Study of Technology and Management at Eckert-Mauchly Computer Company, Engineering Research Associates, and Remington Rand, 1946-1957*. Cambridge: MIT Press, 2005. Pp. x + 347. Illus.; bibliog. Hardcover, \$40.00.

Norberg examines the early managerial history of the computer industry as it first emerged from its wartime developmental stage in a comparative case study of the two early key firms denoted in the book's title. These firms were subsequently acquired by Remington Rand, which later merged into Sperry Rand. Among the topics considered are the role of governmental support to the industry and how theoretical knowledge was transformed into workable machines.

Pearson, Byron E. *Still the Wild River Runs: Congress, the Sierra Club, and the Fight to Save Grand Canyon*. Tucson: University of Arizona Press, 2002. Pp. xxii + 247. Illus.; bibliog.. Hardcover, \$45.00.

Pearson reinterprets the extent of the role of the environmental lobby, most notably that of the Sierra Club, in defeating proposals to build two dams in the Grand Canyon in the 1960s. He argues the deletion was more the result of political expediency, which he traces in detail, rather than environmental activism, however laudable that may or may not have been. This volume could well be read along with Righter's, noted below, in many environmental history courses.

Pirages, Dennis and Ken Cousins, eds. *From Resource Scarcity to Ecological Security: Exploring New Limits to Growth*. Cambridge: MIT Press, 2005. Pp. xi + 268. Figs., maps, bibliog. Paper, \$24.00.

An updated overview of the resource limitation issues identified first in Meadows et al's 1972 *The Limits to Growth* and the subsequent *Global 2000 Report to the President* commissioned by Jimmy Carter in 1980. Population, food, water and energy supplies, climate change, and biodiversity issues are among the topics discussed in the 12 essays. Nor surprisingly the essayists call for anticipatory socioeconomic, political, and ethical action rather than waiting to take more

costly and difficult remedial action after the fact. Problems in the near future are as likely to be ones of globalization, interdependence, and disequilibrium rather than ‘simple’ population overshoot and environmental limits to growth.

Righter, Robert W. *The Battle Over Hetch Hetchy: America’s Most Controversial Dam and the Birth of Modern Environmentalism.* New York: Oxford University Press, 2005. Pp. xxii + 303. Illus.; maps. Hardcover, \$30.00.

Most environmental historians view the early twentieth-century political battle that emerged over plans to dam the Tuolumne River in Yosemite National Park as the central event in crystallizing the subsequent emergence of preservationist thought. Although the dam was eventually built, the preservation issues raised remain a touchstone at the core of grass-roots environmental thinking and have subsequently influenced other public debates, such as over the dams proposed for the Grand Canyon analyzed in Pearson’s study noted above. Righter nicely details the Hetch Hetch story.

Sansone, Gene. *New York Subways: An Illustrated History of New York City’s Transit Cars.* 1997. Baltimore: Johns Hopkins University Press, 2004. Pp. xiii + 508. Illus. Hardcover, \$49.95.

A Centennial Edition in honor of the 1904 establishment of the NYC subway system published in association with the New York Transit Museum. Lavishly illustrated with descriptive text for each type of subway car including information on design, construction, and service record. Also included are schematic drawings, cost data, capacity and load information, and a glossary of subway terminology. An outstanding reference work.

Schiebinger, Londa. *Plants and Empire: Colonial Bioprospecting in the Atlantic World.* Cambridge: Harvard University Press, 2004. Pp. x + 306. Illus. Hardcover, \$39.95.

Schiebinger analyzes the way eighteenth-century scientific explorers sought out New World botanicals useful in a variety of medicinal and food—e.g., quinine and chocolate—while selectively ignoring the usefulness of certain abortifacients well-known in the Caribbean to slave women desirous of not bearing children into oppression. In particular she focuses on the history of the so-called “peacock flower,” *Poinciana pulcherrima*, and the ways gender relations differentially shaped the transfer of knowledge regarding certain plants.

Steele, Brett D. and Tamera Dorland, eds. *The Heirs of Archimedes: Science and the Art of War through the Age of Enlightenment.* Cambridge: MIT Press, 2005. Pp. 397. Illus. Hardcover, \$55.00.

Thirteen essays treat the early modern intersection of scientific theory and military practice in four main areas: the innovation of gunpowder in the late medieval and renaissance eras, the interaction of mathematics and naval power, the role of chemistry in manufacturing gunpowder, and the utility of mathematics and mechanics for military engineering and artillery in the eighteenth century

Sturgeon, Stephen C. *The Politics of Western Water: The Congressional Career of Wayne Aspinall.* Tucson: University of Arizona Press, 2002. Pp. xxii + 243. Illus.; maps; bibliog.. Hardcover, \$45.00.

A biographical analysis of the Chair of the House Interior Committee Wayne Aspinall’s role in water politics, especially that involving the Colorado River, in the American West during the 1960s. Aspinall, a Democrat from Arizona with a wise-use conservation mind set, is generally viewed as having been opposed to most environmental legislation, but his was a more complex position than either sobriquet ‘anti-environmental’ or ‘pro-development’ would imply, at least according to Sturgeon’s analysis. This volume could well be read along with Pearson’s noted above.

Warner, John Harley. *Against the Spirit of System: The French Impulse in Nineteenth-Century American Medicine.* Baltimore: Johns Hopkins University Press, 2003. Pp. x + 459. Illus. Paper, \$24.95.

Warner traces the influence of the so-called Paris Clinical School on the practice of American medicine in the nineteenth century. “It is an overarching argument of this book that the representations of French medicine deployed in the United States were highly selective constructions that made the Paris School stand for a celebration of empiricism and an animus against rationalistic systems” (p. 4). It is thus the “active and selective” process of transmission of Parisian medical knowledge and practice that is of interest to Warner.

Yates, Joanne. *Structuring the Information Age: Life Insurance and Technology in the Twentieth Century.* Baltimore: Johns Hopkins University Press, 2005. Pp. x + 351. Illus.; bibliog. Hardcover, \$49.95.

This case study of the structure of the life insurance industry shows the interrelationship between technology choice in the form of tabulators and computers and their utilization practices within firms. The tendency was for the industry to prefer gradual technological change over radical transformation to better accommodate slowly changing ways of adaptation at the firm level. IBM was particularly good at facilitating this sort of change, and the transformation from the tabulating past to the computer era is illustrated by case studies of the New England Mutual Life and Aetna Life Insurance Companies.

OPEN FORUM

Fellowship Announcement Information Society Project Yale Law School

The fellowship is designed for recent law graduates or Ph.Ds who are interested in careers in teaching and public service in any of the following areas: Internet and telecommunications law, first amendment law, media studies, intellectual property law, access to knowledge, cybercrime, cultural evolution, bioethics and biotechnology, and law and technology generally. This year we have a particular interest in hiring fellows interested in computer security and privacy issues as well as development and the information society.

Fellows receive a salary of approximately \$37,000 plus Yale benefits. Fellows are expected to work on an independent scholarly project as well as help with administrative and scholarly work for the Information Society Project at Yale Law School. More information on the ISP is available at:

<http://www.islandia.law.yale.edu/isp>

The formal application should include the following:

- (1) A brief (one to five page) statement of the applicant's proposed scholarly research;
- (2) A copy of the applicant's resume;
- (3) A law school (or graduate school) transcript;
- (4) At least one sample of recent scholarly writing;
- (5) Two letters of recommendation.

Applications can be sent all year round as fellows are accepted on a rolling basis. Applications for the 2006-7 ISP fellowship must postmarked no later than **Feb. 1, 2006**. The application materials should be sent (in hard copy) to:

Information Society Project Fellowship Program
c/o Deborah Sestito, Room 333
Yale Law School
127 Wall Street
P.O. Box 208215
New Haven CT 06520-8215

Job Announcements

Assistant or Associate Professor of Science & Technology Studies Cornell University

The Department of Science and Technology Studies at Cornell University is seeking to fill a professorial position at either the tenure-track or associate level. Although the area of specialization within Science and Technology Studies is open, candidates with an interest in any of the following areas are especially encouraged to apply: non-Western science, technology and medicine; the environment; medicine; or the human sciences.

Applicants must hold a Ph.D. or equivalent, and have a strong record of research and publication in Science and Technology Studies. Successful applicants will be expected to teach undergraduate and graduate courses, and to play an active role in the department's graduate training program.

Candidates should submit: (a) a letter of application explaining the relation of their research and teaching interests to this position; (b) a curriculum vitae; (c) a sample syllabi for undergraduate and graduate courses; (d) three letters of recommendation to be sent directly to the department; and (e) a sample of written work, such as an article or chapter. Application materials should be submitted to Trevor Pinch, Chair, Department of Science and Technology Studies, 306 Rockefeller Hall, Cornell University, Ithaca, NY 14853.

Applications will be reviewed beginning **October 1, 2005** until the position is filled. For further information, please contact the department at 607-255-3810, or visit <http://www.sts.cornell.edu>

Cornell is an affirmative action/equal opportunity employer.

Penn State University

The College of the Liberal Arts at Penn State invites applications for a tenure-stream appointment, rank open, in its innovative intercollege program in science, technology, ethics, and medicine in contemporary society. Applications are welcome from candidates with degrees in Science, Technology, and Society or in a pertinent discipline within the humanities or social sciences.

This position is part of Penn State's, and the College of the Liberal Arts, commitment to research, teaching, and outreach in the areas of science and technology policy, public health and environmental policy, and ethical inquiry in these fields. The successful candidate will play a central role in the expansion and development of a robust intercollege program designed to augment Penn State's strengths in basic and applied fields of science and technology. She or he will also be involved in programs that strengthen the Rock Ethics Institute's initiatives in the area of ethics and policy in science, technology, and medicine.

The Program seeks candidates with expertise in the study of the relationship between contemporary society and science, medicine, and/or technology. Areas of research may include the ethical and social impact of bio-technology, engineering, environmental sciences, human sciences, and/or information sciences. The successful candidate must be able to work knowledgeably and effectively with researchers in basic and applied fields of science, technology, and/or medicine relevant to her or his area of specialization.

A Ph.D. is required, along with evidence of research strength and ability to offer a range of courses at the undergraduate and graduate level in the program of science, technology, medicine, and ethics in society. Please send application letter, full curriculum vitae, sample publications, and letters of recommendation to:

Chair, STEMS Search Committee

The Pennsylvania State University

Box SS

111 Sparks Building; University Park, PA 16802

Review of applications begins on **November 15** and will continue until the position is filled.

Arizona State University

The Consortium for Science, Policy, and Outcomes (CSPO) at Arizona State University (ASU) seeks to fill one or more open rank faculty positions in the general field of science, technology, and society, available for August 2006. CSPO is a dynamic interdisciplinary center that conducts research, cultivates public discourse, and fosters policies aimed at enhancing society's capacity to grapple with the immense power and importance of science and technology. CSPO is also the home of a newly awarded NSF Nanoscale Science and Engineering Center/Center for Nanotechnology in Society. CSPO and ASU offer an innovative environment for developing and testing research and teaching ideas related to the governance and conduct of science and technology in the public interest. The focus of the recruitment is at the level of Assistant or Associate Professor, however, candidates for Full Professor will be considered. The successful candidate will teach graduate and undergraduate courses, do research and publish in areas of expertise, participate in university, professional and community service activities.

Qualified candidates will have their Doctorate in a related area, will have demonstrated research and teaching interests at the intersection of scientific and technological advance, public policy, and social impacts, appropriate to rank; and evidence of performance in both research and teaching appropriate to rank. Particular areas of specialization are open but could include: societal aspects of nanotechnology, other emerging technologies (genomics; robotics; etc.), biomedicine and health, technology and democracy, research policy, information and/or communication technology, technology and development, globalization, etc. Disciplinary approaches are also open but could include political science, economics, anthropology, sociology, design, communication, history, law, and cultural studies. Experience with policy, public engagement, technology assessment, or other applied areas is a plus. Natural scientists and engineers with significant relevant policy research experience will also be considered. The appointment will be shared between CSPO and an appropriate academic unit at ASU. Salary and start-up package very competitive. For more information about CSPO, go to www.cspo.org.

Review of applications will begin **November 15, 2005** (no electronic applications accepted), and will continue every Friday, until the search is closed. Submit: detailed letter of application stating qualifications, experience, research plans, and teaching interests; a complete, detailed curriculum vitae; and the names and addresses of three references, to David Guston, Chair, Search Committee, Consortium for Science, Policy and Outcomes, PO Box 874401, Arizona State University, Tempe, AZ 85287-4401. AA/EOE.

Contact: David Guston, phone: (480) 727-8829, fax: (480) 727-8791, e-mail: david.guston@asu.edu

Calls for Papers/Conference Announcements

How Business Users Shaped Modern Technologies...and Vice Versa

Hagley Museum and Library

Wilmington, Delaware

March 10, 2006

How Business Users Shaped Modern Technologies and Vice Versa is the theme of a symposium in the Hagley Museum and Library in Wilmington, Delaware, on Friday March 10, 2006, beginning at 1:30 p.m. The symposium will run from 1:30 p.m. to 4:30 p.m., in the Soda House of the Hagley Museum and Library in Wilmington, Delaware.

Sponsored by the Center for the History of Business, Technology, and Society, the symposium will feature a paper by JoAnne Yates (MIT Sloan School of Management, Massachusetts Institute of Technology) followed by comments from Naomi Lamoreaux (Department of Economics and Department of History, University of California at Los Angeles), Steven Usselman (School of History, Technology, and Society, Georgia Institute of Technology), Margaret Graham (Faculty of Management, McGill University), and David Kirsch (Robert H. Smith, School of Business, University of Maryland). The event is free and open to the public.

For more information or to register contact Carol Lockman, at clockman@Hagley.org or by phone: (302) 658-2400, ext.243.

Sixth International Congress of the International Society for the History of Philosophy of Science

Paris, France

June 14-18, 2006

The International Society for the History of Philosophy of Science (HOPOS) will hold its sixth international congress in Paris, France, June 14-18, 2006, in cooperation with the Société de Philosophie des Sciences (SPS). Conference languages will be English and French.

The Congress invites contributions to the History of Philosophy of Science from all time periods and from all scholarly approaches. Symposia should comprise 3-4 papers, each thirty minutes, including ten minutes discussion, on a given theme. Individual papers should be twenty minutes in duration, with ten minutes of discussion.

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

Proposals for symposia should include: title of symposium; symposium summary statement (maximum 500 words); abstracts (maximum 500 words for each paper); address of each participant including email, phone and institution; and identification of symposium organizer, who will serve as contact with the program committee.

Proposals for individual papers should include: title and abstract of the paper (maximum 500 words); and the address of the participant, including email, phone and institution.

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

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

Nineteenth Biennial Meeting of the Philosophy of Science Association
Vancouver, British Columbia
November 2-5, 2006

Members of the Philosophy of Science Association (PSA) are invited to submit proposals for symposia and workshops to be presented at the PSA 2006 meeting in Vancouver, British Columbia, November 2-5, 2006. Proposals must include sufficient supporting material to permit the program committee to evaluate the quality and interest of the symposium or workshop.

Symposia will follow the traditional format, in that the papers presented will be submitted for consideration for publication in a supplementary issue of *Philosophy of Science*. The evaluation for publication will be on entire sessions, that is, all papers in the session will be published together. All contributions for symposia will be electronically archived, whether or not they are accepted for publication.

Workshops follow the same format as used for PSA 2004. There is no expectation that the papers presented will be submitted for review for publication. This format may be more attractive to sessions involving participants from outside the philosophical community, and/or for exploratory-stage research. Authors may choose to have their papers archived in electronic form. Some workshops may take the form of lunch roundtables or mentoring sessions.

Proposals for both symposia and workshops should include:

- The title of the proposed symposium or workshop
- A description of the topic and justification of its current importance to the discipline (one or two pages)
- A short descriptive summary of the proposal (100-200 words)
- Titles and abstracts of all papers
- A list of participants and an abbreviated curriculum vitae or short biographical description for each
- Institutional affiliation and e-mail addresses for all participants
- Full contact information for the organizer (who may or may not be a proposed speaker), to be used for communication with the program committee

The PSA 2006 Program Committee will strive for quality, variety, innovation and diversity on the program. We encourage proposals in both traditional and novel areas of philosophy of science.

The deadline for symposium and workshop proposals is **December 1, 2005**. Decisions about acceptance will be made by mid-February, 2006.

Proposals must be electronically submitted at <http://philsci.org/PSA06/submit>

All questions about submissions should be directed to:

J. McKenzie Alexander, Co-Chair

PSA 2006 Program Committee

Department of Philosophy, Logic and Scientific Method

London School of Economics

London WC2A 2AE

United Kingdom

jalex@lse.ac.uk

FORTHCOMING MEETINGS AND CONFERENCES

October 20-22, 2005. *The Representation of Controversial Objects: New Methods of Displaying the Unruly and the Anomalous in Science and Technology Studies.* Annual Meeting of the Society for Social Studies of Science. Pasadena Hilton, Pasadena, Calif. For more information visit: www.4sconference.org

For details, see STS Newsletter #139 & 140, page 20.

October 28-29, 2005. *Producing Fashion.* The Center for the History of Business, Technology, and Society. Hagley Museum and Library. Wilmington, Del. Contact: Dr. Roger Horowitz, Hagley Museum and Library, P.O. Box 3630, Wilmington, DE 19807 or e-mail: rhorowitz@hagley.org or fax: (302) 655-3188.

November 3-6, 2005. Co-sponsored Meeting of the Society for the History of Technology and the History of Science Society. Minneapolis, Minn. For more information visit: <http://www.shot.jhu.edu>

November 10-13, 2005. *Emergent Systems, Cognitive Environments.* The Society for Literature, Science, and the Arts. Nineteenth Annual Conference. Chicago, Il. Contact: Johns Hopkins University Press Journals: (800) 548-1784 or e-mail: jlorder@jhupress.jhu.edu or visit www.press.jhu.edu

For details, see STS Newsletter #139 & 140, page 20.

March 10, 2006. *How Business Users Shaped Modern Technologies.* The Center for the History of Business, Technology, and Society. Hagley Museum and Library. Wilmington, Del. Contact: Carol Lockman at clockman@Hagley.org or by phone: (302) 658-2400, ext.243.

For details, see page 16.

March 29-April 3, 2006. *A River Runs Through Them: Landscapes in Environmental History.* American Society of Environmental History. Annual Meeting. Radisson Hotel. St. Paul, Minn. Contact: John Anfinson, e-mail: John_Anfinson@nps.gov or visit the ASEH website: www.aseh.net

June 8-10, 2006. *Political Economy of Enterprise.* Business History Conference. Annual Meeting. Munk Centre for International Studies of the University of Toronto. Toronto, Canada. Contact: Dr. Roger Horowitz, Secretary-Treasurer, Business History Conference, P.O. Box 3630, Wilmington, Del. 19807, USA. Phone: (302) 658-2400 or fax: (302) 655-3188 or e-mail: rh@udel.edu

For details, see STS Newsletter #139 & 140, page 21.

June 14-18, 2006. Sixth International Congress of the International Society for the History of Philosophy of Science. Paris, France. Contact: Anastasios Brenner (anastasios.brenner@wanadoo.fr) or Marthe Tournou (tournou@paris7.jussieu.fr) or visit the HOPOS 2006 conference website at <http://www.sps.ens.fr/activites/hopos2006/indexhopos.html>.

For details, see page 16.

November 2-5, 2006. Nineteenth Biennial Meeting of the Philosophy of Science Association. Vancouver, British Columbia. Contact: J. McKenzie Alexander, Co-Chair PSA 2006 Program Committee, Department of Philosophy, Logic, and Scientific Method, London School of Economics, London WC2A 2AE, United Kingdom, jalex@lse.ac.uk

For details, see page 17.