

Program in Science, Technology, and Society

Introduction

The Program in Science, Technology, and Society (STS), now 27 years old, currently has 13 active faculty members. David Kaiser, Leo Marx career development assistant professor of the history and culture of science, was successfully promoted to the rank of associate professor. We have just hired a historian of science and medicine, David Jones, who has an MD/PhD from Harvard and who has recently published his first book, *Rationalizing Epidemics: Meanings and Uses of American Indian Mortality since 1600* with Harvard University Press. Dr. Jones officially begins as an assistant professor in July 2005, as he has one more year of residency and will work approximately half-time in STS until then.

Doctoral Program

The doctoral program in the History and Social Study of Science and Technology (HSSST), approved by the MIT Faculty in 1988, represents a collaboration of STS, the History faculty, and the Anthropology Program. There are currently 28 HSSST students. We are planning to admit four new students in the fall (the usual number). We graduated four students, all of whom are going on to excellent jobs: Dr. Babak Ashrafi to the Center for History of Physics at the American Institute of Physics as a historian; Dr. Rachel Prentice to a tenure-track STS assistant professorship at Cornell; Dr. William Turkel to a tenure-track job in the history department at the University of Western Ontario; and Dr. Timothy Wolters to a tenure-track position at Utah State University.

Our students have been highly successful at winning competitive fellowships to support their graduate studies. For example, in August 2003, Mr. Nick Buchanan received a United States Department of Education Jacob K. Javits Fellowship, which provides a four-year full fellowship in the humanities and social sciences. Ms. Candis Callison was nominated as a member of the Martin Family Society of Fellows for Sustainability for 2004–2005. Mr. Kieran Downes, a first-year student, has been appointed the first Integrative Graduate Education and Research Training Program trainee in the new \$2.9 million, five-year program sponsored by the National Science Foundation (NSF) in emerging technologies jointly awarded to STS, the Technology and Policy Program, and Political Science. Mr. Nate Greenslit received an NSF dissertation support grant, an American Psychoanalytic Association fellowship, and became a research fellow of the Boston Psychoanalytic Society and Institute. Mr. Shane Hamilton received a fellowship in contemporary history, public policy, and American politics from the Miller Center at the University of Virginia. Ms. Margaret (Meg) Hiesinger, a second-year student, has been awarded a highly competitive Luce fellowship for a year's study in the Far East. Ms. Jenny Smith, a fourth-year student, did research in Russia this past year on Soviet agriculture in the 1930s under an International Research and Exchanges Board grant, and has just been awarded a Kenan fellowship to continue this work.

Along with Ms. Smith, HSSST graduate students Mr. Alexander Brown, Mr. Peter Shulman, and Ms. Anya Zilberstein were selected this spring as recipients of the Dibner Institute graduate fellowships for the coming academic year.

Projects, Grants, and Initiatives

Professor Kaiser received a grant from the Spencer Foundation for his project “Training Quantum Mechanics: Pedagogical Pressures and Curricular Reform in Modern Physics.” The grant will support the investigation of the changing ways in which physicists made sense of quantum mechanics in postwar United States, Europe, and Japan.

Professor Loren Graham continued his study, supported by NSF, of the changes in the organization of the scientific workforce and financing of the basic sciences in Russia since the collapse of the Soviet Union.

The Kapor Foundation grant supporting the MIT Initiative on Technology and Self, headed by Sherry Turkle, Abby Rockefeller Mauzé professor of the sociology of science, was extended through February 28, 2005.

A group of STS faculty, working with colleagues in Anthropology, continued their work on “Computation, Visualization and Changing Professional Identities.” This project, funded by NSF, is examining how various professions are being transformed in the digital age, especially through the use of virtual experience.

Educational Activities

The STS Program offered 24 undergraduate subjects and 25 graduate subjects in AY2003–2004. Undergraduate enrollment totaled 505. Graduate enrollment totaled 153. Five of these were new subjects. In our teaching program, we emphasize collaborations with other parts of MIT. This year we offered 19 subjects jointly with other departments (Anthropology, Electrical Engineering and Computer Science, Health Sciences and Technology, History, Linguistics and Philosophy, Media Arts and Sciences, Physics, Political Science, Women’s Studies, and Writing and Humanistic Studies). Some examples follow:

– Professor Kaiser teaches a physics class, STS.042J/8.225J Oppenheimer, Einstein, Feynman, that fulfills a requirement in the new physics major, as well as fulfilling CI-M and CI-HASS requirements.

– Frances and David Dibner associate professor of the history of engineering and manufacturing David Mindell has taught a class in Course 6, 6.933J/STS.420J The Structure of Engineering Revolutions, that fulfills a requirement in its MEng program.

– Associate professor Joseph Dumit is teaching two new classes on scientific visualization (one on the graduate level, one of the undergraduate level) intended to

attract students throughout the School of Science, especially in the Department of Brain and Cognitive Sciences.

—Professor Michael Fischer teaches Ethics and Law on the Electronic Frontier with Professor Harold Abelson from Course 6, where students meet and question technologists, activists, law enforcement agents, journalists, and legal experts; an ethnography course with Professor Dumit for HSSST graduate students, as well as students in Comparative Media Studies, HSSST, and the Sloan School; and a course offered jointly with Health Sciences and Technology, HST.930J Social Studies of Bioscience and Biotechnology, with Harvard Medical School professors Byron and Mary Jo Good.

STS currently has one undergraduate major, eight minors (five of whom are graduating in June 04), and 46 concentrators (26 of whom are graduating in June 2004). We offered five undergraduate HASS-Distribution (HASS-D) subjects and four communication-intensive subjects. Our HASS-D class STS.011 American Science: Ethical Conflicts and Political Choices continues to draw the largest enrollment among STS subjects (68 students in fall 2003). The STS program offered six Undergraduate Research Opportunity Projects, and during the January 2004 Independent Activities Period, we sponsored or cosponsored three activities.

Ongoing Activities of the Program

Ongoing activities of the program in STS bring a wide variety of distinguished scholars to the MIT campus on a regular basis. The longest-running of these activities is the STS colloquium series, which this year gave 13 scholars an opportunity to speak on subjects in the history or social study of science and technology, as well as to meet with students and faculty more informally. Two of them are African Americans and one is Native American; two are our own graduating students.

The fall series began with a special colloquium, Current Events from an STS Perspective, commemorating 9/11. Professor Michael Adas of Rutgers University was the moderator and the speakers were professors Fischer and Fitzgerald, and Merritt Roe Smith, who is Leverett Howell and William King Cutten professor of the history of technology at MIT.

Every year the STS Program also sponsors the Arthur Miller lecture on science and ethics, which is advertised to the larger MIT and Boston area communities. This past fall the Miller lecturer was Margaret Mellon, Food and Environment Program director for the Union of Concerned Scientists, whose talk was titled "The Wages of Hype: Agricultural Biotechnology after 25 Years."

In addition, two other series of lectures have been ongoing in STS during the past several years. The first is Deep Arch, the deep-sea archaeology initiative organized by Professor Mindell, which attracts researchers and students in Ocean Engineering and elsewhere at MIT, as well as from Woods Hole and other institutions with

oceanographic programs. The second is the Sawyer series on Modern Times, Rural Places, cosponsored by STS and the History faculty.

The Siegel Prize is an award of \$2,000 for the best essay on issues relating to science, technology, and society written by an MIT student in the previous year. Mr. Chen-Pang Yeang was the winner of the 2003 Siegel Prize competition for his paper, “When Hobbyists Were Experts.” The Siegel Prize committee for 2003 consisted of Professor Evelyn Fox Keller (STS), who served as chair; Thomas Meloy professor of rhetoric and the history of science Kenneth Manning (STS and Writing and Humanistic Studies); and associate professor of philosophy Edward J. Hall (Linguistics and Philosophy). There were 32 papers submitted for the competition this year. Because of the high quality of this year’s entries, the committee also awarded two honorable mentions: Ms. Hiesinger for “Over the Rainbow: Biotechnological Narratives, the Papaya, and the Remaking of Hawaii” and Mr. Shulman for “‘Science Can Never Demobilize’: The United States Navy and Petroleum Geology, 1898–1924.”

More recently, STS has hosted a growing number of visiting scholars, some of whom have support from various sources (fellowships, home institutions) and who want to be in our midst for a research year. This year we had a dozen visiting scholars, including a number who have also been fellows of the Dibner Institute at some point: Claire Calcagno, Jimena Canales, Joseph Corn, Slava Gerovitch, Anna McCann, Constance Perin, Michael Stiefel, Emily Thompson, Ulrich Wengenroth, Sara Wermiel, Alan Davidson, and Victor McElheny.

At the request of some of these visiting scholars, STS has started a second series of talks, in the form of regular brown-bag luncheons at which they (and a sprinkling of other speakers) presented their work in an informal setting. Mr. Davidson, a 1993 MIT graduate of the Technology and Policy Program and associate director of the Center for Democracy and Technology in Washington, DC, gave a series of four lectures this spring on the common theme of “Liberty by Design.” As a lawyer, he discussed challenges to privacy, free speech, and fair use posed by evolving information technologies.

STS is also hosting a growing number of visiting professors. This past year, we sponsored three such professors:

–Koffi Maglo is a Martin Luther King visiting scholar who is being cosponsored by the Philosophy faculty and STS, with the cooperation of the Dibner Institute. Dr. Maglo is a historian and philosopher of science; he taught an undergraduate class last fall and a graduate class in the spring. His appointment has been renewed for a second year.

–Svante Lindqvist, director of the Nobel Museum in Stockholm, was here for six weeks this fall, including “Nobel Week.” He taught a four-session (non-credit-bearing) seminar in four consecutive weeks, which was well attended and brought together many different parts of the MIT community.

—Manuel Castells, whose home base is now the Open University of Catalonia, although he teaches each fall at the University of Southern California, was brought to MIT for a week in January by STS, the Media Lab, and the Department of Urban Studies and Planning. He taught a one-session faculty seminar and a five-session graduate seminar that were immediately oversubscribed and were by all accounts highly successful. He will return for annual two-week visits during the next five years.

STS faculty and students have been involved in a wide range of other events that attract participation from around the Institute and beyond. The MIT Initiative on Technology and Self, headed by Professor Turkle and closely allied with researchers in the Media Lab, sponsored an Evocative Objects Symposium in Killian Hall on March 5, 2004. It included a full day of presentations on objects and supporting theoretical papers, and examined the psychological, social, and epistemological dimensions of material culture.

STS was a major participant in two MIT events this spring: the Engineering Systems Symposium held March 29–31, 2004 (distinguished visiting professor Thomas Hughes and Professor Mindell spoke in the first session); and the Emerging Technologies symposium held on April 12, 2004 as part of the Integrative Graduate Education and Research Training program, an NSF-supported collaboration of STS, Political Science, and the Technology and Policy Program to study emerging technologies.

In addition, STS has played a major role in supporting the learned societies and related activities in the history of science and technology. For example, this fall STS, along with the History of Science Department at Harvard, hosted (on the premises of the Dibner Institute) the 2003 annual Joint Atlantic Seminar in the History of the Physical Sciences (JASHOPS) on the topic of Modern Physical Sciences and the State." JASHOPS is an important and successful meeting ground for graduate students in the history of the physical sciences.

This fall STS, again in collaboration with Harvard's History of Science Department, hosted the annual meeting of the History of Science Society in the Cambridge Hyatt Regency Hotel. Numerous faculty, students, and visiting scholars associated with STS participated in the sessions.

Knight Science Journalism Fellowship Program

Now entering their twenty-second year, the Knight fellowships continue to attract science journalists from around the world to learn more about the science and technology they cover. During his sixth year as director of the program, Boyce Rensberger organized week-long intensive fellowships for science journalists in medical evidence and brain science. In January the Knight fellows traveled to Mexico to meet with scientists, tour archeological sites, and visit the over-wintering grounds of monarch butterflies.

The twenty-second class of fellows includes Brian Bergstein, technology reporter for the Associated Press; Ingfei Chen, a freelance science writer whose work appears in *Science*

Online, the *New York Times*, and *Discover*; Judy Fahys, environment reporter of the *Salt Lake Tribune*; Justin Gillis, biotechnology reporter for the *Washington Post*; Taro Mitamura, television science reporter for NHK, the Japan Broadcasting Corporation; Colin Nickerson, foreign correspondent for the *Boston Globe* who will be preparing to make a transition into full-time science reporting; Valeria Roman, science and medical reporter for *Clarín*, the largest daily newspaper in Argentina; Jeff Tollefson, science reporter at the *Santa Fe New Mexican* newspaper; Martin Uhler, science reporter for *Lidove Noviny*, one of the biggest daily newspapers in the Czech Republic; and Sylvia Pagán Westphal, reporter for *New Scientist* magazine.

Fellows attend over 60 seminars with faculty, which are specially organized for them, as well as other seminars and workshops devoted to science and technology and their wider impacts. The fellowships are supported by an endowment contributed by the John S. and James L. Knight Foundation of Miami and by alumni and foundation gifts. More information about the Knight Science Journalism fellowships can be found at <http://web.mit.edu/knight-science/>.

Faculty Activities

Professor Dumit's book, *Picturing Personhood: Brain Scans and Biomedical Identity*, was published by Princeton University Press in February 2004. He will be speaking at the American Academy of Arts and Sciences, the Association for Bioethics conference, and the New York Academy of Sciences this year on the uses and misuses of brain images. He is currently working on his next book on medical facts and pharmaceuticals in American culture. He is the chair of the Pharmaceuticals and Identity Working Group (Initiative on Technology and Self at MIT) and a founding member of the special interest group on the Anthropology of Pharmaceuticals in the American Anthropological Association. He is the associate editor of *Cultural, Medicine and Society: An Interdisciplinary Journal*. He launched a new course in spring 2004 on scientific visualization across the disciplines.

Besides his graduate and undergraduate teaching, Professor Fischer helped write four grant proposals, led two student trips to the Middle East, published two books with Duke University Press (*Emergent Forms of Life and the Anthropological Voice* and *Mute Dreams, Blind Owls, and Dispersed Knowledges: Persian Poesis in the Transnational Circuitry*), and published three review essays. He participated in conferences and workshops in Cambridge, England (on cities and film); Jerusalem, Israel (on the Middle East conflict); Montreal, Canada (on the Middle East conflict); at New York University (on religion and media); and at Columbia (on Iranian film). He also attended the Society for Cultural Anthropology's conference in Portland, Oregon; meetings of the American Anthropological Association held in Chicago, and Society for Social Studies of Science meetings held in Atlanta. He does reviews for the AES, AA, *Cultural Anthropology*, several presses, and serves on the executive board of the Society for Cultural Anthropology.

Professor Fitzgerald taught four courses this year. Her book *Every Farm a Factory: The Industrial Ideal in American Agriculture* won the Theodore Saloutos Prize for the best book

in agricultural history. She served as president of the Agricultural History Society. She gave papers at the Society for the History of Technology annual meeting, as well as the American Society for Environmental History. She cosponsored (with Arthur J. Conner professor of history Harriet Ritvo) another year of speakers in the Modern Times, Rural Places seminar series. She chaired a search committee in STS, served as acting director of graduate studies for the spring term, and served on the Commencement Committee and the MIT Museum Collection Committee.

Associate professor Hugh Gusterson was on leave from MIT as professor of public policy at Georgia Tech. He published a book titled *People of the Bomb* with Minnesota Press and three articles: "Nuclear Tourism," in the *Journal of Cultural Research*, and "If US Dumps Test Ban Treaty, China Will Rejoice," and "Lynne Cheney's Free Speech Blacklist," both in *Anthropologists in the Public Sphere*, edited by Roberto Gonzales and published by Routledge. He was treasurer of the American Ethnological Society and a member of the editorial board of *Anthropological Quarterly*.

Professor Kaiser completed his book, *Drawing Theories Apart: The Dispersion of Feynman Diagrams in Postwar Physics*, now in press with the University of Chicago Press. He also completed an edited volume, *Pedagogy and the Practice of Science: Historical and Contemporary Perspectives*, now in press with MIT Press. In addition he has two articles in press in the journals *American Quarterly* and *Social Studies of Science*. He delivered eight invited lectures throughout the United States and Japan, served as local organizer for the annual History of Science Society meeting held in Cambridge in November 2003, and as the faculty organizer for the annual Joint Atlantic Seminar for the History of Physical Sciences held in Cambridge in September 2003. He was also awarded a research grant from the Spencer Foundation, and continues his research with several collaborators in MIT's Physics Department into early universe cosmology.

Professor Keller published two articles. In addition she served as visiting professor and historian-in-residence, NCBS, Bangalore, India in February 2004; organized a workshop on "Intersubjectivity, Development, and Dynamical Systems," at the University of Minneapolis in April 2004; was the plenary speaker at the first African Human Genome Conference in March 2003; was the Snowden lecturer at Wesleyan University in October 2004; and lectured as Winton visiting chair of interdisciplinary studies at the University of Minnesota.

Professor Keniston has continued work on information and communication technologies to promote development. The book he organized and edited, *IT Experience in India: Bridging the Digital Divide*, was published by Sage New Delhi. With Indian colleagues, he received grants from the government of India and from Indian information technology firms to study the costs and benefits of e-governance projects. He chaired the decennial review committee of the National Institute of Advanced Studies at the Indian Institute of Science in Bangalore, and was elected to the governing board of the Indian Institute of Information Technology. He was director of the MIT-India Program, and taught courses on information technology and development, Indian, and environmental studies.

Professor Mindell has been on sabbatical this year as a senior fellow at the Dibner Institute. He has been writing a book on the history of the Apollo program, and the computers and human/machine interface that led to the moon landings. In the summer of 2003, he participated in the survey and sampling of a 1,500 year old shipwreck in the Black Sea that was featured in *National Geographic* in April 2004. He is principal investigator on a \$400K+ grant awarded by the National Oceanic and Atmospheric Administration's Ocean Exploration program to go to Antarctica in 2006 to look for shipwrecks and hydrothermal vents. Mindell is in the process of commercializing a high-precision navigation sonar he has been developing over the past 10 years. His book, *Between Human and Machine*, published by Johns Hopkins University Press in 2002, will appear in paperback this fall. He also received his private pilot's license in March 2004.

Professor Smith is working on the second edition of his coauthored textbook, *Inventing America*, which has been adopted at over 200 colleges and universities. He also contributed an essay titled "What History Can Tell Us about Invention and Creativity" for a book of essays on the subject of invention that formed the core reading for an Invention Assembly held at the National Academy of Engineering in March. He also is serving as coprincipal investigator for an Integrative Graduate Education and Research Training grant received from the NSF, jointly sponsored by the Technology and Policy Program, Political Science, and STS. He is chairing the NASA/American Historical Association History fellowship selection committee and is serving on the national advisory boards of the American Museum of Textile History, the Steamtown Institute, and WGBH's television series "The American Experience." He received the Founders' Day Award for scholarly distinction from the Charles River Museum of Industry and was named honorary guest professor at the Kanazawa Institute of Technology. He gave lectures at the Tsongas History Center, Boston National Historical Park, University of Massachusetts—Boston, Bellarmine University, and the MIT Club of Cape Cod.

Professor Turkle continues her work as the director of the MIT Initiative on Technology and Self. In addition to the Evocative Objects symposium mentioned earlier in this report, the initiative sponsored a conference titled Information Technologies and Professional Identity: A Comparative Study of the Effects of Virtuality. The ongoing NSF grant that funded this workshop explores the challenges that scientific and technical disciplines face as they incorporate simulation and visualization technologies as tools in the production of knowledge. Professor Turkle is editing two volumes resulting from work of the initiative: *Evocative Objects: Thinking With Things* and *Technology and Self: Mediations on Mind and Mechanism*. She also continues her research on "relational artifacts," studying robotics, digital pets, and simulated creatures, particularly those designed for children and the elderly.

Professor Williams continues as director of the STS program. She gave talks on "Information Technology and Organizational Change: Learning from MIT," at the Universitat Oberta de Catalunya in Barcelona in June 2004; "Ubiquitous Computing: An STS Perspective," at the MIT Integrative Graduate Education and Research Training workshop in April 2004; "Science and Technology in a Dangerous World," for the MIT Alumni club of Southern California in April 2004; delivered the keynote address, "The

End of Engineering?" at the 175th anniversary celebration of the Ohio Mechanics Institute at the University of Cincinnati's History of Technology symposium in March 2004; and gave the Jones seminar, "The Identity Crisis of Engineering," at the Thayer School of Engineering at Dartmouth College in February 2004. Paperback and Spanish editions of her book *Retooling: A Historian Confronts Technological Change* were released. She served as vice president of the Society for the History of Technology (SHOT) and organized the first SHOT summer writing and publication workshop for young scholars, held on Cape Cod in June 2004.

Rosalind H. Williams

Director

Robert M. Metcalfe Professor of Writing

More information about the Program in Science, Technology, and Society can be found on the web at <http://mit.edu/sts/>.