

MIT Faculty Newsletter

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this issue features outgoing Faculty Chair Rafael Bras' "Back to the Future" (page 3); Dr. Ed Seldin's experiences caring for victims of the tsunami, "Mission to Banda Aceh" (page 12); "The Purpose of Poetry" by John Hildebidle (page 16); and what the faculty think about their updated lunch program, "Survey Says" by Lydia Snover (page 18).



Provost Responds to Professor Postol's Allegations

Robert A. Brown

IN ARTICLES PUBLISHED IN the January/February and March/April 2005 issues of the *Faculty Newsletter*, Professor Theodore A. Postol described his criticisms of MIT's review of allegations he made of scientific fraud involving research at MIT Lincoln Laboratory. I am writing to inform the faculty about some of these issues and to correct some of the most important errors or misunderstandings in those articles.

First, it is important to understand that MIT has not put a stop to the investigation of the allegations. To the contrary, in early December 2004, Dr. Vest issued a statement, reported in *The Tech*, citing the reasons for the delay in the investigation stage of MIT's review and noting that we continue to seek the approval needed so that we may carry out the investigation. [See page 6 for text of Dr. Vest's statement.]

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International Students and Scholars: A Legacy for MIT and the U.S.

Alice P. Gast

THE UNITED STATES PRESENTLY enjoys a system of higher education that is the envy of the world. This premier position allows us to attract the most talented, most driven and highly motivated international students and scholars in the world. We benefit from the presence of these students and scholars in myriad ways. These benefits can be difficult to quantify; in this brief analysis, we use the perspective of MIT's experience over the past 150 years to evaluate the contributions that our international student and scholar population makes to us and to our nation.

A Century of International Students

MIT has welcomed international students essentially since its inception; the first student from Canada came to MIT in 1866, the second year MIT offered classes.

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Lorna Gibson New Chair of the Faculty

Newsletter Staff

PROFESSOR LORNA J. GIBSON will begin a two-year term as Chair of the Faculty on June 15, 2005. Professor Gibson is the Matoula S. Salapatas Professor of Materials Science and Engineering and holds joint appointments in the Department of Mechanical Engineering and the Department of Civil and Environmental Engineering.

Lorna was raised in Niagara Falls, Ontario, home of both tacky tourist traps as well as some remarkable civil engineering works: several bridges across the Niagara River, observation towers near the Falls, as well as the canals, reservoir, and penstocks associated with the hydroelectric power station. Growing up, her mother thought that she and her two brothers should know what factories were like, and organized family field trips to the Nabisco cereal factory in Niagara Falls, to

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From The Faculty Chair Back to the Future

Rafael L. Bras

IT IS THE YEAR 2061, and MIT is preparing to celebrate the two-hundredth anniversary of its founding. President Patricia Arroyo, past winner of the National Academy of Engineering's Charles Draper Prize for innovation in engineering and technology and former presidential science advisor, is reviewing historical material in her office; naturally, it's all digitized.

MIT is doing very well. It remains the foremost university with focus on science and technology in the world. The emphasis is on university. The educational commons revision of 2006 set in motion a series of fundamental changes in the curriculum that blurred the distinction between science and engineering and integrated social sciences and humanities into a new liberal science and engineering education. The Institute's financial strength has made our need blind admission policy for undergraduates even more generous. "Self help" has been eliminated, so students with financial aid no longer have an academic disadvantage by having to work during the week. MIT is finally fully competitive with our peers in attracting the best minds to the student body.

MIT's educational partners worldwide are also enjoying the well defined, and encouraged, student exchange programs. Students are truly becoming citizens of the world.

The Graduate School is providing improved services to our graduate students and making sure that policies of recruitment and balance with undergraduate activities are followed. In fact, undergraduate/graduate education has become a seamless continuum. The first profes-

sional engineering degree is now the Masters. All first-year graduate students are now supported by fellowships managed by the School.

MIT faculty are still working incredibly long hours. Nevertheless the housing program, providing incentives to live close to campus, helps eliminate the wasted and aggravating commuting time for many. It has been amazing how this influx into the Cambridge area has also resulted in an improvement of the city and its school system; we always knew these things were connected. In fact, the mixed use – commercial, dormitories and faculty housing – of the renovated University Park has been an extraordinary success. Needless to say, the integrated child-care facilities, modeled after the most successful part of the recently replaced Stata Center, go a long way toward improving the quality of life of the faculty.

Along with its international partners, MIT has aggressively pursued the betterment of education and well-being in less-developed countries. Technology and science are truly agents of change and empowerment. MIT has come a long way since its first OpenCourseware initiative. MIT's ideas now help feed those hungry for food, not only those hungry for knowledge.

President Arroyo recalls fondly the spirited and illuminating faculty meeting debates that led to the adoption of the concept of international partners. She was then a new faculty member and was truly taken by the openness, honesty, and depth of the various arguments. Given all that had transpired in the meeting, she was really surprised at the overwhelming

support that the measure received once the electronic voting was completed.

That experience inspired her to get involved in faculty governance. The following year she put her name forward as a candidate to the Standing Committee on International Relationships. She was delighted when she was elected.

By that time, 2036, she felt comfortable and secure as a woman of color faculty member at MIT. The faculty was then nearly 50 percent women and 25 percent formerly "underrepresented minorities." It was hard to imagine how it must have been when the first woman president of MIT, Susan Hockfield, took office on December 6th of 2004. President Arroyo was not even born at that point! What a thrill it must have been for all of those involved.

Patricia had read about the search process that led to Hockfield's selection. It was a model of collaboration among all stakeholders: students, staff, faculty, and trustees. She read about Friedman, the Nobel Prize winner, who led the Faculty Advisory Committee. And Champy, the ultimate volunteer, who led the Corporation Committee on the Presidency. She also heard of Mead, the then new Chairman of the Corporation, who was key to making the process work. And she read about Manning, Rizzoli, and Bras, the officers of the faculty at the time. How did they come up with this unlikely trio of a woman and two (then) minorities? They are all long gone, mostly forgotten, but she knew they had fun.

Among the items found during the latest remodeling of her office, 3-208, were

continued on next page

Back to the Future

Bras, from preceding page

a plastic pocket protector (how quaint) presented to then President Hockfield; a golden hammer inscribed with the name Lorna Gibson, the then incoming Chair of the Faculty (2005-2007), and a toilet plunger painted in gold with reference to some sort of award given to efficient staff. It must all have been a private joke, she thought. They had fun.

Note:

The style and idea for this article came

from a talk I gave after 9/11/2001, entitled: "A Vision of the Future" (Strategies for Civil Engineering Research, ASCE Conference and Exposition, October 10-13, 2001, Houston, Texas). After I finished writing this article, *Newsletter* Managing Editor David Lewis called and pointed out the similarity with "MIT 2040," the editorial by Erik Demaine and Olivier de Weck, in the March/April 2005 *Faculty Newsletter*. I had not yet read their piece, but upon doing so I agreed; the similarity is eerie! The difference is that they were imagining a future, while I am playing a back-to-the-future theme, trying to spec-

ulate about how some of the events of my tenure as Chair of the Faculty may affect the future (just in case you missed it!). It is nevertheless amazing that not only the style, but also common themes appeared in both pieces. I am honored to be in such youthful and inspired company.

Anyway, as the article says: we had fun; I had fun. Thank you very much for the opportunity to serve. ■

Rafael L. Bras is a Professor, Civil and Environmental Engineering and Earth, Atmospheric and Planetary Sciences; Faculty Chair (rbras@mit.edu).

letters

Academic Expectations

To The Faculty Newsletter:

ACADEMIC INSTITUTIONS ARE for learning, exploration, research, and discovery. They stand for open, free, and unhindered search of the truth, and disdain any overt or covert infringements of such searches. These are the historic goals of academic institutions and, to a large extent, their reasons for being.

Traditionally, academic institutions manage themselves and are administered by peers, among peers usually elected or selected from among faculty. Their management is responsible to their faculty and student constituents. Yet at MIT, the divide between faculty and administration seems more pronounced, with faculty playing a declining role in the matters of the institution. There are many issues that are examples of this trend, and they vary from the de facto closure of the

Faculty Club as a meaningful place of assembly and socializing by faculty, to various other administrative decisions that have changed the life and workings of the institution. Even the faculty lunch program that was established some years ago is apparently under scrutiny now. Yet the most difficult issue to understand is probably the failure of faculty to question the administration.

The troubling silence by faculty that followed the repeated suggestions by Professor Theodore Postol to investigate possible scientific fraud or cover-up at Lincoln Laboratories relating to missiles is disturbing to me. I am not an expert on missile defense technology or missile physics, but I was in Israel during the first Gulf War when that country was attacked by Iraqi Scud missiles and the so-called U.S. Patriot missile defense shield so abysmally failed not only to shoot down

or divert incoming missiles, but actually caused collateral damage on the ground. At that time, Professor Postol also reported on these failures, only to be criticized by some members of the MIT administration.

My concern is the increasing gap between administration and faculty. Whenever faculty, and for that matter students, question the administration, few, if any, colleagues join the discussion. This is worse than the environment in private industry or government. I worked many years for both and found a much greater freedom, involvement, and mutual responsiveness. For me, these are ominous developments that do not bode well for the future of academic inquiry, research, and learning.

Ernst G. Frankel
Professor Emeritus,
Ocean Engineering

Lorna Gibson New Faculty Chair
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the paper mill in nearby Thorold, to the Ford plant outside of Toronto, and to Kodak and Corning Glass in New York State. When one of her former students recently described the field trips he took during IAP as part of the Leaders for Manufacturing Program's national plant tour (paper mill, auto plant, Kodak, Dell computer, Boeing...) she realized that her mother was way ahead of her time!

Funding difficulties between the university and the provincial government led her to look at other academic positions, and when she was offered a position at MIT in the Department of Civil Engineering in 1984 she accepted (with some trepidation over what was expected of junior faculty).

Career Choices

Lorna was unsure of what career she was interested in when she entered the University of Toronto and started by taking mainly science subjects. During her first year, she realized that engineering was much more practical than science, and being a practical person, and wondering just how all those bridges, towers, canals, reservoirs, and penstocks in Niagara Falls worked, she transferred into Civil Engineering. By the final year of her undergraduate studies, she had become interested in the mechanical behavior of materials and decided to pursue a PhD in this field at Cambridge University. On returning to Canada in 1981, she worked for about a year for a consulting engineering company in Calgary, Alberta that specialized in engineering in the Arctic. Projects at the company tended to be very short term and she found that she was just getting into a project and finding out what the issues were, when it was time to move on to the next project. She then realized that perhaps an aca-

ademic career would be more interesting than consulting and got a faculty position at the Department of Civil Engineering at the University of British Columbia in Vancouver in 1982.

The move to Vancouver was also a welcome relief from winter in Calgary, where there were days when it was colder in Calgary than in the Beaufort Sea in the Arctic. At UBC she began to appreciate the real pleasures of an academic career: the independence in defining research projects and working on them with grad-

uate students, as well as teaching and getting to know undergraduates. Funding difficulties between the university and the provincial government led her to look at other academic positions, and when she was offered a position at MIT in the Department of Civil Engineering in 1984 she accepted (with some trepidation over what was expected of junior faculty).

Research

Professor Gibson's research focuses on the mechanical behavior of materials with a porous, cellular structure: engineering honeycombs and foams as well as natural materials such as cork and wood. Her work in this area initially focused on developing models for predicting the mechanical properties of cellular solids as well as methods for using them in engineering applications. Over the last 10 years, she has become interested in applying models for cellular solids to biomedical applications: in understanding the mechanical consequences of the loss of trabecular bone (a

porous, spongy type of bone that exists at the ends of the long bones and in the vertebrae) during osteoporosis; in estimating stress concentrations in the lung around local regions of stiffer tissue (such as scar tissue or collapsed alveoli); in measuring and modeling the mechanical interactions between biological cells such as fibroblasts and porous scaffolds used in tissue engineering.

Lorna also has an interest in biomimicking, in applying the microstructural features and mechanisms that lead to efficient materials and structures in nature to engineering design. In 1996 Lorna transferred to the Department of Materials Science and Engineering, as her research increasingly moved into the area of biomaterials and biomechanics.

MIT and Beyond

Lorna currently teaches graduate subjects on mechanical properties of materials as well as a service learning freshman seminar in which the students develop educational displays on natural materials and structures for the Boston Nature Center and the Museum of Science. She has served on numerous committees at the departmental, school, and Institute levels. She served as Undergraduate Officer in CEE, chaired the Committee on Women Faculty in the School of Engineering and has been on the Faculty Policy Committee for several years.

Lorna lives in Jamaica Plain with her partner, Jeannie Hess, and their chocolate Labrador, Toblerone (Tobes for short). She commutes to MIT by bicycle along the Emerald Necklace in the spring, summer, and fall, keeping an eye out for wildlife along the way: she has seen deer and coyote in the Arnold Arboretum, albino squirrels near Jamaica Pond, and blue herons nesting in the Forest Hills Cemetery. Lorna also enjoys birding (she was delighted at the recent announcement of sightings of the ivory-billed woodpecker, long thought to be long gone), gardening (especially in the spring, when it is at its most rewarding), and baking (especially for her friends). ■

Provost Responds
Brown, from page 1

MIT has until now responded publicly to news reports about the review only by confirming that it is underway, warning that the existence of a review does not mean that it has been determined that scientific misconduct occurred, emphasizing that decisions can only be made once the facts are determined, and explaining why confidentiality is necessary for the process. [MIT and applicable federal policies emphasize the importance of maintaining confidentiality during the course of the review of these kinds of allegations. Maintaining confidentiality helps avoid interference with the review process and protects the reputations of those who raise allegations and those against whom allegations are made while the facts are being determined.]

Because Professor Postol has already spoken publicly about these matters on several occasions, here I am providing this information in order to correct statements that have been made about these issues.

Professor Postol's Allegations

Professor Postol's allegations arise in the context of a technical review of software designed by TRW associated with an early (June 1997) test of sensors manufactured by Boeing that were being considered for use in a planned national missile defense system. A former TRW engineer had brought a False Claims Act lawsuit against TRW alleging that TRW had produced a fraudulent analysis of the performance of its software. The federal government was considering joining the claims against TRW.

As part of that consideration, in 1998 the National Missile Defense Joint Program Office asked an existing advisory group known as the Phase One Engineering Team – or POET – to review the lawsuit's claims against TRW. Two members of the POET group were from Lincoln Laboratory. The analysis resulted in a classified report, POET STUDY 1998-5, issued on January 25, 1999. Because the POET report was and remains classified, it is not available for MIT's use in conducting an investigation of Professor Postol's allegations.

On December 1, 2004, President Charles Vest issued the following statement to *The Tech*:

Statement Regarding Alleged Scientific Misconduct

Integrity in research and scholarship is a bedrock principle of MIT, and we give serious attention to allegations of violation of that principle. Furthermore, federal policy requires that we conduct inquiries or investigations as appropriate when the integrity of research in federally sponsored programs is questioned.

In this case, MIT has worked for nearly three years to meet this responsibility, but has been unsuccessful in obtaining access to classified materials essential to complete this process.

In early 2002, MIT commissioned an inquiry into the allegations, which, as has been earlier reported, found that an investigation was warranted. Such a finding is not a determination that research misconduct occurred. Rather, an investigation was recommended to review issues that had been identified but could not be resolved during the preliminary inquiry.

As required by federal policy, the finding of the preliminary inquiry was reported to the Missile Defense Agency, which then decided that all of the information relating to the allegations, including the report of the inquiry itself, had to be classified in order to protect national security. MIT has identified a panel of distinguished outside investigators, all of whom have appropriate security clearances, to conduct the investigation. However, we have not yet been successful in obtaining approval from the Missile Defense Agency to give them access to this classified information. Without that access, the investigation cannot be conducted. We continue to seek the approval needed so that the investigation can proceed.

Professor Postol alleges that Lincoln Laboratory staff interfered with the federal investigation of the claims against TRW, and that the POET report was fraudulent. Those are the issues that have been, and are being, reviewed under MIT's established procedures for handling allegations of scientific misconduct, which are set out in MIT's Policies and Procedures (Section 10.1). [MIT and federal policies call for a two-step process for reviewing allegations of scientific misconduct: first, an inquiry, to determine whether an investigation is warranted and, if so, to frame the questions for the investigation; second, the investigation itself, to determine the facts. After the facts are determined, decisions are made regarding the appropriate actions to take, if any, based on those facts.

The questions identified by an inquiry may or may not be the same as the ones that were initially presented by the person who first brought the allegations to MIT's attention. It is also important to understand that when an inquiry finds that an investigation is warranted, that finding does not mean that scientific misconduct has occurred, but only that a further examination of the facts is needed.]

I have been overseeing the review of Professor Postol's allegations because, at

the time they were brought, MIT's vice president for research (who ordinarily supervises such reviews) was a Canadian citizen and therefore was ineligible for the security clearance necessary to oversee the allegations that involved the classified POET report.

None of the reports or letters from federal agents or agencies of which we are aware conclude that staff of the Lincoln Laboratory withheld information or failed to cooperate in any way with federal agents, or that any findings in the POET report were fraudulent. Professor Postol's articles refer to reports of the General Accounting Office (now known as the Government Accountability Office). Those reports, which contain the GAO's actual findings about the POET report, can be found at www.gao.gov/docsearch/date.php (enter February 28, 2002, and scroll to National Defense, Reports GAO-02-124 and GAO-02-125).

Steps MIT has taken to Review the Allegations

I will explain in this article the steps that MIT has taken to review Professor Postol's allegations, which include the completion of a preliminary inquiry to

determine whether an investigation is warranted. Professor Postol's two articles in the *Faculty Newsletter* incorrectly report that MIT has called a halt to the investigation of the allegations he has made. This is not true; we continue in our efforts to obtain the materials necessary for the investigation.

The planned investigation has not yet occurred because the Department of Defense Missile Defense Agency (MDA) has classified the materials required in order to examine the allegations (including the POET report and our own inquiry report) and has denied our investigation committee access to those materials. Professor Postol has asserted that he believes MIT could proceed with the investigation without access to classified material. However, without those materials, an investigation can neither identify the questions posed in the inquiry report nor answer them.

An inquiry into Professor Postol's allegations was launched in March 2002. Professor Edward Crawley of the Department of Aeronautics and Astronautics spent nine months conducting that inquiry. At one point during summer 2002, a first draft of the inquiry report was sent to the Lincoln Laboratory researchers and Professor Postol for verification of technical matters. In violation of the policy of confidentiality that applies to the review of allegations of scientific misconduct, Professor Postol made information in that report available to others outside the inquiry.

The final inquiry report concluded that Professor Postol's allegations could not be resolved within the scope of an inquiry, and that an investigation was therefore warranted into certain specific questions framed in the inquiry report. Such a conclusion does not mean that there was any determination that scientific misconduct had occurred, but only that a further investigation into the facts was needed to determine whether or not there was misconduct.

As required by the federal Policy on Research Misconduct, in February 2003 I advised the sponsoring agency, the MDA, of the finding that an investigation was

warranted. I informed the MDA that I intended to appoint a committee composed of expert individuals holding the requisite security clearances to conduct an investigation into the issues identified in the inquiry report. Three highly qualified and experienced individuals agreed at that time to serve on the investigation committee.

The MDA advised us in April 2003 that the inquiry report itself contained classified information, and that the report, and all drafts and comments on it, must be classified and moved to a secure location. Access to these classified documents requires both the appropriate level of security clearance and a "need to know," and the MDA denied the latter status to the outside investigators.

In my February 2003 letter to the MDA I had noted that we would be seeking permission from the MDA for the investigation committee to have access to classified information regarding the POET report in order to conduct their work. In early May 2003, the MDA advised us that it would not permit the investigation committee to have access to classified information, including not only the POET report itself, but also the MIT inquiry report, on the grounds of national security.

I wrote back to the MDA's general counsel to explain that without access to the classified information (including the inquiry report itself, which contains the questions that the investigation should address), no meaningful investigation of the issues described in the inquiry report could take place, and asked the MDA to reconsider its position. President Vest wrote the MDA with the same request in June of 2003, and the following month a meeting occurred between officials at MIT and the MDA at which we requested reconsideration of the decision to deny the committee access to the necessary information.

At the end of October 2003, the MDA advised us in a formal letter that they found no compelling basis to permit highly sensitive classified information to be provided for MIT's investigation, again citing risks to national security.

In our correspondence and discussions with the MDA over the next five

months, we explained that scientific integrity is the bedrock principle for all research done at MIT and that it is imperative that we be able to assure the accurate and unbiased nature of such research by carefully and thoroughly investigating any allegation of scientific misconduct. In those discussions we assured the MDA that the relevant classified information would not be compromised by the proposed investigation.

Professor Postol has asserted that an investigation can be done without access to the classified materials. Professor Postol was offered the opportunity to read the final version of the inquiry report, but was told by my office that he would not be given a copy because of his repeated violations of the confidentiality policy. He declined to read the report unless he was allowed to keep a copy of it. Because he has not read the inquiry report, he does not know what issues that report framed for investigation.

I believe that the inquiry report and the POET report, as well as other classified and unclassified materials, are needed to conduct the investigation and therefore resolve fully the issues raised in the inquiry report. MIT continues to work to resolve this matter through the establishment of an investigation committee with access to the documents needed for their work.

Despite our arguments and assurances, the MDA has continued to refuse access to these materials. We are continuing our efforts to obtain permission to allow the investigation committee to have access to the classified materials, in the hope that when all of these considerations are weighed by senior officials of our government, we will be able to find a way for MIT to conduct the investigation, while assuring protection of classified information.

Scientific integrity is the essential standard for all research done at MIT. Any allegation that there has been a deviation from that basic tenet must be taken seriously, and that is what MIT has done and will continue to do in this case. ■

Robert A. Brown is a Professor of Chemical Engineering and Provost (rab@mit.edu).

Teach Talk Strengthening TA Training

Lori Breslow
Cindy Dernay Tervalon

APPROXIMATELY 900 TEACHING assistants – some of them undergraduates, but most of them graduate students – teach every year in the 23 departments at MIT. Many of these TAs have limited or no prior teaching experience, and many receive no formal training before entering the classroom.

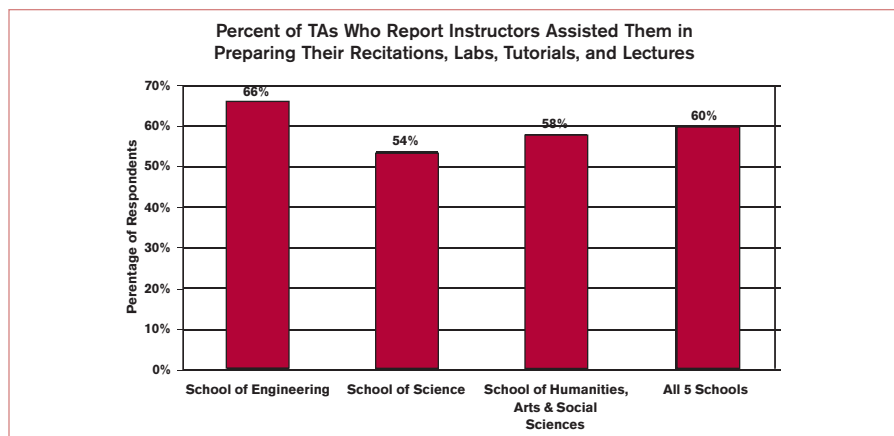
Like many aspects of MIT life, support and training for TAs varies by discipline and department. Some departments, such as Chemistry and Biology, have orientations and on-going support for their TAs. For departments that don't offer such programs, the Graduate Student Office (GSO) and the Teaching and Learning Laboratory (TLL) organize a one-day orientation to the classroom at the beginning of the academic year. TLL also offers one-on-one support to interested TAs, but resources for that service have been limited. Ironically, TA training has become especially important in the last several years, since initiatives to improve undergraduate education at MIT have led to many changes in technology and pedagogy. But because TAs themselves have often been taught in more traditional classroom settings, they may be even less comfortable using these new formats and tools.

How Well are TAs Trained?

Several efforts have been undertaken to assess the difficulties faced by TAs, and how those difficulties impact undergraduate education. In 2002, the undergraduate Student Committee on Educational Policy (SCEP) conducted a survey of undergraduates to assess their level of satisfaction with their TAs. The survey

revealed: 1) students were unhappy with the inconsistency in teaching abilities of the TAs; 2) students were frustrated by discrepancies in what they are told by the instructor and what they are told by the TA; and 3) students were concerned

of support they receive, how they perceive their teaching ability, or whether they believe the level of training made available to them is adequate. Therefore, the committee asked TLL to survey TAs to get a clearer picture of their needs.



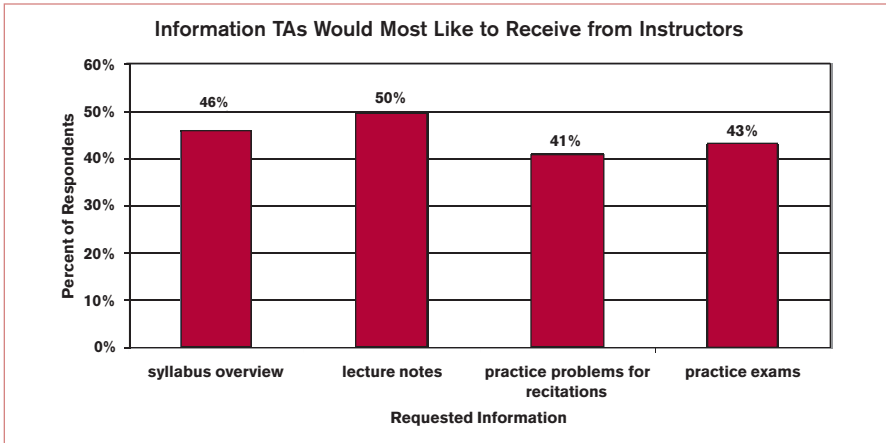
about the inability of some TAs to communicate clearly.

Also in 2002, a committee of faculty, instructional staff, and students was called together by Dean for Undergraduate Education Robert Redwine to discuss how to better prepare TAs for the classroom. Committee members recognized that TAs are already under pressure to balance the demands placed on them to complete coursework, carry out their research, and teach. They realized, too, that support must be sensitive to the TAs' time schedules, create minimal extra work, and be flexible with respect to various disciplines. It was agreed that little information was known, other than through personal conversations and observations, about how TAs themselves feel about the level

Survey Identifies TA Training Needs

The TA survey was conducted in the spring of 2003. Three hundred and seventy-five TAs responded, over one-third of the TA population. The survey asked TAs about their previous teaching experiences, and what types of training and support services had been made available to them. It asked them to rank how effective or helpful the training and/or information had been. Lastly, the TAs were asked what types of training and support services they wanted.

Perhaps the most important finding was that graduate students view the TA experience as an integral part of their education. And perhaps the second most important finding was that "discussions with instructors" is the resource TAs look to first for information about teaching. As



one TA commented in the survey, "...The TA experience hinges on the professor. Not only on how the TA interacts with the professor [but] also on how much support the professor gives the TA..."

Sixty percent of the survey respondents reported the instructor in charge of the course assisted them in preparing for their recitations or labs, and of the TAs who meet regularly with the instructor teaching the subject, almost 65% saw him/her either weekly or semi-weekly. That's the good news. The bad news is that of the information TAs reported needing most from the instructor – lecture notes, syllabus overview, and practice exams – a relatively small percentage actually get that material. Only 38% of the respondents said they received an overview of the syllabus, 31% were given lecture notes, 22% were supplied with instructions for grading, and 21% got practice exams.

Another big obstacle respondents noted was a lack of clear communication between them and the faculty member. They are also frustrated about unrealistic expectations about the amount of work they are supposed to do, and that they received limited or no feedback on their performance throughout the semester. For example, one TA wrote, "...difficulties arose due to lack of communication between instructors, lab instructors, lab directors, and TAs. Each had different expectations of the students and the TAs."

Although respondents felt interactions and clear communication with the instructor were the key component to TA success,

they did identify several ways in which training on how to teach would be helpful. When asked what kind of information they would find most useful, the following four topics were rated "very helpful" or "helpful" most frequently: motivating students (73%); facilitating class discussions (74%); planning recitations, labs, and tutorials (73%); and giving presentations (60%).

Guidance on these topics could be provided by department- or Institute-based workshops, but two-thirds of respondents reported their department currently did not offer teaching workshops. Those who had attended a workshop were evenly divided among those who thought it "very helpful" or "helpful" (33%); "somewhat helpful"

(33%); and "only slightly helpful" or "not helpful at all" (33%). Thus, even when we do provide workshops for the TAs, it is clear we could do a better job with them.

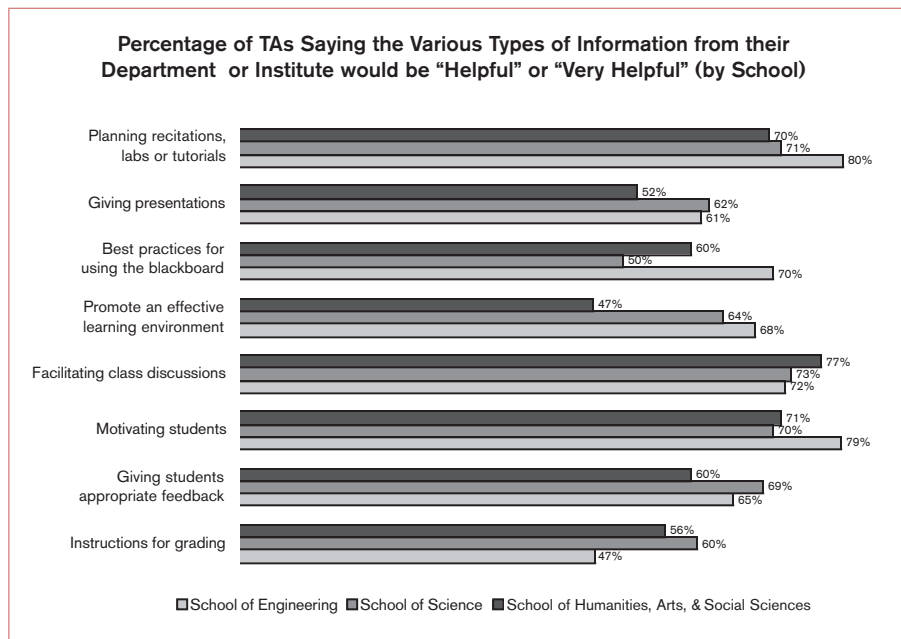
The TAs said having an opportunity to meet with other TAs was also extremely important. Approximately 85% of those surveyed reported they either did not have the opportunity to meet with other TAs in their department, or they did not know if such opportunities existed. The respondents want to be able to learn and get advice from one another, and they said they often feel more comfortable with each other than a faculty member or a teaching consultant.

Finally, 34% of the respondents said their most preferred way of getting information about teaching would be from online resources. Because of the time pressures on them, accessibility to information that is fast and convenient is critical. Online resources are clearly a way to provide information to TAs that can be accessed on an as-needed basis, and at a time that is most convenient for them individually.

Plans to Improve TA Training

Those of us working on TA training recognize both the time restrictions faculty face and the mounting pressures on grad-

continued on next page



Strengthening TA Training

Breslow and Tervalon, from preceding page

uate students to successfully complete research. Therefore, in planning ways to strengthen TA training, we have carefully considered the time limits of the constituents as well as the need to tailor programs and services to the unique characteristics of departments and disciplines. Four new initiatives are in various stages of implementation.

Create/Maintain Department-Based Orientations. There are several advantages to introducing new TAs to their teaching roles in department-based orientations. The chance to meet other TAs and receive information specific to the department is an invaluable first step to creating community and support for graduate students, many of whom will be teaching for the first time. The department-based orientation should couple the opportunity to learn about and practice teaching skills with specifics about instruction in the particular discipline. After this initial introduction, TA peer groups could be established. As the TA survey revealed, creating opportunities for TAs to meet in a social environment to discuss teaching obstacles and strategies for overcoming them is critical.

Modify Institution-Wide Orientation. For departments that don't have the resources to organize a TA orientation, the Institute-wide orientation offered at the start of the academic year will continue. However, based on the feedback from the survey, we hope to modify the program to be more responsive to what the TAs have told us they need guidance on as, for example, motivating students.

Establish a TA Network. Many of the teaching and learning centers at our peer institutions have created networks so that one or more TAs in each department serve as a direct line of communication between TAs in that department and staff in the teaching and learning center. Our colleagues report that these networks are extremely effective in getting resources to TAs when they need them. The addition of a new position in TLL, the Associate Director for Teaching Initiatives, will help us to develop a similar network, as well as increase support for department orientations, enhance the Institute-wide orientation, and strengthen our capacity to work with individual TAs.

Develop Online Materials. TLL is partnering with Columbia University to develop a Web-based tool to help TAs teach better.

The Teaching Assistant Strategy Kit, or TASK, is designed to supply TAs advice on teaching on a just-in-time basis. "Quick Tips" will answer specific questions and give users practical, concrete suggestions for how to teach to enhance learning, interact more effectively with students, and communicate more successfully with course instructors. Videos will demonstrate best practices and strategies to deal with common classroom challenges. "Dig Deeper" sections will afford users the opportunity to read about the research in learning that underpins the recommended tactics and practices, as well as point to more print and electronic resources. Thanks to the support from the Alumni-Sponsored Funds for Teaching and Education Enhancement and alumnus Stephen P. Kaufman (EECS '63), a prototype of the site will be available this summer.

We welcome additional thoughts on and recommendations for strengthening the teaching abilities of the Institute TAs. ■

Lori Breslow is a Senior Lecturer, Sloan School of Management and Director of the Teaching and Learning Laboratory (lrb@mit.edu).
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Faculty Mentor Program: A Growing Success

DAPER'S VARSITY SPORT Faculty Mentor Program, initiated in January 2005, has already seen remarkable growth since its inception. The goal of the program is to promote faculty and student-athlete interaction, by linking each MIT varsity athletics team with a faculty member. The faculty member acts as an advisor and mentor to the athletes on the team, and is available to discuss academic challenges and undergraduate life in general. Seventeen matches have been made thus far, with 15 faculty members participating.

A Faculty Mentor Dinner was held in March, convening current faculty mentors, coaches, and student-athletes. Among the topics discussed were goals of the program and opportunities for interaction between faculty members and athletes. Faculty members shared their experiences with the program thus far, many of them noting that they feel they have benefited personally from the relationship. The program has allowed faculty to get to know students on a more informal basis. One mentor states, "I am happy to talk with them

about anything and everything . . . and host them for hot chocolate at home after practice." This mentor also arranged for a Special Topics Subject based on the team's interests in artificial glaciers.

If you are interested in becoming a faculty mentor, there is still an opportunity to get involved. Several teams are still in need of mentors. If you have any questions about this program, please contact Kari Hebert, Sports Administration Intern, at 4-0391 or khebert@mit.edu. ■

Advising and Mentoring of Undergraduates

J. Mark Schuster
Hazel Sive

TO GET THE MOST from their experiences at MIT, students rely on faculty, staff, and peers for guidance on issues ranging from academics to personal development. In recognition of the importance of providing good guidance, the Institute faculty requested (at its meeting of May 15, 2002) that the Committee on the Undergraduate Program (CUP) and the Committee on Student Life (CSL) undertake a joint effort to consider upperclass undergraduate advising and mentoring at MIT and to make recommendations to the faculty. The results of this joint effort are outlined in a report, which can be found online at: web.mit.edu/committees/cup/advising_and_mentoring.html.

Principles and Recommendations

We quickly realized that, tempting though it is, we cannot simply exhort the faculty to commit more time to advising and mentoring. We are all busy people with multiple and conflicting commitments. Accordingly, our report is built around two principles:

- Advising and mentoring constitute a continuum of interactions among everyone on campus: faculty, university administration, staff, athletic coaches, activity advisors, and students themselves.
- Effective advising and mentoring involves creating a mentoring network for each student.

Informed by these principles, the two committees have focused on making concrete recommendations that would improve the quality of faculty-student interaction, rather than simply adding more meetings. It should be emphasized

that presently there are some excellent upperclass advising practices at MIT, but advising quality across the Institute is variable and, overall, could be significantly strengthened.

The CUP/CSL report lays out broad principles for advising and mentoring, and discusses the roles of faculty in these activities. Recommendations made focus on strengthening the framework that underlies effective advising, including improving departmental support, expanding the program of associate advising, improving advisor training, restructuring registration activities, and smoothing the transition between freshman and departmental advising. (For a sample of the recommendations that have been made, see the accompanying box.)

Among the activities that help us to provide a truly exceptional academic experience for our students are those that incorporate out-of-classroom interaction with others in the university community – particularly faculty. The promotion of a network that includes staff and students notwithstanding, the faculty plays a critical role in advising and mentoring. These activities are fundamental to MIT's educational mission, and we must recognize and reward these activities accordingly. With this report, CUP and CSL hope to highlight conspicuously effective current initiatives and to stimulate changes that will allow best practices to proliferate across the undergraduate programs.

Next Steps

The final version of this report has received the endorsement of the current memberships of both the CUP and CSL. With the Committees' endorsement, the report has been presented to Academic Council, to the Task Force on the Undergraduate Educational Commons,

Recommendations on Advising and Mentoring: A Sample from the CSL/CUP Report

- The major advisor should be assigned at the end of the freshman year.
- The transition from freshman advisor to the major advisor should be improved.
- Effective Undergraduate Offices should be developed and supported in all departments.
- Associate advisor programs should be implemented as part of upperclass advising.
- All members of the mentoring network should be trained.
- The number of advisees should be reasonable.
- The number of meetings between advisees and mentors should be increased, perhaps with a required mid-semester meeting, perhaps during some other specified "advising period."
- Departments should make additional efforts – beyond assigning an academic advisor – to include upperclass majors in the intellectual and social life of the department.
- Our core values with respect to advising and mentoring should be clearly formulated and articulated.
- Students must understand that they have a right to diligent and effective advising and mentoring.
- The importance of advising and mentoring must be recognized by the Institute.

to the Undergraduate Academic Officers, and to the Faculty Policy Committee, which has given its endorsement. The full report was presented to the faculty at the May 18, 2005 meeting. We invite your response to the recommendations of the report and would be particularly interested in hearing about your own advising experiences – good or bad. ■

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Hazel Sive is a Professor of Biology; Chair of the Committee on Student Life (sive@wi.mit.edu).

Mission to Banda Aceh: Excerpts from a Journal

Edward B. Seldin

AMONGST THE NUMEROUS GROUPS that came to the aid of the people of Banda Aceh after the tsunami of December 26, 2004, was a team consisting of U.S. Navy (USN) medical personnel plus several deployments of Project Hope civilian volunteers. This group, assembled from all over the United States, lived and worked on the enormous hospital ship, USNS “Mercy.” The Mercy is one of two sister ships that, in a previous life, were supertankers. Each ship is over 900 feet long, contains a fully equipped, state-of-the-art, tertiary care hospital with 1000 beds, 11 operating rooms, and a helicopter landing deck.

Of the Project Hope volunteers, the largest and most organized block was from the Massachusetts General Hospital (MGH). I had the good fortune to participate in this mission, sent by the MGH. Because the MIT Medical Department kindly consented to let me have a three-week leave of absence to make the trip, I therefore like to think that I represented MIT as well.

When asked to participate, I indicated that, if a younger oral and maxillofacial surgeon – one more actively involved in the treatment of traumatic injuries – could not be found, I would agree to make the trip. Shortly thereafter, still sore from all the required vaccinations, off I went to the Indian Ocean – which our Navy people call the “IO.”

This was the first time, at least since WWII, that a team of civilian health-care providers was paired with a military medical team to engage in a relief mission. As such, it was an experiment. Judging from the efflorescence of e-mail traffic

among participants that immediately followed the mission, it would appear that Project Hope volunteers believe that the pairing was a success. The Government and Navy seem no less interested in this novel paradigm. On its own, without the civilian contingent, the Navy would have had to pillage its on-shore assets and

on all of us that, in delivering care to individual patients, we were also participating in a public relations and geopolitical exercise on a grand scale on behalf the United States. (There was no explicit briefing regarding this aspect of the mission, nor were some of the potential dangers of participation spelled out in advance.)



USNS “Mercy” Steaming off the Coast of Banda Aceh

disrupt the delivery of care to the enormous population they serve in San Diego in order to have fully staffed the Mercy for this mission. If the USN could, in the future, count on a ready supply of volunteers that can deploy rapidly, it would certainly extend the range of their activities of this sort.

Without doubt, the focus of Project Hope volunteers was primarily, if not exclusively, on patient care as a motivation for participation. It would be hard to generalize regarding the level of political awareness on the part of the civilian participants, but I think it eventually dawned

The trip from Boston to Singapore, if you go via San Francisco and Tokyo, takes about 24 hours. The final leg of the journey to Banda Aceh, at the northern extremity of Sumatra, involved an additional three-hour flight in one of those ubiquitous four-prop military transport planes, the C-130. I arrived in Banda Aceh on the 28th of February, my 62nd birthday.

Transport between the Mercy and land was by military helicopter, the doors of which are frequently left open in transit. This affords a great view of the terrain being traversed, especially when the 'copter banks steeply – clearly one of the

delights of flying one of those great, highly maneuverable machines. (We were instructed that having the doors open also makes it that much easier to get out of the 'copter in the event of an emergency

Areas closest to the water were totally decimated; not a stick left standing; foundations of buildings only faintly discernable – Hiroshima or Nagasaki after the bomb, but without radioactivity or human agency.

“landing” over water. Because all the mechanical contrivances necessary for flight are overhead, when in the water, no longer supported by the action of the rotor, helicopters promptly turn upside down and sink like a stone. We were told not to bother trying to help other passengers – just get yourself out quickly and then activate your life vest.) All of this useful information during the sleep-deprived final phases of the trip to the Mercy convinced all of us that we were “not in Kansas any more” – or wherever our points of origination may have been.

On the way out to the Mercy, the pilots made a sweep over the coastline so that we could see, in person, what no images in the media properly conveyed; the extremity and pervasiveness of the devastation wrought by the tsunami.

In a single stroke, a force of nature, with remorseless indifference, totally obliterated an enormous swath of the densely inhabited broad coastal plane that lies between the mountains of Aceh Province and the sea. Areas closest to the water were totally decimated; not a stick left standing; foundations of buildings only faintly discernable – Hiroshima or Nagasaki after the bomb, but without radioactivity or human agency. By degree, moving inland from the ocean, some buildings were left standing, their survival predicated on their size and quality of construction. Some of the most durable structures turned out to be mosques, several of which, surrounded by mountains of debris, appeared to be entirely intact, as seen from the helicopter.

Further inland, surviving structures were surrounded by fields of debris with enormous piles of detritus on the side facing the ocean. The debris, in multiple colors, consisted of boats, automobiles,

portions of houses, tree trunks, household items, mud and buried in all this wreckage – the remains of the former population. There is no way of knowing exactly how many people lost their lives in the tsunami that engulfed Banda Aceh. Perhaps it was 200,000 – or was it closer to 250,000? The obscene imprecision of these numbers is as upsetting as the event itself.

Clearly, there is an inverse square law at work in our appreciation of disasters. From a vantage point halfway around the world, the numbers don't register. From directly overhead, some details start to make an impression. Face to face with sur-

vivors, hearing the stories of individuals, one gets that much closer to an appreciation of the nightmare quality of the tsunami. Julie Gold's wonderful song, “From a Distance” (popularized by Bette Midler) captures what I am trying to say. There is not a single person in Banda Aceh who did not lose a friend, a spouse, a child, a parent, other relatives, or multiples of the above. I think I wanted to be included in this mission in order to be less oblivious as a human being, to bear witness to this particular catastrophe and to meet and perhaps help individual people. I also hoped to experience health care delivery as one likes to imagine it; free of modern encumbrances.

From the medical perspective, the kinds of problems seen after a natural disaster depend upon how soon you arrive on the scene. Relative to those who perished, the survivors of the tsunami were few in number. Of those who survived direct involvement, many had orthopedic injuries and/or a characteristic aspiration pneumonia from inhaling mud and debris, leading, in some instances, to secondary brain abscesses. Such problems were encountered in their early stages by

continued on next page



Debris deposited around a house that survived the tsunami

Mission to Banda Aceh
Seldin, from preceding page

the first responders. The USNS Mercy arrived about a month after the tsunami, by which time most of the acute problems had been dealt with. For a while, it was unclear if an American team comprised of a mix of civilians and Navy people would be allowed by the Indonesian Government to participate in the relief effort. Much to their credit, the posture of the Navy and Project Hope was very low key: "We are here with the USNS Mercy. Tell us how we can be of service." It will be remembered that Bill Clinton broke off

service basis. We saw and treated, for example, many patients with extreme forms of benign tumors that had languished for want of local treatment options, affordable or otherwise.

Given the limited length of time that the Indonesian Government would tolerate a foreign military presence, careful triage and discharge planning were the keys to a successful mission. Nothing could be undertaken without first considering how rapidly a given patient could be made ready to return to shore after treatment. Many heart-rending, treatable cases had to be turned down for want of realistic on-shore prospects for convales-

Many heart-rending, treatable cases had to be turned down for want of realistic on-shore prospects for convalescent and follow-up care. These unusual considerations created a nightmare for those who were responsible for case selection.

relations with Indonesia in the wake of atrocities in East Timor. I suspect that the Indonesian Government may have feared that, if they allowed an official American presence ashore, they might never be able to get us to leave. We were finally allowed ashore and to fly patients to the Mercy for treatment, but the force protection people who came ashore with medical personnel had to be unarmed.

We treated some late sequelae of the tsunami: infected, mal-united fractures and serious complications of pneumonia, but, as anticipated, much of what we saw on board the Mercy had little to do with the tsunami. With the promise of free care available on board an American tertiary-care facility, floating, as if by magic, a few miles off shore, most of the patients seen and treated on the Mercy were drawn from an enormous backlog of local inhabitants with unmet medical needs. In the underserved, impoverished Aceh Province, much of the health care, even before the massive disruption of infrastructure, was only available on a fee-for-

cent and follow-up care. These unusual considerations created a nightmare for those who were responsible for case selection. All of us were faced with the moral dilemma as to whether it would be better for a patient to die as a result of the relentless progression of his or her disease process or whether it would be better for that patient to have an operation, accepting a large measure of uncertainty regarding the durability and longevity of the result in the absence of sophisticated follow-up care. This amounted to making a choice between potential errors of omission versus errors of commission. Despite these inherent limitations, more than 150 major procedures were performed on board the Mercy, while off the coast of Sumatra.

Many of us, in addition to caring for patients on the Mercy, also had the opportunity to participate in care ashore. In my case, I was able to join the general dentists and Navy corpsmen in removing many hundreds of infected teeth for patients who patiently waited in lines for hours to



Children outside the University Hospital in Banda Aceh

be seen in the slowly recovering dental clinic of the University Hospital in Banda Aceh. This was my best opportunity to meet large numbers of local people and it proved to be the most memorable part of the mission. My translator in this clinic, a 23-year-old graphic design student, was in her family's car with several relatives when the tsunami struck. She miraculously escaped through a window and later found herself on the roof of a house. She taught me the one thing I can say in Indonesian: "ma'af," which means, "I'm sorry." This is a fitting thing to say after giving someone a local anesthetic injection; I believe that it was also understood by most of my patients to encompass my feelings about the tsunami itself. This one phrase never failed to provoke a warm smile or a laugh despite everything that my patients had endured and will continue to endure.

There are many lifetimes of useful work to be done in Banda Aceh and so many other places around the globe, including corners of our own country. Upon my return, a friend showed me the latest disposable electronic toothbrush with its own built in battery and motor. It made me queasy to see that object and to consider how much good the United States could do overseas if a more generous portion of our energy and creativity were focused on foreign aid. ■

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MIT Poetry

by Teresa Cader

SUMMER WITHOUT SUMMERING

1~

Peculiar bird call. Gray-haired man stops
Daily to scan the sycamore. To listen.
Some sort of fungus on the leaves.
Huge squirrel nest in the crook.
Let someone else name the call, the infestation.
In the garden at the verdigris table,
We eat grilled shrimp, swat late afternoon bees.
An inlet of peace as twilight narrows its gaze.
Faces soften in amber shadow.
What I've wanted might be this.

2~

Damp mists blow inland, the evergreens
In the yard still drip last night's rain. Thunder
Lurks over the neighbor's roof. Wicker chair,
Tea, a book. Upstairs, my child belts "Country
Roads," her first mezzo solo. I listen
On the porch, imagining a stage. There is hope
In the world of ordinary change, the song
Opening her throat like a hollow reed.

3~

On Long Beach Island mosquito sirens spiraled
Around our ears in firelight, squads of June bugs
Zapped our faces when the wind shifts broke
Across the dunes. Blues ran in silver streaks.
My father dug his heels into the shore, surf-fished
Between rip tide channels. Night swallowed
Sight, moonless, cold. I sit in the hot tub tonight
Watching stars cascade like fizzled fireworks.
They were God to me on that deserted shore,
A faint display of indifferent light.

4~

We had no pool to swim in, no cabin to rent, no walks
In the forest of Cologne. Mushrooms were our habitat
In Polish Pittsfield, fried straight from the woods, mixed
With seasoned eggs. This summer I'm cooking soups,
Fish in sauce. We grilled scrod on Martha's Vineyard
The summer before my friend killed herself. It fell apart
On the grate, a white hash. I love the riffs of oak leaves
Tonight, wafting in and out of windows. I love the reprieve.

SLAVE HUTS, BONAIRE

Maker, modeler, bearer, begetter

In cospes of oleander, in cactus shade,

Among squid, flounder, sea cucumber, coral,
They mar the sea, the white sand.

On a slender shore, mud huts the size
Of my daughter's playhouse

With doors at waist level and one window
Housed five African men on the floor

After they harvested salt by hand all day
In evaporation salt pans, free Saturday nights

To walk barefoot seven hours to Rincon
In the green hills, then back by Monday.

The obelisks signaled, *Drop them off here,*
As Dutch traders sipped rum on the deck.

Maker, modeler, bearer, begetter

Four flamingos perch one-legged

In an irrigation ditch, as trade winds
Lift white wisps from the salt mountains.

A Toyota scurries by to catch the sunset at Pink Beach.
The company cranes are hauled up for the night.

Maker, modeler, bearer, begetter

This is who we are, whom you created.

Teresa Cader has received awards and fellowships from the National Endowment for the Arts, the Bunting Institute at Radcliffe, the Poetry Society of America and the Massachusetts Cultural Council. She taught in the MIT Literature Section in 1998-99 and has published two books of poems, *Guests* (1991) and *The Paper Wasp* (1999).

The Purpose of Poetry

John Hildebidle

IN ALAN LIGHTMAN'S NOVEL *Reunion*, the protagonist, a sometime poet and avid fan of Emily Dickinson, meets the mysterious aunt of his lover. The aunt rather gruffly accounts both poetry and dance (the lover is a ballerina) as “useless.” Then she backtracks a bit, and proposes that “uselessness” is not a vice.

However, at a place like MIT, governed as it is by results and products, the apparent “pointlessness” of poetry is a terrible stigma. In a sense, I share it – boarding a jetliner, I don't much care whether the designer has an informed knowledge of, say, the work of Robert Frost. But having spent my MIT career teaching undergraduate how to read poems with passion, attention, and informed analytic understanding, I cannot altogether avoid the question that is my title here.

It is an old question. Plato banned poets from his Republic because they concocted imagined worlds. Sir Philip Sidney was prompted to compose a renowned “Defense of Poesy” because some of his fundamentalist contemporaries converted that accusation to one of falsehood. By “poesy” Sidney meant more than just verse, but his effort remains relevant.

What possible use is there for poetry? In a world in which we have too many tasks and too little time, how can anyone defend the reading and/or writing of verse as an endeavor. There is one defense by way of a Pleasure Principal – the American poet William Carlos Williams was given to insisting, at his readings, “If it ain't a pleasure, it ain't a poem.” But Hedonism seems a slender reed, to say the least.

In one of his poems, Williams formulated the matter this way:

*It is difficult
to get the news from poems
yet men die miserably every day
for lack*

of what is found there.

Lest we think that Williams is some sort of air-headed Pollyanna, we need to recall that he was, for his entire adult life, a working physician, among the poor immigrant communities of Northern New Jersey. He knew quite well, in a diagnostic sense, what caused men and women to die miserably. We can hardly object to Williams' admission that poems are a bad source of news; but, enigmatically, he still stands by the declaration that there is something fundamental and life-giving to be found in them.

The contemporary poet Adrienne Rich, in a collection of essays which takes its title from Williams' polemical assertion, and which to some degree attempts to define that “something” about which Williams is so vague, puts it this way:

Poetry wrenches around our ideas about our lives . . . Poetry will always pick a quarrel with the found place, the refuge, the sanctuary . . . Even though the poet, a human being with many anxious fears, might want just to rest, acclimate, adjust, become naturalized, learn to write in a new landscape, a new language, poetry will go on harassing the poet until, and unless, it is driven away.

It will come as no surprise that Rich is fond of Emily Dickinson, a quarrelsome and unsettling poet from start to finish.

I had a student once who asked, rather shyly, whether it was still acceptable to turn to poetry for “wisdom.” If wisdom = consolation, Rich would loudly answer in the negative. I have myself written a short essay (you can find it on my Website, dutchiamb) arguing that the unsettling aspect of poetry is central, that what poetry most persistently wants to do is alter our whole perception of the world. But not everyone has these perverse views. Consider the poet Jane Cooper, who offers a more healing perspective:

We are not separate. And the work for all of us must begin, I think, with the stripping down of words, with listening, with acknowledging our fear, with getting back to origins, with learning to live, however perilously, in this moment, for it is our only life. Poems are moments of the most acute consciousness. Through them we recognize the now and here, and yet we enter into a dialogue with history and otherness. Poems are made in solitude, but they move toward connectedness.

That leaves hard work, and risk, and discomfort, but at least it offers connectedness as a reward. Seamus Heaney, the Irish Nobel laureate, speaks of the “redress” which poetry provides:

In the activity of poetry . . . there is a tendency to place a counter-reality in the scales, a reality which can only be imagined but which nevertheless has weight because it is imagined within the gravitational pull

of the actual. Poetry has to be a working model of inclusive consciousness. It should not simplify. . . . Poetry can make an order as true to the impact of external reality and as sensitive to the inner laws of the poet's nature as the ripples that rippled in and rippled out across the surface of the water [in a scullery bucket Heaney recalls from his farm childhood].

It is striking to hear a poet try to mobilize the language of physics, although it must be noted that in the end he falls back on memory and metaphor.

The late American poet, Audre Lorde, wrote an essay which has a polemical title – “Poetry is not a luxury.” She defends that proposition thus:

The quality of light by which we scrutinize our lives has direct bearing on the product which we live, and the changes which we hope to bring about through those lives. It is within this light that we form those ideas by

which we pursue our magic and make it realized. . . . [I]t is through poetry that we give name to those ideas which are – until the poem – nameless and formless, . . . but already felt . . . If what we need to dream, to move our spirits most deeply and directly toward and through promise, is discounted as a luxury, then we give up the core – the fountain – of our power, . . . we give up the future of our worlds.

We have accumulated quite a package of answers to the issue with which we began – greater attention, deeper understanding (especially self-understanding), the possibility of transformation and action: all this from “what is found” or put there in a poem. The recent American poet laureate, Robert Pinsky, offers a more simple explanation of the “point” of poetry: we are hard-wired that way:

I presume that the technology of poetry . . . evolved for specific uses: to hold things in

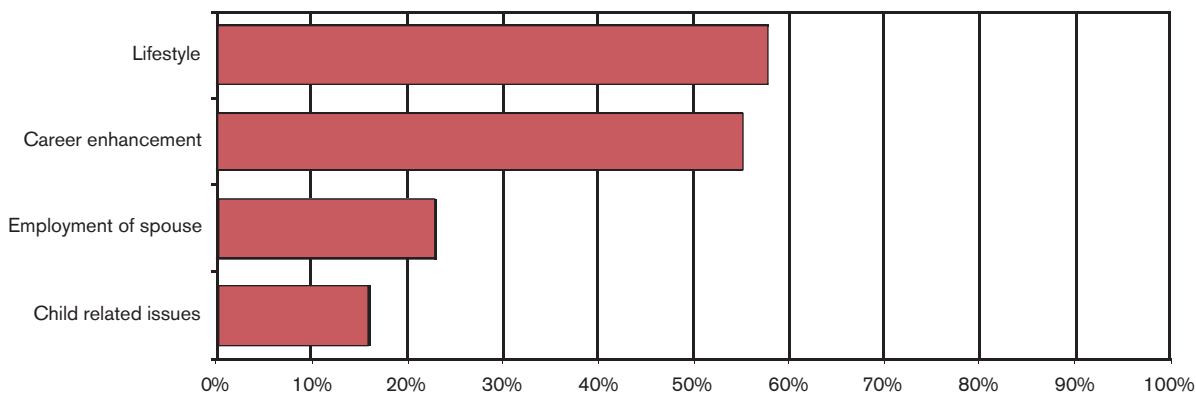
memory, both within and beyond the individual life span; to achieve intensity and sensuous appeal; to express feelings rapidly and memorably. To share those feelings and ideas with companions, and also with the head and with those to come after us.

Why are there poets? Don't blame professors or prize competitions or Hallmark Cards – it's all a matter of evolution. If you look carefully at Pinsky's formulation, however, you see the same terms – connectedness, both within and beyond individual lifespans, the naming of complex ideas. To which he adds two more crucial elements – *intensity* and *sensuous appeal*. It is a hard but essential truth: good poetry (much less great poetry) cannot be read quickly, but it should always provide some variety of pleasure. ■

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M.I.T. Numbers

Have you ever considered leaving MIT for the following reasons? (% Yes) [from the 2004 Faculty Survey]



Source: Office of the Provost, Institutional Research

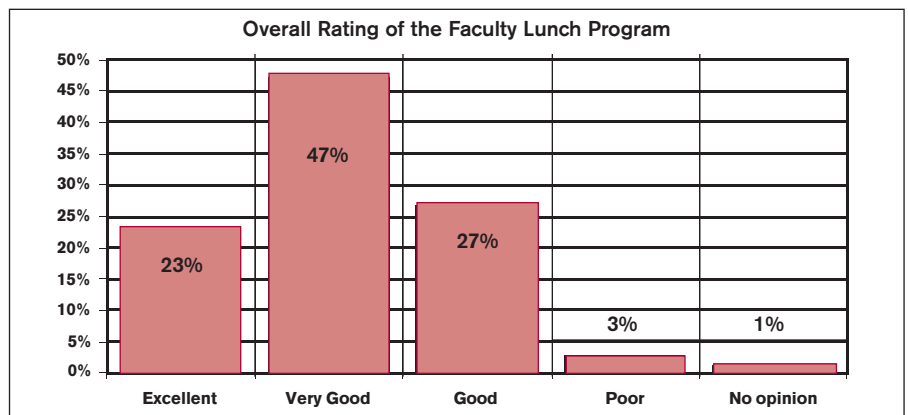
Survey Says: Faculty Approve Updated Lunch Program

Lydia Snover

ABOUT 10 YEARS AGO, the Faculty Lunch program was established for faculty, senior research, and instructional staff. The program is intended to provide a collegial environment that will promote informal interactions between members of the faculty outside traditional departmental and research boundaries. In September, the Faculty Lunch program was relocated from Walker to the fourth floor of the Stata Center. This past winter, the Provost asked a small group of faculty and staff to evaluate the current operation and, if need be, make recommendations for improvement.

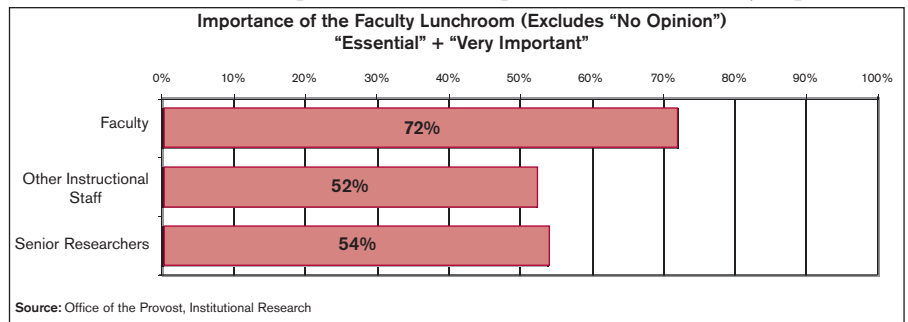
In order to facilitate this evaluation, the committee constructed a short survey that included questions for people who have not participated in the Faculty Lunch program as well as those that had participated. The survey was administered in the spring of 2005 by the Institutional Research Group on behalf of the committee. All faculty, instructional staff, senior researchers, and faculty emeritus were invited to complete the survey online; slightly more than 51% of those invited to respond completed it. Of those that responded, 68% had participated in the faculty lunch program at the Stata Center. Of the individuals who had not been to the Stata Center location, almost 40% did not know it existed. But of those people who had been to Stata, only 15% had only been once.

Although the faculty lunch program is intended to serve faculty, senior research, and instructional staff, individuals are welcome to bring guests. Of the people who had participated, 57% reported that they had brought a guest, including non-faculty col-



leagues (58%), graduate students (41%), visitors (69%), and friends and spouses (26%).

faculty lunch program. Overall 65% of the respondents said it was very important or



Overall, almost 70% of the individuals who had participated in the Faculty Lunch program rated it very good or excellent, and 56% rated their ability to interact with other faculty at the Stata center as very good to excellent. The survey asked a series of questions about other aspects of the program, including food, hours of operation, and environment. The data on these questions will be used to evaluate the program and plan for improvements.

The final question on the survey asked how important it was to maintain the

essential and only 3.4% said it was unimportant. Of the tenured and tenure track faculty who responded, over 70% rated it as essential or very important.

In addition to the quantitative ratings gathered through the survey, many participants provided qualitative comments. These comments, along with analysis, have been provided to the committee as part of their evaluation of the Faculty Lunch program. ■

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International Students and Scholars
 Gast, from page 1

This student was followed by a steady stream of students from across the globe throughout the nineteenth century. By 1900, some 50 students had traveled to Massachusetts for study; however, the numbers of international students only really began to grow after the Second World War, when an influx of students began in earnest, as shown in Figure 1. The rapid rise of international students from East Asia, led by China, changed the demographics of this group beginning in the 1950s. The change in immigration law in 1965 opened up the doors to a steadily rising influx of international talent.

World events and political decisions have always had a strong impact on immigration. We see this in MIT's international student population as well (Figure 1). World wars curtail the flow of students while peacetime pressures, such as changing immigration laws (1965), the demise of the iron curtain (Figure 2, next page), the Vietnam War protests (1968), and the Asian financial crisis (1997), cause their respective ebbs and surges.

The "Best and Brightest" International Students – Global Contributors

The United States has been the destination of choice for international students

Two Notable International MIT Alumni from the Nineteenth Century

Louis Francisco Verges – Puerto Rico
BA – Civil Engineering – 1891

Upon graduation, Verges returned to Puerto Rico to work with his father to improve the sugar industry in their country. Louis Verges was responsible for the introduction of modern methods of evaporation and chemical control, and is generally credited with the revitalization of the sugar industry in Puerto Rico.

Baron Takuma Dan – Japan
BA – Mining Engineering – 1878

After receiving his degree in Mining Engineering, Dan returned to Japan, where he first became the technical officer at the Japanese Government Meteorological Observatory, and then the director of the Miike coal mine. When the mine was purchased by the Mitsui Company, Dan began a career with Mitsui, moving from engineer to the managing director of the vast Mitsui commercial interests. Dan was a leader in improving commercial relations between Japan and the United States.

and scholars for the past 50 years. Just as MIT's experience shows, the number of foreign students has risen steadily since the 1970s, and last year, according to the Institute for International Education, there were more than 500,000 international students enrolled in U.S. colleges and universities (see www.opendoors.iienetwork.org).

One might ask what becomes of the international students we recruit and train. We are aware of the great contributions immigrants make to our culture and the leadership roles those who are educated in the United States often assume. Our current visa system is predicated on applicants demonstrating that they have

no "intent to immigrate." Thus, officially we want them to come here, pursue their studies, and then to return to their home country. This appears to have some merit if one holds the view that to remain in this country, these highly educated immigrants would compete for jobs with domestic candidates. It is also true, however, that those who remain in the U.S. contribute greatly to our community, our economy, and our science and technological leadership.

Many of our international graduates return to their home country. While they are not directly contributing to our economy, in today's global environment the alumni are contributing to our economies and those of others both directly and indirectly. In addition, those who return and gain positions of leadership are more likely to share our values and to try to emulate our technical and business structures. This level of diplomacy may be far more important than we can imagine.

Those who stay

The United States has always and will continue to gain strength and leadership in science and technology from its immigrants. A growing fraction of the U.S. engineering faculty is foreign born, and greater than one-third of the Nobel Laureates we claim were born elsewhere (see www.nobel.se/index.html).

continued on next page

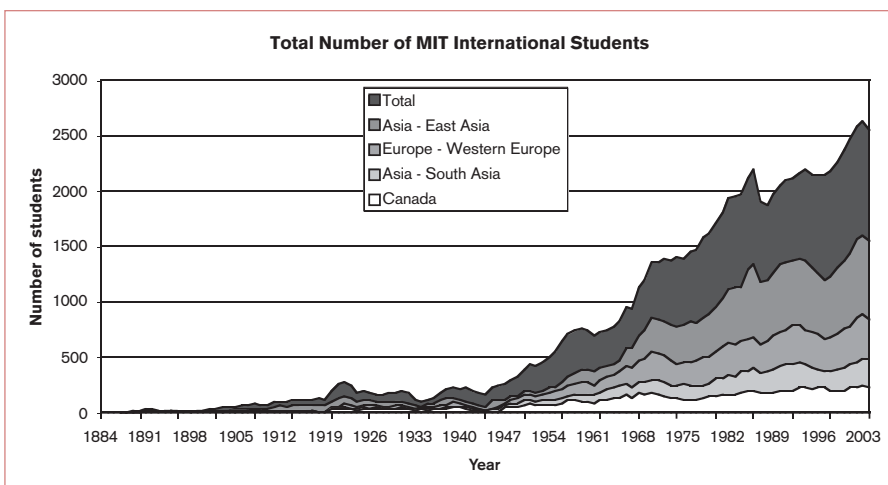


Figure 1. MIT's international student population over the past 120 years, highlighting those from Europe, Canada, and Asia. East Asia includes: China, Japan, Korea, Mongolia, Bhutan; South Asia includes: India, Pakistan, Nepal, Bangladesh, Sri Lanka. These data are stacked to highlight the ebbs and flows from different regions over time.

International Students and Scholar
Gast, from preceeding page

International students often go on to leadership positions in large and small companies. It becomes apparent that we attract not only the “best and brightest” students to travel abroad for study, but perhaps we also attract those more inclined to be “risk takers” who end up in leadership positions in academia, industry, and entrepreneurial activities. These innovative individuals thrive in the American system of research, education, and venture support. As one measure of their innovation, MIT has seen a rapidly increasing number of patent disclosures having at least one inventor from among our international student and scholar community.

As the distribution of international students changes, so does the rate with which they choose to remain and pursue a career in this country. Tracking income tax records, Michael G. Finn has shown that the number of doctoral recipients remaining in the U.S. two years after receiving their degree has increased from 49 percent in 1989 to 71 percent in 2001. (See Michael G. Finn, “Stay Rates of foreign doctorate recipients from US universities, 2001,” National Science Foundation, November 2003.) Electrical engineering, computer science, and the physical sciences had the highest fraction of international students remaining after graduation and those most likely to remain here come from China (96 percent) and India (86 percent). We do not know the stay rates beyond two years, since 2001, nor for postdoctoral scholars. It is clear that many international graduates become more global citizens going on to mobile careers abroad, in their own countries, or in another country.

Those who return home

Many international students choose to return to their home country and there they use their talents as leaders in many areas of government, industry, and academe-

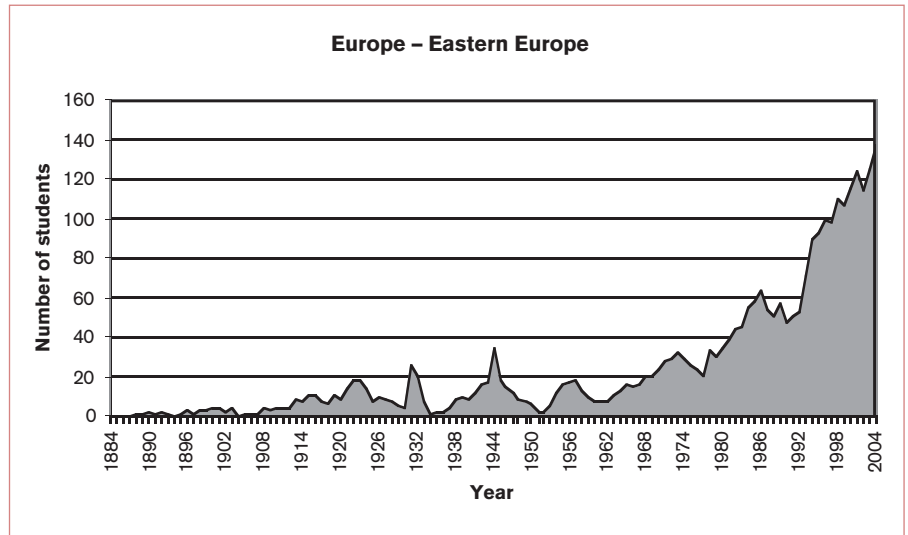


Figure 2. MIT's International Students from Eastern Europe. Note the increase since the fall of the Berlin Wall. (Eastern Europe includes: Belarus, Russia, Ukraine, Cyprus, Turkey, USSR (Union of Soviet Socialist Republics).)

mia. In addition to their formal education, these alumni retain strong attachments and identification with their alma mater. Their ease with our traditions, culture, and values is widely regarded as an important facet in their relationship with our country. Generally, those who have lived abroad and experienced another culture have a higher respect for those from different countries. One's perspective on world events is forever changed by viewing them from another part of the globe. The U.S. State Department maintains a Website showing the tremendous leaders who have received part of their training in the U.S. as international students. (See “Foreign Students Yesterday, World Leaders Today” exchanges.state.gov/education/educationusa/leaders.htm.)

MIT is proud of the many influential alumni who have returned to their native land to improve the quality of life there and enhance productive international relations. Two such individuals from the twentieth century are highlighted in the sidebar, next page.

The network of academic influence should also not be overlooked. As talented individuals receive their education in the U.S. and return to teach in their home country, these faculty colleagues then send

their best and brightest back to their alma mater, providing important connections to lead the most talented students to the U.S. In MIT's alumni database we find that over 1000 of our alumni are working in higher education abroad. Thus, our educational influence is magnified when one considers the production of professors who in turn educate further generations.

Maintaining the Balance - Threats to Our Ability to Attract International Students

We face a challenging task of balancing our national security interests with promoting the valuable exchanges we have with international students, scholars, and visitors. In the past few years, we have seen the significant effects of U.S. immigration policy on the time and effort it takes to obtain a visa for study or research in the U.S. The implementation of the SEVIS system to regularize the information we maintain about international students and scholars has improved many aspects of the process, although ensuring the accuracy and reliability of those records is critical to avoid jeopardizing students' status.

Some aspects of the visa granting process have improved, with the State Department putting international students and scholars at the head of the

queue for the now mandatory interviews; and the "Visa Mantis" security clearance processing time is improving to the point where over 85 percent are completed within 30 days. There are also recent proposals to extend the term of the visa to be more commensurate with the term of study. Despite this progress, there remains a disquieting sense that the U.S. has become less hospitable to international visitors. The specter of students, postdoctoral scholars, and faculty stranded abroad while they are reevaluated for their visa may cast a shadow that will be difficult to dispel.

The perception that the international student immigration process is too capricious and too onerous may degrade our ability to attract the talented students to which we have become accustomed. Meanwhile, we see increased competition for international students.

Anecdotes abound of our allies benefiting from the challenges our international students face. Each European leader who visits MIT mentions that the U.S. problem with student visas is to their

Each European leader who visits MIT mentions that the U.S. problem with student visas is to their benefit.

benefit. (And the competition is not just from Europe.) In 2003, international student enrollments in Australia grew nearly 11 percent compared to the previous year. During 2003, there were a total of 303,324 enrollments of international students in Australia primarily from Asia. (For a summary of international student enrollment trends in Australia, see aei.dest.gov.au/general/Stats/StudentVisaData/RecentAnnualData/RecentData.htm).

We continue to seek improvements in both the processes and the perceptions of the U.S. as a welcoming destination. Several issues come to mind:

- Consular officers and port-of-entry officers need to have sufficient support

International Students Yesterday, Entrepreneurs Today

Kenan Sahin, Turkey

SB 1963, MIT PhD 1969

Dr. Sahin is founder of Kenan Systems, which developed one of the key productivity advances in computer software, and provides software products for business management and decision support to single- and multi-service communications and energy companies worldwide. Kenan Systems was merged into Lucent Technologies and Dr. Sahin served as Vice President for Software Technologies at Lucent. Dr. Sahin is the founder and president of TIAX LLC.

Gururaj "Desh" Deshpande, India

BS Indian Institute Technology, ME Univ. New Brunswick, PhD Queens University, Canada

Dr. Deshpande is co-founder and chairman of Sycamore Networks, Inc. Sycamore is transforming our optical infrastructure into an intelligent and dynamic network foundation for the delivery of new services. Sycamore's equipment carries voice and data traffic in the networks of the world's largest service providers. Dr. Deshpande serves as a member of the MIT Corporation. He and his wife recently established the Deshpande Center for Technological Innovation with a \$20M gift to MIT.

and training to provide consistent decisions. They need access to reliable and accurate SEVIS data for these decisions.

- We waste valuable and scarce consular resources on repetitive processing of visa applications for those with a proven track record. Repetitive security checks and inefficient visa-renewal processes

MIT, the United States, and the rest of the world, now and in the future. There are numerous examples of influential people who, at one stage of their career, were international students in the U.S. We have much to lose if we make this talented community feel unwelcome or unable to study here. Hopefully we will not lose sight of the great strength and global security that comes from the free exchange of students and colleagues from abroad.

We will remain vigilant in our efforts to help improve immigration policy and processes. We will also continue to provide excellent service to our international community through our International Students and International Scholars offices. We may find ourselves in a new era where we must compete more directly with schools here and abroad to attract and recruit international students and scholars. Certainly MIT is ready to rise to this challenge and remain the premium destination for education and research for students within and beyond our borders. ■

cause lengthy visa issuance delays. Security clearances should persist for the duration of study unless significant changes have been made.

- Problems with the data in SEVIS severely undermine both the student's situation and the security we aim to provide.

A recent study by the National Academies (www.nap.edu/books/0309096138/ntml) provides a detailed analysis of the issues surrounding current immigration policies and the increasing competition for international students.

Summary

Clearly our international student and scholar community has much to offer

Alice P. Gast is a Professor of Chemical Engineering, Vice President for Research, and Associate Provost (gast@mit.edu).

Alumni Attitudes and Involvement

Elizabeth Garvin

THIS SPRING HAS SEEN an incredible level of involvement from alumni at MIT. Alumni have turned out in record numbers to meet President Hockfield, the Alumni Fund is on a record pace in both number of donors and total dollars, and the online usage of the Infinite Connection Website (alum.mit.edu) greatly exceeds that of any other alumni association. Is this level of involvement sustainable? The data suggests that it is, and that alumni involvement and financial support will continue to grow. And this is positive news for faculty, who rely on these resources to keep MIT in the forefront.

Last spring, the Alumni Association commissioned a survey to take a fresh look at alumni attitudes about MIT and alumni services. This was part of an overall focus in recent years, encouraged by the Board of the Alumni Association, to develop a robust set of metrics to measure the effectiveness of Association programs. We had a good sense of alumni interests and experiences from conversations and correspondence with alumni from all classes and courses, from all across the world. We had an increasingly sophisticated set of measures and evaluation tools. But we were overdue in asking alumni a comprehensive set of questions to verify or challenge our assumptions about underlying attitudes.

What do alumni think of MIT?

The 2004 Alumni Opinion Survey, conducted by Opinion Dynamics Corporation, measured attitudes about the Institute, the Alumni Association, and giving. There is much good news to report. Attitudes toward MIT are gener-

ally positive, alumni are responding to communications from MIT, and the already strong alumni giving shows great potential for growth.

As faculty, you know that the MIT experience is intense and while many students emerge exhilarated, some feel like toast. In fact, 70% of alumni have either very warm or warm feelings about the Institute. When asked an open-ended question “Is there anything specific you feel is good about MIT today?” the alumni cited good education/high standards (24%), over a tenth noted their pride in MIT, 15% noted MIT’s good reputation, and 11% said MIT’s science and technology efforts made them proud. When asked about what’s not so good, 60% replied either “not applicable” or nothing. For those who identified negative aspects, 7% named fraternities/living group issues; 5% said alumni services/communication; and 5% cited quality of life. There are clearly still some residual issues about changes in the FSILG system – 22% of former fraternity members think that the “fraternity issue” is a particularly bad aspect of MIT.

What alumni services are important?

A remarkable 94% of alumni report that they read *Technology Review* in the past year. The second most popular activity, at 74%, is visiting an MIT Website. Some 36% had attended a reunion or a local alumni function; 21% had volunteered in their local club, affinity group, on reunions, or as an educational counselor. In fact, more than 7,000 alumni are engaged as volunteers annually in Association groups, events, and activities.

Most satisfying to us is that alumni feel connected and the overall view of Alumni Association activities is positive. 52% feel very well informed about MIT and 42% feel somewhat well informed. In a series of questions asking what services were most important and what services the Association performed well, there were very high correlations between those considered highly important and those we performed well. The survey confirmed that our multi-year effort to focus resources and energies on Web services was indeed the right strategy – e-mail forwarding for life, an online alumni directory, and other online services that we market as part of the Infinite Connection enjoy enormous use and are highly valued. We knew the usage was high: the Alumni Association Websites receive over half-a-million hits monthly from 40,000 unique visitors, and the e-mail forwarding for life service is currently forwarding nearly 15 million messages monthly.

Not surprisingly, there are some generational differences in opinion. Only 50% of alumni graduated pre-1969 has visited an MIT Website. A whopping 94% of graduates since 1987 have visited MIT online.

Why does it matter?

Having strong alumni support matters to all of us. Alumni who believe in MIT’s values and commitment to excellence are advocates for the Institute. They influence the next generation of prospective students, they commit time and energy to activities connecting alumni around the world, and they provide increasingly important financial support.

In the recent capital campaign, alumni donated 53% of the \$2 billion raised. Although only 54% of alumni contributed to the campaign, 67% of alumni have donated to MIT over time. Survey data shows that we have opportunities to expand this support significantly over time, both in the number of donors and the size of their donations. The Alumni Fund, which counts alumni donations (up to the first \$100,000 of any individual gift), raised \$31.5 million in FY04, an increase of 7% over FY03. If you remove the \$100,000 cap, gifts from alumni donors totaled \$109.6 million. Alumni giving provides essential resources for innovative education and research, as well as providing substantial support for scholarships, fellowships, and unrestricted funds.

So, MIT's relationship to alumni matters in multiple dimensions.

Moving forward

The Association continues to refine programs, pilot new activities like our recent Women's Leadership Conference, and develop new ways to engage alumni online. One of the most exciting accomplishments of recent years has been our ability to expand the number of faculty presentations to alumni around the world.

Alumni are less interested in nostalgic views of MIT than they are in new and exciting research and education at MIT. We

Our Alumni

Alumni Faculty Facts

36.8% of MIT faculty hold an MIT degree
3.0% hold undergraduate degrees only
22.1% hold graduate degrees only
11.6% hold both

Alumni Snapshot

115,382 living alumni
102,245 alumni with known addresses
70,315 with e-mail addresses
17% are female
52% have undergraduate degrees
13.2% are international alumni

Following Their Fields?

56% work in their MIT field
49% majored in engineering
20% work in engineering
13% majored in management
19% work in management
14% work in education fields

are incredibly grateful that 15% of the MIT faculty are part of Alumni Association efforts to share knowledge and insights with alumni worldwide. This partnership makes a tangible connection between the Institute's research and education and alumni lives, careers, and priorities.

There are many ways for faculty to connect. Some faculty host MIT Alumni Travel Programs, like the peripatetic Jay Keyser, who will host his 11th alumni expedition with a trip to Tahiti next spring. Others speak at club events, like Neil Gershenfeld's April presentation at

the Club of Puget Sound on how the content of information relates to its physical representation. Dedicated faculty like Professors Lotte Bailyn, Margery Resnick HM, Adèle Naudé Santos, Dava Newman AA '89, and Mary-Lou Pardue spoke at the Association's first Women's Leadership Conference April 30th. This year Technology Day, the intellectual centerpiece of reunions, focuses on bioengineering with talks by Douglas Lauffenburger, Linda Griffith, Angela Belcher, Ram Sasisekharan, and Martha Gray HS '86. Not only are these events valued by alumni, they give faculty a fresh opportunity to share ideas on multidisciplinary panels. When I meet with alumni around the world, faculty lectures are the club highlights they recount.

The Association's effectiveness is due largely to a terrific partnership with alumni volunteers who help identify trends, set strategy, and serve as advisors. A number of alumni faculty have served on Association boards and ad hoc committees, providing an essential link to the realities of MIT today.

We hope to find many ways to encourage faculty participation in alumni activities and welcome your suggestions and questions. For a full sense of Alumni Association activities, browse our Website: alum.mit.edu. ■

Elizabeth Garvin is the Executive Vice President and CEO of the Alumni Association (rgarvin@mit.edu).

Launch of New "Giving to MIT" Website

A COLLABORATION BETWEEN Resource Development and the Alumni Association, with technical support by Web Communications Services, has resulted in the launch of the new Giving to MIT Website (giving.mit.edu).

Many enhancements have been added to improve the experience of visitors to

the site, according to Barbara Stowe (Resource Development) and Beth Garvin (the Alumni Association). Improvements include:

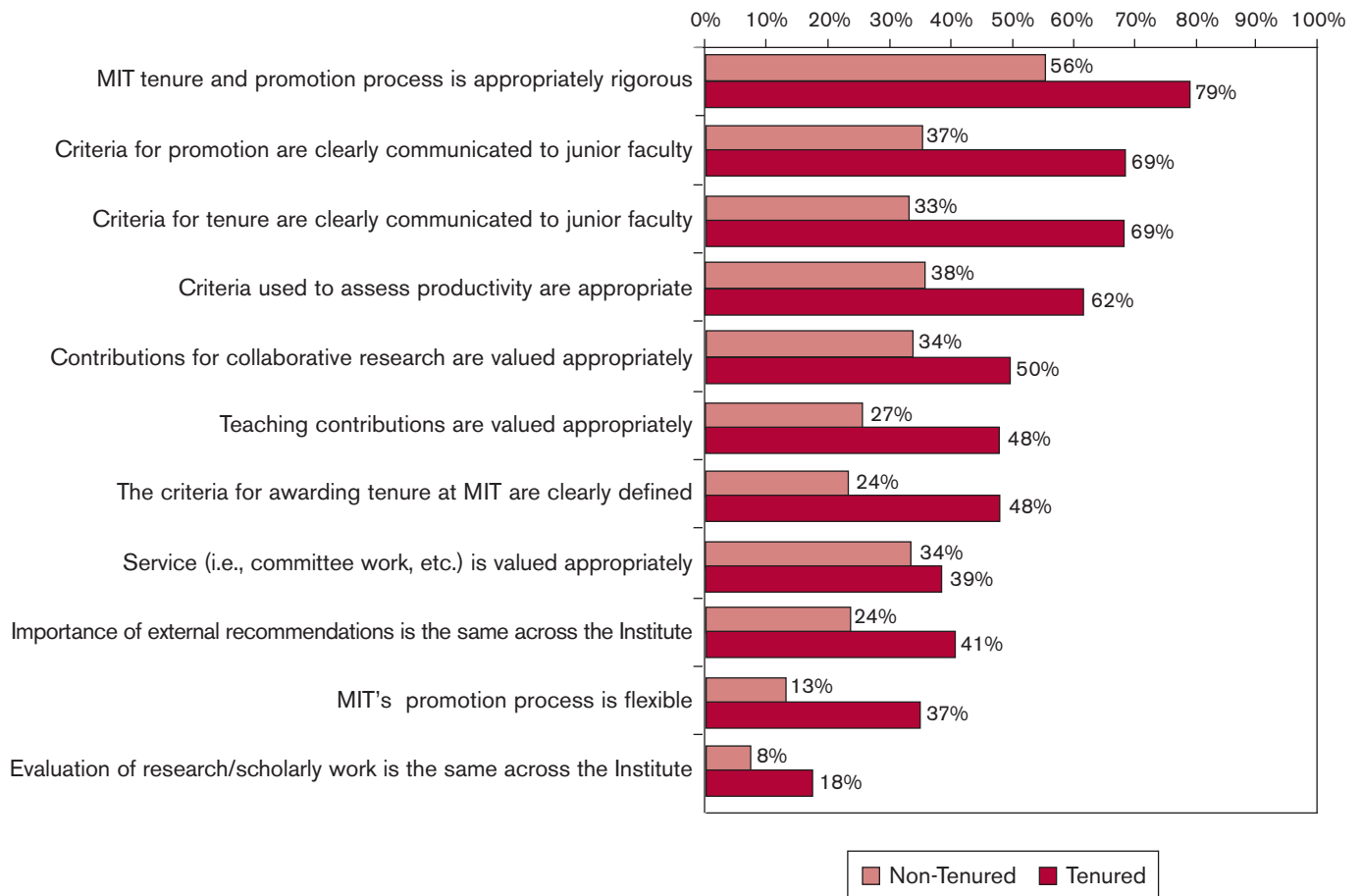
- More ways to search and browse
- A new FAQ section
- A Glossary of Terms

The site makes a compelling case for supporting MIT's priorities, and includes quotes and cameos that highlight the impact of gifts to the Institute.

It's hoped that the sign will serve as both a helpful tool for potential donors, as well as a resource for those at the Institute. ■

M.I.T. Numbers

Tenure and Promotion: Percent Who Somewhat or Strongly Agree (by Tenure Status) [from the 2004 Faculty Survey]



Source: Office of the Provost, Institutional Research