

MIT Faculty Newsletter

<http://web.mit.edu/fnl>

this issue features commentary on the new MIT Energy Initiative (page 6); an update from the Task Force on the Undergraduate Educational Commons (page 9); “Some Thoughts on the Arts” by Alan Brody (page 12); two views on the “Visualizing Cultures” incident (beginning page 18); and a “Modest Proposal” for a student dental insurance plan (page 21).



Meritocracy and a Diverse Faculty

L. Rafael Reif

IN OUR LAST *Faculty Newsletter* (March/April 2006), our colleague and co-chair of MIT’s Faculty Diversity Council, Professor Nancy Hopkins, wrote an illuminating article entitled “Diversification of a University Faculty: Observations on Hiring Women Faculty in the Schools of Science and Engineering at MIT.” Subsequently, both Professor Hopkins and the managing editor of the *Newsletter*, David Lewis, asked me whether I would be willing to write a response or follow-up piece, and I am happy to do so.

Let me start by stating the obvious: Professor Hopkins did an outstanding job of focusing our attention on the data and the important conclusion that, while there has been substantial progress at MIT, it has not been uniform, it is not sustainable without constant vigilance, and it is simply not enough. We must recognize the situation, understand the causes, and chart a stronger path. We are indebted to Professor Hopkins for her work on an issue that continues to deserve our unwavering attention.

We need a faculty drawn from the best talent. For a university that prides itself on being a meritocracy, this requires us to reach beyond the traditional ways of identifying and recruiting faculty. When we do this successfully, we can achieve a more diverse

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A Brief History and Workings of the MIT Corporation

Dana G. Mead

THE MIT CORPORATION is the Institute’s governing body or board of trustees. What does the MIT Corporation do? A former President of MIT opined for me recently: “It has a single mission – to support the President, faculty, and staff in their work to assure MIT’s continued excellence in research and education.” Aptly put, and surely the most apparent of its purposes, but in a complicated world, the Corporation and its Executive Committee also hold a public trust to assure that the Institute adheres to the purposes of its charter and that its integrity and financial resources are preserved for future generations as well as for current purposes. In carrying out its broader mission, the Corporation and its Executive Committee oversee the Institute’s strategic direction, approve the annual budget, exercise long-term fiduciary responsibility and asset management (the endowment, pension funds, debt and capital plant), approve all degrees granted by the Institute and, probably most importantly, elect the President and the other officers of the Corporation (the Chairman, Treasurer, and Secretary).

MIT is a dynamic and complex place and its governance is correspondingly complex. The purpose of this article is to describe the membership of the Corporation, the committees of the

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Subscriptions

\$15/year on campus

\$20/year off campus

Vol. XVIII No. 5

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Committees of the Faculty: An End-of-Year Recap

Lorna J. Gibson

IN THIS LAST NEWSLETTER for the semester, I would like to summarize some of the main accomplishments of the standing committees of the faculty for the past year.

Committee on the Library System (Chair: Brian Evans)

The Committee on the Library System (CLS) has been working on the issues of Open Access (e.g., the NIH request for NIH PIs to post their articles on its PubMedCentral Website). CLS has also been working with Ann Wolpert, the director of the Libraries, and Alice Gast, Vice President for Research, to create an *amendment to standard copyright transfer agreements*, to allow authors to retain more of their IP rights on papers accepted for publication in journals. A copy of the amendment is available at: web.mit.edu/faculty/research.html; or libraries.mit.edu/about/scholarly/amendment.doc.

I encourage you to use the amendment with the standard copyright transfer agreement to preserve your IP rights.

Committee on Undergraduate Admissions and Financial Aid (Chair: Nigel Wilson)

The Committee on Undergraduate Admissions and Financial Aid, working in close conjunction with the Office of Student Financial Services, was instrumental in developing MIT's new policy of matching Federal Pell Grants for all eligible students, starting in September 2006. This policy directs additional financial assistance to our most needy students (federal Pell grants are limited to students

from families with incomes less than \$40,000). Both the federal Pell Grant and the MIT Pell Matching Grant do not have to be repaid.

Committee on the Undergraduate Program (Chair: Denny Freeman)

Following last year's joint Committee on the Undergraduate Program (CUP)/Committee on Student Life Report to the Faculty on Advising and Mentoring of Undergraduates, CUP has been focused on undergraduate advising this year. The Committee has recommended that the Academic Resource Center work to increase the number of faculty participating in freshman advising and explore possibilities for expanding the resident-based freshman advising program. If you are interested in becoming a freshman advisor, please contact Donna Friedman in the Academic Resources Center (friedman@mit.edu; 3-9762).

Committee on Student Life (Chair: Hazel Sive)

The Committee on Student Life is looking at next steps to implement the recommendations of the CUP/CSL Report to the Faculty on Advising and Mentoring of Undergraduates, reporting to the faculty at the May 17, 2006 faculty meeting. A new Website, Interact at MIT, designed to promote student/faculty interaction, will be launched over the summer. CSL has also been focusing on harassment at the Institute. A brochure entitled "*Is it really just a joke: A guide to reasonable behavior at MIT*" will be distributed in the fall to members of the MIT community.

Subcommittee on the Communication Requirement (Chair: Suzanne Flynn)

The Subcommittee on the Communication Requirement has launched an 18-month evaluation of the Communications Requirement. In the first phase of the evaluation, on-line surveys of faculty and seniors will be conducted to collect the impressions, attitudes, and experiences with this GIR. (See "Lighting A Fire in MIT's Undergraduate Education," page 9 of this *Newsletter*.)

Committee on Curricula (Chair: David Pesetsky)

The Committee on Curricula (COC) approved, and the faculty voted on, course number 20 for Biological Engineering. COC also approved a new minor in Japanese and is currently reviewing the evening exam policy.

Committee on Academic Performance (Chair: Tom Greytak)

The Committee on Academic Performance (CAP) has been working on policy guidelines to make decisions more uniform. CAP has also been discussing "ghost" students who are not registered but take classes and live in the dorms. These students are either on financial hold (because they did not pay for the previous semester) or have received notice of a required withdrawal. The CAP recently sent out a letter to department heads and academic officers asking for assistance in identifying such students.

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Committees of the Faculty
Gibson, from preceding page

Committee on Discipline
(Chair: Margery Resnick)

The Committee on Discipline (COD) operations have been running more smoothly as a result of changes recommended by last year's review of the discipline system. One of the current COD initiatives is improving communication with advisors, housemasters, Student Support Services, and the Registrar.

Faculty Policy Committee
(Chair: Lorna Gibson)

The main focus of the Faculty Policy Committee this year was the restructuring of the Committee on Graduate School Programs, to make it more effective in developing general policies across departments related to graduate students and programs, and in encouraging best practices for graduate educational programs. The membership of the committee has been reduced, from 38 to 12, including seven faculty. The Nominations Committee will be selecting members for the committee to begin work this September. Possible agenda items include: approval of proposed graduate

degrees; collection and dissemination of best practices; policies related to international students; global competition for graduate students. The Dean for Graduate Students will continue to convene a separate committee of Graduate Program Administrators.

Committee on Graduate School Programs
(Chair: Ike Colbert)

The Committee on Graduate School Programs has compiled best practices among departmental graduate programs for communication, advising, mentoring, and mediation into a handbook, "Current Practices in Graduate Student Administration." The Graduate Administrators, working with the Dean for Graduate Students, plan to advertise the handbook through various Websites and to continually update it by encouraging departments to include their best practices in it. The restructured Committee on Graduate Programs will have oversight of the handbook. (See the article on page 22 of this *Newsletter* for more information.)

The Committee on Faculty-Administration (Chair: Mary Fuller) and the Committee on Outside Professional Activities (Chair: Bruce Tidor) have both

been relatively inactive for several years. The current chairs of the committees are evaluating the role and charge of their respective committees and are considering bringing motions to the faculty to disband these committees in the fall.

Reflections on the Past Year

In my role as Chair of the Faculty, I have had the opportunity to meet faculty from across the Institute, to learn more about their activities and to renew my appreciation for just how remarkable are MIT faculty. Sitting on Academic Council and various committees, I have learned much about the cultures in different fields; the biggest surprise for me has been seeing just how different are these cultures. I have enjoyed the opportunity to work with students and have valued their perspectives on faculty committees. It has been a pleasure to get to know more of our students through social events such as dorm dinners, the Burchard Scholar dinners, and the Society of Women Engineers "Meet the Professor" dinners; I encourage you to attend student dinners and events. ■

Lorna J. Gibson is a Professor of Material Science and Engineering; Faculty Chair (ljgibson@mit.edu).

Lippard and Sharp Awarded National Medal of Science

FACULTY NEWSLETTER editorial board member Stephen J. Lippard has been awarded the National Medal of Science, the nation's highest science honor.

In a ceremony at the White House on February 13, 2006, Lippard, the Arthur Noyes Professor of Chemistry, and Institute Professor Phillip A. Sharp, were among eight recipients who were awarded the medals by President George W. Bush.

Lippard was cited "for pioneering research in bioinorganic chemistry,

including the interaction of metal compounds with DNA, preparation of synthetic models for metalloproteins, and structural and mechanistic studies of methane monooxygenase."

"I am very pleased to receive this honor for it recognizes the work of the many wonderful graduate students and post-doctoral associates who have contributed to the science that we were able to accomplish," Lippard said. "It was most unexpected." ■

Newsletter Staff



Stephen J. Lippard and President Bush

Meritocracy and a Diverse Faculty

Reif, from page 1

faculty, a faculty able to provide the best education for our students in our complex, global society. Although it is clear that advances have been made in the last decade, no one in the MIT administration is satisfied with our progress so far, particularly in racial and gender diversity. We must further analyze the data that Professor Hopkins has shown us, look at the facts regarding race and ethnicity as well, and understand the reasons why greater progress has not been achieved across the Institute. We need to understand the reasons so that we can focus on what needs to be done. For example, is it more difficult for some units to *identify* promising women and/or under-represented minority candidates who might be a good match for MIT? Do some units have problems *recruiting* them to MIT? Do some units have problems *retaining* them? It is also important to recognize that, in some academic units, it may take decades to reach our goals if we hire women and under-represented minorities at the rate of their availability in the pipeline.

MIT is evolving. At present, our faculty in the upper administration (President, Provost, Chancellor), our faculty officers (Faculty Chair, Associate Chair, and Secretary) and the Academic Council are far more diverse than they were 10 years ago.

Diversity is an important priority of MIT's central administration, as it is for our deans and the heads of our academic units. My first months in office have been a reflection of this priority. Three diversity committees have been created since I became Provost last summer: two are focused on the recruitment and retention of under-represented minority faculty and the third is charged with assessing our Martin Luther King Visiting Professor and Scholar Program. In addition, the search committees for the Dean of the School of Humanities, Arts and Social Sciences and for the Director of Lincoln Laboratory are headed by women faculty.

But the most important issue here is how to translate the efforts of a commit-

ted administration, including deans and academic unit heads, into concrete results. I am asking our deans and the heads of all of our units (Departments, Divisions, Programs, and Sections) to gather and analyze the data in each of their units, and to develop a plan to remedy any significant imbalances they may find with regard to representation of women and under-represented minorities relative to their availability in their fields. Such plans should include ascertaining and extending the use of those practices that have proven successful in identifying, recruiting, and retaining a broadly diverse faculty. This might include, for example, the inclusion of women and minorities on search committees, reviews of applications by the dean to ensure that effective outreach has occurred. I will be discussing this with the deans and the heads of our academic units and intend to review their plans and results annually.

Progress *is* being made. For example, in this academic year, of the 37 faculty hired since the most recent official count of October 2005, 15 (or just over 40%) are women and five (or 13%) are under-represented minorities. Within that total, the School of Science has hired 10 new faculty, including four women and two under-represented minorities; the School of Engineering has hired eight new faculty, including two women and one under-represented minority; the School of Humanities, Arts and Social Sciences has hired nine new faculty, including six women and two under-represented minorities; and Sloan has hired 10 new faculty, including three women.

MIT has benefited immensely from our commitment to meritocracy. That is how we achieved the strength and intellectual brilliance we enjoy today. By identifying, recruiting, and retaining the best talent – including women and men, and people of different races and cultures – we will continue our tradition of unsurpassed and unwavering commitment to the highest standards of excellence in education and research. ■

L. Rafael Reif is Provost (reif@mit.edu).

Dear Nancy,

Your impact continues!

I just got back from a four-day review of one of the best universities in mainland Europe. It was a great international group including a former prime minister of a European country and the immediate past president of the Royal Society of London. Rita Colwell was our chair.

As you know, some regions of Europe are even more behind the curve with women in academia – students and faculty – than we are in the U.S. There are cultural issues of a very interesting sort and too long to discuss here. Bottom line is that at the very top there is a serious will to change, but at the elementary school level the idea of women going into science is often so foreign that it is like being from Mars.

Your recent *Faculty Newsletter* article was cited by the group several times during our discussions. It is really a helpful document because it displays so clearly the absolute excellence and accomplishment of so many women who have joined the MIT faculty in recent years. The mounting influence and success of NSF's ADVANCE program was also held up as an exemplar.

– Chuck
[Charles M. Vest
Professor of Mechanical Engineering
President Emeritus, MIT]

Dear Nancy,

Your *Faculty Newsletter* article is excellent! It will have major repercussions nationally.

All the best,

VV
[Virginia Valian
Distinguished Professor, Psychology
and Linguistics, Hunter College and
CUNY Graduate Center]

Energy Research Council and Forum: A Major New Institute Initiative

IN LIGHT OF THE RECENT *Report of the Energy Research Council* at MIT and the May 3rd MIT Energy Forum, both of which exhibit the commitment to energy research made by the Institute, the *Faculty Newsletter* wishes to reflect on the importance of this initiative heralded by President Hockfield. Following are two examples of research currently underway at the Institute, presented by faculty members who participated in the Energy Forum.

In addition, we wish to invite articles commenting on the energy initiative, its structure, goals, etc., for publication in our September/October issue. Please submit any contributions by e-mail to fnl@mit.edu, or contact any member of the *Newsletter* Editorial Board. For more information about the Energy Research Council and to see the entire final report, visit their Website: web.mit.edu/erc

Efficient Use of Energy: An Important Part of MIT's New Energy Initiative

Leon R. Glicksman

AS PART OF THE new energy initiative outlined in the Energy Research Council report, there is the need through MIT's future research and the development of our built environment to assume the leadership in the field of energy efficiency. Many institutions, such as policymakers in Washington, have concentrated on the energy problem from the supply side. Indeed, in our recent Energy Forum, a majority of the speakers dealt with present and future energy supply technologies. Rather than concentrating on a supply-side solution, it makes more sense to have a balanced approach that also emphasizes means to limit consumption.

Residential and commercial buildings constitute the largest energy consumption sector of the U.S. Buildings use almost 40 percent of our total energy, and are larger than the transportation sector by far. Buildings also consume two-thirds of our total electricity. Most of the energy used in buildings is used to meet basic requirements for heating, cooling, ventilation, and lighting. Buildings have a long lifetime, 50 to 100 years, so that errors we make now will be with us for a long time; unfortunately, there are some recent examples here on campus. For example, each

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Fueling Our Transportation Future

John Heywood

SOME ONE-THIRD OF OUR primary energy consumption is used to transport people and goods. So transportation is an important research area in our developing MIT Energy Initiative. The scale of our transportation systems is vast: some 800 million vehicles in use in the world today and projections suggest there will be 2 billion vehicles by 2050. Almost 100 years of continuous development have fine-tuned the fuels, propulsion systems, vehicle technologies, and use patterns to match our economic and social contexts. Petroleum-based fuels, and internal combustion engines on land and water, and gas turbines in aircraft, dominate. In the developed world, at least, most of us like the services our transportation systems provide. But it is becoming ever clearer that the energy requirements and environmental impacts of our transportation systems will have to be drastically reduced.

MIT, with its strong engineering core, is a place where realism based on quantitative assessments really matters. The numbers that define transportation impacts are truly daunting. How then can we be optimistic about meeting these energy and environmental challenges? What should the breadth and scope of our

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Fueling Our Transportation Future
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transportation energy research agenda be, if we are to make progress? What issues

We can reduce fuel consumption by improving vehicle technology, by reducing vehicle weight, by driving less as well as less aggressively, by finding new sources of energy, by making both technology and behavioral changes.

should we analyze and then explain to the broader community? Let's be clear about the challenge: is it feasible to achieve, say, a factor of four reduction in energy consumed per vehicle so that over the next few decades we can offset the anticipated growth in number of vehicles?

Personal and public transportation, and freight, all pose major challenges. Here, I will focus on light-duty vehicles – cars, pick-ups, SUVs, and minivans – to illustrate what the agenda should include. We can reduce fuel consumption by improving vehicle technology, by reducing vehicle weight, by driving less as well as less aggressively, by finding new sources of energy, by making both technology and behavioral changes. To illustrate the potential of working on a broad set of improvement factors, consider the cumulative impact that several of them could have if each achieves a 20% fuel consumption reduction. Each 20% reduction would reduce fuel consumption to 0.8 of what it was originally. Now 0.8 multiplied together six times yields 0.26, which is close to one-quarter or a factor of four reduction. Thus to offset the anticipated growth in number of vehicles, we will need to achieve substantive fuel consumption reductions through many different steps that include technology improvements, finding substitutes for petroleum, and changes in driver and user behavior.

The table lists twelve different areas where reductions in vehicle energy consumption and greenhouse gas emissions are potentially feasible. They are divided

into two categories. In the first category, each action has the potential for affecting the entire in-use vehicle fleet. For example, raising fuel taxes to replenish our Highway Trust Fund so that it can

adequately maintain our roads would reduce everyone's mileage. If ethanol from biomass steadily builds up in volume and displaces gasoline, then fleet petroleum consumption will go down.

ity and advanced battery technology – would be radical changes. These are being explored and developed because of their potential to “fuel” major parts of our transportation system with low greenhouse gas emissions if the hydrogen or electrical energy can be produced without releasing CO₂.

This list of opportunities (and others no doubt could be added) identifies the broad dimensions of a research agenda focused on reducing transportation energy consumption. For many of us at MIT, carrying out research on parts of this agenda will be our professional responsibility. However, all of us should view this agenda as a set of opportunities where we can contribute as individuals. Each of us can drive less aggressively, choose vehicles that consume less fuel next time we buy or

Various Factors that Affect Fuel Consumption

Opportunities to Impact Total In-Use Vehicles:

1. Encourage/enforce less aggressive driving behavior
2. Increase vehicle occupancy on substantial fraction of trips
3. Reduce mileage driven per person per year
4. Use biomass-based fuels to substitute for petroleum-based fuels
5. More effective transportation system management
6. Increase public transportation utilization

Opportunities for Impact Through Improving New Vehicles:

1. Shift the vehicle performance/fuel economy trade-off towards lower fuel consumption
2. Improve vehicle maintenance, lubricants, tire pressure, reduce parasitic loads
3. Buy and use lighter weight “less big” vehicles
4. Implement more efficient engine, drive train, and vehicle technologies
5. Develop and implement use of hydrogen with fuel cell powered vehicles
6. Use electricity with advanced batteries to reduce petroleum consumption

The second category lists opportunities where fuel consumption and emissions could be reduced through improvements and changes in new vehicle technology. Some of these areas offer substantial reduction potential, but would evolve more slowly since the impact only occurs as new vehicles with improved or different technology are produced and enter the in-use fleet. The last two on this list – hydrogen and fuel cells, and electric-

rent one, and be more thoughtful about how much we drive. In the end it will be the sum of all our individual contributions – both professional and personal – that will make a difference. Somehow, we will have to find effective ways to get off our current path of steadily rising transportation energy consumption. ■

John Heywood is a Professor Mechanical Engineering; Director of the Sloan Automotive Lab (jheywood@mit.edu).

Efficient Use of Energy

Glicksman, from page 6

fume hood left open consumes as much energy for heating and electricity as a single family home in Boston.

MIT can be at the forefront, carrying out a comprehensive integrated study that identifies realistic economic measures that reduce specific energy consumption by at least a factor of two for future buildings. I would propose we develop a demonstration building, using such an integrated approach from the outset, as one of the first actions in our proposed new energy initiative.

The issue of efficient buildings is particularly acute in the developing world where there is a massive construction effort underway. For example, China is building more than 10 million new residential units per year! Proper actions in the urban and regional environment here and abroad can yield substantial immediate as well as long-term results. Over a longer time horizon, major new steps can be taken to reduce energy consumption. Research underway at MIT will lead to comfortable northern homes without heating systems, office buildings naturally ventilated in the summer as well as advanced daylighting systems that save more than half of the energy now used for lighting. It is not unrealistic to expect projects in the built environment that make economic sense while delivering a factor-of-two increase in overall energy efficiency over present buildings.

A handful of demonstration buildings have begun to appear, especially in Europe, which herald major improvements in energy efficiency. Generally these utilize technologies that have a narrow focus and have not been well thought out from a whole building or urban development sense. Many demonstrations include a mix of several technologies, some seemingly because they “look green” even though not economically justifiable. There is a wide spread between the energy consumption per unit floor area of best-

practice buildings and average new buildings. Major advances in energy efficiency in the built environment require a broad approach to building research and development. No one “silver bullet” will make a major impact by itself. Rather, substan-

tial improvements in energy efficiency require the development of advanced technologies and an integrated approach to planning, design, optimization, and operation. These must be guided by mid- and long-range policy studies defining approaches that have major beneficial socioeconomic and environmental impacts, are economically viable, and motivate people to follow.

In many instances it can be shown that the capital costs to improve the energy efficiency of a building are far less than the costs required to provide added energy supplies for a less efficient building. This is particularly true if the building efficiency concepts are included early in the design process for new construction. It is important for MIT to carry out a comprehensive study for our current and future campus development, including future energy demands as well as supply systems. We have the expertise in policy, environmental, and technology issues to put a firm foundation on our ability to “walk the talk.” MIT can be at the forefront, carrying out a comprehensive integrated study that identifies realistic economic measures that reduce specific energy consumption by at least a factor of two for future buildings. I would propose we develop a demonstration building, using such an integrated approach from the outset, as one of the first actions in our proposed new energy initiative.

There is the perception that a sustainable building costs substantially more than a standard building design. If the sustainable features are designed as an integral part of the building system, the capital-cost increase may be minimal, if at all. For example, use of a double-skin façade system may allow the usual perimeter heating and cooling systems to be eliminated. The figure below compares the cost for producing electricity from conventional and renewable means to the costs of saving electricity from efficient new building technologies and integrated designs. Bear in mind that the conventional system costs don’t include additional societal costs. It is clear that a focus on efficient energy utilization should be a key element in our future energy studies. ■

Leon R. Glicksman is Professor of Building Technology and Mechanical Engineering (glicks@mit.edu).

Electric Power Costs	
Technology	Cents/kWe-hr
Nuclear	4-7
Gas/Combined Cycle	4-6
Coal	4
Renewable	
Wind	3-8
Biomass (25MW)	4-9
Small Hydro	5-10
Solar Thermal Electric	12-18
Solar PV	30-80
Efficiency of Consumption	
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Sources: Deutch and Moniz, MIT study 2003; Langcake, Renewable Energy World, 2003; Kats, California study, 2003.

Lighting a Fire in MIT's Undergraduate Education

Charles Stewart III

Preliminary Comments on the Work of the Task Force on the Undergraduate Educational Commons

IN THE WINTER OF 2003, then-President Charles M. Vest charged a cross-section of the MIT faculty with undertaking a fundamental review of the common undergraduate educational experience at the Institute. In the half-century since the last such review, the applications of science and technology have become even more central in determining the wellbeing of human beings around the world. The demographics and goals of the students who come to MIT to benefit from the type of education we offer have changed significantly. Modes of teaching and learning have evolved; educational innovations might be better reflected in the undergraduate experience.

In short, while the overall framework of MIT's undergraduate education has been successful and robust in the midst of a changing world, the job of the Task Force was to step back and ask how the curriculum might be modified to take account of changes in the world's needs, student interests, and advances in teaching methods. Many of MIT's current practices should be preserved, but MIT's curriculum must be adapted so that we can continue to equip our students with the capacity to have a positive impact on the world once they leave here.

An aphorism that has guided much of the Task Force's work is attributed to William Butler Yeats: "Education is not filling a bucket, but lighting a fire." Applied to MIT, this saying reminds us that our task is not to expose students to all the knowledge they will need in a lifetime, but rather to equip our graduates with a robust set of skills, knowledge, and

habits of mind that will set them upon a path of lifelong learning. We must stoke the fires of intellectual passion our students bring with them.

In order to equip our students with a lifelong capacity for learning, we have organized our curriculum around two

In the report we will release to the faculty in September, the Task Force will propose a new eight-subject Science, Mathematics, and Engineering Requirement

major elements: the Science Requirement and the Humanities, Arts, and Social Sciences Requirement. The two combine to produce a distinctive curriculum in the context of American higher education. Each faces a different set of tensions as we strive to provide an undergraduate education that is both liberal in a classical sense and professional – and one that equips students to continue learning after they graduate.

Science, Mathematics, and Engineering

A solid grounding in the natural sciences, mathematics, and engineering is a hallmark of MIT's undergraduate education. What should such grounding consist of? A half-century ago, the answer to this question was easy, and consisted of identifying a very small set of physical science and math classes. In the ensuing decades, the set of science classes that embody fundamental knowledge has grown considerably. Furthermore, engineering has evolved beyond being simply applied

science. Finally, with some important exceptions, our foundational science subjects have tended toward passive teaching and learning approaches, at a time when our students are increasingly responsive to modes that are more hands-on and integrative.

The design challenge is this: how do we maintain the excellence, relevance, and focus that have been the strengths of our long-standing Science Requirement, while at the same time accommodating a wider range of foundational subjects, introducing engineering principles, and fostering more project-based learning within the requirement?

In the report we will release to the faculty in September, the Task Force will propose a new eight-subject Science, Mathematics, and Engineering Requirement that is directly responsive to this design challenge. To address the need to accommodate a larger universe of foundational science and technical subjects, we should move from prescribing virtually the entire requirement by named subjects to requiring students to select among subjects that fall within six distribution categories – mathematics, physical sciences, chemical sciences, life sciences, computation and engineering, and freshman project-based experiences.

continued on next page

Lighting a Fire

Stewart III, from preceding page

We should continue to require that all students complete a year of calculus (18.01 and 18.02) and one semester of mechanics (8.01). Beyond that, students should be given the choice of subjects within the distribution categories, according to their own professional and personal goals.

The last of these categories, freshman project-based experiences, is unlike the others in that it is defined more by educational approach than by subject matter. It is also conceivable that subjects in the substantive categories might emerge that are designed in a more integrative, project-based mode. At this point in MIT's history, we believe it important to encourage the development of these sorts of classes at MIT – classes that move from the characterization of a complex problem to the design of a solution that draws on a mix of disciplines and approaches. Specifying such a separate category would do just that.

A topic of much discussion has been whether students should be required to take subjects from all six distribution categories, or be allowed to forego one (or more) of the categories. We will propose that students be required to take subjects from five of the six, which means that a student might graduate without taking even one class in chemistry, life sciences, or engineering, or without doing an integrative project. We of course hope that students will take classes from all six of the categories, and will even take more than one class from each. Still, there are trade-offs in all curriculums, and we believe the gains in flexibility outweigh losses that may occur because some students will miss out on a particular subject.

The success of reforming the Science Requirement will rest on many things, including getting the administrative details right. An important detail is vigilant oversight to ensure that the number of subjects in each distribution category does not proliferate. The distribution cat-

egories should be populated with no more than three subjects apiece, with the exception of the freshman project-based subjects, which will need to be more numerous.

We have encountered widespread agreement that a rigorous grounding in humanities, arts, and social sciences is not only a necessary ingredient for a fulfilled life, but also a prerequisite for a successful professional career. . . . We believe the needs of our graduates demand that the role of the humanities, arts, and social sciences be even more prominent than they already are.

Humanities, Arts, and Social Sciences

MIT is dedicated to preparing students who will act to make a difference in the world. We back up this goal by providing our students with a rigorous education in culture and society. The current eight-subject Humanities, Arts, and Social Sciences (HASS) Requirement is a strong signal to the world that students who wish to use a rigorous technical education as a springboard to leadership in the public and private sectors, and in society at large, should study at MIT.

We have encountered widespread agreement that a rigorous grounding in humanities, arts, and social sciences is not only a necessary ingredient for a fulfilled life, but also a prerequisite for a successful professional career. For the past half-century, the role of this education at MIT has evolved. We believe the needs of our graduates demand that the role of the humanities, arts, and social sciences be even more prominent than they already are. We also believe the HASS Requirement needs to be more transparent and its goals more clearly articulated to our students and their advisors.

The design challenge is this: how do we maintain the current excellence in classroom teaching in the humanities, arts, and social sciences and the highly-valued student choice within the current HASS Requirement, while at the same time

raising the stature of the HASS Requirement and sharpening its focus?

To help meet this challenge, we should be more explicit about identifying those classes that provide grounding in core dis-

ciplinary knowledge and academic skills, and focus the attention of freshmen and sophomores on those classes. We also believe that the centrality of the humanities, arts, and social sciences can be better demonstrated to students if their first experience with HASS subjects at MIT is one that responds to our students' desires to tackle the most compelling problems and questions that face humankind.

We should think of the HASS Requirement as unfolding in two phases, foundational and advanced, which are distinguished by the degree to which they emphasize core knowledge, fundamental academic skills, and a breadth of subject material. Foundational subjects should introduce students to disciplinary approaches to important social and cultural matters, and should be especially attentive to developing basic intellectual skills such as writing, reading original sources, deciphering raw data, and using research resources such as libraries. These subjects should incorporate the CI-H portion of the Communication Requirement, which will end one of the most serious sources of confusion that now confronts the HASS Requirement. And, the foundational phase should have a streamlined distributional component. Advanced phase HASS subjects would constitute the Concentration, which we conceive of as being fundamentally unchanged from the current requirement.

An important element of the fundamental phase is a class of subjects we have termed “freshman experience” subjects. These subjects, which will be relatively few in number (no more than 16), are intended to provide an exciting intellectual experience by exploring “big ideas” in the realms of culture and society. These big ideas might be topics such as globalization, democracy, poverty, or revolutions. The big ideas would need to be broad enough to capture the attention of a relatively large number of freshmen (80 to 100, say), and rich enough so that a number of smaller sections that addressed the idea could provide the day-to-day intellectual focus of the students. Compelling ideas and a relatively large number of students would create, we believe, a sufficient critical mass of students and faculty around a particular topic that the larger intellectual climate of the Institute would be affected.

Globalizing education, classrooms, and advising

Over two and a half years of work, the Task Force has deliberated on a wide variety of subjects, not only the Science and HASS Requirements. Because of space limitations, we have focused here on these two major elements of the curriculum. However, there are other matters which have commanded our attention, about which we will be making recommendations to the faculty and administration. Among these matters are globalizing undergraduate education, improving advising, and providing resources for curricular innovation.

Globalizing undergraduate education. Our graduates are entering a world in which commercial relations are less respectful of national borders and events on the other side of the globe have a great impact on their daily lives. A small number of MIT undergraduates currently have an experience abroad during their college years; these numbers are inadequate and must grow. The nature of engineering curricula makes this task especially challenging. However, we

already have developed models of international study – such as MISTI, CME, and D-LAB – that work in the MIT environment and can be built upon to allow more students to study and work abroad

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during their four years at MIT. An appropriate goal is to make it possible for all undergraduates who wish to study abroad to do so.

Classrooms. The educational reforms we are proposing will require MIT to take a new look at its inventory of classrooms and other teaching space and then to undertake a major program of renewal and construction. Project-based and hands-on subjects require a different sort of classroom space than traditional lecture/recitation classes. In order to implement our proposal for special freshman HASS subjects, we will need a larger stock of classrooms that will accommodate 20 students for seminar discussions. The curriculum reforms we propose will not succeed unless improving the quality and distribution of classrooms is made a top priority.

Advising. A sore point among students, and cause for concern among many faculty members, is the uneven quality of undergraduate advising. In recent years, only a small number of faculty members have been involved in freshman advising; we believe that number should increase. Even more important, however, is the fact that the proposed curricular reforms will increase the number of choices freshmen will need to make, and make those choices more consequential. MIT’s current orientation and freshman advising systems have

grown up around an assumption that the freshman year curriculum was relatively proscribed. That will no longer be the case, which means that both orientation and freshman advising will require a fresh

look. In addition, the Task Force believes that the advising and mentoring of our students is an important faculty responsibility that should be an essential part of the teaching record.

Conclusion

These comments provide a brief overview of the current thinking of the Task Force on the Undergraduate Educational Commons as we write up our final report. The report will be finished over the summer, to be delivered to President Hockfield in the fall. With the delivery of the report to the president, we trust our recommendations will be commended to the faculty, for debate, refinement, and (we hope) approval and implementation. As we have discovered, everyone at MIT feels passionately about our undergraduate curriculum. We eagerly anticipate the channeling of those passions in the fall, as we deliberate how to improve that curriculum together. ■

Charles Stewart III is a Professor and Head of Political Science; an Associate Chair of the Task Force on the Undergraduate Educational Commons (cstewart@mit.edu).

Ed Note: To view the Task Force Website, which contains the set of slides presented at the mid-May town meeting as well as other information, go to: web.mit.edu/committees/edcommons.

Some Thoughts on the Arts

Alan Brody

AT THE END OF this academic year I'll be stepping down as Associate Provost for the Arts and returning to the bosom of my colleagues on the faculty of Music and Theater Arts. I'm looking forward to being enveloped again in that capacious and quirky bosom. Even more, I'm looking forward to having daily contact with the students who find themselves in my studio – even if it's only because it fits into their schedules. And while I'm looking forward to all that, this isn't a bad time to look back and take some measure of where the arts at MIT have come over the last 10 years.

In 1995, when my extraordinary predecessor, Ellen Harris, announced she was stepping down, the Institute was just coming out of a financial bind that had led to a 2% budget cut across all Schools. Some people were questioning the need for an Associate Provost for the Arts and suggested eliminating the position. Chuck Vest said, "No. When times are bad you don't cut the arts. If the arts weren't serving our students I'd cut them whether times were good or bad, but you don't let them go because times are bad." I thought this was remarkable. It was the finest evidence that the administration understood the contribution the arts make to the intellectual and creative life of the MIT community.

The most rewarding aspect of my time in the administration was the opportunity to facilitate so much fine work on the part of students, faculty, and staff. MIT being what it is, I suppose there will always be people who say, "I didn't know MIT had any arts." The Institute will always be known for its preeminence in science and

engineering. But every year those who join the campus community discover the richness, the exuberance, and the passion with which the arts are pursued. And those newcomers find themselves wel-

comed by those who have discovered us before them.

In the curriculum, our students discover new ways of being in the world. They develop a tolerance for ambiguity and learn to honor their dreams. They come to exercise those parts of their bodies and minds they may never have experienced before. They understand the profound difference between solving a problem and illuminating a mystery. For many, a course in the arts can be transformative, bringing a whole new dimension to their work in the classroom and the laboratory. Each member of the arts faculty, in his or her own way, introduces them to the complexity and rigor of each discipline, exploding the general myth of the arts as "soft," as an enterprise where anything goes. In doing that, the faculty serve their art, as well as their students.

The arts faculty's research is its creative work. What makes that work distinctively a part of the MIT culture is the amount of interdisciplinary collaboration that occurs, not only between artists but also among artists, scientists, and

engineers. In the Catalyst Collaborative, CAVS, individual artists like dancer Tommy De Frantz, theater director Janet Sonenberg, performance artist Joan Jonas, novelist Alan Lightman, and com-

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poser-performer Evan Ziporyn all celebrate and exploit the unique cutting-edge scientific and engineering resources of their colleagues. They serve as models of cross-fertilization and the continued ability of the arts to mirror and thrive in their own times. A roster of the recent shows at the List Visual Arts Center reinforces this sense of interdisciplinarity. The artists with whom they fill their galleries all, in one way or the other, incorporate, challenge, subvert, and engage the farthest reaches of science and technology in contemporary society.

The MIT staff, as well, exercises its talent and passion. I don't know of a program on any other campus quite like Artists Behind the Desk. Every program of music and poetry, every exhibit of visual arts from painting to photography demonstrates what an astonishingly rich and accomplished creative resource lies in the people who have, in addition to their art, learned to master SAP.

In his autobiography, Nobel physicist Victor Weiskopf wrote that there are two versions of the start of the universe: the

Big Bang and Haydn's *The Creation*. Any informed human being, he said, must know both. Whenever anyone has complained that the arts are marginalized in the MIT ethos, I have tried to explain that although the arts are not central to the mission of MIT, they are necessary.

This is what I have found so exciting and rewarding after having worked in so many pre-professional and conservatory programs. At MIT, we are serving a majority of students who will go on to be scientists or engineers. If we've done our work well, they will not go on to have a life in the arts, but they will always have art in their lives. They will be open to those aspects of themselves and the life around them that might not otherwise have been available to them. They will have a more profound understanding of the human and aesthetic dimension of every enterprise they engage in. Their work with the MIT Symphony or a chamber music group will have deepened their sense of how to work as an ensemble in a laboratory, a study group, an industrial division. Most important, they will be curious about the most baffling aspects of the contemporary arts, eager to be informed, and appreciative champions and lovers of the art of the past.

Over the past 10 years, the arts have become ever more visible on every part of the campus, from our superb collection of outdoor contemporary sculpture to the newest work we have acquired through the Percent for the Arts policy, commissions by Sarah Sze, Mark DiSuvero, Matthew Ritchie, Dan Graham, Jorge Pardo, and Candida Hofer. Freshmen now come to know about the arts resources at MIT through the pre-orientation arts program and the Freshman Arts Seminar and Advising Program, so superbly administered by Michèle Oshima and her associates in the Office of the Arts. The Weisner Art Gallery is being programmed regularly under the leadership of Susan Cohen. The monthly Arts Colloquia feature arts faculty and guest artists sharing their most recent work with faculty, students and other members of the MIT community. And SHASS now

stands for the School of Humanities, Arts and Social Sciences.

There is, of course, much still to be done. The performing arts still have no home. We still depend on the kindness of

The performing arts still have no home. We still depend on the kindness of strangers. None of our teaching spaces is under our control. We still have to schedule five years out to assure performance and rehearsal spaces, and even then we are subject to preemption.

strangers. None of our teaching spaces is under our control. We still have to schedule five years out to assure performance and rehearsal spaces, and even then we are subject to preemption. New faculty members are often startled by this. We are in a situation now that is not unlike telling our scientists and engineers that they will simply have to break down their experiments every night when they leave their laboratories – and that they have to be out by 5:00 each night anyway to make way for a reception or a conference. We have the initial designs for the new Laboratory for the Performing Arts that will provide us with the dedicated teaching and rehearsal space we need. We have the site chosen and approved. It is a modest building and we are on our way to raising the funds for it. Within the new system for capital funding, however, this is now the only building project that must be 100% funded before we can proceed. That will not deter us. We are still determined, as Shakespeare said, “to give to airy nothingness/a local habitation and a name.”

As MIT has evolved from an Institute of Technology to a university that is centered on Science and Technology, some old habits of mind die hard. I think there are still many here who see the arts as an afterthought or, even worse, a frill for the Institute – and maybe for the society as a whole. This limitation reveals itself in our advising system. When I taught at other universities and liberal arts colleges, my theater students would balk at taking their science requirement. I would patiently

explain why it was important for any artist to be familiar with the scientific method, the particular discipline and specificity of scientific inquiry. I would explain how a liberal arts education is designed to

expose them to many different ways of being in the world, however demanding was the focus of their own training. “You’ll never really understand Oedipus or Ibsen,” I would say, “unless you develop a respect for the rigor of cause and effect.” At MIT, I have sat in on advisor orientation sessions where new advisors were given explicit advice on how to help students get their HASS distribution courses “out of the way.” This is still a discouraging message. It tells me that we all still have work to do to help us honor each other’s contributions to the rich intellectual and aesthetic resources at MIT, and help our students understand their value.

The arts have come a long way since I joined MIT in 1988. I’ve seen the culture of the Institute slowly respond to the ever more visible presence of the arts. I’ve seen the profile of our student body change as we’ve heeded young applicants’ demands for ever broader learning opportunities. I’ve seen young people transformed by a variety of new exposures and faculty members discover opportunities for collaboration where they never would have dreamed of finding them.

But that, after all, is the mission of the arts – to help everyone dream and then embody those dreams and celebrate them. It’s why we’re necessary to the core mission of MIT. I’m glad to have had the opportunity to help that happen more and to keep it happening. ■

Alan Brody is Associate Provost for the Arts; a Professor of Theater Arts (brody@mit.edu).

Reflections on the “Visualizing Cultures” Incident

Peter C. Perdue

WHO WOULD HAVE IMAGINED that a 100-year-old Japanese woodblock print could have caused so much trouble? It all began innocently enough, on April 23rd, when the MIT homepage, in its “Spotlight” section, posted a link to the “Visualizing Cultures” project, a multimedia educational Website on East Asia directed by Professors John Dower of the History Faculty and Shigeru Miyagawa of Foreign Languages and Literatures. This simple act led to a cyber-onslaught on the site from Chinese Internet users around the world. It drew MIT faculty, graduate students, top administrators, alumni, historians, scholars, and students into passionate engagement with crucial issues of modern East Asian history, in a very tense atmosphere. The Website was taken down in response to a tidal wave of criticism, but on May 10th the site was restored. The immediate crisis had passed, but ominous echoes lingered.

Here I would like to describe briefly the course of the incident and reflect on some of its implications. Since I was a participant in these events, this is by no means a neutral account. I hope, however, that its immediacy will compensate for its lack of detachment. Since the incident itself opens a window on to fascinating contemporary issues concerning MIT’s role in international education, China’s place in a globalizing world, and the powerful impact of historical memories and emotions, I believe that it is worthy of some comment.

The “Visualizing Cultures” project is a prize-winning compilation of visual imagery and textual explanation focused on Japan’s relations with the world from the nineteenth century to the present. The

first unit, “Black Ships and Samurai,” examined the impact of Commodore Perry’s arrival in Japan in 1854 through contemporary graphics. It won a prize from the National Endowment for the Humanities as “one of the best online resources for education in the humanities.” Other units now on the site discuss the Sino-Japanese war of 1895 and the

and powerful state in an imperialist world. “Throwing off Asia” meant that Japan should reject the stagnant societies of Asia and model itself on the advancing Western powers, especially the imperial power of Britain. Woodcuts celebrating the Japanese victory delivered powerful impressions of Chinese weakness to a Japanese mass audience. Many of the



Photo from “Throwing off Asia” homepage

Russo-Japanese War of 1904-05. Each unit contains vivid color images done by Japanese artists for a popular audience, accompanied by detailed discussion of their historical background written by John Dower. Posted on the OpenCourseWare site, this educational project combines advanced Web technology with thoughtful humanistic commentary to educate a global audience about Japan’s encounter with the modern world.

The unit entitled “Throwing off Asia” looks at the consequences of the Sino-Japanese war for Japan’s view of China. By defeating the massive Qing empire in 1895, Japan had demonstrated that it truly met Western standards of global power. At the same time, Japanese came to despise the Chinese as backward, weak people hopelessly incapable of building a rich

woodcuts were racist, shocking, and gruesome. Dower’s text describes one such print, entitled “Illustration of the Decapitation of Violent Chinese Soldiers,” which depicted Japanese soldiers executing helpless Chinese prisoners of war, as “an unusually frightful scene.” (It is important to clarify that this picture of atrocities did not appear on the MIT homepage; one had to click on many links to find it.) [See next page for image with accompanying statement from the Website.]

He continues, “Even today, over a century later, this contempt remains shocking. Simply as racial stereotyping alone, it was as disdainful of the Chinese as anything that can be found in anti-“Oriental” racism in the United States and Europe at the time – as if the process of



Illustration of the Decapitation of Violent Chinese Soldiers
Visualizing Cultures presents images from the uncensored historical record as part of scholarly research. Be advised that some images may be offensive and difficult to view; presentation of these images does not endorse their content.

“Westernization” had entailed, for Japanese, adopting the white man’s imagery while excluding themselves from it. This poisonous seed, already planted in violence in 1894-95, would burst into full atrocious flower four decades later, when the emperor’s soldiers and sailors once again launched war against China.”

Most viewers, I think, would read the explanation of this image and passage as unequivocal condemnation of Japanese militarism. Several Chinese student viewers, however, saw just the opposite: they believed that by posting the picture of atrocities, Profs. Dower, Miyagawa, and MIT were celebrating Japanese racism, not condemning it. Ripping the image out of its surrounding context, they posted a link to this image alone on the Internet with e-mail messages attacking the project. Soon these messages circulated around the Internet.

A torrent of vituperative e-mail and phone messages poured in on Profs. Dower and Miyagawa. Some were so threatening as to require police action. Clearly the image had inflamed very sore nerves, but why? It was very difficult to understand how an educational project dedicated to overcoming the destructive effects of war, racism, and violence could be seen as doing just the opposite. And many feared that the verbal violence could easily turn into physical attacks. After meeting with several students

and discussing the issue with MIT administrators, it was agreed to take down the site temporarily, and hold a meeting with members of the Chinese Students and Scholars Association, a student group comprised of graduate students from the People’s Republic of China, to hear their concerns.

I attended that meeting on April 26th, along with other member of the HASS faculty. From 50 to 80 students packed the room. The atmosphere was tense, but Chancellor Philip Clay ran the meeting with consummate skill. He allowed everyone a chance to speak, but cut off long-winded speeches, and called for constructive proposals. John Dower took full responsibility for selecting the images and writing the commentary, explaining that to present propaganda images for educational use was not to condone their message; it only meant analyzing the power of propaganda in order to understand its devastating effects. But the students could not grasp this point. Blinded by passion, they shouted that Dower and Miyagawa had been insensitive to the tremendous suffering of the Chinese people at the hands of Japanese militarism. One student undertook to edify Prof. Dower on the finer points of Japanese history by proudly presenting him with a copy of a popular book on the Nanjing massacre! Written demands circulated at the meeting included shutting

down the site permanently, demands that MIT officially apologize to the offended “Chinese community,” and cancellation of academic workshops related to the site. At their best, the students’ patriotism evoked the May 4th movement of 1919, but their arrogance and intolerance also reminded me of the Red Guards of 1966.

At this point I had had enough. I stood up and stated that, having taught Chinese history for 25 years at MIT, I could see nothing wrong with the presentation of graphic violence on the “Visualizing Cultures” Website: all historians use images for teaching, and as John Dower had said, to present an image is not to endorse it. I proposed that the site be restored intact, with no apologies, but that an open online discussion forum be attached to the site to allow anyone to post comments. When I stated that this was a clear case of academic freedom, I was shouted down with a chorus of “No!” Then I left the room.

Statements issued by Chancellor Clay and Professors Dower and Miyagawa expressed sincere regret at the offense caused by the single image and noted that the Website had been temporarily taken down in response to criticism. The statements also condemned hostile criticism from “outside the MIT community” and defended the academic freedom of the authors.

These well-intentioned efforts to respond to the feelings of the students had the unfortunate effect of making it appear that MIT had failed to defend its own faculty against attack. *The Boston Globe* article of April 28 said that MIT had “apologized” to Chinese students for an offensive Website. Many observers outside MIT thought that, in the words of one colleague, MIT had “crumbled” under an assault from irate Chinese students.

Seething, I sat down and wrote an open letter to the Chinese students, specifically targeted at those who had initiated and supported the hostile e-mail attacks. The letter praised them for their intelligence and dedication to the honor of the country, but told them that they had violated fundamental academic norms of civil discourse and respect. As future leaders of China,

continued on next page

Reflections on "Visualizing Cultures"

Perdue, from preceding page

they had a responsibility to open their minds, in order to make China strong, and not to indulge in destructive narrow-minded self-righteous indignation.

The mood in the History faculty was one of fury and despair. The prevailing tone of apology signaled to the outside world that the administration would not defend one of our most respected senior colleagues against attacks that besmirched his reputation and endangered his career. With the approval of Department Head Harriet Ritvo, I posted my open letter on the History faculty Website as a personal expression of one scholar of China on the issue.

Not being an expert in media relations, I had no idea whether anyone would even notice the letter, but such is the magic of the Internet that the letter had the desired effect. The hostile e-mail campaign shifted its target from Shigeru Miyagawa to me, sparing him some further harassment. The messages, all of them passionate, varied in coherence and length. Some preferred lengthy tirades, while another epitomized his opinion with the pithy phrase, "fuk yu (sic)." They claimed that the letter insulted all Chinese students, that it failed to recognize the tremendous suffering of the Chinese people, that foreigners had no right to claim superior authority over the interpretation of Chinese history, and that MIT had no business exposing the painful side of Asian history before the world. Others demanded disciplinary action or worse against Profs. Dower and Miyagawa.

I decided to respond to nearly all the e-mail messages (except the obscene ones). I wanted to engage these writers just to understand how their minds worked, even if there was little hope of changing their opinions. My responses were forceful but, I hope, not intemperate. After reading many accusations of cold-heartedness toward the suffering of Chinese who had lost family members to Japanese militarism, however, I felt obliged to remind some writers that many Americans, too, had family members who lost their lives while defending the

Chinese people against Japanese aggression in World War II. Chinese did not have a monopoly on suffering. I also pointed out that Chinese had inflicted a considerable amount of suffering on each other, during the turmoil of the Boxer Rebellion, Cultural Revolution, or Tiananmen Square, 1989. The exchanges were spirited; if we did not convince each other, we at least clarified our positions. This was, after all, an ideal "teaching moment." Because of the efficiency of e-mail communication, it required only [?] a few hours a day in the midst of regular teaching and service duties. But not much research got done!

Over the next few days, however, the responses took an extraordinary new turn. The Chinese alumni of MIT began to weigh in. Led by their organization, CAMIT, they engaged in intensive discussion of the issues surrounding the site in messages to each other, copied to me, Prof. Miyagawa, and President Hockfield, among others. Bear in mind that they could not verify any assertions about the site, since it had been shut down. All they had to go on were incomplete news reports and the messages from the denunciation campaign. Yet they conducted themselves with remarkable intelligence and civility, setting a model for how to address difficult controversial issues with clarity and insight. I would like to thank especially Ms. Greer Hsing Tan Swiston '87, chair of CAMIT, for moderating the discussion with consummate skill, and Ms. Yee Wah Chin '74, for responding so thoughtfully and elegantly to a variety of views.

The alumni views were diverse, but all of them were insightful. Almost all defended vigorously the rights of Profs. Dower and Miyagawa to teach and propagate their perspectives; many condemned the arrogant attitudes of the students. Some thought that MIT should not expose such painful visual materials to the raw emotions of the global community, even though they were appropriate within the MIT classroom. Others argued that since we can never predict precisely how our views will be received, we cannot let excess concerns for "sensitivity" inhibit

our teaching and research. As Yee Wah Chin put it, "as for taking things out of context or even altering them, there is always that risk, and if we were to refrain from posting anything from that fear, we may as well not post anything at all."

More important than the particular positions was the tone of this debate, so radically different from that of CSSA and its supporters. This amazing outpouring of moderate civil discourse on a vital contemporary subject was the most heartwarming aspect of the whole affair. It showed that the Internet truly can be a global village in the hands of rational, concerned citizens. As I wrote to President Hockfield, "We can be very proud of our alumni (after all, they used to be our students), I am sorry to be bragging so much."

If some future social scientist used this correspondence as "data" for a research project, she might conclude: "A content analysis was done of the opinions contained in the complete database of e-mail correspondence, arranging them on the following ordinal scale from 1 to 5: 1. Dower and Miyagawa were completely justified in their project; the students' actions were ridiculous and embarrassing; 2. The Website contained some unintentionally offensive portions, indicating the need for some clarification, but it should be restored as soon as possible with warnings about the need to view its content carefully; 3. The site was unbalanced, because it leaned too much toward the Japanese perspective; it needed to include Chinese materials and be substantially revised; 4. The Website indicated such bias against the Chinese people and in favor of Japanese militarism that the Website should be suppressed, MIT should apologize, and Profs. Dower and Miyagawa should be fired; 5. Even more violent threats..."

"A frequency distribution of the responses would find them arrayed in a normal distribution with its median at about 3.0, with the median response from members of CAMIT lying one or more standard intervals to the left (≤ 2.5), and the median response from members of CSSA lying one or more standard intervals to the right (> 3.5). There is most

MIT Faculty Statement on the Visualizing Cultures Website

As faculty members of MIT, we endorse in the strongest terms the scholarly value of the Visualizing Cultures project directed by Professors John Dower and Shigeru Miyagawa. This prize-winning Website was created by two of the world's leading scholars. By going to visualizingcultures.mit.edu, readers of this letter can see for themselves how, by bringing together textual explanation with thousands of images, the Website explores in detail the development of Japan's relationship to Western powers and China since the mid-nineteenth century.

It also evokes broader questions about the cultures of war, imperialism, and nationalism. Many of the subjects it analyzes are painful to recall, but since the authors are professional scholars of the highest caliber, the site in its entirety enlightens everyone who examines it carefully about the deepest questions of social and historical change. Because it brings advanced technology together with humanistic research, it is a jewel of the MIT curriculum, and the OpenCourseWare project makes it available to the entire world.

A small group of individuals took one image on this site out of context and broadcast it across the Internet. By doing so, they fomented an e-mail campaign directed against MIT's educational mission that quickly exploded out of control into a global incident. The site was temporarily shut down in response to these attacks. Some critics claim that the site endorses Japanese racism and militarism and therefore urge that it be permanently shut down or substantively revised. In fact, the site describes and strongly condemns the racist propaganda that supported Japanese militarism.

The challenge to this project threatens the core values of MIT's educational and research mission. We commend the eloquent statement from President Susan Hockfield in support of the project. We call on all interested parties to join with us to ensure that the Visualizing Cultures Website will remain in its entirety and be protected against any future attacks. We also express our strong sympathy to Professors Dower and Miyagawa for the ordeal they have suffered, and reaffirm our commitment to MIT's basic values of academic freedom and scholarly integrity.

Hal Abelson	Loren Graham	George Kocur	Richard J. Samuels
Alice Amsden	Stephen Graves	Steven Lerman	Bish Sanyal
John Belcher	Hugh Gusterson	Pauline R. Maier	Merritt Roe Smith
Rafael Luis Bras	Morris Halle	Roger G. Mark	Bob Stalnaker
David M. Ciarlo	Ellen Harris	Anne M. McCants	Edward S. Steinfeld
Joshua Cohen	James Harris	David A. Mindell	Peter Temin
Isabelle de Courtivron	Wesley Harris	Fred Moavenzadeh	Emma Teng
Jesus Del Alamo	Irene Heim	Joel Moses	Bruce Tidor
Peter Donaldson	Harold F. Hemond	Dava J. Newman	Lily Tsai
Herbert H. Einstein	Diana Henderson	Steven E Ostrow	Edward Turk
Howard Eissenstat	Jean E. Jackson	Peter C. Perdue	Daniele Veneziano
Michael Fischer	Meg Jacobs	Ruth Perry	Julian Wheatley
Deborah Fitzgerald	Patrick Jaillot	David Pesetsky	Ann Wolpert
Suzanne Flynn	Kenneth Keniston	Jeffrey S. Ravel	Evan Ziporyn
Daniel Fox	Michael Kenstowicz	Norvin Richards	
Lorna Gibson	Samuel Jay Keyser	Harriet Ritvo	

likely a significant statistical difference between the two populations, but this subject requires further research.”

On May 4th, a memorable date in Chinese history, the anniversary of the great student movements of May 4th, 1919, President Hockfield issued a statement in English and Chinese strongly supporting the “Visualizing Cultures” project. She said, “the attacks on our colleagues and their work are antithetical to all that we stand for as a university dedicated to open inquiry and the free exchange of ideas.” Finally, I was ready to

cheer for the administration.

In the end, the authors resolved the crisis by adopting mainly position #2, with some parts of position #3. The Website has been restored intact, with the same images and text unchanged, but with warning labels attached to the most shocking images. A strong “gateway” statement in Chinese, English, and Japanese recognizes the power of images and the need to view them with extreme care. It insists, “Some of these images are harsh, for history itself is harsh...graphics that depict dark aspects of history – such as violence, intolerance,

racism, aggressive nationalism, war and atrocity, abuse of others and of the environment in general – have not been censored... PLEASE VIEW & USE THESE “VISUALIZING CULTURES” UNITS CAREFULLY & IN THE SPIRIT IN WHICH THEY HAVE BEEN PREPARED...To take images out of context and use them irresponsibly and provocatively destroys the highest ideals of uncensored sharing and communication that technology now makes possible.” Existing units will have Chinese translations, and I intend to work with the authors to add new Chinese units to the site.

What can we learn from this affair? Was it a tempest in a teapot or a straw in the wind? We learned about the terrifying power of images to strip very well-educated people of their capacities for reason, the large cultural gaps between different populations on this as yet incompletely globalized planet, the vital need for responsibility in presenting and responding to painful media material, the central role of MIT in propagating deeply insightful perspectives on the modern world through technological and humanistic research, and, most encouraging, the deep dedication of our faculty and especially our alumni to the critical academic norms which we all share.

The incident could also inspire many fascinating interdisciplinary research projects: How do historical memories embed themselves in student populations, through schools, media, and family stories (History)? Is there something special about the wiring of the brain that connects the visual cortex to emotional centers, bypassing the rational faculties (BCS)? Can modern computer technology both broadcast painful material widely but ensure that it cannot be misused (EECS)? When do students specializing in the sciences engage intensively in global political campaigns (Political Science, STS)?

Just leave it to an academic to turn a crisis into a research project! ■

Peter C. Perdue is the T.T. and Wei Fong Chao Professor of Asian Civilizations; Professor of History (pcperdue@mit.edu).

On the “Visualizing Cultures” Controversy and its Implications

MIT Chinese Student
and Scholar Association

AFTER ACTIVELY PARTICIPATING IN the resolution of the recent controversy surrounding the “Visualizing Cultures” Website, we at the Chinese Student and Scholar Association (CSSA) are grateful for this opportunity to directly communicate with the great academic and research community at MIT. We want to introduce to you what CSSA does, report on the resolution of the controversy, clarify our position on this issue, and share our views on the greater implications of this issue on cultural sensitivity.

CSSA is one of the largest student groups at MIT, with over 600 official members, most of them from mainland China. They include 400 graduate students, 150 post-docs and visiting scholars, and 50 MIT affiliates. The main mission of our organization is to serve the needs of our members, promote Chinese culture, and facilitate communication within the large Chinese community both on and off MIT campus. Towards this goal, CSSA regularly organizes social activities (dancing parties and outings), conducts seminar series (career and academic development, insurance, immigration), and celebrates Chinese culture with various events (Mid-Autumn Harbor Cruise and Chinese New Year events).

CSSA's role in resolving this controversy

Although the recent controversy surrounding the “Visualizing Cultures” Website generated headlines worldwide, the issue was swiftly resolved within four days, thanks to the close cooperation among the MIT administration, the two professors (Dr. John Dower and Dr. Shigeru Miyagawa), and CSSA. The controversy originally unfolded with the Website being spotlighted on MIT's homepage on April

23rd and 24th (Sunday and Monday). By Monday afternoon, CSSA had received numerous e-mails from distressed students protesting against the inappropriate presentation of Japanese wartime propaganda depicting atrocities inflicted on the Chinese people in the “Throwing off Asia” unit of the Website. As CSSA officers, we held an emergency meeting to decide the course of action. Based on the email responses we received and the thunderous outcry from the worldwide Chinese online community we observed, CSSA wrote an official letter on behalf of Chinese students at MIT that was sent to the two professors as well as to the MIT administration on Tuesday (see CSSA Website cssa.mit.edu/new/new). The letter detailed the emotional damage the inappropriate presentation had caused to thousands of Chinese people worldwide, and requested that, i) “the authors should provide the proper historical context for the prints” and ii) “MIT should pay special attention to the presentation of culturally-demeaning content, particularly to its emotionally-damaging potential.”

Also on Tuesday April 25th, CSSA officers met with the MIT Ombuds Office and Graduate Dean Ike Colbert. We greatly appreciate the promptness and attention with which they listened to our concerns, and the helpful guidance they offered. On Wednesday, while CSSA and Dr. Miyagawa corresponded by e-mail to set up an official meeting, the two professors and the MIT administration held a public forum that evening. Some Chinese students from MIT as well as some from Chinese communities outside of MIT attended the forum and voiced their personal opinions.

Finally on Thursday morning, CSSA officers had an in-depth discussion with

the two professors and the MIT administration. We were most impressed by, and thankful for, the two professors' willingness to seriously consider our requests, and the Institute's efforts in resolving this issue. The meeting resulted in a mutual recognition of the need to contextualize these sensitive materials and a constructive plan to do so. In the afternoon on the same day, one final detailed discussion led to the joint release of three official statements. The two statements from the professors and the Institute can be found at the MIT News Website web.mit.edu/newsoffice/2006/visualizing-cultures.html, while the statement from CSSA is available at the CSSA Website and was sent to Chinese media worldwide (see next page). CSSA also contributed to the translation of the three statements into Chinese, with the help of Dr. Jing Wang.

This is not about censorship

Since then, Dr. Dower and Dr. Miyagawa have successfully relaunched the “Visualizing Cultures” Website, with constructive feedback from CSSA officers before and after the amendments. Unfortunately, outside of the team directly working to resolve this issue (the two professors, the MIT administration, and CSSA), some members of the MIT community without complete information have caused grave misconceptions of the Chinese students at MIT. The opening paragraph of *The Tech's* initial reporting of the issue (April 28th) misleadingly cast the issue as one of censorship versus sensitivity. It also conveniently excluded Chinese students from any of its dozen or so quotes, and decided not to place the official letter or statement from CSSA alongside those from the two professors and the Institute.

As stated clearly in our official letter, statement, and multiple meetings with the two professors and the MIT administration, we have utmost respect for academic freedom and the quality of research presented in the “Visualization Cultures” Website. We have asked for proper context, but never censorship. As *The Tech* stated in the Corrections section of their next issue, their initial reporting was “incomplete in its portrayal of the views of the Chinese students, many of whom wanted the sensitive material on the site introduced with better context, rather than removed altogether.” Nevertheless, it is very tempting for anyone who disagrees with the views of Chinese students to denounce this as censorship, for censorship is one of the few issues that all of us at MIT would unanimously oppose. One should, however, realize that, to blatantly ignore the actual request CSSA put forth on behalf of Chinese students and stubbornly insist on calling our demands censorship, is as inappropriate and irresponsible as the act of condemning the Website without reading its content.

We also hope that the MIT community would not generalize from the irrational behaviors of some Chinese individuals from outside of MIT. Just as the personal opinions of some students at the Wednesday public forum did not represent the majority of Chinese students at MIT, these irrational behaviors were but the most extreme reactions among Chinese people. Right from the beginning, CSSA and its members clearly and repeatedly stated our strong opposition to irrational behavior and acted swiftly to diffuse the tension, and indeed the majority of CSSA members were strongly supportive of the achieved resolution.

Implications on cultural sensitivity

This controversy has been an invaluable lesson for all parties involved. As readers, we must bear the responsibility of carefully reading the materials. As authors, professors and researchers must carefully consider the possible impact of any highly-sensitive materials to their audience. Sometimes highly-sensitive materi-

Official CSSA Statement (April 27, 2006)

Dear CSSA Members and Other Members of the Chinese Community Worldwide,

Earlier this morning, the MIT Chinese Student and Scholar Association (CSSA) had an in-depth discussion with the MIT administration on the issue of the Visualizing Cultures website, specifically the “Throwing Off Asia” unit. This is a scholarly research project, and there is no art exhibition associated with it. Representatives from the President’s Office, the MIT News Office, and the research group behind the website were all present. The meeting has resulted in a constructive agreement.

The research group recognized the need to contextualize these sensitive materials and pledged to continue a dialogue with CSSA and other groups to address this issue.

Professors Dower and Miyagawa have expressed deep regret over the emotional distress caused by some of the imagery and are genuinely sorry that the website has caused pain within the Chinese community.

The agreed resolution is as follows:

1. Official statements from both MIT and Professors Dower and Miyagawa, which will be posted as a link off the MIT home page shortly and permanently reside on the MIT News Office website, and distributed to the Chinese community worldwide.
2. Organize a public forum to facilitate a discussion on the use of sensitive imagery. The Committee on Campus Race Relations (CCRR) is currently organizing a panel discussion on visual imagery that is scheduled to take place in early May (date and location to be determined).
3. The Visualizing Cultures research team will address how it contextualizes sensitive content by providing appropriate language to prepare users for the graphic material depicted. The research team is looking to CSSA for feedback and future dialogue.

As stated previously, CSSA is strongly opposed to any irrational behavior. Any feedback from individuals on this issue is welcome.

als, especially powerful visual imagery, exert such irreversible emotional damages on the unprepared readers, that they in fact present an obstacle to the readers’ complete comprehension of the authors’ original intent.

In particular, it is important for professors and researchers, especially in a prominent institution like MIT, to recognize their potentially wide audience. In the case of “Visualization Cultures,” “the homepage brought it to the attention of such a wide audience that we have to think about how it will be interpreted,” as Suzana Lisanti (MIT homepage coordinator) pointed out in an article in *The Tech*. The materials’ emotionally damaging potential was amplified by their publication on the popular OpenCourseWare and Spotlight on MIT’s homepage for two consecutive days. All of this, together with the “Visualization Cultures” Website’s exhibit-style presentation, indicated a mainstream audience.

Beyond the current controversy at hand, when presenting highly sensitive materials for a mainstream audience, it is paramount that authors provide proper

guidance, to avoid the possible emotional damage for the unprepared reader. Again, this is not an issue of censorship. The question is not whether these materials should be shown, but rather, how?

We at CSSA would like to express gratitude once again for the two professors’ openness to suggestions and for the MIT administration’s support. The sensitive way in which this controversy has been handled could not have been accomplished without the collaborative attitudes we all brought to the table. We encourage anyone who would like further clarifications and who have additional comments to please contact us, and/or Drs. Dower and Miyagawa. We welcome continued conversations on this issue, and look forward to future developments of powerful educational tools like “Visualizing Cultures.” ■

MIT Chinese Student and Scholar Association:

Edward Chin Wang Lee, Officer
Shan Wu, Member
Lin Han, Vice President
Huan Zhang, President

Communication Requirement Evaluation Process Begins

Suzanne Flynn

THIS SPRING, MIT LAUNCHED Phase One of a three-part, 18-month program evaluation of the undergraduate Communication Requirement (CR). As you will recall, the CR was established by a vote of the faculty in May 2000. At that time, the faculty Subcommittee on the Communication Requirement (SOCR), which is responsible for CR oversight, was charged with assessing the overall effectiveness of the requirement.

As a brief background summary, the CR currently consists of four Communication Intensive (CI) classes sequenced throughout a student's undergraduate career. Every student takes two CI subjects in the humanities, arts, and social sciences (CI-H) and two CI subjects within his or her major degree program (CI-M). CI subjects are designed to teach written and oral communication skills within the context of disciplinary material and in conjunction with the teaching of general and technical skills. The implementation of this requirement began with the Class of 2005.

Given that we have completed one full cycle of the CR, we are now in a position to begin an initial assessment of the requirement, as well as put in place those mechanisms that will allow for its ongoing evaluation. For the three phased evaluation process we are now embarking upon, we have several general goals:

- We seek to determine what the CR experiences of our undergraduates are as there is considerable flexibility – especially at the CI-H level – in terms of which classes a student may choose. In addition, we know that many students take more than the minimum four CI classes during their undergraduate career.
- We want to understand what the impact of these CR experiences is on students' abilities to write and speak, and we will seek this information from both the students' and faculty's perspectives.
- We want to know how effective the implementation of the CR is in terms of curricular

integration, acceptance, and sustainability.

Each of the planned three phases focuses on some aspect of these overarching questions. We also anticipate that the results of each phase of the evaluation will inform subsequent phases and allow us to expand areas of study, deepen the line of questioning, and cross-validate findings.

The evaluation process is guided by two general principles: independence and transparency. Independence will be ensured by the participation of a nonpartisan in-house evaluator, who will coordinate faculty involvement and, when necessary, consultation with outside faculty experts. Conducting an evaluation using an internal evaluator makes certain that the stakeholders are intimately involved with the process and that the assessment addresses the issues and questions the stakeholders deem important at each phase of process. Dr. Rudolph Mitchell of the Teaching and Learning Laboratory has been appointed as the in-house program evaluator for the CR assessment. At another level, transparency will be maintained through timely reports to the MIT community that profile current evaluation activities and summarize findings.

Phase One of the assessment process is now underway. This phase will provide an overview, focusing on students' and faculty members' attitudes and experiences with the CR and identifying new areas for investigation in future phases. Select student and faculty opinions were gathered through interviews and meetings, which began in January. In April and May 2006, all seniors and faculty were asked to participate in online surveys consisting of between 50 and 65 one-line statements that respondents are asked to rate by a seven-point scale. The senior survey seeks to gain an understanding of these students' attitudes, experiences, impressions, and conclusions about their CI subjects. The faculty survey focuses on faculty beliefs about, and observa-

tions and impressions of the Communication Requirement. The faculty survey also solicits views on the impact of the CR and how the CR might be improved. Findings from Phase One will be reported to the MIT community in the fall of 2006.

Scheduled for fall 2006, Phase Two will focus on effects and will involve a more in-depth investigation of the undergraduates' CI experiences and faculty views on how well the Requirement has been implemented.

Phase Three of the assessment, slated to take place in winter and spring 2007, will focus on the impact of the CR on the overall educational experience of MIT undergraduates and on understanding best practices in its implementation. This phase will include an examination of alumni reflections on how their undergraduate education – specifically the CR – prepared them to communicate in social and professional settings and employers' perspectives on the ability of recent MIT graduates to effectively communicate in professional contexts.

MIT provides students with an extraordinary education, but success at the Institute and beyond also requires effective communication skills. The CR program evaluation will lead to an understanding of the overall effects of the Requirement on students' communication skills and help identify specific areas for improvement of methodologies and further integration of the Requirement into the curriculum. SOCR members would like to thank you, in advance, for your participation in the survey and look forward to sharing the Phase One program assessment survey findings with you this fall. More specific information about the Communication Requirement and lists of subjects that are designated as CI are available on the Website at: web.mit.edu/commreq/. ■

Suzanne Flynn is a Professor of Linguistics; Chair, Subcommittee on the Communication Requirement (SOCR) (sflynn@mit.edu).

A Modest Proposal: A Dental Insurance Plan for All Students

Edward B. Seldin

IN AN “OPEN LETTER to the MIT Faculty” in a previous issue of the *Faculty Newsletter* (January/February 2006), I expressed the personal belief that the Institute creates for itself an ethical responsibility to provide reasonable access to dental care when, because of the excellence of its graduate programs, it attracts foreign students to come study in Cambridge.

It may not be generally known to the faculty, but some of our students come from countries in which the average graduate school-aged individual may have received either no dental care up to that time, or care that is deficient by U.S. standards. The plight of some students is compounded by a knowledge deficit regarding what constitutes good dental health as well as by economic factors. Some students may not recognize that they have a significant problem until irreparable damage has been done by disease processes that only produce symptoms at an advanced stage.

Medical insurance is provided for students by the Institute as a matter of course, and there is now legislation that prevents foreign students from waving local medical insurance offerings. But no dental insurance is currently provided by the Institute for its students, and the difference in the way medical and dental issues are dealt with seems almost to suggest that the teeth and oral cavity are not legitimate parts of the human body.

The extent to which members of the MIT faculty and administration agree with my statement regarding Institute responsibility probably varies widely. Proximity to the problem may be the principle determinant of how it is viewed.

I can tell you, as the principal on-campus provider of oral and maxillofacial surgical care for the MIT community during the past 30 years, that every time I have had to preside over the premature loss of teeth (ones that might have been saved had a given student been prop-

erly screened for critical needs upon arrival at MIT, given a baseline education regarding dental health and treatment options, and provided with the wherewithal to access care in a timely manner) I have, *on every such occasion*,

Presumably, a college or university is “about” its student body. How then does one explain the anomaly that at the Institute students comprise the only sub-set of our population that goes without the benefit of a dental insurance offering?

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New Resource on Faculty Website: “Current Practices”

Ike Colbert

THE FACULTY RESOURCES WEBSITE

(web.mit.edu/faculty) has a new resource called “Current Practices in Graduate Student Administration.” This compilation, illustrating current departmental efforts to enhance the graduate experience in areas such as communications, faculty/student advising, orientation, and peer support and training, is a direct outcome of the Graduate Student Council’s initiative on better advising and research ethics. The purpose of the resource is to document current practices in student life and academic administration and inspire new ones. This article tells the story behind the work.

* * * * *

In the fall of 2004, the Graduate Student Council (GSC) initiated an effort to engage faculty, staff, and students in considering the status of advising and mentoring for graduate students at MIT. A GSC subcommittee on advising and mentoring designed survey questions for inclusion in the 2004 Graduate Student Survey. Over half the graduate student body responded to the survey. Subsequently, the subcommittee convened eight different focus groups, which included 85 participants (faculty, staff, and students) representing 25 different departments. The GSC reported on the results of this comprehensive work in an article in the March/April 2005 *MIT Faculty Newsletter*. They also presented their work to the Committee on Student Life (January 2005), to the broader MIT community at a town meeting in Room 10-250 (February 2005), at a faculty meeting (May 2005), and at a roundtable meeting of all graduate administrators (May 2005).

Writing in this newsletter on the GSC’s behalf (“Improving the Graduate Student Academic Experience,” March/April 2005), former GSC President Barun Singh described the advisor-advisee relationship as the single most important supportive relationship in the career of a graduate student. In addition,

he noted that this relationship must be complemented by “. . . training in essential skills and advice to assist with their professional development.”

If you read Singh’s article or attended one of the GSC’s presentations, you couldn’t help but be inspired by the passion and commitment of the students who were determined to improve the graduate student experience. The graduate administrators (who serve as the key representatives responsible for a broad array of services and resources for graduate students and work closely with me) applauded the GSC’s undertaking, resonated with the results, and agreed that the data generated was rich, comprehensive, and timely. Determined not to lose the valuable information and momentum, they planned to design a structure and process that would seed ongoing support for graduate students by departments and faculty.

In August 2005, the graduate administrators met for a day-long retreat at Endicott House. The purpose of the retreat was to identify services currently provided across individual departments that differed widely in size, academic orientation, and culture. Those who attended the retreat discussed the most significant results of the GSC’s survey and offered descriptions of current departmental practices that addressed student needs as flagged by the survey. Over the past year, a subcommittee has organized and refined these descriptions into a directory of services organized by six broad themes: communication; ethics; faculty/student advising; mediation and conflict resolution; orientation; peer support and training.

Later in the academic year, I invited the graduate administrators to present their work to the Committee on Graduate School Programs (CGSP). The CGSP viewed the directory as a practical resource for faculty and offered many thoughtful recommendations. They concluded that this work addressed the recommendations of the original focus groups

that “emphasized the importance of regular discussions – among faculty, students, and graduate administrators – to assess the state of advising and to seek out best practices from other departments or Schools.”

More recently, the Chancellor and the Faculty Policy Committee (FPC) reviewed “Current Practices.” The FPC recommended disseminating the information to faculty via the Faculty Resources Website. “Current Practices” is now available there as a pdf file (web.mit.edu/faculty/currentpractices.pdf).

This is an evolving document, which the graduate administrators are committed to updating on a regular basis, with oversight from the Committee on Graduate Programs. Over time, issues and priorities change, and “Current Practices” will reflect that. The graduate administrators hope that many departments will find practices they can usefully adopt, or adapt, to improve graduate student life in their areas. Comments, suggestions for change, and contributions are welcome at any time. To contribute your current departmental practice, please contact Department of Physics graduate administrator Brian Canavan at bcanavan@mit.edu.

Acknowledgments

I wish to thank the graduate administrators’ subcommittee responsible for shepherding this effort on behalf of their colleagues and in support of graduate students: coordinators Brian Canavan (Physics), Cathy Modica (HST), and Susan Twarog (Political Science); and subcommittee members Sydney Miller (TPP); Paulette Mosley (ORC), Cynthia Stewart (Civil and Environmental Engineering); and Marie Stuppard (Aeronautics and Astronautics). ■

Ike Colbert is Dean for Graduate Students (ikec@mit.edu).

MIT Poetry

by Anthony Lioi

Noctiluca

Stir-crazy noctiluca,
the dinoflagellate as night-light,
enlightens a summer solstice
as I churn the cold Atlantic
and Harp, Aquila, and the Swan
illuminate the island's rocks.

Maine is full of island-rocks
to host a hunt for noctiluca;
scattered feathers of the Swan
fallen in its night-light,
they float in the cold Atlantic
unhurried by seal or solstice.

Plotting equinox and solstice
to drown schoolboys in the rocks
of sunken cities, cold Atlantic
sweeps the shining noctiluca
to my hands, a night-light
rivaling suns in the Swan.

I do not need the Swan
as totem of my solstice;
many beasts of night-light
instruct the hundred rocks
harboring the alga noctiluca
from death's pull in the Atlantic.

There is no drowned Atlantic
town ruled by the Swan;
principalities of noctiluca
dance at the water-solstice,
heedless of the darkened rocks,
to mark the reign of night-light.

True patron of knight-light
in the luminous Atlantic,
I would brave many rocks,
the crucifixion of the Swan,
to see you manifest at solstice,
Lady of Waters, Noctiluca.

When chanted rocks draw light
from Noctiluca, the Atlantic
calls me, errant swan, to her solstice.

Anthony Lioi is Assistant Professor in the
Program in Writing and Humanistic Studies.

\Noc`ti*lu`ca\, n.; pl. Noctilucae. [L. *noctiluca* "something that shines by night," from *nox*, *noctis*, night + *lucere*, to shine, *lux* light.]

1. (Old Chem.) That which shines at night; – a fanciful name for phosphorus.

2. (Zool.) A genus of marine flagellate Infusoria, remarkable for their unusually large size and complex structure, as well as for their phosphorescence. The brilliant diffuse phosphorescence of the sea is often due to myriads of Noctilucae.

–*Webster's Dictionary* (1913)

“Soft Skills” to Help Avoid the “Hard Knocks”

Charles Leiserson
Catherine Avril

Developing Leadership Skills for Greater Effectiveness in Teaching and Research

Dealing with the tough (but nonacademic, nonscientific) issues

WHAT DO YOU DO when confronted with an apparently unmotivated student? How do you deal with interpersonal conflicts that could jeopardize your research? How does your modus operandi help or limit you in different situations? How would you communicate successfully with that key donor who thinks very differently from you?

These situations typify just a few of the thorny challenges that faculty members can face. Generally unschooled in how best to deal with such human-centered issues, faculty are left to gain experience through “hard knocks.” That’s painful . . . and not the most efficient approach for developing leadership skills. So concluded Professor Charles Leiserson of EECS. While on leave at Akamai Technologies in 1999–2001, he saw first-hand the value to that company of engaging a management expert to assist with leadership skills training. Upon returning to MIT, Leiserson realized that similar training provided to engineering faculty could significantly enhance their teaching and research.

Since 2002, three dozen MIT faculty have participated in a series of workshops developed and presented by Professor Leiserson and Chuck McVinney, management consultant. Originally offered to faculty in the then Laboratory for Computer Science, this year sponsorship by the School of Engineering has widened the audience to all Engineering faculty. “The School of Engineering at MIT is fortunate to encompass many extraordinary faculty who are conducting pioneering research and educational innovations,” says Dean Tom Magnanti. “These workshops provide a novel forum for individ-

ual and collective reflection and enhance the faculty’s effectiveness in those important endeavors.”

McVinney explains the customized nature of the Leadership Skills for Engineering Faculty program. “We have developed these workshops specifically for academic engineering environments and use real-life examples taken from situations faced by engineering professors.” Leiserson and McVinney have run four workshops over the past five years, including three at MIT and one at the National University of Singapore’s School of Computing.

Having completed the program, participating faculty members can understand and articulate how leadership styles affect engineering, research, and the educational process. “I learned many key things essential to running a group and interacting with others that you don’t learn anywhere else,” says Prof. Kimberly Hamad-Schifferli of Mechanical Engineering. “A good way to become aware of your inner strengths,” says Professor David Gifford of EECS. Both senior and junior faculty participants gain significant insights into:

- emotions in the workplace
- being effective with people who think differently
- how to foster creativity
- dealing with conflict
- giving effective feedback
- how different situations call for different leadership styles
- student motivation
- self-understanding as a leader.

Professor Rodney Brooks, director of CSAIL, comments, “CSAIL faculty speak in very positive terms about the work-

shop. It has provided them an opportunity to develop a better understanding of themselves and others and helped them to know how to manage their research groups.” Professor Eric Grimson, department head of EECS, who has provided academic support for Leiserson to teach the workshops this semester, adds, “The leadership course that Charles Leiserson has created is a great opportunity for our faculty. While clearly of value to junior faculty who are anxious to learn skills that will make it easier for them to supervise students, run a research group, interact professionally with colleagues, and generally be more effective leaders, we have had senior faculty in our department take the course and comment on how much they learned that makes them better faculty members.”

A question of time

Leiserson observes, “When I attend a departmental luncheon to acquaint faculty with these workshops, someone invariably expresses the concern that they have little time to attend a session. In fact, workshop participants often find that the time invested in attending a workshop is easily returned in just one semester by avoiding time-consuming miscommunications with students and staff and by applying the lessons in situational leadership to bring students up to speed on projects more quickly.”

About the workshop

Leiserson and McVinney instruct workshop participants in human-centered strategies for leading effective teams in academic engineering environments. Through a series of interactive role-playing activities, self-assessment instru-

ments, and group discussions, faculty members develop a repertoire of techniques for addressing issues that commonly arise within engineering research groups and among teaching staff. "I really appreciated the self-assessment instruments and the framework they provided for future growth," says Professor Bruce Tidor of EECS and Biological Engineering. Professor Polina Golland, also in EECS, points out, "The professor/student role-playing taught me how differences in communication styles can seriously complicate interactions, a poignant and unforgettable lesson."

Because leadership styles vary widely with personality, the workshop eschews "one-size-fits-all" prescriptions. What

works for one person often fails to work for another. Instead, the workshop promotes awareness of the participants' own styles of leadership, offers them a palette of approaches to explore, and provides experiential learning to help them to determine what works best for them. The instructors do not judge styles as "good" or "bad," but provide a nonjudgmental yet structured environment in which participants can discover their own leadership strengths. In Professor Leiserson's words, "No dogma."

Discussion topics in the workshop cover a wide range of issues that includes: group culture, student advising, race and gender, balancing work and family, research and grants, the imperative to

publish or perish, reputation and tenure, teaching, and service.

Professor Regina Barzilay of EECS sums up her experience this way: "I learned many things about myself that will help me in my professional and personal life." "I admit I was skeptical," adds Professor Vivek Goyal, also of EECS, "but I was amazed that so much of the material was genuinely universal."

For information about future workshops, please contact Donna Savicki in the Office of the Dean of Engineering, savicki@mit.edu, x3-3294. ■

Charles Leiserson is a Professor of Computer Science and Engineering, EECS and CSAIL (cel@mit.edu). **Catherine Avril** is Director of Communications for the School of Engineering (cavril@mit.edu).

Computer Space Planning for MIT Tops IT-SPARCC's Priority List

Jerrold M. Grochow

USE OF INFORMATION TECHNOLOGY has become one of the most important factors in the success of academic, research, and administrative enterprise at MIT. A 2002 external review committee recommended that MIT appoint a strategic coordinating body to develop better Institute-wide processes for planning and resource allocation for all aspects of IT. In response to this recommendation, the Provost and Executive Vice President created the Information Technology Strategic Planning and Resources Coordinating Council (IT-SPARCC) to advise them on policy and priorities for IT infrastructure and services. IT-SPARCC members include faculty and senior administrators, and is chaired by me, as Vice President for Information Services and Technology (IS&T).

IT-SPARCC has been meeting for the past year to review reports and proposals on issues prepared by task forces of the Council, by staff, or by other organizations within

MIT with focus on policy and recommendations with broad impact across the Institute. Topics that the Council considers include:

- General review of the provision of IT and related services at MIT
- Charging mechanisms for IT services
- Strategies for allocation of the Institute general budget across academic, administrative, and research computing
- Space allocation for IT
- Review of priorities for computing infrastructure, academic computing, and administrative IT

Recommendations from IT-SPARCC feed directly into the decision-making process for capital allocation, annual budgets, and rate structures.

IT-SPARCC members include both faculty and administration, by design overlapping with members of the Academic Council, MIT Council on Education Technology, and Administrative Systems and Policies Coordinating Council. Faculty

members include Dean of Science Robert Silbey, Dean of Undergraduate Education Daniel Hastings, Hal Abelson, Nancy Leveson, Bob Redwine, and Associate Chair of the Faculty Bruce Tidor; Professors Steven Eppinger and Lorna Gibson served on the Council during academic year 2004-5. The Council's charter and full membership are available at web.mit.edu/it-sparcc/.

Top Priority: Computer Spaces

Over the past year, IT-SPARCC has discussed a variety of topics, and currently has computer space issues as its top priority. After an initial round of fact-finding and discussion, the Council endorsed the idea of a multi-tiered solution for critical IT space needs. Recognizing the complexity of this idea, the Council then commissioned the Computer Space Task Force (CSTF) to focus on facilities for server management and high-performance computing (HPC). CSTF membership includes many faculty and

continued on next page

Computer Space Planning

Grochow, from preceding page

researchers, as well as IT staff from various departments. The CSTF's charter and membership are available at web.mit.edu/it-sparcc/cstf/.

At the present time, large-scale computer servers are pervasive throughout the campus because of the relatively low-cost for cluster and server hardware. It is estimated that administrative and HPC computers are housed in over 100 sites throughout the campus, most under faculty control. The vast majority of these sites are not properly designed for data center usage and as a result, deans and laboratory directors are under increasing pressure to renovate many localized prime campus space locations for similar types of infrastructure for computer machine rooms. The IS&T Department also provides 4000 sq ft of space and facilities for computer server and HPC co-location management, but that is running to capacity. The opportunity cost for other more pressing academic and research uses of on-campus space coupled with the large costs of individual local space changes is prompting the Institute to seriously examine this computer space issue.

In June of 2005, the Council endorsed a set of recommendations to the Provost and Executive Vice President that focused on the issues of computer space.

1. That all Institute building projects (new and renovation) require planning and review for current and future computing needs for expected tenants as part of the Institute's capital approval process. Funding considerations should be part of this process.
2. That the Institute plan for and provide economic and scalable computing, communications, and "co-location" spaces (a secure site with good environmental factors for housing servers and related equipment) to meet the current and future requirements for computing and communications hardware and related equipment.
3. That the Provost and Executive Vice President use Institute funds for co-location where possible and agreeable to all parties. Such funding should apply to

requests for computer infrastructure space, power, cooling, and network connectivity in co-location spaces that have been specifically outfitted for these needs. Institute funds should be considered for individual DLC sites if the DLC and IS&T jointly present to the Provost and Executive Vice President that the Institute co-location cannot meet the needed computer hardware infrastructure requirements.

4. That all DLCs identify computing needs and requirements in conjunction with research proposals and annual plans, taking an approach similar to identification of other capital needs. IT-SPARCC will review this information in aggregate to ensure that IT considerations feed directly into the decisions for Institute capital allocation, annual budgets, and rate structures.

Researchers in many departments need space and facilities ranging from housing a single rack of computer equipment to as many as 40. Some faculty want space that allows easy access for themselves and students; others are able to manage their computers remotely. Some faculty are looking for basic facilities (power, cooling, and Internet access) while others want facilities with backup power, redundant cooling, or other aspects of high-reliability computer centers. Some faculty manage computer equipment using student labor, while others are looking for various levels of services from IT professionals.

Recognizing the diverse needs of the faculty for different levels of infrastructure support in this area, the CSTF is considering a number of campus and remote locations. The task force has identified several key cost categories impacting the consideration of any options for computer space. These include the costs of:

1. Building construction and renovation
2. Network connectivity
3. Capital equipment and IT infrastructure
4. Operating costs (labor and consultants)
5. Lease costs (if applicable)
6. Power costs

From an analysis of its preliminary findings, the CSTF has observed that power for a data center/co-location site is the most expensive cost factor over the lifetime of the

facility (it is estimated that MIT currently spends almost \$2M per year for electricity to power and cool HPC sites across campus). Because the cost of power is similar among campus and Boston/commuting locations, the total cost of ownership over the lifetime for any such data center and HPC co-location facility are fairly similar. One would have to identify a remote location with substantially lower power costs to significantly impact the total data center/co-location costs.

Based on its findings to date, the CSTF has concluded that any solution to satisfy MIT faculty, researchers, and administrators may need to include a combination of on- and off-campus space, some administered locally and some centrally. The success of the centralized data center/co-location approach will depend upon adequate planning, funding models that provide incentives, a plan to provide excellent equipment service to faculty who would locate their computer hardware at such a site, and close cooperation with faculty, department heads, and administrators in the DLCs.

As part of this planning and fact finding process, IT-SPARCC and the CSTF are keenly interested in receiving feedback from faculty and researchers about their computer space IT needs and suggestions going forward. The CSTF and the Council welcome all faculty suggestions and feedback. The Council will delve into a variety of issues related to IT planning on an Institute-wide basis and will make recommendations to the Provost and Executive Vice President. MIT relies on well-run, cost-effective server management and high performance computing to do all the things it does so well.

In addition to talking with any of its members, you can also provide feedback to IT-SPARCC by:

- Sending email to the CSTF at cstf@mit.edu
- Sending e-mail to IT-SPARCC at it-sparcc@mit.edu
- Filling out the Comments and Questions form on the IT-SPARCC Website at web.mit.edu/it-sparcc/comments.html. ■

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Seniors Report Increased Satisfaction with Faculty Interaction

Newsletter Staff

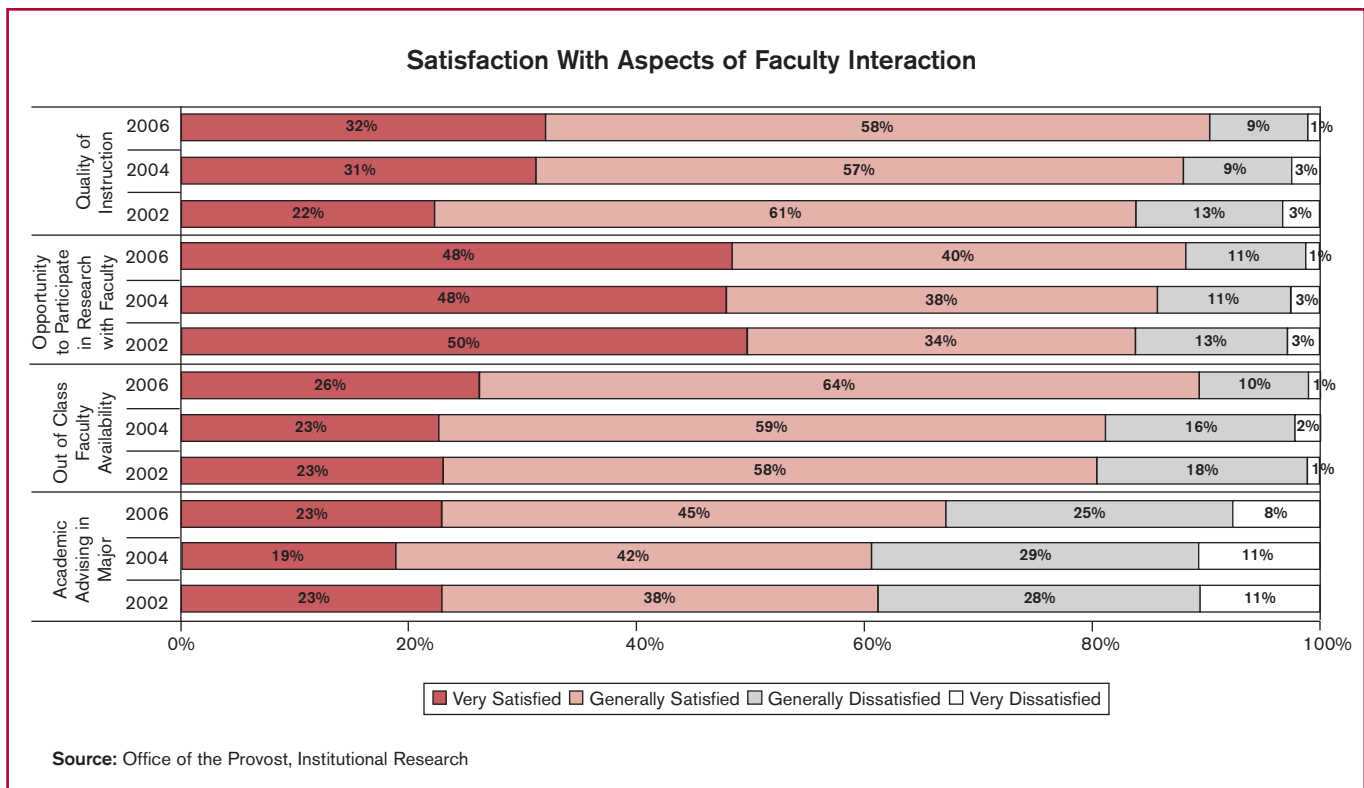
IN MARCH OF THIS YEAR, all undergraduate seniors were invited to complete an on-line satisfaction survey. This survey is administered at MIT every two years; this is the third administration. The survey asked students to describe their plans after college, to rate their satisfaction with various aspects of their education, and to indicate how their abilities had

changed since enrolling at MIT. The response rate was 61%. For each academic department with sufficient responses, a report with overall frequencies and charts was produced.

The chart below summarizes senior satisfaction with several aspects of faculty interaction. In general, seniors reported higher levels of satisfaction in 2006 com-

pared to previous years, with 84% being very satisfied or generally satisfied with their undergraduate education, and 78% with their social life on campus.

The survey was conducted by the Office of the Provost, Institutional Research. The overall Institute report for the 2006 Senior Survey is available at web.mit.edu/ir/surveys/index.html. ■



Smart Buy Purchasing Initiative

Richard Schmalensee

MIT Sloan School dean reveals how a new campus resource is making quick work out of purchasing

THE GOAL OF THE Smart Buy Purchasing Initiative is to simplify and improve the purchasing of commodities and services across the Institute – saving time and money that can be redirected to each unit’s higher priorities, like lab equipment or research. The initiative, introduced in January 2005 by John Curry and Bob Brown, is a collaborative effort with the MIT Procurement Department and representatives across MIT. As a steering committee member of this important initiative, I wanted to share with you the process that was undertaken and the progress that has been made.

Phase I of the initiative began with the review of printing and express shipping. The MIT Procurement Department and an extended team of experienced buyers, including DLC staff and service providers like the Publishing Services Bureau, undertook the work of evaluating competing vendors. Team members pooled their knowledge and negotiated terms. The result: reduced costs, improved quality and service, and streamlined ordering tools.

What makes these efficiencies possible is buying power. MIT spends millions of dollars each year on printing and shipping. The Procurement Department and its partners have leveraged that buying power on behalf of the entire Institute. The more frequently the community purchases from participating vendors, the stronger its bargaining power.

The Smart Buy Purchasing Initiative Website (web.mit.edu/smartbuy/) rolled out with two commodities in place, printing and shipping. Other frequently pur-

chased products and services – like catering, office furniture, copiers, and office printers – will be available through the program in the coming months.

Members of the MIT community can take advantage of this program by visiting the Website, where they can quickly evaluate and compare the services of multiple vendors. Who are the best printers for departmental newsletters? What’s the most efficient way to send a package across town or around the world? These questions and many more are answered there.

To print or not to print

The Smart Buy Purchasing Initiative site provides a profile of each participating printing company, as well as a toolkit of resources and related links, such as access to the Publishing Services Bureau Website. There, members of the community can even evaluate a project to determine whether print is the most effective medium for the job at hand.

Overnight or across town

On the shipping pages of the site, members of the MIT community can find out how to get their documents and packages across town or to the furthest reaches of the globe easily and inexpensively. A quick online form streamlines the air bill creation process and makes it simple to choose the most cost-effective service for a particular package. The Smart Buy Purchasing Initiative’s shipping team has negotiated prices even lower than previous bulk-pricing structures.

Keeping the machine oiled

The Procurement Department and its partners will continually monitor the performance of these suppliers by looking to the MIT community for feedback about services rendered. Find out more about both the process and the vendors at web.mit.edu/smartbuy/. ■

Richard Schmalensee is Dean of the Sloan School of Management (rschmal@mit.edu).

A Sestina

The poem on page 23 by Anthony Lioi of the Writing Program is a *sestina*, a famously (or infamously) complicated verse form invented in the twelfth century by the wandering singers known as troubadours. A *sestina* contains six six-line stanzas and a three-line conclusion (or *envoy*). The *sestina* eschews rhyme in favor of a fixed pattern of end words, which must be repeated in a different (and specific) order in each stanza. The *envoy* must complete the end-word variations and also contain the remaining three end words.

–David Thorburn, poetry editor

MIT Corporation
Mead, from page 1

Corporation, including the visiting committees which are so critical to the advancement of the academic mission of the Institute, and to explain the roles each constituent part plays in working to create efficient and effective governance in support of MIT's mission.

No discussion of the Corporation goes very far before the perennial question arises: "Why is it called the MIT Corporation, and why are the people on it called Corporation members instead of trustees?" The terms, as so much else at MIT, are rooted in history and tradition. In the mid-nineteenth century when MIT was chartered, it was the practice of legislatures to grant charters to colleges that were incorporated under state laws, and to refer to them as "corporations." MIT was incorporated and empowered by a series of acts of the Massachusetts legislature beginning in 1861, and was referred to from its inception as The Corporation of the Massachusetts Institute of Technology.

Some of its membership was specified by law. When the Morrill Act of 1863 ("the Land-Grant College Act") provided a grant to MIT, it specified that "...The governor, chief justice of the supreme judicial court, and the secretary of the board of education shall each be a member, *ex officio*, of the government of the institute." The grant also specified that "...the Institute shall provide for instruction in military tactics." The legacies of 1863 remain with us: the Corporation name, the representation of the Commonwealth on the Corporation, and military instruction, in the form of ROTC training.

Most of the 54 original incorporators of MIT who met in 1862 for the first annual meeting of the Institute's "Government" (as it was then called) were Bostonians. Today, the Corporation includes members from all parts of the United States and abroad. Their backgrounds are varied, but most are distinguished leaders in science, industry, education, the professions, and public service.

Corporation members serve without compensation, and have one thing in common – a strong commitment to MIT. By

devoting their time, hard work, financial resources, and wisdom, they reinforce a tradition of active, not passive, trusteeship.

Composition of the Corporation

Today, the Corporation is comprised of approximately 78 active members, including 45 term members (who hold five-year terms), 25 life members (who may serve until age 75), and eight *ex officio* members. In addition to the active members, there are currently 29 Life Members Emeriti, who attend Corporation meetings and participate in discussions, but are not permitted to vote.

Of the current term members, over 80 percent are graduates of MIT and almost all life members are MIT graduates – a representation that enhances the commitment of the Corporation to the Institute. Over 20 percent of the Corporation members are women and 18 percent are minorities. Five of the term members are recent graduates. A high priority of the Corporation is to achieve greater representation of women and minorities in its membership. The variety of occupations among our Corporation members mirrors the Institute's many-faceted interests. We have members representing academia (18%), business and finance (39%), technology (14%), the professions, government and non-profits (15%), and manufacturing (14%). For a complete list of Corporation members, see: web.mit.edu/corporation.

The Corporation as a whole meets four times a year, on the first Friday in October, December, and March, and has an abbreviated meeting on the morning of Commencement in June. These four- to five-hour meetings typically include a detailed report from the President and other officers, reports from visiting committee chairs, followed by a question period, approval of degrees and new courses of instruction, a review of Executive Committee actions, financial reports, and often a special presentation by a member of the faculty, a department head or dean, regarding an important aspect of their work. Nobel Laureates are always invited to make a presentation of their prize-winning work to the members.

The members of the Corporation and its committees (Audit, Executive, Development, and CJAC) are nominated by the Corporation's Membership Committee, which is headed by the Chairman of the Corporation, who consults as well with the President and the Provost as part of this process. The Chairman of the Corporation nominates the members of the Membership Committee. The Corporation as a whole acts on these nominations. The Executive Committee appoints the board of the MIT Investment Management Company. The visiting committees are comprised of Corporation members, MIT alumni, and presidential nominees. Visiting committee members are selected through a process organized by the Associate Secretary of the Corporation and involving the Chairman, the President, the Provost, the Secretary, the Vice President for Resource Development, the VP and CEO of the Alumni Association and associated staff, with the deans and department heads providing input. The Corporation as a whole annually ratifies all appointments to the visiting committees.

Committees of the Corporation

Much of the detailed and continuing work of the Corporation is conducted through its committees, whose chairs periodically report their findings and recommendations to the full Corporation.

The Corporation has delegated many important responsibilities to its Executive Committee, which is comprised of eight Corporation members and, *ex officio*, the President, who is the chair, the Chairman of the Corporation, the Chair of the Investment Management Company Board, and the Treasurer. The Provost and the Executive Vice President of Finance and Administration are regularly invited guests, and the Secretary of the Corporation serves as secretary to the Committee. This Committee acts similarly to a corporate board, convening up to 10 monthly meetings during the academic year. The Executive Committee focuses on policy and administrative issues facing the President and the Institute, including financial and budget planning, the man-

continued on next page

MIT Corporation

Mead, from preceding page

agement and enhancement of the Institute's resources, and capital projects. In connection with the President and Provost, it receives and approves the annual allocation from the endowment to the operating budget. Other significant topics of discussion typically include developments in teaching and research, student recruitment and admissions and financial aid policies, student life, and external relations. All of its actions are reported to the Corporation, which may be required to affirm or approve some of these actions as specified under the Bylaws.

The other standing committees are the Audit Committee, Membership Committee, and the Corporation Development Committee (CDC). Both the Membership Committee, which I chair, and the Audit Committee are composed entirely of Corporation members and those Committees' functions are self-explanatory. The CDC, which counts 16 Corporation members among its 67 members, meets regularly with the Institute's development officers to advise on and to assist with the resource development efforts.

MIT Investment Management Company Board

The newly created MIT Investment Management Company (MITIMCo) manages the MIT endowment and other assets. The MITIMCo was created to afford more flexibility in the framing of investment policy and its execution and to provide the Institute's investment leadership with broad, timely advice. While not technically a standing committee, it is also a creature of the Corporation. The MITIMCo board chair and eight of its members are members of the Corporation; its three outside members, who are all experts in the investment business, are appointed by the Executive Committee. Its president reports to the MITIMCo Board and to the President of the Institute. The MITIMCo management and staff exist within the Institute's organization.

CJAC

Another key group is the 18-member Corporation Joint Advisory Committee on Institute-wide Affairs (CJAC), established in 1969 to provide a vehicle for bringing students and faculty into regular communication with the Corporation on matters of importance to the MIT community. The Committee consists of six Corporation members, one of whom chairs the committee (including the President of the Alumni Association); six faculty

members including the Chair of the Faculty; and six students, including the President of the Undergraduate Association, the President of the Graduate Student Council, two undergraduate and two graduate students. The CJAC, which meets several times during the academic year, makes periodic reports to the entire Corporation.

Corporation Visiting Committees

Most faculty have come into contact with one or more of the Corporation's 30 visiting committees. Since their establishment in 1875, these committees have been important influences on education, research, and governance at MIT. The visiting committees are chaired by members of the Corporation and, as part of the Institute's governance, their role is to provide appraisal, advice, and insight on each academic department and on certain other major activities at the Institute, such as student life, undergraduate education, the libraries, and athletics.

Each visiting committee meets for approximately two days on campus every other year, providing faculty and students an opportunity to provide impressions, ideas, and recommendations to the Corporation. Most committee members comment that the meetings with faculty and students are the most valuable part of their deliberations. These meetings are always agenda items for visiting committee sessions.

Approximately 400 distinguished scientists, engineers, entrepreneurs, artists,

executives, and educators serve on the committees. Each committee (typically 17-18 members) has five Corporation members, one of whom is the chair, six alumni nominated by the Alumni Association, and six presidential nominees nominated by the President of MIT. This last group is comprised of distinguished achievers in the disciplines of the department being visited. As such, they offer a valuable outside perspective and

Each visiting committee meets for approximately two days on campus every other year, providing faculty and students an opportunity to provide impressions, ideas, and recommendations to the Corporation.

help to maintain a close relationship between academic procedure and professional practice.

The department heads play an important role in visiting committee meetings, up front, by working with the Corporation Chair, the visiting committee chair and the Corporation Office to frame the issues to be discussed and to design the agenda for the meeting. The deans of the Institute's five Schools are also often involved in the early planning process. Most agendas include presentations by faculty on current research, or on administrative issues for which they are responsible within their departments.

The MIT visiting committee structure is unique in its scope and its longevity. Our visiting committees have great credibility because of the great importance attached to the committees' views, which often stimulate action and change. The visiting committee reporting procedure is timely and intense, and includes oral reports by the chair to the full Corporation and by the relevant Dean to the Academic Council, as well as a written report that goes first to the Executive Committee and then to the Corporation, the members of the Academic Council, and the Department Head. Between biennial meetings, an interim report is prepared by the visiting committee chair and the Department Head, outlining progress and the status of the various issues and recommendations made at the previous committee meeting.

The visiting committee structure has evolved over 130 years into a vital part of the governance of the Institute, and I have always urged the faculty, whose input is so important, to take full advantage of the opportunities these committees afford to make their views and ideas known. When chairs of other prestigious university governing bodies are asked about their views of MIT, they are unanimous: "We would kill to have your visiting committee structure and its success!" Despite this envious reputation, we have worked hard to continuously improve the process.

Faculty Involvement

I have already touched on a number of direct and indirect ways the faculty is involved with the Corporation, but let me focus a bit more directly on that subject.

The elected Chair of the Faculty is an invited guest to all Corporation meetings and is encouraged to be an active participant in its deliberations. The report to the Corporation by the outgoing Faculty Chair, presented biennially at the June Commencement Day meeting, has proven to be a highlight, with many of the observations and recommendations in the reports becoming important Corporation actions.

Probably the most important task of any governing body is to select the leadership of the organization. The faculty's elected officers as well as the broader faculty play vital roles in presidential searches, and will be expected to do the same in the future.

At the outset of the most recent search, 18 members of the faculty served on a Faculty Advisory Committee (FAC) that, along with some members of the Corporation Committee on the Presidency (CCOP), interviewed faculty in every department at MIT to ascertain their views of the issues, challenges, and opportunities facing a new president and, by extension, helped to define the skills and experience a new president should have to be successful.

The FAC and the CCOP initially interviewed all candidates *together*. As the candidate list narrowed, FAC and CCOP members joined in smaller groups to interview each candidate for more extended periods. Following all of the interviews, the FAC and

CCOP held extensive closed discussions and jointly conducted due diligence until they agreed on a recommendation to the Corporation. The incredible cooperative effort between the Corporation and the faculty enabled us to successfully complete the search in record time – nine months – and resulted in the identification of a great new president for MIT. (Space does not permit me to outline the vital assistance we also received from the Student Advisory Group in the process, except to note that the inclusion of student leaders in this process proved to be invaluable.)

Faculty members and leaders are also invited to present their work and plans to the members as part of the regular Corporation meeting agenda. At the past two meetings, for example, the Director of the Center for Cancer Research and the Dean of the Sloan School made presentations. These presentations have proven to be excellent vehicles for increasing understanding and engendering Corporation support for the academic programs and projects that are underway.

Of course, the Corporation and the faculty brush up against each other in scores of other ways: The Investment Management Company calls on faculty for advice and assistance. The Chairman hosts Chairman's Salons to bring faculty, entrepreneurs and investors together. The Chairman occasionally is invited to address a faculty meeting to outline the current goals and responsibilities of the Corporation. In a celebration of excellence in teaching, the MacVicar Fellows are introduced and honored at the Corporation luncheon each March.

Over nearly 150 years, Corporation governance has evolved to address changes in the Institute's focus and challenges. Its structure has also changed to better reflect MIT's composition and to create greater inclusion and responsiveness. In the past 35 years, the emphasis upon alumni membership, the addition of recent class representatives, changes in visiting committee procedures and reporting, the addition of CJAC, the creation of the MITIMCo, among many other actions, have reinforced that goal. One of my objectives as Chair is to increasingly assure that the Corporation truly reflects the com-

position and foci of MIT as we move forward. The changes in the Corporation's structure were intended to help us be more responsive to the needs and aspirations of the Institute leadership and the faculty. Throughout it all we have been assiduous in establishing a clearly understood bright line between oversight, advice and support on one side – and management and execution on the other. It is the view of the Corporation and its committees that the latter two are the responsibility of the executive leadership, the faculty and the staff. We work hard to keep that separation clear so that our support is not misunderstood in any way.

Most people associate the Corporation with fundraising, and it is a major part of the Corporation's activity. It has proudly provided leadership for raising money for MIT, as during the recent successful \$2 billion campaign, when the campaign chairman was a prominent member of the Corporation and the Corporation Chairman, my predecessor, played an important role. Some \$425 million (21% of the campaign total) was contributed by Corporation members. It was a truly great demonstration of leadership by example. Building annual financial support, especially of unrestricted funds, will continue to be a prime objective of the Corporation. In fact, the capability to support generously the Institute and its programs is a prime criterion used in selecting Corporation members. Our goal going forward is to build an even more active and engaged Corporation in this vital activity.

The Corporation above all is extremely proud of the Institute's pre-eminence in education and research, and very appreciative of the great leadership – of the administration, faculty and staff – that has made it so. Our primary goal will be to continue to support you in a myriad of ways so you can continue to achieve *your* goals. ■

Dana G. Mead is Chairman of the Corporation (dmead@mit.edu).

Editor's Note: As a follow-up to his article on the MIT Corporation, Dana Mead has graciously agreed to be interviewed by the *Newsletter* over the summer, for publication next fall. Please submit any questions you'd like asked to: fnl@mit.edu.

M.I.T. Numbers

From the Funding of Graduate Students at MIT (FOGS) Report

