MIT Faculty Newsletter

in this issue we offer reflections on the recent tragedy at Virginia Tech and its implications for MIT (p. 6); two statements from the Bioengineering faculty (p. 13); a lighthearted look at standard measurements, "Units, Schmunits: What Do You Care?" by Eduardo Kausel (p. 16); and the revised "Policies and Procedures" of the Faculty Newsletter (p. 28).

From The Faculty Chair
Stating Our Core Values: Does MIT Need a Statement of Ethical Principles?

Steven Lerman

BECAUSE THIS IS MY final column for the *Faculty Newsletter* as Chair of the Faculty, I spent a great deal time thinking about an appropriate theme that would reflect what I have learned as Chair and what departing message might be of lasting value. My decision was ultimately based largely on a series of conversations over the past year with Mary Rowe, one of MIT's Ombudspersons.

The Ombuds Office provides all members of the MIT community with a confidential, informal, and neutral option to discuss concerns of all sorts, including various forms of harassment, discrimination, academic honesty, and research integrity. Everyone at MIT can go there seeking options and support, with the guarantee of confidentiality. The Ombuds office has no formal role at MIT. Ombuds do not investigate or make man-

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Bish Sanyal New Faculty Chair

Newsletter Staff

BISH SANYAL, Ford International Professor of Urban Development and Planning and former Head of the Department of Urban Studies and Planning (1994-2002), is the new Chair of the MIT faculty. His term runs until 2009.

Bish, whose full name is Bishwapriya in Bengali, credits contradictory forces in his life for his intellectual journey from Kolkata, India to his nomination as the Faculty Chair. Bish was born into an orthodox Hindu family, but attended a private Jesuit school for 11 years. He is deeply drawn to visual aesthetics – particularly of the kind exemplified by good architecture, which he studied as an undergraduate at the Indian Institute of Technology – and yet he is equally drawn to social sciences' analytical traditions, which inspired him to do his doctoral studies in international development

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Editorial
Your Newsletter

THE MARCH/APRIL ISSUE of the *Faculty Newsletter* published a piece written by Prof. Michel DeGraff, titled "Faith vs. Facts in the Pursuit of Fairness at MIT." The article addressed some issues related to the Institute's decision to deny tenure to Prof. James Sherley. The very public debate on this case has already demonstrated that there are many strong and divergent opinions on the process that led to the decision. There have been several direct mailings to the faculty, both before and after the March/April issue of the FNL, by different parties to the Sherley case, including administrative officers of the Institute, groups of faculty from the Biological Engineering Department, and various others. Many of these items are posted on the *Newsletter* Website, *web.mit.edu/fnl/volume/sherley/sherley.htm.*

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Your Newsletter

In this context, it is not surprising that the *Newsletter* Editorial Board received some comments, questions, and complaints from colleagues on its publication of Prof. DeGraff's article. While some felt that the article, whether or not one agreed with it, was quite appropriate for the FNL, others questioned the propriety, fairness, or motivations of the Editorial Board in publishing this piece.

The *Faculty Newsletter* was founded 19 years ago with the objective of serving as an independent forum for free discussion by and for MIT faculty, on issues of importance and interest to the faculty. The pages of the FNL have been open to contributions of all kinds from the entire faculty (and from non-faculty, as and when appropriate). The Editorial Board has guided selection of contributed material and has solicited original material. It has on occasion asked for clarifications or rewording, but the aim has always been to let the faculty speak directly.

As a result, there have been contributions over the years that have been contentious. Inevitably these contributions challenge the Editorial Board to re-examine how to balance the goal of providing an open forum with that of maintaining collegiality and fairness. The Board's processes for finding the right balance are well-intended but not perfect, and it doesn't necessarily always get it right. As one recourse, the FNL provides an opportunity for clarifications, rejoinders, or rebuttals in succeeding issues of the *Newsletter*. However, given the infrequency of publication of the FNL, some question the fairness of this option and argue that the Board needs to be more proactive in soliciting alternative viewpoints whenever it decides to publish a potentially contentious article. The Board is working to improve and clarify its oper-ating standards for such cases, keeping in mind the balance that is called for.

As a final point, the Board operates under the assumption that authors are responsible for the substance of their articles. For the Editorial Board to take on the task of independently investigating the specifics of each piece would be beyond its mandate or ability. Published articles express the opinions of their authors, not of the Editorial Board. ■

Editorial Sub-Committee

(March/April FNL)
Nazli Choucri
Stephen C. Graves
Ronald Prinn

(May/June FNL)
Ernst G. Frankel
David H. Marks
George Verghese

M.I.T. Numbers
From the Senior Survey (2002, 2004, 2006)

Satisfaction with various aspects of college
(Bars represent "generally" and "very" satisfied)
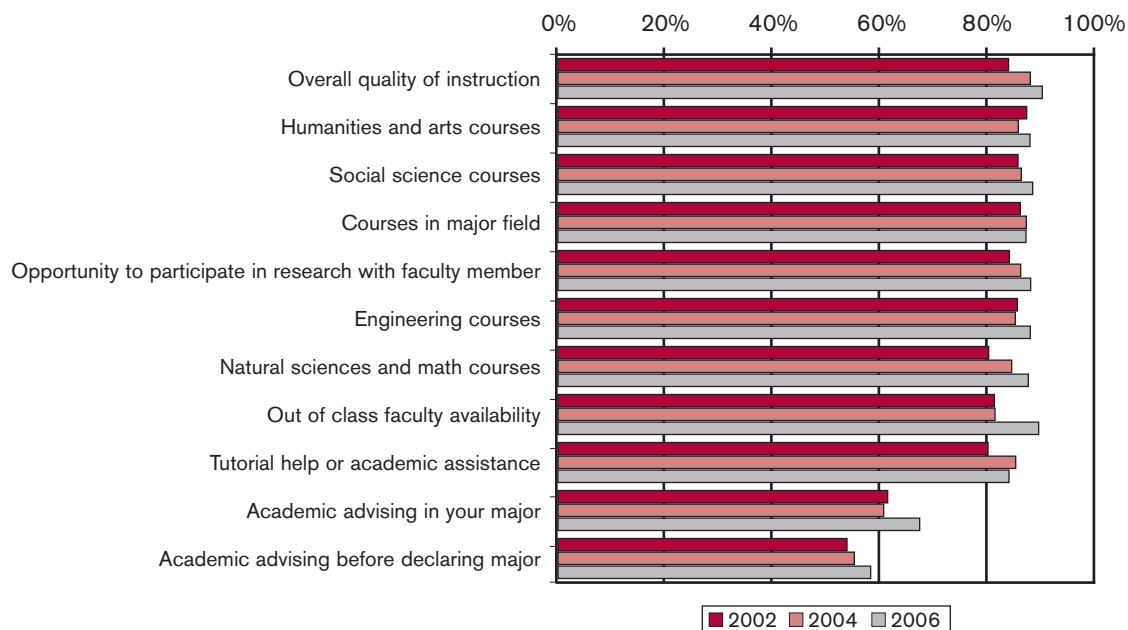
Data Source: Senior Survey (2002, 2004, 2006)
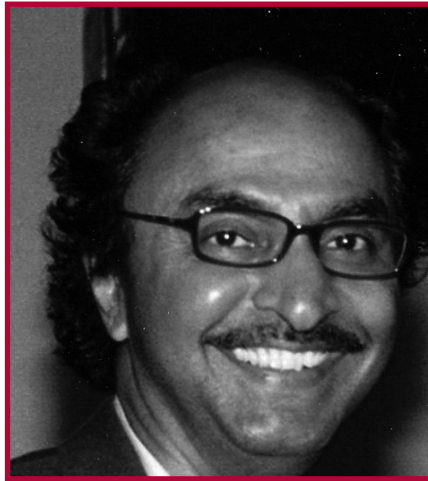**Source:** Office of the Provost/Institutional Research

Bish Sanyal New Faculty Chair
continued from page 1

planning at the University of California at Los Angeles. In between, Bish worked for his father's civil engineering firm building bridges and managing a difficult business enterprise at a time of major labor unrest in India. Even though this labor unrest deeply hurt his father's business, Bish was moved by the plight of the poor construction laborers – men, women, and even children – who relied on unpredictable daily wages, lived in ramshackle houses, and lacked the privileges Bish grew up with in India. Before joining MIT as an assistant professor in 1984, Bish also worked for the World Bank and was posted in Zambia in south central Africa to supervise five large urban projects to provide housing and services for the urban poor in Lusaka. His doctoral dissertation, which grew out of this experience, demonstrated a paradox: that a large percentage of the urban labor force relied on food they grew within the city as a stepping stone in the process of industrialization and modernization.

At MIT, as a young faculty member in a professional school, Bish was equally drawn to both outstanding scholars whose preoccupation was to better understand the role of cities in national development, and to innovative practitioners with experience in urban planning to make cities more efficient, equitable, and aesthetically attractive. As a result, he engaged in serious research while simultaneously advising major international institutions, such as the UNDP (United Nations Development Programs), UNCHS (United Nations Center for Human Settlements), International Labor Office, United States Agency for International Development, The World Bank, as well as the Ford Foundation and national government agencies and universities in Asia, Africa, the Middle East, and Latin America.

The ease with which Bish holds opposing ideas in his mind helped him play a bridging role between scholars and practitioners, and that is why he was asked to be the Head of the Department of Urban Studies and Planning in 1994, when he was still an Associate Professor. Bish accepted the responsibility with apprehension, as he and his wife, who was then commuting between New York and Boston, were then expecting their first child. The dual strain of new administrative work and family responsibilities was difficult at times, but overall it was a memorable learning experience, primarily because of the collegiality of departmental colleagues and his parental love for his newly-born daughter, a new sensation Bish cherished despite the work overload.

After stepping down from the Department Head position in 2002, Bish enjoyed a peaceful sabbatical with short lecture assignments in Asian and European universities, and spending time with his family who, by then, were all living in Boston after 13 years of commuting to and from New York. The sabbatical allowed Bish to complete his third book, *Comparative Planning Cultures*, which had begun as a quest to understand the planning cultures of 12 nations. Working on this edited volume, Bish learned that there is no cultural nucleus, no social gene that can be decoded to reveal the cultural DNA of planning practice. Planning culture, like the larger social culture in which it is embedded, is in constant flux, because of the continuous process of social, political, and technological changes. Bish recommends that planning cultures be viewed in this dynamic way, in contrast to traditional notions of culture that are used to evoke a sense of immutability and inheritance, so as to go beyond "cultural essentialism" which, in essence, is an exclusionary, parochial, and also inaccurate representation of history.

Bish is currently probing this dynamic notion of interwoven planning cultures in a program that he directs for mid-career planning professionals. Known by the acronym SPURS, the program was created in 1967 at a time very different from now – politically, economically, and socially –with regards to the United States' relationship to the rest of the world. Bish has been trying to construct a new rationale for the program since 9/11, which created an urgent need for better international understanding and mutual learning among the diverse but interconnected nations of the world.

Bish is looking forward to his two-year term as Chair of the Faculty, which he considers an honor he shares with his fellow faculty officers, Prof. Melissa Nobles from HASS (Associate Chair) and Prof. Bevin Engelward from the School of Engineering (Secretary). He is somewhat apprehensive, however, about his ability to continue conducting rigorous research, publish, and teach popular undergraduate courses such as D-Lab (which he co-teaches with Amy Smith) as he assumes this new role. But, as someone who is curious about how institutions plan, and in particular, how academic institutions plan to respond to social changes, Bish is grateful for having the opportunity to observe this first hand. He is also grateful that his new responsibilities will create opportunities for intellectual encounters with some of the most creative individuals in various fields other than his own urban planning. Where this intellectual journey will lead he cannot predict – because he is attracted to both rigorous research and academic administration, research and writing as well as managing innovative programs, and ultimately theorizing from practice. He hopes these somewhat opposite goals will continue to be a source of intellectual energy, and wonders if their resolution is necessary for a meaningful life.

MIT Communications: Diversity, Vitality, and Openness

Fred Moavenzadeh, John Belcher,
Jonathan King, Stephen Lippard

MIT PLAYS A VERY IMPORTANT and prominent role in shaping and directing the global agenda in higher education in general and in science and technology in particular. Its influence in policy formulation, technology development, industrial strategy, and physical and life sciences research and education go well beyond its campus. What happens in the campus is becoming of interest in many parts of the world and many walks of life.

Several important steps taken by President Hockfield over the past year show the Institute's long-term commitment to this global role of MIT and appreciation for the critical role MIT can play in world affairs. Among them are MIT's involvement in establishment of the MIT Energy Initiative; international programs and affiliations with other countries; and the expansion of MIT's communication with the outside world.

The recognition of the necessity for MIT to better manage and expand its commitments to the world community is exemplified by the recent hiring of Deborah Loeb Bohren in the newly-created position of Vice President for External Affairs. As expressed in President Hockfield's e-mail announcement to the MIT community, "Ms. Bohren brings to this new position extensive experience in public relations, government affairs, and employee communications in both the public and private sectors."

The realization that MIT will be strengthened by a strong, stable communication infrastructure is further acknowledged in President Hockfield's announcement: "In her new role at the Institute, Ms. Bohren will lead the coordination of MIT's communications with external constituencies and audiences including government and the media. The MIT News Office and the Office of Government and Community Relations will report to her, and she will work closely with the MIT Washington Office in the development and implementation of our strategy for federal relations. More broadly, she will serve as the senior adviser to the Institute's academic and administrative leadership on public affairs and external communications."

The creation of the position of Vice President for External Affairs is most welcomed by us, Editorial Board members of the *Faculty Newsletter*, as it finally acknowledges the need for more systematic channels of communication by the Institute, and should be strongly supported by the MIT community. In addition, the Institute-wide Communication Survey administered last March (the results of which we understand will be released shortly) is likely to offer further insight on this important subject. However, whether *Tech Talk*, whose chief mission is internal communication, should be overseen by the Vice President for External Affairs, needs further reflection and review.

We are also confident Ms. Bohren recognizes that the need to coordinate external relationships does not mean that the diversity of views and vigor of internal debate on major issues should be minimized or limited. Indeed, the strength of MIT as an institution continues to depend on the ability to encompass the diverse contributions and views of talented and dedicated faculty and staff. We envisage that some of the external negotiations and arrangements will require coming back to the faculty for advice and consent.

Since its inception nearly 20 years ago, the *Faculty Newsletter* has attempted to bridge the communication gap at the Institute by providing a channel of communication for the faculty (and others) on issues of importance. The interest and enthusiasm in major issues that faculty members have exhibited by their participation in the *Newsletter* (writing articles, sending letters, etc.) again is evidence of the value of a truly open channel of communication among peers and the entire MIT community. The importance of this open channel is perhaps most significant when a consensus cannot be reached on matters of concern, or a minority of faculty do not accept or go along with the consensus of the majority. It is at these times that the *Newsletter* serves as a forum for diverging views. Over the years it has provided an avenue for the faculty (sometimes disgruntled ones) to challenge the administration on a variety of issues. The MIT administration, unlike corporate administration, recognizes these privileges of MIT faculty. It distinguishes between faculty of a university and an employee of a corporation. This has so far allowed for a healthy, vibrant, and productive give and take, which should and will continue. Although some segments of MIT have, on occasion, been dismayed or angered by what has appeared in the pages of the FNL, most have eventually come to recognize and respect its independence.

The results of the opening of the *Newsletter* Website to the entire world community nearly two years ago are again evidence of the importance of clear channels of communication. Significant additional interest in MIT has been generated, and colleagues at other institutes throughout the world have taken notice. Our Website has regular visitors from more than 50 different nations, and the number of "hits" we receive increases monthly. In addition, we are planning a substantial overhaul of the Website to allow for more timely access and response, which we believe will even further increase its importance.

The *Faculty Newsletter* is a window on MIT that many envy and admire. By its independence, by its willingness to publish unpopular articles, or articles on unpopular subjects, we believe the *Newsletter* has mostly generated admiration and respect from its readers. ■

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MIT Responds to the Tragedy at Virginia Tech

On April 16, 2007 on the Virginia Tech campus in Blacksburg, Virginia, Cho Seung-Hui killed 32 people and wounded many others. It was the deadliest shooting in modern U.S. history. Generating extensive coverage worldwide, the aftermath of the massacre reopened debates about gun control, safety on university campuses, modern communication technology, and many others. At MIT, as on college campuses throughout the country, responses to news of the tragedy included fear, sorrow, and myriad questions about how such a thing could happen and how would MIT respond if something similar were to happen here. Following are three perspectives from community members whose positions necessitated immediate involvement in the aftermath of the shootings: the Chief of Mental Health Services, Alan Siegel, the Institute Chaplain, Bob Randolph, and the Chief of the MIT Police Department, John DiFava.

Student Responses to Virginia Tech and How Faculty Can Help
Alan Siegel

IN THE HOURS AND DAYS following the killings at Virginia Tech, our community began to react, especially our student population. At first, students were sad, shocked, and some were confused. But soon after, they began to experience other symptoms – from feeling physically unwell, to having trouble concentrating or sleeping, to being more irritable or lonesome. As one might expect, the reaction in the MIT community was not immediate. As is often the case, more immediate stresses and concerns overshadowed the feelings about the tragedy. Although the effort to compartmentalize pain is a normal one, this psychological effort is only partially successful.

The news coverage and blog correspondence about Virginia Tech became more intense and constant. Videos made by the student responsible for the killings were explicit and frightening. This violence and irrationality naturally made many people frightened and confused about human nature, and uncertain about how safe we are in our own worlds. Within days, our campus was confronted with two additional tragedies – the deaths of two undergraduates. Those in our community who knew and loved these two students suffered the most immediate pain of loss and shock. "How can all these terrible things happen?" students and parents wondered. Our students always try to make sense out of things, and yet, in these cases, our creative intellectual skills seemed not to provide much help. Feelings of sadness, helplessness, guilt, responsibility, and profound confusion appeared in student e-mails, blogs, and in residence-hall conversations. Fascination with violence, death, and pain also appeared in communications. Many of us, some parents ourselves, felt afraid for our loved ones and, perhaps, for ourselves.

In responding to tragedies such as these, we know that wounds and hurts from the past, many long forgotten, can become reactivated and affect us. This includes any of us who have been victims

MIT Community Confronts Issues of Safety and Grieving
Robert Randolph

LAST MONTH WE EXPERIENCED VICARIOUSLY the terror of the Virginia Tech tragedy. For many in our community the terror was not vicarious. They are graduates of Virginia Tech, had family members there and are tied to that hurting community in a myriad of ways. Some of us have wondered if such a thing could happen here. The answer is not very comforting: it could happen here. I do not think it will and I can tell you why, but tragedy is a companion in life and to pretend it is not does not serve our community well. Safety is something we desire and understandably so, but our reality is that total safety is an illusion.

At the same time we were grieving over what happened in Blacksburg, two of our own students died in unrelated accidents. I am wary of reducing the enormous tragedy of young lives lost to statistics, but it is important to know that each year we can expect student deaths and while young lives lost seem particularly unfair, we have also lost peers, colleagues, and mentors. Grieving is always going to be part of life in a community. So in addition to asking "How may we be safe?," we also must ask "How are we to grieve?"

Let me comment first on safety. Over the course of nearly 30 years at MIT, I have been involved in most of our acute emergencies. I have searched rooms for guns, asked police to remove them from rooms, talked troubled students out of labs and rooms and into circumstances where they could receive help, and encouraged others when they had done the same things. These are always team efforts and possible here at MIT because we are a community that talks together about crises and potential crises in the daily sequence of events. The right hand knows what the left hand is concerned about and when difficulties develop there are people who can connect the dots.

We have a professional campus police cadre that are well trained and who know the difference between the streets around MIT and the heart of the Institute. While tensions develop from

An Interview with MIT Chief of Police John DiFava

FNL: *When did you first hear about the events at Virginia Tech?*

JD: It turns out I was with my family on vacation in Florida at SeaWorld when my cell phone rang. It was the News Office calling and they gave me a quick overview but not a lot of information had come out yet. So I hung up and then called the Police Chief at BU who was a former colleague of mine in the State Police. The facts were still unfolding, but he told me as much as he knew and then I called back the News Office and filled them in. I also told them that even though I was on vacation I was willing to do whatever was needed.

FNL: *Were you able to effectively monitor the situation from Florida?*

JD: Yes I was. I kept in close touch with my staff and I also was in frequent contact with Bill Van Schalkwyk, who is in charge of Environmental Health and Safety. There were several meetings held that Bill attended along with my Deputy Chief, John Driscoll, who went in my stead. I offered to return to MIT, but was told it wouldn't be necessary. It seems the meetings were pretty low key. There wasn't a lot of panic on the campus and the issues were basically Are we prepared? What have we done? And people were satisfied with the answers.

FNL: *Did the police force do anything different immediately upon hearing the news? Was there greater vigilance or other actions taken? Or was it more of well nothing has happened here, let's see how prepared we are?*

JD: To be honest, it was the latter. It was let's see how prepared we are.

FNL: *And were we prepared?*

JD: Yes we were. And to be as candid as possible, I believe one reason I was hired was because of the expertise I brought. So one thing I did early on was to make sure that we were ready for any type of event that could happen on campus.

FNL: *How did you go about doing that?*

JD: I started by really tearing this place apart from our first response capabilities. I identified officers that I felt had the mindset and ability to be able to respond to an active shooter type of thing. Because if something goes down, we're going to be the immediate responders. And our response is really quite impressive here. We have never arrived at a scene or a call in more than three minutes. And that's really good in this business.

We went through the whole active shoot-up scenario. We set up a group that would respond in case of a situation like that or something similar. We did an awful lot of training with the State Police, with the Cambridge Police – not to create an overly aggressive organization, but to be prepared.

We also worked very closely with the Cambridge Fire Department and with departments on campus to make sure that there was that flow of information. We worked with Medical, Environmental Health and Safety, the Dean's Office, Counseling – because we can't work in a vacuum here. We have to share information. And although we never expect an incident to happen, we do prepare for it, and I guess it's the old mantra: prepare for the worst, expect the best. And that's what I've always done. So when Virginia Tech happened, we sat back and we looked at our plans and our preparation. We were about as prepared as any organization anywhere, and I took comfort from that.

FNL: *What would you say was the most important aspect of all the training?*

JD: I actually believe it's the sharing of information. The other thing, and it's so important for me to say this, is we the police are a cog in the machinery at MIT, and the one thing that impresses me no end about this place is that people talk to each other here. I mean there was incredible communication among Medical, the Dean's Office, the Counseling Deans, us. People talk. People know what's going on.

And partially as a result, only 3% of our work is actually criminal. That's unheard of anywhere. And it's really because of the incredibly high quality of the faculty, students, and staff. So it doesn't call for an aggressive department.

It calls for a vigilant department. It calls for a proactive department. It calls for a very community-oriented department.

FNL: *So you really didn't need to change anything in response to Virginia Tech?*

JD: Very honestly, should we have a similar situation to Virginia Tech where we respond, it's already too late. So you've got to keep ahead of it. If something happens here, you stand back, you get together and you say oh my God, we've got to change this, change that. We haven't had to change anything. Have we refined? Yes, we have. Have we looked into a little bit more detail? Certainly. Have we analyzed and checked to make sure? Yes, we have as well. But are we at the level that, should something happen today, we are as prepared as we could be? Yes, I believe we are.

FNL: *Perhaps the biggest criticism of the authorities at Virginia Tech and the greatest concern on our campus was the question of communication. How do you inform people rapidly as to what has occurred and what they should do?*

JD: I agree – that's a huge issue. How do we notify? And once again, this place is great. We're ahead of the curve. The Institute has purchased a new piece of software which enables us to get the word out through a multitude of cell phones, e-mail, and regular landline telephones.

FNL: *Are we able to text message everyone with a cell phone simultaneously?*

JD: Yes we are. Everybody that's in our database can be reached at the same time.

FNL: *That is if we actually have their cell phone number.*

JD: You know, BU has similar software, but the students aren't providing their cell phone numbers. But *we are* getting students' phone numbers; it's part of the registration process.

FNL: *Is there anything you'd like to add?*

JD: Just that MIT is a fantastic place and that it's wonderful to work here. And because of the positive, sharing attitude of all the people and their resources, I believe that MIT is as safe a campus as it is possible for it to be.

of physical, emotional, or sexual abuse, family violence, as well as those whose families have been victims of political oppression, torture, or gang violence.

Faculty can expect that a substantial number of students, and some colleagues, will be less efficient, less organized, and less productive over the next several weeks and months as we mourn for those we know and those we did not know. I suggest that faculty members make a special effort to pay attention to students and colleagues, and to actively inquire about how others are doing. It is an especially good time for departments, labs, and residences to have food around, and to provide opportunities for people to gather informally.

In the past several years, we have made substantive changes in our Mental Health Services at MIT. We made it simpler for someone to meet with a mental health clinician. Increased access, walk-in hours, and more community outreach have allowed more students, faculty, and staff to talk with us. Clinicians in Mental Health have worked with our colleagues in Student Life and other departments to improve communication and collaboration to help identify students in distress.

Faculty, administrative officers, and departmental administrators know their students well. I encourage them to pay close attention to their own intuitive reactions to students. If you have a feeling that someone is having difficulties, it is important to listen to your own reactions. Please talk with others in your department to see if they share your concerns or have noticed any changes in the student's demeanor or performance. We do not expect faculty to function as mental health clinicians, but rather as the sensitive educators that they are. That's why we encourage all faculty, administrative officers, and departmental administrators to contact a clinician in Mental Health (x3-2916) with any concerns. A phone consultation is always available. We will talk things through with you and figure

out, together, what the best next step might be.

We encourage you to refer to the booklet "for MIT faculty, How to Help Students in Distress" which is available on the MIT Medical Website at: *web.mit.edu/medical/pdf/faculty_brochure.pdf*. This booklet describes signs and symptoms that may indicate a student in distress. These include:

Academic indicators, such as unusual absences; decline in performance; unusual requests for extensions; changes in concentration or motivation; papers with unusual themes of depression, hopelessness, anger.

Physical/Psychological indicators, such as a decline in usual hygiene; changes in weight; overall impression of being depressed, withdrawn; change in social behavior in class and lab; more isolative; irritability.

If you have any concerns or questions – even if you are not sure of their importance or relevance – please call me directly or the clinician on call at x3-2916. It is essential that anyone who is worried about a student (or a colleague) not keep that worry to themselves. Effective communication and collaboration among all of us are the best ways to help anyone in our community who is in distress.

The Mental Health Service has recently initiated two new programs of interest.

College Pilot Study (Adapt@MIT) to Address Rate of Suicide and Violence

This project, which involves a consortium of MIT and five other universities (Cornell University, Harvard University, Princeton University, Columbia University, and the University of Rochester) uses some of the successful strategies employed in the United States Air Force Suicide Prevention Program and applies them to a university setting. The Air Force program emphasizes the importance of community and protective social networks in preventing suicide, the second leading cause of death in college students. In a 1994 report of the program's first 10 years, the Air Force noted a significant reduction in suicide rates, homicide rates, and moderate-to-severe domestic violence.

At MIT, this project seeks to expand the stakeholder training experiences that we have offered to the community, so that all segments of the Institute community can learn about depression and risk factors for suicide and violence, with the dual goals of learning how to recognize symptoms and how to help. This inclusive approach centers on all members of our community caring for each other.

Online Depression Screening and Intervention

This project was developed by the American Foundation for Suicide Prevention in cooperation with Emory University. Introduced at Emory several years ago, this online screening process reaches out to students who may be reluctant to seek mental health care. Because such students are usually hesitant to make their problems known, they have become an important population on which to concentrate mental health outreach activities. Since our graduate students tend to be less connected with the larger MIT community, we have begun this project with outreach to this group of students.

Our outreach starts with e-mail invitations that are sent to groups of graduate students (1500 to date) requesting their participation in an anonymous mental health screening survey. The survey is brief and easy to complete. Based on a depression screening survey used in primary care medical settings, we have used focus groups to help us make the questions more relevant to our student population. The survey has two goals: 1) to educate students about depression and stress in general, and the availability of mental health treatment at MIT Medical; and 2) to identify students at higher risk and attempt to actively engage them in treatment.

Once the surveys have been completed, each student's questionnaire is scored and a clinician from our Mental Health Service is alerted to the results. Students who score in the range indicating depression are invited to come in for an interview. They can also communicate

Issues of Safety and Grieving

time to time that may involve the police, the inherent stresses that affect the community tend to be transitory.

Counseling services are also part of the conversation. Privacy concerns are honored, but the bias is in favor of intervention when safety issues are raised. We know that even the best efforts of professionals can be thwarted by bad luck and circumstances that may intervene, but the framework is there for a reasonable system committed to the safety of our community.

But what else might we do to make that framework even more effective? From my perspective, the most important thing we can do is to recognize that we have some conflicting priorities that need to be examined and rethought. We desire to be safe. We desire to be let alone and allowed to do our work. We do not like to waste time on ambiguities. We desire to encourage and promote behaviors that are often creative but unusual because we believe that those who often shape the future are sometimes a bit at variance from the norm. We tolerate a high degree of eccentricity. We in fact celebrate eccentricity. That celebration means that sometimes the behavior of students and colleagues is not flagged as it might otherwise be. Who wants to be the one to tell Ben Franklin not to take his kite out in the storm?

What are we then to do? For several years now, along with a creative group of colleagues, we have had a program called "When Support Gets Personal" that has educated staff on the resources available to them when they are worried about individuals. On average about 60 people a year have gone through this program and the goal is simply to help them understand our student community and to know who to call when they are concerned and need advice – anytime, day or night.

Those resources begin with the Dean for Student Life at 617-253-4052 and Student Support Services at 617-253-4861. After hours there is a Dean on Call who can be contacted by calling the Campus Police at 617-253-1212. Faculty may also wish to touch base with Mental Health at 617-253-2916 and consultation with the Campus Police is not inappropriate. In all of these places questions may be asked and advice sought. You may continue to own the problem or you may hand it off. Better still, you may get involved in a process that deals with the needs you perceive and the anxieties you feel. Few problems are solved with a single interaction and over time you can develop a relationship with helping resources that will offer comfort and solutions in situations that range from the mundane to the profound.

Things, however, may not always go as we wish. The nature of our life together also dictates that from time to time we will experience losses that hurt terribly and for which there is no system that can protect us. When jolted by tragedy and loss, how do we respond?

In January, I was appointed the first Chaplain to the Institute. Part of my job description was to ask just that question: "How do we respond to loss?" When I first came here, the prevailing metaphor was that of a machine. MIT was like a huge machine that simply kept moving. We seldom paused and when we did there were those who noted critically that not much work got done! The end result was that little attention was paid and we were rather callous and unreflective in our responses to a significant part of the human experience.

I am grateful that this attitude has changed over time and the appointment of a Chaplain speaks to that change. Part of my task will be to ask about how we are to grieve and to seek ways to help that happen. After Virginia Tech, we held a memorial service for those lost in Blacksburg and when our own resident Hokies came to share their grief, it was clear that this was an important gesture.

If conversation protects us from danger, it also contributes to our healing in times of loss. To facilitate these healing conversations, we have put in place protocols that should help in planning memorial activities. More importantly, however, we all can come to recognize our need to carve out space so we can reflect and respond to those circumstances that challenge our very being. In our lives together, the most important lessons we learn may well be how to survive and grow through the sorrows that would otherwise stop us in our tracks.

So, where do these responses leave us? I think that total safety is an illusion, but we have in place resources and plans that contribute to our wellbeing in even the most challenging circumstances. As well, we have come to realize that how we deal with the unthinkable can contribute to our long-term wellbeing. To my mind MIT is a healthy and safe community. I am not sure one can ask for more. ■

Robert Randolph is Institute Chaplain *(randolph@mit.edu)*.

Student Responses to Virginia Tech

anonymously, via e-mail, with a clinician who can try to help them via e-mail or try to persuade them to come into the clinic for a meeting. We send responses with different levels of urgency depending upon the level of depression indicated by the survey, so we can quickly help the students who most urgently need help. Our data indicate that about twice as many MIT students are responding to the survey than at other institutions using this specific methodology. Initial data indicate that this approach engages students who are at risk, and who are not known to our mental health staff.

Faculty or administrators with any concerns about a student, please call x3-2916 anytime for a consultation. ■

Alan Siegel is Chief of Mental Health Services *(sieg@med.mit.edu)*.

Stating Our Core Values
Lerman, from page 1

agement decisions or keep case records, but this office often helps resolve concerns before they escalate to formal grievances. It is an important part of the web of mechanisms MIT has in place to help all of us work together more effectively. Mary and her colleague Toni Robinson often hear serious concerns about misconduct that go to the heart of the values of integrity, honesty, and fairness that are central to the MIT community.

My discussions with Mary and others have led me to believe that MIT would be well served by articulating what I would call a "Statement of Ethical Principles" that would clearly articulate our core values. To be clear, I do not envision this document as a detailed set of policies, processes, or quasi-judicial rulings. Rather, this statement would be brief and general and, for the most part, what most of us already implicitly understand. It would state the ethical principles that apply to our teaching, research, business practices, and professional interactions.

Over my 38 years here at MIT (first as a student and then as a faculty member) I have come to deeply respect the core values of our university. The vast majority of our community strives to be ethical in their research, teaching, and interactions with others who work here. We as faculty overwhelmingly strive to communicate these values to our students, and we take our ethical responsibilities seriously. In our role as supervisors, we try to treat everyone who works for us fairly and with respect.

However, as in any community our size, there will inevitably be those who ignore these responsibilities. These transgressions range from theft of property and research misconduct to misrepresentation on résumés and plagiarism. They may include actions that harass or discriminate against students, co-workers, fellow faculty, or others in ways that cause deep and lasting harm. Or, they may involve conflicts between our own goals and our educational obligations to our students. Almost all such actions are already viola-

tions of one or more policies at MIT (not to mention various state and federal laws), and we clearly cannot and do not tolerate them. Why then do I think we need a statement of ethical principles?

My first reason for believing a statement of ethical principles would be useful is that many of the rules that we rely on are scattered across many documents that most of us have never read. MIT's *Policies and Procedures*, for example, embodies many of these core values. The prose in this document is of necessity legalistic in tone and style, and it isn't organized around core ethical principles. We have other documents that describe grievance processes, academic honesty, environmental safety standards, and other aspects of our expectations for behavior within the community that have similar features. Each of these is important and each draws implicitly on shared values, but none of them entirely abstracts out those shared values.

A second feature of a statement of ethical principles is that it would apply universally to everyone in the community – students, staff, and faculty alike. It would reaffirm that we hold all members of the community to ethical standards, regardless of their reputation or status. For example, the Office of the Dean for Undergraduate Education published a superb document that clarifies the definition of plagiarism and appropriate attribution of the work of others. This document reflects some of our most sacred principles, but by design is mostly targeted to our students. These same principles of course apply to everyone.

Our collective belief in the universality of our ethical principles was very much part of the recent tragedy involving the dismissal of our Dean of Admissions. As President Hockfield made clear in her public statements, how could we possibly hold our students to the highest standards of ethical behavior unless we demonstrated that those same standards govern our leadership? The application of this standard of conduct was necessary even though everyone recognized the extraordinary accomplishments of the person

dismissed, and wished that the outcome could have been different.

The third feature of a statement of ethical principles is that it would create a standard for behavior that goes beyond what is mandated either by law or through MIT policy. The notion that we, as members of the MIT community, can do whatever isn't explicitly prohibited is corrosive and should be rejected. Ethics go beyond legal requirements and policy statements, and we should expect ethical behavior even when we don't have the ability to compel it. Those of us who see unethical behavior should condemn it, and those who undertake such behavior should expect the community's opprobrium.

The development of the statement I have in mind should involve representatives of all parts of the MIT community. Rather than try to create an initial draft here, I instead propose a list of areas our principles should cover. To be useful and complete, the statement needs to include our ethical principles regarding:

- mutual respect for members of the community, including promoting diversity and inclusion, and preventing harassment and unreasonable interference with the lives and work of others
- research conduct, including promoting the highest standards of objectivity, openness, and honesty
- academic integrity, including attribution of the work of others and condemning plagiarism and cheating
- commitment to excellence in all aspects of our work
- personal integrity, including accepting responsibility for our actions, preserving confidentiality and privacy, when appropriate, and promoting honesty in working with each other and those outside the community
- ethical financial conduct, including use of MIT funds, as well as those of donors and research sponsors
- commitment to the health and safety of the community, including environmental safety, workplace safety, and respect for rules governing use of human and animal experimental subjects

- respect for property, including that belonging to MIT and to other community members, as well as intellectual property
- responsibility for mentoring, advising, and appropriate supervision of students, staff, and faculty
- respect for the ideas of others, including the rights of free speech and the boundaries of appropriate communications with others
- fairness and equity in how we treat others in the community

- participation in civil society, including respect for rules with which we may disagree and commitment to public service that contributes to society at large.

As my last words in this column, I want to thank my fellow faculty officers of this year who have served the entire faculty well above and beyond the call of duty. Bruce Tidor and Diana Henderson, who have served as Associate Chair and Secretary, respectively, have been wonderful to work with and have done far more for the entire

community than most people will ever know. My special thanks also goes to Lily Burns. She has served as staff to the Faculty Officers and has provided continuity and advice to all of us. Finally, I want to wish the incoming officers – Bish Sanyal (Chair), Melissa Nobles (Associate Chair), and Bevin Engelward (Secretary) – all the best in their coming terms. I know MIT will be well served by them. ■

Steven Lerman is Professor of Civil and Environmental Engineering; Faculty Chair *(lerman@mit.edu).*

MIT and the World Economic Forum

Yossi Sheffi

MIT has a long history of interactions with the World Economic Forum. In a 2006 Institute faculty meeting I described our intentions for the January 2007 Davos meeting and promised a report on it. Here it is.

IN JANUARY 2007, MIT decided to heighten its profile at the annual meeting of the World Economic Forum (WEF) in Davos, Switzerland. A small faculty planning group was constituted and the decision was to focus on energy, bio-technology, and robotics.

MIT's participation in Davos included a private MIT dinner and an alumni/guests reception which drew 80 guests. The private dinner consisted of a panel of three MIT faculty presenting their research in disruptive energy technologies. Prof. Angela Belcher presented her research on energy storage, Prof. Vladimir Bolovich talked about photovoltaic fiber, and Prof. Greg Stephanopoulos presented the challenges in turning biomass to ethanol. The panel was introduced by MIT President Susan Hockfield and emceed by *New York Times* columnist Tom Friedman. We had 60 guests and excellent press coverage. In describing the session, *Time Magazine's* editor-at-large, Eric Pooley, wrote: "At a certain point during this year's World

Economic Forum annual meeting…the gusts of self regard became a little too much to bear…. Fortunately…something came along to remind me what Davos is good for." (To enjoy a great coverage of MIT, see the full article at: *www.time.com/world/article/ 0,8599,1582504,00.html.*)

In addition to the dinner, Prof. Angela Belcher participated in a panel session on local energy solutions and gave a briefing on nature's power solutions. Prof. Rodney Brooks gave a briefing on robotics, moderated a briefing on reverse engineering the brain, and participated on panels on the human lifespan and on the factors that shape identity. Prof. Linda Griffith gave a briefing on creating new body parts and participated on a panel on stem cells with Prof. Tyler Jacks. Prof. Jacks also gave a progress report, in a two-speaker panel, about the progress in the fight against cancer. Prof. Susan Lindquist gave a briefing on engineering simple cells and participated on a panel on genetic screening.

Other MIT faculty participated on panels and in sessions related to their areas of expertise, including Prof. Esther Duflo, Prof. Kristin Forbes, Prof. Fred Moavenzadeh, Prof. Nick Negroponte, and Prof. Yossi Sheffi. In all, 13 faculty members attended the WEF annual meeting. President Hockfield had 11 one-

on-one meetings with senior corporate executives, five meetings with donor prospects, and a meeting with a senior U.S. government official. She also participated in four panel discussions and 15 events/receptions.

The effects of MIT's imprint on the Davos meeting are, naturally, not easy to measure. The Institute was featured in six news articles, four of which covered the disruptive energy technologies dinner. The attending faculty had multiple opportunities to interact with very high-level industry and government officials. Some of these meetings bore short-term fruits in starting or deepening relationships while others have already helped to generate funds for MIT projects. The effects of the faculty contacts and meetings in Davos are likely to also show up in future support for the Institute as well as support for individual labs and centers. The importance of MIT's participation in this conference is that it provides a unique opportunity for the highest level of networking and relationship initiation and nurturing, as well as in the continued branding of MIT. ■

Yossi Sheffi is a Professor of Civil and Environmental Engineering and Engineering Systems; Director of the Center for Transportation and Logistics *(sheffi@mit.edu).*

MIT Administration Support for the Faculty Newsletter

Lorna J. Gibson

THE FACULTY NEWSLETTER IS a valuable vehicle for communication among the faculty. It has been financially supported by the administration since its inception. I am responding to an article in the March/April 2007 issue of the *Faculty Newsletter* in order to provide the readership with the administration's point of view regarding the Editorial Board and its request for increase in financial support for the Managing Editor position.

Over the last 10 years, the FNL has had an average of five issues per year, with contributions from faculty and staff and occasional short articles by the Managing Editor, a part-time support position. In June of last year, the Editorial Board made several requests of President Hockfield regarding the FNL operations. In response, President Hockfield asked Professors Steve Graves, Nazli Choucri, Robert Jaffe, David Marks and Dr. Kirk Kolenbrander, a group who had reviewed the FNL earlier in 2002, to review the Editorial Board's request; Professors Graves, Choucri, and Marks are on the Editorial Board. In September, the group, led by Professor Graves, made the following recommendations:

• the FNL should be placed administratively under the direct supervision of the Provost's Office

• the Editorial Board should prepare a job description for the Managing Editor, outlining the responsibilities, duties and expectations which could then be the basis for a formal proposal from the Editorial Board to the Human Resources department to reclassify the position to administrative staff

• the FNL should provide a justification for the expansion in the job from half-time to full-time

• the salary request should be referred to Human Resources to determine what the fair salary range for such jobs is within MIT, once the questions of the job classification and of full-time versus half-time are resolved.

At the request of Provost Reif, I took the lead to respond to the recommendations. There was a delay in obtaining a job description for the position because of a miscommunication to the Editorial Board, for which I was responsible, that a job description was needed. I received the job description in early December.

As Human Resources representatives regularly do when there is a review of a particular job position, the human resource officer for the Provost's office consulted with several members of the Editorial Board and revised the job description. Based on the recommendations of HR, the Managing Editor position was reclassified at the end of January as a full-time administrative staff position, at a salary commensurate with the job position responsibilities for MIT positions. In addition, the FNL was placed administratively in the Provost's Office. The change in the status of the position was effective February 1, 2007.

FNL Governance

In our faculty governance system, faculty can become members of faculty committees through two routes: by being placed on a slate of candidates selected by the Nominations Committee, or by being nominated by two faculty colleagues. The faculty vote on the membership of faculty committees. The chairs of faculty committees are appointed by the Chair of the Faculty, who is also elected by the faculty. Presently, the Editorial Board of the FNL is outside of the Institute's usual faculty committee system, having instead a volunteer board, not elected by the faculty. In addition, there is no connection between the Editorial Board of the FNL and the elected Faculty Officers, who represent the faculty. While this is a matter for the faculty to decide, it is my opinion that an elected Editorial Board, with several routes to membership on the Board, would be more representative of the MIT faculty.

Balanced Perspectives in the FNL

The FNL is a vehicle for faculty communication on a wide range of topics. Some are contentious. While free expression of ideas should be advanced, some issues of the FNL have published one perspective of a contentious topic without any alternative views. Although this is a matter for the faculty as a whole, my view is that there is a need for greater balance in the FNL. This is particularly important when a topic is directed to select members of the MIT community. In this case, those individuals should be given the opportunity to respond in the same issue in order for the readership to gain a balanced perspective on a particular topic or set of circumstances.

Lorna J. Gibson is Associate Provost (*ljgibson@mit.edu*).

Two Statements from the Biological Engineering Faculty Regarding the Tenure Case of Prof. James L. Sherley

Members of the faculty of the Biological Engineering Division, including the Biological Engineering Executive Committee, have submitted the following two letters for publication. These letters were previously distributed to the MIT community and appear on our Website.

March 30, 2007

To the MIT Community, Colleagues and Friends:

AS THE EXECUTIVE COMMITTEE OF THE MIT Biological Engineering (BE) Division, we write to address a misstatement about independent space made by Prof. James Sherley in recent public communications regarding his tenure case and to clarify other issues, such as the timing of his appointment. We believe that it is important to correct misstatements of fact in the interest of openness, honesty and fairness that should exist in a healthy academic community.

Research space. From an email dated 12/21/06: "*...I was denied independent lab space by Professor Lauffenburger for my entire 7 years on the BE faculty...The faculty members handling my recruitment were forced to either give me their own lab space or retract my offer. I have shared lab space with them thereafter, and Professor Lauffenburger has done nothing to rectify the situation...*"

Prof. Sherley's statement that no space was available for him until other faculty gave up theirs is, in fact, correct. This is typical of space assignments for many new hires in BE and other departments at MIT. Space is a complicated and constantly challenging facet of academic life in every department, laboratory and center at MIT, and more generally at academic research institutions everywhere, with limited space resources under constant pressure from new faculty hiring and the growing research groups of faculty in all departments at MIT. Space at MIT is controlled entirely by the Provost, with department heads delegated the responsibility of distributing space according to the needs of their faculty members. It is the prerogative of department heads to shift space from senior faculty, whose research programs decrease in size, for example, to new members of the faculty or other faculty whose programs are growing in size. It is also common for senior faculty to give up portions of their space voluntarily to facilitate the hiring of new members of the faculty. Prof. Sherley and another untenured contemporary of Prof. Sherley's in BE were the benefactors of such space transfers due to the absence of unassigned space at the time of their arrival at MIT. Their space was taken from the existing space assigned to three senior

Statement of Facts in Regard to the James Sherley Tenure Case

March 30, 2007

To the MIT Community, Colleagues and Friends:

AS SENIOR MEMBERS OF THE FACULTY in the Biological Engineering (BE) Division at MIT, we are writing now as a follow up to our public statement of 2/5/07 about the tenure case of Prof. James Sherley, to correct public misstatements of fact. Several other issues, such as research space, will be addressed in a separate statement by members of the BE Executive Committee. The objective of this letter is to correct misstatements of fact in the interest of openness, honesty and fairness that should exist in a healthy academic community.

Conflicts of interest and the fairness of the tenure decision. In an email dated 12/21/06, Prof. Sherley expressed concern that a conflict of interest adversely affected his tenure case as a result of the BE Director being married to Prof. Linda Griffith, with whom Prof. Sherley claims to have had a hostile relationship.

Prior to or at the time of the tenure decision, we had not witnessed or known of any unprofessional tensions or conflicts between Profs. Sherley and Griffith that would call into question either person's professional integrity. Further, Prof. Sherley did not avail himself of the opportunity to alert any of us about any conflicts prior to or during the assembly of his tenure case. While some have said that a tenure candidate should not bear that burden, only the candidate can raise issues that only the candidate sees.

It should be noted that Prof. Griffith, through several grants on which she was the Principal Investigator, was a collaborator of Prof. Sherley's, and a strong and longstanding financial supporter of his research program. Furthermore, Prof. Griffith is listed as a coauthor on one of Prof. Sherley's published peer-reviewed papers.

In an email dated 2/10/07, Prof. Sherley also alleged that the tenure decision was determined solely by Prof. Lauffenburger. This is not the truth. The process used in all promotion cases in

BE Executive Committee Statement
continued from preceding page

members of the BE faculty, space that was provided voluntarily and willingly by these senior faculty to facilitate the hiring of both Prof. Sherley and his contemporary. Racism did not play a role in the assignment of Prof. Sherley's space.

From email dated 1/29/07: "...*The fact that I have been allotted only 355 sq. ft. of independent lab space, despite repeated requests for adequate independent lab space to Prof. Lauffenburger, is prima facie evidence of racist MIT policies for the hire of minority faculty and racist practices by individuals who administer resources to minority faculty.*"

Prof. Sherley's claim that he had only 355 sq. ft. of independent lab space is incorrect. According to official BE space records and the official MIT Environmental Health and Safety space registration, Prof. Sherley has had ~2100 sq. ft. of independent space under his control. This is more than the average of ~1800 sq. ft. of space to which junior faculty members in BE have access (~1100-2500 sq. ft.). The 355 sq. ft. wet lab noted by Prof. Sherley as his only independent space ignores an additional ~510 sq. ft. comprised of a cell culture facility, his office and an office for his students and staff, as well as ~1300 sq. ft. of space, portions of which came from the MIT Center for Environmental Health Sciences and portions of which were shared with one other member of the BE faculty (large open-design wet labs, additional student/staff office; reception area for his staff assistant).

The space assigned to Prof. Sherley is truly independent space: it was his to use as he saw fit and it was not controlled or determined by another member of the faculty. Add to this the ~1100 sq. ft. of community space (conference room, lunch room, cold room, dishwashing, autoclave space) on the same floor as Prof. Sherley's labs and offices, and the facilities available for his use as a member of the Biotechnology Process Engineering Center, the Center for Environmental Health Sciences and the Center for Cancer Research, and one concludes that his

research program was fully accommodated and not limited by his space allotment.

As indicated above, Prof. Sherley did indeed share some of his space with another member of the BE faculty, as do many tenured and untenured members of the BE faculty and the faculty of many other departments at MIT. An untenured contemporary of Prof. Sherley also had her entire allotment of 1032 sq. ft. of independent space (a large wet lab; apart from her 166 sq. ft. office) taken from existing space belonging to two senior members of the faculty, Profs. Essigmann and Wogan. Now tenured, she still uses cell culture and other space assigned to Prof. Essigmann, space that is not her independent space. In Prof. Sherley's case, all of his space, shared and unshared, was independent. Space sharing is commonplace due to the need to balance the immediate demand for space when new faculty arrive with the alternative of slow, cost-prohibitive remodeling. Prof. Dedon, for example, shares ~95% of his total ~2900 sq. ft. of independent space with three BE faculty (two tenured, one non-tenured), which compares to Prof. Sherley's ~2100 sq. ft. of space of which ~40% is unshared.

Attribution as the first appointment in BE. Prof. Sherley also expressed concern that he was denied recognition as the first appointment in what is now BE. Though this issue had no bearing on his tenure case (or any stage of his promotion process), an exhaustive review was undertaken of records from two major divisions of MIT (Whitaker College of Health Sciences and Technology; School of Engineering). A review of the resulting time line reveals the basis for the differing views about Prof. Sherley's appointment, one that paralleled the conversion of the Division of Toxicology (then in Whitaker College) to the precursor of BE (in the School of Engineering):

5/7/97: Prof. Steven Tannenbaum, Director of Toxicology, extends an offer of appointment to Dr. Sherley as "*Assistant Professor in the Division of Toxicology.*"
5/12/97: Provost Joel Moses sends a letter to Dr. Sherley acknowledging Dr. Sherley's acceptance of Prof. Tannenbuam's offer,

"...*of a position as Assistant Professor in the Division of Toxicology at MIT. We are happy to welcome you to the faculty...*" **5/22/97:** Dr. Sherley, by letter, accepts "...*your offer for appointment as an Assistant Professor in the Division of Toxicology...*" **7/1/98:** Toxicology merges to form the Division of Bioengineering and Environmental Health with Profs. Tannenbaum and Lauffenburger as Co-Directors. Prof. Sherley receives a new letter from the new Provost, Robert Brown, appointing him as an Assistant Professor in Bioengineering and Environmental Health in the School of Engineering. At the same time, because Bioengineering and Environmental Health had just formed, several other faculty members from other MIT departments simultaneously have their appointments moved to the new Division. **11/98:** Approval of the first new faculty search proposed and undertaken by Bioengineering and Environmental Health.

This time line reveals a complicated organizational change occurring at the time of Prof. Sherley's hiring and appointment. There is ample room for concluding that Prof. Sherley was the last hire in the Division of Toxicology and the most junior member of the Division of Biological Engineering and Environmental Health (the precursor to BE). We can also see how Prof. Sherley considered himself the first new appointment in Biological Engineering and Environmental Health. The different perspectives of Prof. Sherley and others did not derive from racism, bias or conflict of interest, but instead from the blurred semantics of administrative changes during a period of Institutional transition.

In closing, the facts show that Prof. Sherley had more than the average amount of independent space, and that his research program was fully accommodated and not limited by his space allotment. Racism did not play a role in determining his share of research space.

Sincerely,

Peter Dedon
John Essigmann
Alan Grodzinsky

Statement of Facts
continued from page 13

BE is similar to that of Chemical Engineering, Civil and Environmental Engineering, and the Engineering Systems Division. The process starts with the candidate submitting a Faculty Personnel Record that accounts for all of his or her professional accomplishments and the Division Head soliciting names of referees from both the tenure candidate and from senior members of the faculty. Several senior members of the BE faculty recommended that Prof. Griffith provide a letter as an internal referee for Prof. Sherley's case, on the basis of her extensive knowledge of Prof. Sherley's research program from their research collaborations. It is a common practice to solicit letters from the candidate's collaborators. Prof. Sherley had the opportunity to provide the BE Director with names of individuals that he preferred not to be included as referees on his case. To our knowledge, he did not exclude Prof. Griffith.

A package of information for Prof. Sherley's case, as in all promotion cases in BE, was made available to senior faculty for review more than one week before the meeting to discuss the case and vote. In addition, copies of the materials were made available to all senior faculty during this meeting. Prof. Sherley's case received a thorough, thoughtful and uncontentious discussion of the merits of his accomplishments in research and teaching, discussion of the many letters of evaluation received from experts in Prof. Sherley's research areas, and discussion of his service to MIT and to the broader science and engineering communities, as do all promotion cases in BE. The senior faculty voted not to recommend Prof. Sherley's tenure in BE and we believe that the outcome was fair.

As in all promotion cases in BE, the Division Head did not vote on Prof. Sherley's case and acted only as a moderator of discussion. Prof. Lauffenburger's decision not to carry Prof. Sherley's case forward reflected the vote of the faculty. All of us considered his case only on the basis of facts and merits, and we based our decisions solely on the candidate's professional accomplishments and letters of reference, as we stated in our previous public communication of February 5, 2007.

<u>Research publications.</u> In every tenure case in BE, the faculty assess the number, scientific quality and, in particular, the impacts of peer-reviewed articles published during the tenure probationary period at MIT. The issue of the number of Prof. Sherley's publications is a matter of public record readily accessible from public databases such as *PubMed*. During the pre-tenure period at MIT, Prof. Sherley had published only six peer-reviewed publications describing original research. Four of those publications were based upon work done at MIT, and the other two were based upon work from his previous independent position at Fox Chase Cancer Center. Only three of the six publications list Prof. Sherley as the first or corresponding author (or another member of his research group as lead or first author), the status most highly valued for promotion decisions. Prof. Sherley's publication record, while only one factor in our decision, did not meet the standards required for tenure cases in BE.

<u>Research reputation.</u> The issue of letters of reference was raised by Prof. Sherley in an email dated 12/21/06. As discussed earlier, all tenure cases in BE involve consideration of letters from a list of external and internal referees assembled from recommendations made by both the candidate and senior members of the faculty in BE. We state here (without violating rules of confidentiality) that the external letters from experts in the field of stem cell biology were not strong enough to support a positive tenure decision in BE. Further, the internal letters were solicited from members of the MIT faculty who had detailed knowledge of Prof. Sherley's research, teaching and service activities, and not from anyone thought to be in conflict with the candidate.

<u>Research funding.</u> The BE faculty also considers the level of independent, competitive, peer-reviewed research funding that the candidate is able to attract. From an email dated 1/29/07: "*My program was funded with $747,000 per year in direct costs.*" This figure is accurate only for the year Prof. Sherley came up for tenure. On the basis of Prof. Sherley's Faculty Personnel Record and other official records, Prof. Sherley's research was supported by ~$1.5 million over the entire six year and four month pre-tenure period (exclusive of startup funds; averaging <$250,000 per year). It is noteworthy that a large portion of this funding (~$1 million over the pre-tenure period; averaging ~$158,000 per year) was obtained from several grants on which Prof. Linda Griffith was the Principal Investigator and that did not include Prof. Sherley in the original competing grant application.

Prof. Sherley received the NIH Pioneer Award more than a year and a half after the tenure decision was made.

In closing, we believe that Prof. Sherley's tenure case was handled by the BE faculty with the utmost fairness in a process with the greatest integrity, as free as humanly possible from bias and racism. The facts as we present them here support this conclusion.

Sincerely,

Angela Belcher
Peter Dedon
Ed Delong
Forbes Dewey
John Essigmann
Jim Fox
Alan Grodzinsky
Roger Kamm
Alex Klibanov
Harvey Lodish
Paul Matsudaira
Leona Samson
Ram Sasisekharan
David Schauer
Peter So
Steven Tannenbaum
Bruce Tidor
Dane Wittrup
Gerald Wogan
Yanni Yannas

Units, Schmunits: What Do You Care?

A lighthearted take on standard measurements

Eduardo Kausel

THE DEVELOPMENT AND establishment of modern standard units of measurement, including monetary currencies and their equivalence to weights in gold, began early in civilization, motivated principally by the need to regulate commerce between individuals as well as trade across borders. This culminated in the last two centuries with the development and implementation of numerous standards and norms for the legal (or agreed) sizes of myriad objects and artifacts, and especially with the institutionalization of standard units of measurements for length, mass or force, and time. Nonetheless, besides meters or inches and kilograms and pounds, there exist also a plethora of other units still in widespread use throughout the world, which not only change from country to country, but also within one and the same region, even in metric Europe. International travelers are certainly aware of this problem when they try to buy shoes or clothing abroad, the numerical sizes of which vary not only between the U.S. and, say Europe, but also across the various countries within the European Union.

Shoes, for example, have myriad numbering schemes. Legend has it that shoe sizes originated in the fourteenth century when King Edward II of England ordered shoes for his child and provided the shoemaker with the length of the child's foot measured in barley corns. Presumably, royal protocol prohibited access of the lowly shoemaker to the blue-blooded prince, so an indirect podiatric measurement was required. Today, the meaning of shoe sizes in the U.S. is still a mystery to most – even to those who make a living by selling shoes – and for reasons now lost to history, there exist different sizes for men, women, and children, although the latter do use the same number for any given size, whether boy or girl. This discrepancy between sexes is especially an inconvenience with sneakers or sport boots, of which men and women use basically the same type even if their numerical sizes should not agree.

Shoe sizes are generally related to the length of the "last," which is a foot-shaped template used for shoe fabrication. The American size of the shoe is three times the heel-to-toe length of the foot, measured in inches, minus a constant (what for?), so each half size increment is 1/6 of an inch (4.23 mm). The subtractive constant is 22 for men, 21 for women (or is it 20.5?), and 9.75 for children (9.67?), but the latter only up to size 13 1/2, after which another constant is used! For instance, a man's foot that is 10.5" long requires an American shoe size 3x10.5–22=9.5. By contrast, most countries in continental Europe and in Latin America follow some version of the French rule, which specifies a shoe size that is 1.5 times the length of the last measured in centimeters, irrespective of gender or age, so each step (or Paris point) is 2/3 cm (6.67 mm) long. Thus, a foot 26.7 cm in length, which for comfort demands a last that is some 2 cm longer than the foot, would correspond to a French shoe size 1.5x(26.7+2) = 43. Shoe sizes in the U.K. follow a similar but not identical rule to those in the U.S., and (apparently) they do not differ between

> Thus, a woman's dress size 7 today would have corresponded to a size 11 a generation ago, a phenomenon that is referred to euphemistically as *vanity sizing*.

men and women. Fortunately, and despite regional variations, shoe sizes have remained consistent over the years, so a shoe of a given number from a generation ago is as large as a contemporary shoe of that same number.

Regrettably, this consistency has not held for sizes of clothing, at least not for women's clothing in the U.S.A. As you may perhaps have noticed, in the course of recent years, women's sizes in America have suffered considerable deflation, especially in upscale and expensive boutiques, but also in discount stores. Thus, a woman's dress size 7 today would have corresponded to a size 11 a generation ago, a phenomenon that is referred to euphemistically as *vanity sizing*. Presumably, as America became more rotund over the years the industry adapted, to impress upon the buyers the good feeling that they were as lightweight as ever. Problem is, with vanity dimensioning women's sizes have largely ceased to be meaningful, at least in the U.S., inasmuch as the numbers now change substantially not only from store to store, but also across brands sold at any one store. Interestingly, no comparable vanity sizes

have developed for men in the U.S., despite that they too have increased in bulge, and this is because men's sizes were regulated early on by the government, to satisfy the need for uniform men's sizes in the military.

Another source of confusion is in lumber sizes, again at least in the U.S. As everybody knows, a stock is not a piece of lumber of 2 by 4 inches in cross-section, but one that is instead 1 1/2 by 3 1/2 inches. In larger lumber sizes, the discrepancy between nominal and actual sizes is even bigger. When asked as to why the differences, people in lumber yards state that

indeed 2 by 4 inches, a measurement that has not shrunk to dry conditions in half a century, so at that time at least, nominal and actual sizes indeed coincided. In later years, the width of 2 inches shrunk first to 1 3/4, then to 1 5/8, and finally to 1 1/2. Moreover, until fairly recently, when you bought 1/2-inch plywood board, that was the thickness that you actually got, but today, the so-called 1/2-inch plywood is only 15/32 inches in thickness, again a move by the industry to save on material.

A similar shrinking over time has taken place with coffee cans, at least as far as the contents are concerned. The standard

material and of its transport: weight and not size of the sheets was of the essence. In addition, it was easier for the government to assess taxes for weight of metal than for sizes or thicknesses of sheet, especially because this allowed taxing at similar rates both flat and corrugated metal sheets, which occupy rather different volumes and weights for the same thickness. At the present time, however, numerical changes in gauge not only do *not* translate into proportional changes in thickness, which decrease with the gauge number, but the actual thickness depends also on the material of which the sheet is made. For example, gauge 3 corresponds to 0.2391 inches for sheet steel, 0.2294 inches for aluminum, and 0.2500 for stainless steel (i.e., differences of less than 10%), but at gauge 39, the thicknesses for these three metals is 0.060, 0.040, and 0.062, a dramatic difference for aluminum. Rather peculiarly, if you were to plot modern sheet gauges against thickness for any given material, you would observe not a smooth, monotonically decreasing curve, but one with obvious discontinuities in slope. These must have resulted at later points in time as more gauge numbers for thinner and thicker sheets were added to the standard. Thus, by now the gauge is just an arbitrary number used for trade that says nothing about either average thickness or weight. Instead, these must now be read from standard gauge tables, which may even change among manufacturers.

A similar shrinking over time has taken place with coffee cans, at least as far as the contents are concerned. The standard coffee can used to contain one pound (16 ounces) of ground coffee. Today, however, while the size of the can has remained exactly the same, most modern cans contain only 11 or 12 ounces.

the nominal size is that of the rough, unfinished lumber, and that finishing reduces it to the actual sizes, but it seems rather wasteful that fully 34% of the wood in a two by four should be lost to sawing, planing, and finishing. Perhaps part of the explanation may be that the wood is cut to rough sizes in a wet condition that shrinks after kiln drying, but then again, nothing would impede the lumber industry from starting with appropriately larger rough sizes to begin with so as to attain truthful finished sizes. Thus, this anecdotal explanation is just a modern red herring that belongs to the type of truths that people – and the industry – come to accept merely by virtue of its repetition. The actual reason is more pragmatic: a good number of decades ago, sizes were gradually reduced by mills as a way to increase profits and prevent cost increases without effecting changes in the wording of then existing construction norms and regulations. Indeed, if you were a carpenter and did some remodeling of houses older than some 50 years, you would find that the studs in many of these older houses are

coffee can used to contain one pound (16 ounces) of ground coffee. Today, however, while the size of the can has remained exactly the same, most modern cans contain only 11 or 12 ounces. Peculiarly, when you open one of these cans, they are still filled to the rim with coffee. How can that be possible? This has to do with the way that modern coffee is ground. By appropriate grinding methods, you can make the powder occupy more space, so the coffee now has more air in between its particles. This is what mathematicians refer to as the *packing problem*, of which the producers of coffee seem to be making very good use.

A curious case is also that of sheet metal. In the U.S., metallic sheets are sold not by thicknesses (as done elsewhere in the world) but instead by *gauge* (or *gage*) numbers, which range anywhere from 0 to 39, and the original definitions corresponded very roughly to the reciprocal of the thickness in inches. In the late nineteenth century, sheet gauges were related to the weight per square foot of the sheet, presumably because of the costs of the

As can be seen, and despite the significant advances that civilization has made by creating and implementing logical and easy-to-use measurements and sizes, much progress remains to be accomplished before sanity prevails in the standard dimensioning of objects and artifacts. But then again, perhaps commerce may have vested interests in maintaining the status quo and the reigning confusion: it makes shopping by price comparison so much more difficult. *Caveat emptor!* ■

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Looking Forward to Changes in the Undergraduate Commons: Perspectives from a "Large" Program

Linda G. Griffith

I'D LIKE TO BEGIN by thanking the *Faculty Newsletter* for encouraging me to submit a letter for this issue. I also would like to express, belatedly, my appreciation for the outstanding efforts of the faculty who led the Task Force on the Undergraduate Educational Commons, and to the FNL for assembling the special issue presenting perspectives on the work of the Task Force and related undergraduate education topics [*MIT Faculty Newsletter*, Vol. XIX No. 4, February 2007].

I am also writing as Chair of the Biological Engineering (BE) Undergraduate Programs Committee and former Head of Area 6 (Bioengineering) in Mechanical Engineering to share some perspective on how the discussions initiated by the Task Force over the past two years have shaped the evolution of the new Course 20 SB curriculum and the 2-A Biotrack, and to offer some suggestions for implementation of the recommendations of the Task Force. Finally, I offer a new proposal for decompressing the first two years of the undergraduate program and hope this proposal can be discussed along with other Task Force recommendations as the faculty consider the ways to implement changes in the GIRs and improve other aspects of the common undergraduate experience.

The BE curriculum was approved as a new SB program in February 2005. At that time, the curriculum included nine new core subjects developed over about six years. Currently, BE has about 30 juniors and about 50 sophomores. Based on the first year of experience (with the Class of 2008) and including input from BE teaching staff and BE undergraduate students, we have revised our curriculum this year with changes approved by the Committee on Curricula (CoC) in October 2006. We are very grateful the Task Force deliberations were proceeding during this pivotal time, as

we gained enormous insights from the discussions held in workshops, presentations, and meetings of Task Force members with our department, as well as personal interactions with the Task Force committee members.

Like many other programs in the School of Engineering (SoE), the BE program is "large"; that is, it allows relatively little unrestricted elective time and has a hierarchical structure of required subjects that make it difficult to complete in four years if a student switches in from another major at the end of sophomore year. Like many of my SoE colleagues, I believe that students should have the option to choose such programs of study at MIT (though I remain open to friendly debate on this opinion). Many students thrive in highly structured programs, and gain additional flexibility in career options upon graduation. With this in mind, BE endorses the general concept of the new Science-Math-Engineering (SME) GIRs, in the five-out-of-five format (including the computation GIR, which is arguably long overdue and much welcomed). The final report of the Task Force outlines six potential new categories of SME GIRs (see *web.mit.edu/committees/edcommons/documents/task_force_report.html* for details) and proposes that students take subjects in five of these six categories. Some adjustment to the proposed plan is likely as implementation discussions proceed, as many faculty members (myself among them) have countered that a more workable plan is a format with five categories, and that specific content within categories (and specific category titles) might be altered somewhat to capture the main intent of the Task Force recommendations.

The discussions ensuing from Task Force activities, combined with the experience of advising sophomores in the BE major, have convinced me unequivocally that large

major programs should provide substantial flexibility in the first two years, so that students can change majors until the end of sophomore year without substantial penalty. I thus welcome the general concept of the new SME GIRs as an opportunity for the BE program to respond to the need for flexibility in the first two years, and I have faith that the details of the categories and contents will be worked out in a satisfactory way. I have also been inspired by the example of existing large programs, such as Course 2 and Course 2-A, that currently provide flexibility for students to begin the major in spring term, sophomore year.

I suggest that departmental programs might achieve flexibility in the first two years by:

1. *Offering required sophomore-year subjects both fall and spring terms*, so that students could potentially take the first entry subject during spring term freshman year (for example, to get an early sample of the major), or either term of the sophomore year.

2. Offering more subjects in the sophomore year that satisfy the requirements of multiple departments, thus providing students with more transparency and flexibility as they decide about their major. Such subjects might be co-taught or cross-listed by a variety of departments, *which would make it far easier to offer required subjects twice per year*.

3. *Allowing students to complete the GIRs in Science, Math, and Engineering over the first two years* (the current expectation is that students complete the Science Core by the end of the first year). If departments are to be allowed to specify most, if not all, of the SME GIRs, they will need to provide students ample time to complete

ones that are prerequisites for departmental subjects. Otherwise, we run the risk of forcing overloads on our newest students.

4. *Requiring of students no more than two subjects beyond the SME GIRs during the sophomore year* (and none during freshman year), so that students can enter their major during the spring term of sophomore year without undue difficulty (e.g., subject overload). Assuming that students take four HASS subjects during their first two years, and that Science and Engineering students take 12 subjects in addition to their HASS subjects during this time, this allows students to retain their two additional unrestricted elective subjects (and avoids the often-used tactic by large programs in constructing curricular roadmaps: i.e., showing HASS subjects deferred to senior year to fit in a freshman elective). This strategy might decompress the freshman and sophomore years and provide choice in the spirit (if not directly in the means) suggested in the Task Force recommendations.

Toward these goals, several departments have worked together with BE to collaborate in our undergraduate teaching program. For example, BE and Mechanical Engineering co-developed "Thermodynamics of Biomolecular Systems" (20.110J/2.772J) in 2003 to serve needs in both the BE core curriculum and the 2-A Biotrack. Co-development of this subject further strengthened the BE-ME collaboration begun with the teaching of biomechanics at both the graduate and undergraduate level; indeed, Prof. Rohan Abeyaratne (ME Department Head) and Prof. John Lienhard (ME UG Program Chair) have been very creative in finding ways to leverage teaching between the two departments. Biology then added this subject to their list of subjects that fulfill their departmental thermodynamics requirement, providing flexibility in the sophomore year for students deciding among Course 20, Course 7, and Course 2-A programs. The Chemistry Depart-ment proposed an experiment to further increase transparency by co-teaching thermodynam-

ics together with us, combining lectures for the first half of the term with "Physical Chemistry" (5.60) thus allowing students to complete both subjects in one term and giving students additional flexibility for choosing majors through the first half of the fall term of sophomore year. Dean Bob Silbey heroically championed this experiment by volunteering to co-teach this subject (with me and Prof. Darrell Irvine) in the spring of 2005 (and even coming in on Sundays to give tutorials), so that a common syllabus could be developed before launch of the fall 2005 joint subject 20.110J/2.772J/5.601J. Course 2 is currently exploring ways in which this subject may serve in other emerging 2-A tracks such as energy, nanotechnology, and molecular mechanics.

A second example of working toward transparency is the partnership between Biology and BE in teaching "Genetics" (7.03), with the goal of developing a spring-term offering to complement the current offering (the launch of the spring-term subject has been delayed, but is planned for next year). This plan emerged (in part) from the long-standing participation of the Biology Undergrad-uate Programs Chair on the BE Undergraduate Programs Committee as an ad hoc member. BE appreciates the time that Professors Graham Walker, Chris Kaiser, and Hazel Sive have devoted to discussing our mutual teaching interests over the past years, and for the support of Biology Department Heads Professors Bob Sauer and Chris Kaiser, as this partnership has led to many co-taught subjects at upper levels and enthusiasm for increasing transparency between BE and Biology in the undergraduate program. Indeed, "biological engineering" – engineering analysis, design, and synthesis based in molecular life science – has emerged as a new discipline at MIT as a result of this partnership with Biology, to mutual benefit. This engineering-biology partnership is unique in the entire landscape of "bioengineering" nationally and internationally (it is certainly unique among the top tier engineering schools), just as MIT is unique in many other endeavors due to the tremendous collabo-

rative, can-do spirit that pervades the Institute.

As a third example, the near simultaneous emergence of "Computation and Engineering" as a possible SME GIR and the launch of the new subject 6.00 "Introduction to Computer Science and Programming" stimulated BE to re-think our strategy for teaching basic programming and computation skills in our core curriculum, and to change from our original strategy of including these topics in our own computation subjects (20.180 and 20.181). By the end of the sophomore year, BE students need to master basic programming and algorithmic techniques, and to start developing an understanding of how to build computational models that can be used to understand complex systems. We felt that this material could be most effectively learned in a dedicated 12-unit subject that focuses on these skills without the distraction of discipline-specific material. In a landscape that already includes 1.00 ("Introduction to Computers and Engineering Problem-Solving") and the new 6.00, there is little compelling reason for my department to offer a separate subject (or subjects) covering this foundational material. The predominant programming language used in upper-level BE subjects is Python, and algorithmic approaches to problem-solving are important; hence, for the average student, the Python-based subject 6.00 is an appropriate choice. Prof. John Guttag, who developed 6.00 and taught it in fall 2006, was stimulated in part by the needs of current Course 20 sophomores to teach 6.00 again this spring (6.00 has also attracted freshmen this term). Prof. Ernest Fraenkel from Course 20 participated in teaching 6.00 this term, and contributed new lectures on data analysis and probability, mathematics topics of importance to BE (and other MIT majors) that are not covered in the canonical 18.01/18.02/18.03 series. The EECS Department has a commitment to continue to develop 6.00 as a foundational course offered both fall and spring terms. We thus cancelled the BE subjects 20.180/20.181 (each six units) in favor of requiring 6.00 (or equivalent) for our future majors. The availability of the 6.00 lecture notes and problem

Some Alternatives
Griffith, from preceding page

sets online facilitates reference to the subject material later in our curriculum for students who took a substitute subject (e.g., 1.00) in the sophomore year.

Finally, I offer a proposal for decompressing the first two undergraduate years and increasing student exposure to different possible majors before being asked to commit to one: I propose that we *move the deadline for declaring a major from the end of the first year to the end of fall term sophomore year*, and feature choice of major activities prominently in the fall term for as-yet-undecided sophomores. This proposal is based on two years of experience with a sophomore admissions process for entry into the Course 20 SB program.

Some Background

The BE SB program was launched with resources to accommodate ~25 students per year, with expectations that resources would be increased, if needed, to accommodate demand. Because other schools that have launched "bioengineering" undergraduate programs in recent years have seen very large enrollments, the Committee on the Undergraduate Program (CUP) and CoC approved a five-year plan to allow enrollment management in BE should demand for the major exceed the available resources. This plan, developed over a two-year period with CUP, CoC, and students enrolled in the Biomedical Engineering minor, requires students to apply for admission to the BE undergraduate program at the end of fall term sophomore year after completion of a set of required subjects. The plan also allows for my department to conduct a random lottery to select students for available slots if demand for the major is excessive. Although the department has thus far been able to accept all applicants who met the requirements, we encouraged students to stay on track for an alternate major should a BE lottery be required.

We scheduled the BE required subject, ("Thermodynamics of Biomolecular Systems") at a time that would not conflict with required fall term sophomore subjects

for most majors complementary to BE (e.g, Courses 2, 3, 6, 10). We found that a majority of students who indicated a serious interest in BE at the end of their first year indeed applied to and ultimately enrolled in BE, and their experiences during fall term sophomore year strengthened their commitment. Roughly 20% of the students who registered for our thermodynamics subject at the beginning of fall term with intentions to apply to BE opted for a different major after learning more about each option through coursework and discussions with faculty and other students. Likewise, many students who enrolled in the subject without previously considering BE as a major decided to switch in to BE at the end of the term. Thus, in our experience, *roughly a third of students needed additional flexibility during the first term of their sophomore year* to firm up their decision about their choice of major. (I would be interested in hearing from those who have other estimates of the choice of major experience.)

Framing the Issues

Currently, students can remain "undeclared" for their entire sophomore year, and retain their freshman advisor or pick another advisor, so why am I proposing that MIT consider moving the formal deadline for the first declaration of major to fall term of sophomore year? First, doing so may drive the kind of structural changes I suggest for "large" programs; i.e., departments will be more motivated to structure their curricula to accommodate students who switch in to their programs midway through sophomore year, as it is expected that about 1/3 of students may start sophomore year undecided and undeclared. Second, doing so may drive the development of better advising and activities for students who need more time and information before they decide on their major. I expect that even with a formal change of deadline to sophomore year, most MIT students may still want to declare a major at the end of freshman year, but I would like to delay the formal process to encourage them to wait. The intent of the proposal is to provide formal institutional support for

that fraction of first year students who need more time to explore their options.

Some Thoughts on Implementation

How can this possibly work, given that it potentially increases the workload of freshman advisors, at a time when MIT is trying to recruit more faculty to serve as first-year advisors? Perhaps the cultural change in the sophomore year may work to strengthen ties between faculty in the departments and freshman year advisors, by forcing a hybrid advising system in the fall term for at least some sophomores. Biological Engineering has experimented with a modest version of such a hybrid system: BE does not have a formal advising process for fall-term sophomores (since students cannot declare BE until the end of fall term), but holds advising events before and during fall term (e.g., formal information sessions, student-faculty dinners off campus), and connects students individually with potential advisors if they wish, recognizing that many students are in a need-for-more-info mode in fall term. Our ad hoc experiment is clearly idiosyncratic, and I am not in a position to address all the organizational and administrative challenges that such a hybrid system implies. But I hope my ideas start a discussion about concrete steps that might be taken to resolve the formidable advising issues more of us will face as a new set of GIRs is introduced.

In conclusion, I reiterate my appreciation to the members of the Task Force on the Undergraduate Educational Com-mons, and especially to Dean Bob Silbey, Dean Diana Henderson, and Dean Peggy Enders, for many stimulating discussions on undergraduate education and for providing extraordinary leadership and vision in future directions for MIT education. I look forward to joining my colleagues in further collegial discussions as we move toward more concrete plans for implementation of the Task Force recommendations. ■

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MIT Poetry

by Jean Monahan

Borderline Jesus

is what my friend said
when she meant to say:
borderline genius.
Genius, Jesus. Easy

slip. Genius rides a donkey
down a row of palms,
a self-crowned king
come to the city of reckoning.

Meanwhile, Jesus
grows up misunderstood,
outcast at school
and in his neighborhood.

He admires the way Genius
breaks the rules, unshakable
as a new temple. If only
he could master that

Genius swagger, sacred sneer
and divine gaze. Little
does he guess how Genius
frets, his mind on the face

of perfect love. What
must that feel like?
Genius thinks, riding
his ass of martyrdom.

The Diviners

The most gifted understood
that everything in this world informs;
the ways in which the accidental foretells
what the gut knows, the heart holds.

Some sat out under a strong wind
until they saw the world with doubled vision.
Some watched shadows, how they curled
and crept, or, in the heart of black woods
the dance of white stallions,
the fall of their manes, the mark of the hoof.

For the traditional, there were dreams, lines
in the palm, birth stars and meteors, moon.
These were the old ways of knowing
and they still worked, the way numbers
told stories, dice threw fate,
the way letters in a name
could rearrange into a word.

No deliberate spill
of salt, no wand. Whatever they saw
they believed, looking beyond, within,
for the divine. How that one laughed in the hay field
as the sun set. Beside the barn, how
the cock crowed, and mice, out of sight, slept.

Jean Monahan, who taught part time in the Literature Section between 2002-05, has published three books of poetry: *Hands*, winner of the 1991 Anhinga Prize, *Believe It or Not* (Orchises Press, 1999) and most recently, *Mauled Illusionist* (Orchises Press, 2006), from which these poems are reprinted. This is her second appearance in the FNL.

Solving the Energy Problem

William Schreiber

GLOBAL WARMING IS NOW almost universally accepted as a serious problem caused by human activity – mainly burning fossil fuels - that demands strong remedial action as soon as possible. Past events, such as the temporary boycott by some of the major petroleum producers in the '70s, showed that the U.S. also has a national security problem related to both price and availability of one of our main energy sources. This note is intended as a contribution to the effort to devise a comprehensive solution to all aspects of the energy problem.

Many others have also recognized various aspects of the problem and the need for a rapid response. I have found that most workers in this field have not completely defined the problem, but nevertheless have some favorite solutions to be exclusively pursued.

When I began my engineering education long ago, I was lucky enough to have had the tutelage of experienced engineers, not scientists. They all said (preached, actually) that the indispensable first step in devising a solution in the real world was to define the problem.

What is the energy problem? It has several parts.

In the early '70s, the temporary boycott of the world market by OPEC caused the price of petroleum to rise dramatically, as petroleum is the most common source of energy used in heat generation, production, commerce, transportation, and residential facilities. *(1) The ability of major petroleum producers to withhold the supply reveals the importance of energy independence and price.*

(2) More recently, global warming has become unmistakably important with widespread melting of ice, noticeable climate changes, and rising sea levels. This is now recognized by nearly everyone as caused by greenhouse gases, mainly carbon dioxide, produced by burning fossil fuels such as petroleum, coal, and natural gas. While nuclear power plants are being advocated by some, dealing with spent nuclear fuel is as problematic as greenhouse gases, and energy must be used to produce nuclear fuel. Note there is now a worldwide shortage of nuclear fuel.

Others are pushing ethanol, which is such a bad idea that it is hard to understand how its use has become as widespread as it has. Ethanol's production consumes nearly as much energy as it provides, and its use generates greenhouse gas. With only about 1% of gasoline now replaced by ethanol, some growers of corn have become rich, but many growers of domestic animals for food are in dire straits because of the unanticipated rise in the price of feed corn.

Solar power, wind power, hydroelectric power, nuclear power, hydrogen power, methane from buried organic material, and other renewable power sources are advocated by some, *but so far, no solution has been proposed that would be both affordable and complete. The purpose of this paper is to propose such a complete solution, the development of which requires only resources that we already have in abundance.*

Unless, by some miracle, we find a substitute for petroleum fuel that can be used with the same technology we use today, takes no energy to produce, has no noxious residue, and has no unexpected consequences (like raising the price of corn) its adoption will require rebuilding our entire energy infrastructure. This will be neither easy nor cheap, but if we hope to preserve the Earth for our descendents, we have no choice but to act now. This will involve diverting manpower and funds from current uses. If we examine how these resources are now being used, military applications will be found high on the list. Many of us believe that such diversions would make our world a better place in which to live. The decisions, of course, will be political, which is beyond the scope of this short paper.

Though expensive to build, the proposed system, which abandons fossil fuels, should be cheap to operate, as the fuel, which is sunlight, has no operating cost.

Some preliminaries

All the energy the earth has stored and almost all of the energy it receives every day comes from the Sun. About 89,000 terawatts (1 TW = a million million (quadrillion) watts) falls on the Earth, while total usage (in 2004) was only 15 terawatts, of which 87% was provided by fossil fuels. Their use produces most of the global warming that has become so obvious. If we were to get most of our useable energy from the Sun, we would solve many of the most important problems, including the price and availability of petroleum as well as *(3) the noxious by-products associated with using nuclear power and fossil fuels. (4) Relying on the Sun rather than petroleum would also permit us to be much less involved with events in the Middle East.* (Anybody who does not realize how advantageous this would be is urged to read Seymour Hersh's "Annals of National Security" in *The New Yorker* of 5 March 2007.)

Cleaning carbon dioxide (and other greenhouse gases such as water vapor) from the Earth's current atmosphere is not one of my fields of expertise, but greatly reducing the rate at which we

increase it is clearly a good idea. (Perhaps we shall discover that if we stop adding these gases to the atmosphere, the existing unwanted gases will slowly dissipate.) A way to do this is to move to an electrical economy, producing electricity from sunlight, and then replacing as much of other fuels as possible by electricity. There is cost associated with this, but mostly new technology is not required. The one field in which this is not yet completely possible is transportation, where better batteries (or their functional equivalent) are needed. Fortunately, we still have a lot of competence in developing new technology, in spite of losing a good part of our manufacturing skills. (A very promising battery project is underway at MIT.)

Solar power at present is faulted for being available only during clear days, for requiring expensive solar cells of limited efficiency and life, and for not having enough space for the receptors in crowded areas such as cities. This proposal concentrates on dealing with these issues.

The main idea

When I was teaching in India in the '60s, I learned that some irrigation pumps were solar-powered without using any electrical components. Small collectors concentrated sunlight sufficiently to produce steam of high enough temperature and pressure to operate water pumps. (The motivation was that pilferage of electrical components, even copper wire, was then a problem in the outlying areas where the apparatus was often located.) This idea is one of the elements in the proposal. The other is to collect the sunlight on large steerable, focusable mirrors in geostationary orbit that would direct the reflected light onto much smaller receptors on the ground. (The orbits would be inclined so that the mirrors would never be in the shadow of the earth.) Initially, the receptors would be located near existing hydroelectric plants, where solar-powered pumps would be used to move water up into the lake(s) behind the dam(s) for energy storage. At NASA, we have the skills to develop such devices as the mirrors and perhaps even have the money

if we give up such projects as the space station, which produce no noticeable benefits for mankind. Should the initial installations prove workable, new plants could be built in more remote locations.

Solar power like the kind I saw in India is still used to some extent in the U.S. Heating of swimming pools seems to be the largest application. Some is used for domestic hot water and some for space heating. Numerous small companies are in the business of making and selling the collectors and the receptors for the various applications. The same is true today in India.

Details

The orbiting mirrors would be, perhaps, a mile in diameter. They would be constructed as transparent inflatable thin balloons, one of the inside surfaces of which would be aluminized to provide the reflecting surface for the required concave mirror. The mirrors would be lifted into orbit while folded, the inflated shape being determined by the thickness of the plastic or other material and by the pressure. It is likely that spherical reflectors would be adequate, and the focal length could be adjusted by the pressure, thus avoiding high precision in their manufacture. Communication satellites already use slanted orbits and incorporate sufficiently accurate steering mechanisms.

Note that since the Sun apparently moves through the sky while the mirror apparently remains fixed to viewers on the Earth, the angle of incidence of the sunlight on the mirror changes. Thus the mirror must be constantly redirected. This is preferably done by using feedback from small sensors located around the edge of the mirror to the steering mechanism of the satellite carrying the mirror. These same sensors can also be used to adjust the focal length of the concave reflector by adjusting the air pressure inside the plastic balloon so that the incident beam just fills the receptor surface.

At the surface of the Earth, incoming solar radiation in clear weather averages something over 300 watts/sq. meter, but it is much higher and nearly constant above

the atmosphere. Measurements show the "solar constant" to be about 1366 watts/sq. meter. A reflector about 5000 feet in diameter thus collects about 3000 megawatts, which is comparable to the capacity of a typical terrestrial electric power plant. I am guessing that collectors might be 500 feet in diameter, but this must be verified. The fraction of the collected power that would be received by the collectors depends on the weather, and the fraction of that which becomes useful heat to make steam and drive pumps remains to be seen.

Close to populated areas, it may be necessary to stop the transmission at night. For these reasons, storage of the collected energy is essential, which makes the use of dams holding pumped water a vital part of these systems. The ability to defocus the mirrors is also important.

One of the reasons for using the solar energy directly to produce steam and drive pumps is that solar electric cells, besides being expensive, are not very efficient in converting light into electricity, and need replacement from time to time. At best, the efficiency is about 20%, the rest of the light energy appearing as heat, which limits the intensity of light that can be handled. There is no such limitation when converting the incoming power into steam, but there probably are some limitations from safety considerations. However the efficiency is surely higher than that of solar cells.

Space debris

It has been known for some time that thousands of pieces of debris, some very large but most very small, abandoned from previous launches, are in orbit around the Earth. Some objects that have been returned, such as shuttle vehicles, have been found to have suffered minor damage from impact with small pieces. This raises concern for us, since the mirrors we propose to place in orbit are actually quite fragile. Fortunately, almost all space junk is in much lower orbit, where it will eventually burn up as it enters the Earth's atmosphere.

There are two possible approaches to deal with this problem. One is to make the mirrors less fragile by abandoning the balloon approach and providing a structure to support a single-surface properly shaped mirror. The other is to provide redundancy by placing two or more mirrors in orbit for each receiving location on the ground. The balloon approach is very attractive because it enables focus to be controlled by pressure, rather than making and then placing in orbit a very precise mirror.

Although the redundancy approach seems better to me, my inclination is to leave the final decisions to the engineers who will do the actual design, hopefully from NASA.

More thoughts

This proposal need not be the only scheme used. Higher efficiency in systems that do burn carbon-containing fuels would lessen, but not eliminate contamination of the atmosphere. Conservation, wind power, tidal power, and any other schemes that do not burn fossil or carbon-containing fuels may also be used. I have no special knowledge about hydrogen fuel cells, except to note that water vapor is also a greenhouse gas. Carbon sequestration seems to involve significant new technology and does not free us from the grip of OPEC.

References

Many of the numbers used here are from Wikipedia, "World energy resources and consumption," (*en.wikipedia.org/wiki/Energy: _world_resources_and_consumption*). The piece uses the words "energy" and "power" as synonyms in many instances, much to the discomfort of technically-trained persons, such as myself. In this article, I have used these two terms only in their technical sense. Power (typical unit is watt) is the rate of providing energy (typical units are BTU – British thermal units – or joules). ■

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The Task Force on Medical Care for the MIT Community: An Update from MIT Medical

William Kettyle

FOR MORE THAN 100 YEARS, MIT has been providing convenient, on-site healthcare services. Eventually, MIT Medical grew into a comprehensive, multi-specialty, group practice offering services to all members of the community, from the very young to the most senior. Through our various insurance plans, we care for the entire student population, many graduate student families, and almost half of the faculty, employees, and their families. We promote campus wellness and healthy lifestyles. We plan for campus emergencies. We advise Institute leadership on healthcare policy and matters related to the health of the campus. And we care deeply for the health of the individuals in the community and for the health of the community as a whole.

Given the complexities of our mission, our continuum-of-care model, and the impact we have on the lives of individuals, we welcome occasional opportunities to look at and learn about ourselves with the help of others, both those inside and outside our community. Our goal is to have broad input and comparative information to help us evaluate and continuously improve our services to the MIT community.

We had just such an opportunity in 2004 when MIT President Charles Vest created the Task Force on Medical Care for the MIT Community. Its charge was to examine the cost and quality of medical services and health insurance coverage provided by MIT to its students, faculty, employees, retirees, and post-doctoral affiliates and fellows. In November 2005, the Task Force recommended that "the MIT Administration express its confidence in and strong support of the basic model for medical care and medical insurance that has served the Institute so well for many decades."

The following December, a multi-disciplinary working group was convened to assess and address the 41 recommendations included in the Task Force's final report and to work diligently to assure implementation of the ideas and suggestions that had been generated. In March 2007, Terry Stone, MIT's Executive Vice President and Treasurer, announced that the working group had successfully reviewed and made determinations regarding each of the recommendations and offered an update on each outcome.

The 41 recommendations fell into two broad categories: those pertaining to MIT Medical and those pertaining to MIT's health insurance programs. For MIT Medical, the Task Force, in partnership with the working group, allowed us to take a thorough and careful look at the medical care we provide to the community. It also allowed us to look at our insurance programs, as well as our fiscal

budgeting and resource allocation processes, to ensure that the fiscal foundation of MIT Medical was robust, healthy, comprehensive, and comprehensible.

At this point, many of the recommendations specific to MIT Medical have been successfully implemented while others are ongoing in nature and will require additional and continuing analysis and input. We have introduced several new practices and processes with the goal of improving healthcare for the MIT community, emphasizing a patient-centered approach. I am pleased to offer an update on a few specific recommendations that should be of particular interest to the MIT faculty.

Improving access to care

Even before the Task Force released its recommendations, MIT Medical was working diligently to increase clinical staffing and improve access to care and services in key clinical areas, including adult medicine, mental health, dental, eye services, and women's health. In addition, our Center for Health Promotion and Wellness continues to advance efforts to promote wellness and healthy living.

We have also enhanced our health financial management systems to improve our resource utilization processes. These changes allow us to make important decisions with much better, more detailed information and clearer views of the cost implications for our patients and for the Institute. These enhancements allow us to partner more effectively with MIT's Human Resources Department to optimize resource deployment. MIT's Human Resources Department shares our goal of matching available insurance benefit packages to the needs of the community.

Update on key recommendations

Key outcomes for each of the 41 recommendations are summarized in the Medical Task Force Follow-Up Worksheet (**web.mit.edu/task-force/medical/**), however, it might be helpful to highlight a few of the recommendations and offer more details:

• *A recommendation was made to "continue efforts to identify and take advantage of opportunities for reducing costs without reducing the quality of care."*

As a practice providing more than 25 clinical specialties, we are constantly evaluating the balance of providing the best possible care at the right cost. For example, we are working on ways to control our expenses while improving our services in the area of "high-tech" imaging. Through advances in healthcare information technology, MIT Medical has been able to take advantage of marketplace competition within the areas of CT, MRI, and PET scanning. We have access to high-quality images, which improves patient care at a lower cost. We have also realized some efficiency through digital radiography; updated electronic laboratory systems; and implementing an electronic dental records system.

• *A recommendation was made to "address issues regarding access to specialists within and outside the Medical Department."*

We have improved access to care within MIT Medical with the addition of new clinicians in the areas of Internal Medicine, Dermatology, Neurology, and Orthopedics. We are also encouraging each of our patients to identify a primary care provider, which will improve and expedite access for both routine and urgent care issues. We have also improved our specialist-referral process to help patients more easily access medical care outside of MIT Medical. We have been especially diligent in helping our patients make appointments for colon cancer screening, breast cancer treatment, cardiac testing, and orthopedic care.

• *A recommendation was made to "continue efforts to strengthen the measurement and assessment of objective measures of the quality of care provided by the Medical Department."*

MIT Medical has developed an evidence-based decision support system to measure and report metrics of care quality and patient outcomes at the clinician and service level. The model has been success-fully tested in our Internal Medicine Service and will be implemented in all major services in 2008. This system allows us to monitor such things as colon cancer screening rates, management of patients with diabetes, and patient satisfaction. This real-time quantitative and qualitative data-reporting instrument will be available to our clinicians with the goal of providing the information needed to improve care for patients across our practice.

Looking forward

The Task Force recommendations and the efforts of the working group have established a system of processes and frameworks that will continue to enhance care for our community in the years to come. Healthcare has changed dramatically over the years, with an increased focus on quality of care, wellness, preventative medicine, and patient outcomes. MIT Medical will continue to partner with key stakeholders in the Institute community including the senior administration, the Medical Management Board, the Medical Consumers' Advisory Council, and the Student Health Advisory Council, to integrate ideas and suggestions to help improve healthcare for the community.

I very much appreciated serving on the Advisory Committee to the Task Force on Medical Care and the opportunity to be a member of the working group. I extend my thanks to all those who supported this major effort with their time, ideas, analyses, thoughtfulness, and creative approaches. In response to the careful analysis of the Task Force and the follow-up work of the working group, the Institute has invested resources in MIT Medical that will allow us to continue our mission to promote wellness and provide healthcare for the diverse needs of the Institute community.

We welcome your feedback, thoughts, and ideas. MIT Medical has created an e-mail address – *MTF@med.mit.edu* – for you to share your ideas related to the work of the Task Force. Please feel free to write to me and share your thoughts. ▪

William Kettyle is Medical Director and Head of MIT Medical *(kett@med.mit.edu).*

A New Cooperative Residence for the MIT Community

Paul E. Gray
O. Robert Simha

A Brief History

SINCE THE END OF WWII there have been a number of initiatives that have addressed the vexing problem of providing convenient, appropriate, and reasonably-priced housing for MIT's faculty and staff. In 1948 MIT's treasurer, Horace Ford, leased land on Memorial Drive to the New England Life Insurance Company for the purpose of building 100 Memorial Drive, an apartment house that has provided rental housing to both members of the faculty as well as the general public. In 1951, MIT economics professor W. Rupert McLaurin envisioned the development of affordable housing for young MIT and Harvard faculty and graduate students. He provided the initial funds to establish the now famous Conantum community in Concord, Mass. The buildings designed by Carl Koch, an MIT professor of architecture, provided 100 homes on 190 acres. At the time, Conantum advertised that the community was but 22 minutes from Harvard Square. In 1962, the desire for housing closer to the campus stimulated a proposal to build a faculty cooperative residence on land to be leased from MIT. This proposal was thought to be ahead of its time and was shelved. In the years that followed, other initiatives were taken by MIT to provide suitable housing for faculty in Cambridge, but for the most part they have not survived.

A New Faculty and Alumni Initiative

Beginning in the spring of 2003, a group of MIT and Harvard faculty and alumni met to consider the possibility of developing a residence to serve the university community in Cambridge. In January of 2004, nine members of the group organized as University Residential Communities, LLC (URC). In the fall of 2004, URC entered into an agreement with the Beal Companies, Boston-based developers with extensive experience in the Cambridge market, to assist URC in the development process. The URC founders designated several members as managers, who have contributed their time and talents in order to bring the project to this point. They include Paul Gray, Neil Harper, and O. Robert Simha of MIT, and Carl Sapers of Harvard. One of the founders, Bob Simha, has agreed to undertake substantial responsibilities as Executive Officer through the completion of the project.

Preliminary surveys and discussions led to the decision to locate the facility within walking distance of the MIT campus. A series of meetings with the MIT Medical Department, Athletic Department, Alumni Office, and other MIT agencies established an early openness of the MIT community to the presence of a nearby residential community of the kind envisioned. The MIT administration, while supportive of our effort, was, however, not in a position to participate financially in this enterprise.

The main idea behind the project was to create a multi-generational community of people with an affinity for university life and to locate the facility as near as possible to the campus. The emphasis was on developing a facility that would appeal to people who shared an interest in the intellectual, cultural, and social life in the Boston/Cambridge area. There was also a desire to design the facility with physical and programmatic features that would enable residents to age gracefully in place and to remain in their apartments for as long as they wished.

Consideration of the objectives outlined above eventually led to the decision to organize the residential community into a co-operative form of ownership, an ownership structure that will allow greater control over the nature of the community and greater flexibility in certain financing alternatives. Eligibility for membership in the cooperative will initially be open to faculty, staff, employees, graduates, and others with affiliations at MIT, Harvard, and the Massachusetts General Hospital.

For the past two years, the URC managers and the Beal Company have been exploring housing site opportunities within the MIT neighborhood and, in April of 2007, we signed an agreement with the Extell Corporation that will enable us to accomplish our objectives – in a new, eight-story cooperative residence now being constructed at 303 Third Street in Kendall Square Cambridge, just a short walk from the Kendall/MIT T station and the entrance to East Campus.

The site is composed of two buildings: the South Building, which will be the URC co-op containing 168 units, and the North Building, which will be a rental apartment building owned by the Equity Residential REIT of Chicago.

The new residence will have apartments varying in size from one to three bedrooms. Each unit will be fully equipped, and the residence will have 24-hour concierge service, common rooms,

meeting rooms, a media room, a swimming pool, health and fitness facilities, a dining club, and parking in an underground garage. We expect that the MIT Medical Department will be available to all residents. In addition, access will be provided to the wide range of intellectual and cultural activities on the MIT campus.

The cost of apartments will range from $510,000 to $1,500,000. Sizes range from 750 square feet to over 2,000 square feet. The apartments are scheduled for occupancy in the fall and early winter of 2008.

Twenty-one of the units will be made available to the Cambridge Affordable Housing Program at very substantial discounts. These units will be available on a lottery basis to any person who meets the income guidelines established by the City. These guidelines include income levels which cover many members of the MIT community, and we would encourage all who qualify to apply.

We believe that the residence will offer the opportunity to live amongst both younger faculty and staff beginning their careers, and older members of the MIT community who wish to spend their working and retirement years in the stimulating environment that is MIT.

The goal of this new community is to provide an opportunity for MIT faculty, staff, and alumni to be part of a congenial living and teaching community that will provide a range of services and amenities, for all age groups. We believe the community will reflect one of MIT's greatest strengths: the belief that we can continue to make contributions to learning by engaging in the life of the mind and doing those things that enriches our lives and the lives of others.

If you are interested in learning more about this residential opportunity please contact either of the authors of this article or visit the Website: *web.mit.edu/ir/urc/update.html*. ◼

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Error Results in Some Faculty Being Overcharged for Supplemental Life Insurance

Newsletter Staff

SEVERAL MIT FACULTY MEMBERS who reached their 65th birthday as of July 1 of 2006 were inadvertently overcharged for supplemental life insurance under the Plan provided by MIT.

MIT provides all employees up to $50,000 of Basic Life Insurance. Additionally, all faculty (and staff) may purchase up to 5 times their salary in Supplemental Life Insurance. However, on the July 1st following their 65th birthday, the amount of available Basic and Supplemental Life Insurance decreases. Between the ages of 65 and 70, employed faculty may purchase up to 3.3 times their salary in Supplemental Insurance. After age 70, the amount decreases to 2.2 times their salary. After age 75, 1.6 times their salary, and so on, until after age 95 it is reduced to 0.6 times their salary.

Recently, the *Faculty Newsletter* learned that several employed faculty over the age of 65 were mistakenly charged for their elected 5 times salary Supplemental Life Insurance when they were only eligible for 3.3 times their salary and therefore should have been paying a correspondingly lower rate.

When contacted by the *Faculty Newsletter*, Vice President for Human Resources Alison Alden replied, "I am aware of this situation and am happy that it is being resolved. . . . In this unique circumstance, the overpayment resulted when a necessary override prevented the automated coverage reduction process from functioning correctly – so I ask that we keep this in mind." The Benefits Office has corrected this situation and is in the process of reimbursing affected faculty for the overpayment.

If any faculty have specific concerns about their life insurance they can contact Elizabeth Parr by calling 3-6151. ◼

Newsletter Adopts New *Policies and Procedures:* Includes Direct Election of Editorial Board Members

A SIGNIFICANTLY REVISED VERSION of the *Policies and Procedures* for the *MIT Faculty Newsletter* was unanimously adopted at the April 19 Editorial Board meeting.

Key changes include: the creation of the position of Secretary for the *Newsletter*; a staggered three-year term for Board members; appointment of a Nominations Committee for potential new Board members; and the yearly direct election by the faculty of ~1/3 of the Editorial Board. These changes (and others) will be implemented in the coming acadmic year.

Below are the complete *Policies and Procedures* as adopted at the April 19 Board meeting.

MIT Faculty Newsletter

Policies and Procedures

I.   **Mission**
II.   **Function**
III. **Governance**
IV.   **Editorial Policy**

I. Mission

The mission of the MIT Faculty Newsletter (FNL) is to serve as a medium for communication among MIT faculty, and as a voice for the diversity of faculty views within MIT as well as in the broader academic world.

II. Function

The Newsletter publishes articles, letters, editorials, and data deemed of interest to the faculty. Contributions are welcome from all members of the faculty and from emeritus faculty. Articles and letters represent the views of the author.

a. To carry out the above mission the FNL may publish articles deemed useful, from other sources, including members of the administration, students, research staff, and faculty at other universities.

b. Essential to the function of the FNL is its ability to express views that may not reflect those of other MIT constituencies and entities.

III. Governance

1) The MIT Faculty Newsletter shall be governed by an Editorial Board composed of members of the faculty:

    a. The Editorial Board shall be composed of at least 12, but not more than 15, members of the faculty.

    b. Editorial Board members shall serve for staggered three-year terms, with 1/3 of the members elected each year. Board members may be re-elected.

    c. Faculty emeritus shall be eligible to serve.

    d. Seven members shall constitute a quorum.

    e. The Editorial Board shall meet not less than three times per year, fall, winter, and spring.

2) Nominations Committee:

    a. The Editorial Board shall establish a Nominations Committee consisting of four members at the January/February meeting. Members shall serve for two years with staggered appointments for continuity. Two members will be elected in odd years and two in even years. The Editorial Board shall elect the Nominations Committee from among Board members. The nominees receiving the most votes among those nominated shall fill the open slots.

    b. The Nominations Committee will have the responsibility of recruiting and evaluating candidates for the Editorial Board, taking into account the need for representation from different schools and sectors of the Institute, junior, senior, and retired faculty, male and female, underrepresented groups or faculty constituencies.

    c. Candidates for the Editorial Board should give evidence of commitment to the integrity and independence of the faculty, and to the role of the Faculty Newsletter as an important voice of the faculty.

3) Election of the Editorial Board:

    a. The Nominations Committee will present not fewer than four nor more than eight candidates to the faculty-at-large prior to the spring meeting of the Editorial Board. Nominees shall have the opportunity of circulating a short statement of their qualifications and/or views. The nominees corresponding to the number of open seats and receiving the most votes will be elected for three-year terms.

4) Officers of the Board:

    a. The Board shall elect a Chair and a Secretary at its spring meeting for two-year terms. The Chair will be responsible for ensuring circulation of an agenda for Board meetings. The Secretary will be responsible for communicating minutes and financial reports when appropriate.

    b. Among candidates nominated, the nominee receiving a majority of ballots shall be elected. In the case of more than two nominees, and no majority, the nominee receiving the fewest votes will

be eliminated, and further ballot taken, until one individual has received a majority of the ballots cast. The Secretary shall be responsible for counting of ballots.

c. The Chair and Secretary will be elected in alternate years following the procedure described above.

d. Between Board meetings the Chair, Secretary, and Chair of the current Editorial Sub-Committee will constitute an Executive Committee to deal with matters arising, with serious issues communicated electronically to the Editorial Board for rapid comment.

5) The Editorial Board shall hire and direct the work of the Managing Editor. The Chair of the FNL Board shall serve as the formal Supervisor of the Managing Editor.

6) These Policies and Procedures can be amended by a 2/3 vote of the Editorial Board at any regular meeting of the Board. The proposed changes should be circulated not later than 7 days before the meeting.

IV. Editorial Policies

1) The Editorial Board shall set or amend editorial policies at its regular meetings. Changes in editorial policies will be published in the Newsletter and posted on the Website.

2) For each issue of the Newsletter, an Editorial Sub-Committee shall be constituted consisting of at least three and preferably four members of the Editorial Board. These committees shall choose a chair for their duration. Each Editorial Sub-Committee will have responsibility for the content of the issue they are supervising, and for the Editorial if they choose to write one. On salient issues, the Editorial Sub-Committee may choose to poll the Board. Wherever possible, at least one member of an editorial Sub-Committee will also serve on the following Sub-Committee, to provide continuity.

3) In general the pages of the Faculty Newsletter are open to all members of the faculty. The publication of articles will be subject to the judgment of the Editorial Sub-Committee. Letters to the FNL will usually be published, provided they are relevant to the life of the campus, are not deemed libelous, do not report clearly erroneous information, and do not largely repeat opinions expressed in previous letters. Letters must be signed.

4) In general the views expressed in articles and letters represent the views of individuals and not those of the Editorial Board. Only the Editorial reflects the view of the Editorial Sub-Committee or Board.

5) The FNL will maintain a Website, the content of which will be set by the Editorial Board or Sub-Committee designated by the Editorial Board.

[This revision adopted at the meeting of the Editorial Board, April 19, 2007.]

M.I.T. Numbers
Women Faculty (as of October 2006)

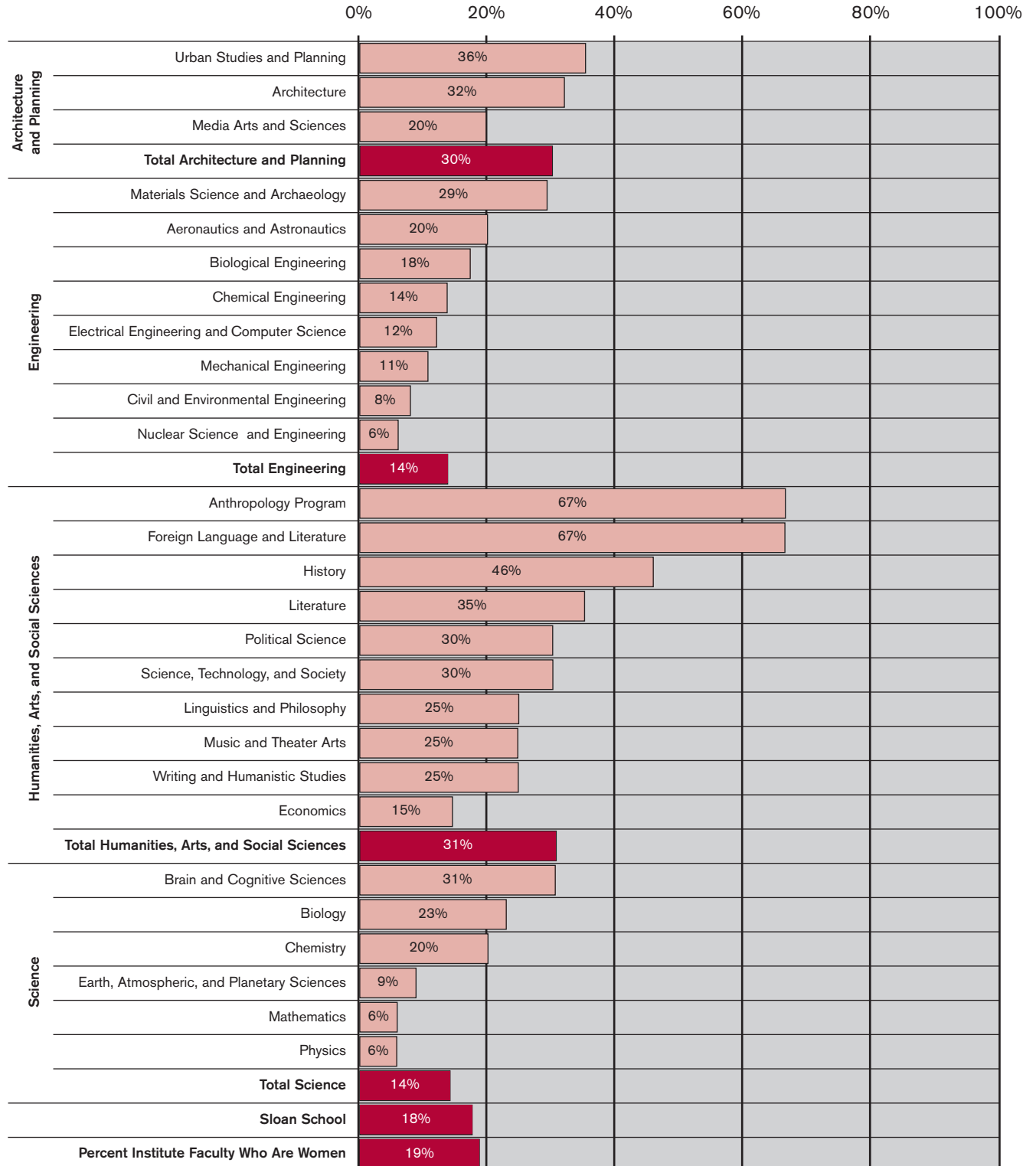| School	Department	Total Faculty	Women as % of Total Faculty	Tenured Faculty	Women as % of Tenured Faculty
Architecture and Planning	Urban Studies and Planning	28	36%	19	26%
	Architecture	31	32%	20	30%
	Media Arts and Sciences	20	20%	13	15%
	Total Architecture and Planning	**79**	**30%**	**52**	**25%**
Engineering	Archaeology and Materials Science and Engineering	34	29%	24	21%
	Aeronautics and Astronautics	35	20%	22	14%
	Biological Engineering	17	18%	12	25%
	Chemical Engineering	29	14%	26	12%
	Electrical Engineering and Computer Science	130	12%	95	12%
	Mechanical Engineering	73	11%	62	2%
	Civil and Environmental Engineering	37	8%	33	9%
	Nuclear Science and Engineering	16	6%	13	8%
	Total Engineering (includes ESD in total)	**371**	**14%**	**287**	**10%**
Humanities, Arts, and Social Sciences	Anthropology Program	6	67%	5	60%
	Foreign Languages and Literature	9	67%	7	71%
	History	13	46%	9	56%
	Literature	17	35%	12	25%
	Political Science	23	30%	15	20%
	Science, Technology, and Society	10	30%	7	43%
	Linguistics and Philosophy	24	25%	21	29%
	Music and Theater Arts	12	25%	9	22%
	Writing and Humanistic Studies	8	25%	5	20%
	Economics	34	15%	23	13%
	Total Humanities, Arts, and Social Sciences	**156**	**31%**	**113**	**30%**
Science	Brain and Cognitive Sciences	36	31%	27	26%
	Biology	52	23%	43	23%
	Chemistry	30	20%	24	17%
	Earth, Atmospheric, and Planetary Sciences	33	9%	30	10%
	Mathematics	50	6%	36	6%
	Physics	72	6%	49	4%
	Total Science	**273**	**14%**	**209**	**13%**
	Sloan School of Management	**96**	**18%**	**62**	**15%**
	MIT TOTALS*	**998**	**19%**	**738**	**16%**

Note: This table is an unduplicated count of faculty by primary academic department. In the case of faculty with dual appointments, individuals are counted in one department as designated by the Office of the Dean of the School.

*MIT TOTALS includes 23 faculty with appointments outside the academic departments listed.

Source: Office of the Provost/Institutional Research

M.I.T. Numbers
Percent of Faculty Who are Women* (as of October 2006)

Division	Department	Percent
Architecture and Planning	Urban Studies and Planning	36%
	Architecture	32%
	Media Arts and Sciences	20%
	Total Architecture and Planning	**30%**
Engineering	Materials Science and Archaeology	29%
	Aeronautics and Astronautics	20%
	Biological Engineering	18%
	Chemical Engineering	14%
	Electrical Engineering and Computer Science	12%
	Mechanical Engineering	11%
	Civil and Environmental Engineering	8%
	Nuclear Science and Engineering	6%
	Total Engineering	**14%**
Humanities, Arts, and Social Sciences	Anthropology Program	67%
	Foreign Language and Literature	67%
	History	46%
	Literature	35%
	Political Science	30%
	Science, Technology, and Society	30%
	Linguistics and Philosophy	25%
	Music and Theater Arts	25%
	Writing and Humanistic Studies	25%
	Economics	15%
	Total Humanities, Arts, and Social Sciences	**31%**
Science	Brain and Cognitive Sciences	31%
	Biology	23%
	Chemistry	20%
	Earth, Atmospheric, and Planetary Sciences	9%
	Mathematics	6%
	Physics	6%
	Total Science	**14%**
	Sloan School	**18%**
	Percent Institute Faculty Who Are Women	**19%**

*Note: For complete details, see preceding page.
Source: Office of the Provost/Institutional Research