

STS.069 “TECHNOLOGY IN A DANGEROUS WORLD” AND
STS.092 “CURRENT EVENTS FROM AN STS PERSPECTIVE”

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Along with many people in the world, and especially in the United States, the events of September 11, 2001 gave me a lot to think about. And to act upon: one of the great gifts of a university is that it provides people and resources to work with in difficult times. Eventually the thoughts and actions triggered in me by 9/11 led to the two undergraduate classes that are the subject of this website. Before describing this pedagogical destination, however, I would like to tell you something about the journey there, since the story illustrates the close connections between research and teaching at MIT.

On September 13, 2001, the MIT administration cancelled classes after 3 PM and invited the community to gather in Killian Court, the great lawn enclosed by elm trees and rhododendrons that begins at the foot of the Great Dome and rolls out to the Charles River. The thousands of people gathered in the court divided into groups of about fifteen people, each group gathered around a staff or faculty member who had volunteered to facilitate a discussion. It took only a few seconds for my group to form itself on the lawn. For over an hour, we sat there, talking. It was a magnificent late-summer day; the sun, low in the sky, illuminated the names of the great scientists (Kelvin, Darwin, Newton...) engraved on the facades of the massive buildings.

My group was evenly divided between graduate and undergraduate students, with a slight majority of them from the United States and the rest from elsewhere in the world. We talked about how the terrorist attacks had affected us, how we were responding, how we planned to respond. No one was especially interested in the technical details of how this had happened or even how it could be prevented from happening again. The dominant questions were why it had happened and what it meant. Many students said that the disaster revealed to them how little they knew about the world despite their

computer literacy, despite the so-called information age. Most of those raised in the United States could not understand why anyone could be so angry at their country. Several students from other countries said that while they too were horrified, they thought they understood. Some of them described similar experiences of terror in their homeland, and explained how they had learned to live with fear. Several students said they were rethinking what they wanted to do with their lives.

That afternoon on Killian Court, the humanities, arts, and social sciences were at the very core of MIT education. They never seemed more relevant to the education of scientists and engineers. I hope to teach at MIT for many more years, but I could not imagine a moment that so much expresses the quintessence of education as that transcendent hour on Killian Court. That afternoon, MIT was university. That afternoon, for the first time, I felt that I belonged at MIT, not in spite of being a humanist, but because of being a humanist.

I wanted to find a way to approximate this extraordinary experience in an ordinary classroom. During the fall, I did some more thinking about the events of September 11, which for me means writing about them. I had just finished a book manuscript but was not happy with its conclusion. With some guilt, but also with a sense of opportunity, I realized that now I could write a much better conclusion. It included a description of the Killian Court event and became the last chapter of *Retooling: A Historian Confronts Technological Change* (The MIT Press, 2002)

I also wrote an essay for the journal *Technology and Society*, which is published by the Society for the History of Technology, the professional organization in which I have long and happily been active. Among other things, I wanted to encourage fellow historians to write more essays, as opposed to scholarly articles. It seemed to me that 9/11 was the kind of event that forces us to think about how our individual identity is interwoven with collective historical forces. I felt that historians of technology had to confront 9/11 from a personal perspective—which is what essay writing is all about—as well as in a more distanced professional voice. The two perspectives are by no means the same, but neither are they separable. A similar issue arises in the history classroom. Students have to learn to connect historical experience with personal experience, while

also coming to understand that historical forces and events have causes and effects that are far greater than their personal perspectives on them.

By the time the year 2001 thankfully came to an end, other people at MIT were starting to get involved in these discussions. Early in January 2002, during MIT's Independent Activities Period, a group of students, faculty, and staff gathered to discuss the educational implications of 9/11 for MIT. There was a strong consensus that we needed to do more to bring the "real world" into our classrooms, and to get our students out into the "real world," whether through service learning or exchange programs or other means. I began thinking about ways to teach history from the "problem-solving" approach so engrained at MIT. To be sure, history is not a problem to be solved, but a condition to be observed, understood, and possibly influenced, if only marginally. But I was intrigued by the idea of providing students with a "toolkit" of concepts, or, better yet, a historical skill set. With basic historical skills, students could begin to understand current events, no matter how horrific, as more than a series of disconnected and often bewildering episodes. They could analyze them in terms of the historical forces at work, with definable causes and effects.

During the early months of 2002, I collaborated with a friend and colleague, Professor Miriam Levin of Case Western Reserve University, to organize an NSF-sponsored workshop, on the topic "Rethinking Technology After September 11." Eighteen invited participants and almost as many listeners attended this workshop, held at MIT in March 2002. The invited participants, primarily historians of technology, along with some social scientists, were asked to write short two-page comments on their reactions to 9/11 to circulate in advance of the meeting. These comments were so thoughtful that John Krige, editor of *History and Technology*, invited Miriam and me to edit some of them for publication in a special issue ("Forum on Rethinking Technology in the Aftermath of September 11, 2001," *History and Technology*, Volume 19, Number 1, March 2003.)

At the workshop itself, we had broad and deep conversations about the connections between technology and identity, both individual and collective. We also began to discuss plans for follow-on events, including what eventually became the plenary session for the next annual meeting of the Society for the History of Technology.

In some of the workshop discussions, we shared our ideas about recasting our teaching in the aftermath of September 11. We had our students' attention to a degree that had not been true before, and along with our students we wanted opportunities to think through the historical implications of recent events.

At that point I began thinking about teaching such a class the following fall for MIT undergraduates. I thought about various titles for the class, eventually rejecting any with "terrorism" in the title. By that time I had concluded that what we call "terrorism" is only one manifestation of a deeper phenomenon: the emergence of a new world, a hybrid of "nature" and "technology," one that we humans have largely created ourselves and that therefore exhibits all the imperfections and shortcomings as well as the strengths of humanity. This world emerged from the long and noble struggle to "conquer nature," to create a more secure and promising habitat for human existence. What we are discovering, however, is that the project of controlling nature creates other vulnerabilities. The "second nature" we are creating is laden with unpredictabilities and risks, especially as we keep constructing layer upon layer of large technological systems that interact in increasingly complicated ways. What we realize even more forcefully after September 11 is that this hybrid world is increasingly vulnerable to sudden and decisive redirection to ends entirely different from those in the minds of its designers. The world built to protect human beings against natural hazards can readily become an arsenal that some human beings can turn against others.

I therefore settled on the title "Technology in a Dangerous World" for my new class. It raised the problems inherent in a technological world without taking sides as to whether "technology" makes the "world" more or less "dangerous." Obviously it does both, and this was the central theme of the class. The first session was held almost exactly one year after 9/11/01. In the third class (September 12, 2002), the twenty-odd students watched a CBS-distributed videotape filmed primarily in the lobby of one of the World Trade Center towers. This was extremely difficult viewing, and I am not sure I would not repeat it in future classes. However, at least the students had an assignment to do as they were watching the videotape, which helped give them a little detachment from the emotional weight of the images. They had been asked to list all the particular technological devices they saw, the technological systems implied by those devices, and

the role of human beings in those systems. This assignment proved to be an excellent starting point for discussion of a key concept in the class, that of technological systems.

This and other basic STS concepts (technological determinism, technological fixes, “second nature,” etc.) were also emphasized in the early part of the reading list for the class. The list included some standard texts on risk, safety, and accidents, but also more general works that address the world we are creating for ourselves (e.g. Castells on “information society,” Giddens, Mumford) as well as the identity issues raised by this world (Murakami, Weart). To be honest, the list came primarily from books I had on my shelves: these were books that I had recently read or that had made a deep impression on me. As a result, the list is too eclectic and scattered, though not by much. The idea was to cover a range of perspectives on technology and danger, ranging from the highly personal to case studies to classic statements. In the future I would not change the reading list too dramatically, but I would do considerably more lecturing to explain the overall arguments and the context of the readings. (For most of my time at MIT, I have taught writing, not history, so I am not used to lecturing. I am beginning to see that lecturing has its virtues.)

Just as important, I wanted to make sure that the reading list connected in a direct way with issues of technology and danger confronted on the MIT campus. I am grateful to MIT colleagues Claude Canizares, Alice Gast, Jamie Lewis Keith, Roe Smith, Ted Postol, David Marks, Beryl Rosenthal, and Debbie Douglas, all of whom took time and thought to engage with the class, with such effective results. I am also grateful Wade Roush and Tom Hughes for their outstanding guest teaching (Wade got his doctorate from MIT in STS studies, and Tom is a Distinguished Visiting Professor here). There is always the danger that the continuity of the class will be overwhelmed by a series of guests. In this case, however, it seemed to work. The individual voices from MIT and beyond kept forcing us to connect the basic concepts of the class with pragmatic choices faced by administrators, faculty, students, and citizens.

In setting up the class, I hoped that we might develop a collective project of writing a report on the subject of “MIT’s role in a dangerous world,” to present to the MIT administration at the conclusion of the class. This never happened, primarily because it was asking too much of everyone in an introductory subject. Before writing

any such report, students had to assimilate the concepts that would enable them to think through the issues. Furthermore, it also takes a lot of class time to set up subgroups, generate drafts, coordinate the drafts, and produce a final report. I still like the idea of using historical skills to produce such a report but have concluded that this would work best as a follow-on project, not as an integral part of the initial subject. As we shall see, such a follow-on project has indeed emerged as a student initiative, along with others.

The undergraduates who took “Technology in a Dangerous World” were wonderfully forgiving for the less-than-shipshape quality on its maiden voyage. From their end-of-term comments, and from my own observations, I realized that I need to adjust the reading list, give more lectures on the reading, create more “check-in” stages on the term paper, and develop greater continuity in the themes. But students felt that the strengths of the class—the importance of the topic itself, the “real world” connections established in the classroom, and the emphasis on developing a historical “skill set”—made up for its deficiencies.

Toward the end of the semester one student asked if he could do a reading seminar with me the following term. I was already scheduled to teach one graduate seminar and to teach a considerable chunk of another, but I could hardly refuse this expression of interest from a smart and motivated student. I forget exactly what happened next: I must have mentioned the seminar to other students. Somehow, at the end of the Independent Activities Period 2003, eight students had signed up for the spring seminar—seven from the fall class, with one additional new student (a freshman, who more than held her own with the other older students).

Because I didn’t have much time to organize the new class, I decided to make it easy for myself: the textbook would be *The New York Times*, seven days a week, and the writing assignments for the weekly meeting would be two-page comments on some story in the newspaper, drawing upon concepts and insights we had learned in the preceding semester. At the back of my mind, I’m sure, I was remembering how stimulating the two-page essays had been that Miriam Levin and I requested in advance of the NSF-sponsored workshop the year before. But also at the back of my mind was the experience in Killian Court a couple days after 9/11, when I had been so struck by the disconnect so many students experienced between their own lives and what was going on in the world. I

hoped that the emphasis on current events would help us all connect our daily lives with larger historical forces. Finally, in the front of my mind I realized that there would be a lot of current events in the approaching months that would engage our attention and trouble our spirits. It was becoming clear that the United States was likely to go to war in Iraq. The “fight against terrorism” continued to raise questions about privacy and surveillance. The air was full of concern about the economy.

So I christened the spring 2003 seminar “Current Events from an STS Perspective” and hoped that the students could connect what they read in the paper with some of the concepts they had been using the previous fall. A few days before the class began, the Columbia space shuttle fell apart on its descent. I emailed the students and asked them to write their first “two-pager” on the STS issues raised by this tragedy. We had read a lot about risks and accidents the previous term, and Wade Roush had told us about his dissertation research on “technological catastrophes.” The first set of “two-pagers” was outstanding. From then on, every week the students chose their own topics, which went off in many unpredictable directions but also in predictable ones, especially relating to war and peace.

The results are here for you to read. “If you would see their monument, look around you.” The students’ papers convey an extraordinary range of clear observation, sharp thinking, and thoughtful analysis. They may not, however, fully convey how much fun the class was for all of us. We were dealing with some very troubling issues, at a time of great national division, especially over the war in Iraq. On this and many other topics, students in the seminar held sharply differing opinions. Nevertheless they focused less on their opinions than on the “STS perspective” as a common point of reference. They managed not only to maintain a tone of civility, but to actively listen to and learn from each other. This was an accomplishment of which the students should be proud. At the end of the term, all of us agreed that this was one of the best if not the best educational experiences we had ever had—even, speaking for myself, the unforgettable experience in Killian Court.

The story did not end there. Teaching, like research, can have spin-offs. Over the summer of 2003, three students have worked on summer projects: Peter Van Buskirk did research on weapons of mass destruction, Jina Kim (the intrepid freshman) is developing

a web-based forum for Boston students to comment on current affairs; and Stephanie Chung has carried out this project, collecting, editing, and indexing all the “two-pagers” produced in the spring seminar. A fourth student, Reshma Khilnani, has contacted class members to ask them to work with her on starting a process that will lead to a “white paper” recommending post- 9/11 policies and programs to the MIT administration, with a target date of spring 2004. I suspect that still other spin-offs of these two classes will emerge over time. For a teacher, there is nothing more gratifying to witness. The proliferation of these follow-on projects makes me wonder about the wisdom of the curricular habit of cutting students’ lives up into thirteen-week segments. Surely there must be ways to develop more continuity through time, more opportunities for meandering and reconnecting, more paths for creative lateral runs as students explore their identities and the world.

In terms of my own plans, I would like to teach a class that combines in one semester the best elements of both “Technology in a Dangerous World” and “Current Events from an STS Perspective.” Instead of a term paper, I will assign “two-pagers.” To make more time for discussion of current events, I will trim the reading list, do more lecturing, and slightly reduce the number of guests. It will probably take me a few more semesters to get it right, but I want to keep at it. I started in this teaching direction because I felt the students needed it. I am continuing because I need it.