

# MIT Faculty Newsletter

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

**in this issue** we offer commentary on the new MicroMaster's Credential (below and p. 6); "A Response to President Reif's 'Plan for Action on Climate Change'" (p. 4); reflections on his time at MIT by Medical Director William M. Kettyle (p. 13); and "Improving the Way MIT Handles Sexual Assault Complaints" (p. 18).



After the Nepal Earthquake

## After the Earthquakes: MIT's Nepal Initiative

Jeffrey S. Ravel, Aaron Weinberger,  
Bigyan Bista

**LAST APRIL 25, AN EARTHQUAKE** with a magnitude of 7.8 on the Richter scale struck the South Asian country of Nepal, killing over 9,000 people and injuring more than 23,000 others. Aftershocks continued in the following days and months, including a 7.3 magnitude quake on May 12 that killed or injured another 2,700. Hundreds of thousands of people were made homeless with entire villages flattened across many districts of the country. Centuries-old buildings were destroyed at UNESCO Heritage sites throughout the Kathmandu Valley. It was the worst natural disaster to strike Nepal since the 1934 Nepal-Bihar earthquake that registered 8.0 on the Richter scale and resulted in the deaths of over 10,000 people.

continued on page 10

## The Tragedy of Forced Migration and What MIT Can Do About It

Nasser Rabbat

**THERE IS A NEW FACE** to the tragedy of forced migration, and it is Syrian. Mouaz al-Balkhi, a 22-year-old engineering student, died while trying to swim across the English Channel. His decomposed body was found months later on the Dutch island of Texel, hundreds of miles from the French seaport of Calais where he started his ill-fated attempt to reach the relatively lenient England. He and another Syrian, Shadi Kataf, had bought two identical thin wetsuits on October 7, 2014. They disappeared shortly afterward and Kataf's remains were found even further north on the shore of Lista in the south of Norway in January 2015, but were not identified until July. The two young men, like thousands other Syrians, Afghans, Iraqis, Palestinians, and North and sub-Saharan Africans, had fled the miserable condi-

continued on page 8

Editorial

## The Wisdom and Process of Creating a MicroMaster's Credential

**PRESIDENT REIF ANNOUNCED** a new pathway to MIT Master's degrees on 7 October, and referenced an *MIT News* account with a subtitle that says the new pathway "reimagines admissions," and "introduces 'MicroMaster's'." We expect that President Reif, noting the world needs more leaders with MIT educational experience, wants to find ways to increase our output at every level. Many of us on the faculty, probably most of us, maybe nearly all of us, concur and want to help.

### Issues of Input and Process

What we do not understand is why many of us first heard about the new pathway in the President's announcement. Others, who had heard about it, referencing MIT tradition, expected a full airing in a faculty meeting, with discussion and vote, before an announcement.

continued on page 3

# contents

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Vol. XXVIII No. 2 November/December 2015

	<b>01</b>	<b>After the Earthquakes: MIT's Nepal Initiative</b> Jeffrey S. Ravel, Aaron Weinberger, Bigyan Bista
	<b>01</b>	<b>The Tragedy of Forced Migration and What MIT Can Do About It</b> Nasser Rabbat
Editorial	<b>01</b>	<b>The Wisdom and Process of Creating a MicroMaster's Credential</b>
	<b>04</b>	<b>A Response to President Reif's Announced "Plan for Action on Climate Change"</b>
	<b>06</b>	<b>MicroMaster's Pilot: An Experiment in Educating Professionals</b> Sanjay Sarma, Isaac Chuang, Hazel Sive, Woodie Flowers
	<b>07</b>	<b>The Alumni Class Funds Seek Proposals for Teaching and Education Enhancements</b>
	<b>13</b>	<b>Reflections: My Years at MIT</b> William M. Kettyle
	<b>16</b>	<b>A Frog in Water Part II: The Long-Term Consequences of Imperceptible Change</b> Thomas W. Eagar
Letters	<b>17</b>	<b>Publishing Political Views in the FNL</b> Steven R. Tannenbaum
	<b>18</b>	<b>Improving the Way MIT Handles Sexual Assault Complaints</b> Munther Dahleh, Suzanne Flynn, Kevin Kraft
	<b>20</b>	<b>Gender Imbalance in MIT Admissions Maker Portfolios</b> Chris Peterson, Hal Abelson
	<b>22</b>	<b>In Guarding the Well-Being of MIT Students We Should Emphasize Prevention</b> Elfatih A. B. Eltahir
M.I.T. Numbers	<b>23</b>	<b>Master's Degrees Per Faculty (2006–2015)</b>
M.I.T. Numbers	<b>24</b>	<b>Master's Degrees (2006–2015)</b>

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## Address

MIT Faculty Newsletter  
Bldg. 10-335  
Cambridge, MA 02139

## Website

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

**Telephone** 617-253-7303

**Fax** 617-253-0458

**E-mail** [fnl@mit.edu](mailto:fnl@mit.edu)

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**Creating a MicroMaster's Credential**  
continued from page 1

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Certainly a full airing in a faculty meeting would have brought strong opinions to light, forced deeper thinking, and led to a better package. That is what should happen at faculty meetings. There might have been contention, possibly considerable contention, but plans would have been clarified, flaws would have been exposed, improvements would have been adopted, and all would have got on board with enthusiasm or at least would have experienced the acquiescence that comes with being heard.

We understand that the Faculty Chair went to considerable trouble to get the new-pathway package put before the Faculty Policy Committee, and we salute him for that. At the Institute Faculty Meeting on 21 October, however, he explained that he chose not to take the package further, to a faculty meeting, and stated that his decision was based on “tradition.” His presentation was too nuanced for us to summarize it fairly here, so we have asked him to clarify for us in an issue of the FNL. We hope he will explain why, if there is a likelihood that someone would care, we should let ill-defined “tradition” trump the guidance in *Policies and Procedures* and *Rules and Regulations of the Faculty*.

**Concerns Over Impact on Education**

In any event, there must be some limit on what “tradition” can excuse. Suppose the new pathway involved a replacement of all coursework by life experience; suppose the new pathway required spending only an IAP on campus.

Does the new pathway introduce elements about which someone cares? Does it go into territory not sanctioned by tra-

dition? We think so. The new pathway introduces a new credential with the word “Master’s” in it. To be sure, we give certificates to those who pass our MOOCs and XSeries certificates to those who pass various sets of our MOOCs, but the injection of *Master’s credential* into the package takes certification to a whole new level.

Well, perhaps not a whole new level. If a Master’s degree certifies that the recipient has mastered a subject, which generally takes a year or two, then a MicroMaster’s certificate perhaps certifies that the recipient has mastered a millionth of something, which, if you do the numbers, should take 7 to 14 seconds.

But of course the real problem is with confusion and abuse. Many already seem to think the MicroMaster’s is some sort of degree. Others will surely say they have a Master’s from MIT without even lying, because they have, after all, a MicroMaster’s Credential. Still others with real Master’s degrees will be resentful.

We are saddled with a label that invites confusion, abuse, resentment, and ridicule.

So why did the label get past committees? Perhaps because it can take some days of reflection and conversation before resistance to or acceptance of an idea can override an initial impression.

Had the label, MicroMaster’s Credential, been part of a proposed package to be discussed and then come after a week or so to the faculty at a faculty meeting, we think the faculty would have expressed strong objection to and disapproval of the MicroMaster’s label. The package would have been a better package.

**Concerns Over Novel Degree Programs**

Of course the concern we raise here about the MicroMaster’s label is merely repre-

sentative, not exhaustive. Other concerns include: Should expansion of our professional degree programs be a priority? Are such programs peripheral to our mission? What limits should we place on using MOOC performance in admissions? Will companies have a heavy influence on who gets access? Should we be concerned about programs in which most of the teaching is done by instructors who are not professors? Is a single semester at MIT enough to absorb whatever it is about us we value? How will we provide oversight to programs with little faculty involvement? How will we measure success?

Another concern is the possibility that proponents of using MOOC performance in admissions will advocate deployment beyond our professional degree programs. Such a way of doing admissions would be a disaster if used, for example, in the undergraduate program. It would close the door for many underrepresented students who often lack infrastructure support for a year of MOOCing.

So let us innovate, change, reengineer, start over – all of that, but let us not hurry to announce ideas not tested as our guiding documents say they should be tested. Let us not fear to bring contentious issues to the sometimes stormy sunshine of our faculty meetings. Let us instead remember Winston Churchill’s observation about the British form of government, with its often contentious question time and frequently fierce debates: “. . . democracy is the worst form of Government except for all those other forms that have been tried from time to time.” ■

Editorial Subcommittee

## A Response to President Reif's Announced "Plan for Action on Climate Change"

*Editor's Note: Due to space constraints, we are unable to publish the titles of the faculty who signed this letter.*

To add your support, and for a complete list of signatories, please visit [www.mit-facultydivest.org/newsletter](http://www.mit-facultydivest.org/newsletter).

November 3, 2015

Dear MIT Community,

**ON OCTOBER 21, PRESIDENT REIF** announced a Plan for Action on Climate Change ([climateaction.mit.edu](http://climateaction.mit.edu)) in response to the ongoing call from student group Fossil Free MIT for MIT to divest its \$13.5 billion endowment from fossil fuel companies.

As faculty members who have signed an open letter in support of divestment ([mitfacultydivest.org](http://mitfacultydivest.org)), we write to express our deep frustration with MIT's climate action plan. Though we welcome the constructive steps embodied in the plan and applaud the acknowledgement of "the seriousness and urgency of the climate threat, and the need for MIT to play a public leadership role," we do not believe the Plan for Action on Climate Change meets these aspirations.

We support the students of Fossil Free MIT, who have been peacefully protesting outside the President's office to call for bolder, more decisive action. President Reif acknowledges that it was the actions of these students that motivated the administration to respond to climate change. In particular, the administration last year launched a nine-month MIT "conversation on climate change" steered by the Climate Change Conversation Committee, which would "recommend to the President a path forward." In June, the Committee presented their recommendations

([web.mit.edu/vpr/climate/MIT\\_Climate\\_Change\\_Conversation\\_Report\\_2015.pdf](http://web.mit.edu/vpr/climate/MIT_Climate_Change_Conversation_Report_2015.pdf)). Unfortunately, the plan announced this October ignores many of the Committee's recommendations, instead focusing on a repackaging of largely pre-existing programs and a close relationship with the fossil fuel industry.

Three aspects of the climate action plan are especially troubling.

First, it ignores two key recommendations of the Climate Change Conversation Committee. It ignores the 9-3 recommendation of the Committee in favor of divestment from coal and tar sands, "the most carbon-intensive and environmentally hazardous fossil fuels." And it ignores the Committee's unanimous support for the creation of an Ethics Advisory Council to "explicitly combat misinformation and avoid inadvertently supporting disinformation through investments." If these are complicated issues for MIT, refusing to establish a committee to explore them cannot be the right response. Nor is continuing to invest in fossil fuels a less divisive move. More than 3,500 members of the MIT community have signed a petition ([www.fossilfreemit.org/3000divest](http://www.fossilfreemit.org/3000divest)) in favor of fossil fuel divestment.

Second, the strategy of "engagement" proposed by the climate action plan, a strategy that would bring MIT "closer" to fossil fuel companies, has history against it. Without greater leverage against these powerful corporations, we have no adequate means of persuading them to curtail their exploration and extraction of trillions of dollars worth of fossil fuels, whose use would cause irreparable climate catastrophe; to cease lobbying against clean energy in an effort to create political gridlock; and to stop spending untold millions undermining the science of global climate change. Targeted divest-

ment from coal and tar sands is justified on scientific, economic, moral, and political grounds. It is an approach that has won the support of Stanford, Oxford, the University of California, and the Australian Academy of Science, among others. It is the right approach for MIT.

Third, the climate action plan aims to "reduce campus greenhouse gas emissions 32 percent by 2030" relative to 2014 emissions. We applaud the adoption of a target, the first time MIT has committed to any specific emissions reduction goal and timeline. But the goal falls far short of the aims of other universities, including Yale (43 percent by 2020), Cornell (100 percent by 2035), and Duke (100 percent by 2024). More than 400 universities have already committed to become climate neutral ([www2.presidentsclimatecommitment.org/ACUPCC-Progress/Summary-September2014.pdf](http://www2.presidentsclimatecommitment.org/ACUPCC-Progress/Summary-September2014.pdf)), and they are among 700 who have reduced their emissions an average of 21% in the last seven years ([annualreport.secondnature.org/2014](http://annualreport.secondnature.org/2014)). MIT's weak goal maintains our Institute's position as a laggard, not a leader. It is unworthy of our reputation for scientific innovation and technical know-how.

We join with Fossil Free MIT in urging the administration to meet its own aspiration to public leadership by:

- Committing to divest from coal and tar sands companies.
- Addressing climate science disinformation by establishing an Ethics Advisory Committee, whose assessments can lead to disinformation-based divestment.
- Committing to achieve campus carbon neutrality by 2040 at the latest, and striving to achieve this target as far ahead of schedule as possible.

Sincerely,

Scott Aaronson	Michel Goemans	Jennifer Light	Frederick P. Salvucci
Sandy Alexandre	Eric Goldberg	George Lusztig	Leona D. Samson
Eric Alm	Renée Richardson Gosline	Cesar McDowell	Andreas Schramm
Deborah Ancona	Margarita Ribas Groeger	David McGee	Kieran Setiya
Clark Barwick	Marah Gubar	Vann McGee	Peter Shor
Jolyon Bloomfield	Aram Harrow	Dennis McLaughlin	Susan S. Silbey
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Noam Chomsky	Stefan Helmreich	Emmy Murphy	Lucas Stanczyk
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## MicroMaster's Pilot: An Experiment in Educating Professionals

Sanjay Sarma  
Isaac Chuang  
Hazel Sive  
Woodie Flowers

**IN 1861, THE CHARTER OF MIT** incorporated it as an Institute of Technology based on a school of industrial science. This was a tremendous novelty for the age, blurring boundaries between learning and doing, and ushering in an era of innovation and change in science, engineering, arts, and education. The choice between learning or doing was replaced by learning *and* doing: *mens et manus*.

Today, the tides of change are once again shifting boundaries among scholarship, industry, and education. The word “degree,” a key imprimatur of higher education, is being diluted. For example, AT&T and Udacity are now offering a “NanoDegree.” ([www.nytimes.com/2014/06/18/business/economy/udacity-att-nanodegree-offers-an-entry-level-approach-to-college.html](http://www.nytimes.com/2014/06/18/business/economy/udacity-att-nanodegree-offers-an-entry-level-approach-to-college.html).) Traditional degree programs, core to the bastions of the Academy, are merging with the commercial world: Coursera and Google recently partnered ([www.brookings.edu/blogs/techtank/posts/2015/02/23-mooc-google-coursera-butler](http://www.brookings.edu/blogs/techtank/posts/2015/02/23-mooc-google-coursera-butler)) with universities to launch online course sequences with capstone projects leading to “microdegrees.” Core concepts of educational attainment, such as the “credit hour” and “accreditation,” are being supplanted by networks of self-accrediting startups (*micro.degree*) and companies, using competency measurements in lieu of “seat-time” for academic credit. And deals are in the offing with universities to accept such alternative credits, and adopt non-traditional degrees.

We believe that once again MIT has a unique role to lead in this change, and to

enable a meaningful path for academe and industry. As faculty members representative of the School of Science (Chuang & Sive) and the School of

define what comprehensive education is – not by ignoring the clamor of a rapidly changing world, but by offering a creative vision of how our principles can be

The urgent challenge is: Are we able and ready, as an institution, to move forward decisively and lead in the midst of transformations of higher education? Can we move fast enough, and effectively enough, to demonstrate to the world how educational attainment can be better, faster, more accessible, while still preserving truths MIT holds dear?

Engineering (Sarma & Flowers), we represent diverse perspectives and yet converge in our excitement at this moment in MIT’s history. (All four of us serve on the faculty advisory council for MITx and two of us, Sarma and Chuang, head the Office of Digital Learning.)

MIT holds several principles dear, including that: (1) merit is the key criterion for admissions; (2) MIT confers degrees to graduates who can impact the world – not just as thinkers but also as doers; and (3) residency is core to an MIT educational experience. To nuance the last point, we assert that there is a difference between *training*, which can be achieved by a number of means, including online, and *education*, which requires a deeper engagement through residency (see this article in the *Faculty Newsletter* [“A Contrarian View of MITx: What Are We Doing!?” Vol. XXIV, No. 3, January/February 2012]). As industry struggles to meet job-oriented training needs in different ways, it is up to us to

upheld through the use of digital learning technologies we pioneered.

The urgent challenge is: Are we able and ready, as an institution, to move forward decisively and lead in the midst of transformations of higher education? Can we move fast enough, and effectively enough, to demonstrate to the world how educational attainment can be better, faster, more accessible, while still preserving truths MIT holds dear?

A few weeks ago, MIT announced a pilot program to offer a MicroMaster’s credential ([micromasters.mit.edu](http://micromasters.mit.edu)) – not a degree – in Supply Chain Management & Logistics ([scm.mit.edu](http://scm.mit.edu)), an existing professional Master’s program. This credential is earned by completion of a series of open online MITx courses on edX, and by passing a proctored comprehensive exam. Credential earners who excel in the online courses may then apply for competitive admission into the SCML Master’s program. Admitted students receive MIT course credit for their



online courses (thus the moniker “inverted admissions process”), and come to MIT for one semester to complete and earn an MIT Master’s degree. This pilot affirms MIT’s commitment to residential education, extends MIT’s impact in the education of professionals, and reasserts merit as the primary criteria for admission.

The MicroMaster’s pilot is an experiment established in the best tradition of MIT. It reduces to practice Recommendation #11 from the final report of the Institute-Wide Task Force on the Future of MIT Education (<https://future.mit.edu>), realizing President Reif’s charge to “experiment boldly with ideas to enhance the education we offer

our own students and to lower the barriers to access for learners around the world.” From its mid-2015 origination as an idea, moving forward with careful consideration to receive the blessing of the Academic Council, its presentation to the Faculty Policy Committee, and its provisional approval from the Committee on Graduate Programs, the MicroMaster’s pilot demonstrates a healthy ability for MIT to move decisively and thoughtfully forward with a meaningful experiment in education.

What will the future entail for MIT, degrees, credentials, and open online education? Let data from this and other educational experiments guide us. We owe it

to the next generations of MIT students to employ the best, scientifically-based methods of education, to explore the most effective ways of recognizing merit, and to innovate incessantly at the boundaries of learning and doing, in the spirit of *mens et manus*. ■

**Sanjay Sarma** is the Dean of Digital Learning ([sesarma@mit.edu](mailto:sesarma@mit.edu));

**Isaac Chuang** is a Professor in the Department of Electrical Engineering and Computer Science and Senior Associate Dean of Digital Learning ([ichuang@mit.edu](mailto:ichuang@mit.edu));

**Hazel Sive** is a Professor in the Department of Biology ([sive@wi.mit.edu](mailto:sive@wi.mit.edu));

**Woodie Flowers** is the Pappalardo Professor Emeritus in the Department of Mechanical Engineering ([flowers@mit.edu](mailto:flowers@mit.edu)).

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## The Alumni Class Funds Seek Proposals for Teaching and Education Enhancements

**THE OFFICE OF FACULTY SUPPORT** is requesting proposals for projects for the 2016-2017 academic year that improve the quality of teaching, enrich students’ learning experiences, and uphold the tradition of innovation at the Institute. The Alumni Class Funds are comprised of gifts from the classes of 1951, 1955, 1972, and 1999.

Over the past 20 years more than 200

projects were made possible through the generous assistance of The Alumni Class Funds. These projects have had substantial impact on education both inside and outside MIT. Grants typically range from \$10,000 to \$50,000 and cover a wide variety of creative curricular and pedagogical projects. Larger scale projects will also be considered, as well as project renewals and multiple year projects, but

funding commitments will be made on a year-by-year basis.

Proposals are due on Friday, January 29, 2016. Guidelines, forms, instructions, and descriptions of previously funded projects can be found at [web.mit.edu/alumnifunds](http://web.mit.edu/alumnifunds). Please contact Curriculum and Faculty Support at 617-253-6776 or [alumnifunds@mit.edu](mailto:alumnifunds@mit.edu) for more information. ■

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### The Tragedy of Forced Migration

Rabhat, from page 1

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tions at home to seek better lives in the promised land of Western Europe. But many have died trying to sneak across treacherous seas and hostile borders.

This is only one front of the global web of forced migration. Similar foreboding barriers exist along the long southern borders of the United States to keep out Central and South Americans and the northern shores of Australia to prevent a panoply of hopeless Asians from entering. And similar tragic stories of people who died while trying to cross them are reported all the time. The number of dead has increased exponentially as the number of refugees around the world skyrocketed (more than 51 million registered in 2013) and as the disparity between the wealthy West and the devastated South widened. But the Western governments are still erecting more formidable physical and legal obstacles in the face of forced migration, while ignoring the historical roots of this global problem and its political, economic, and ethical ramifications.

Of course there are direct causes for this surge in desperate migration from the South: raging civil wars, brutal, corrupt, and ethnically biased regimes, ruined economies, emboldened drug and human trafficking, ruthless terrorism, and perennial natural disasters like drought, desertification, and epidemics. But these phenomena are not totally unrelated. Nor are they isolated from global trends for which the West is primarily responsible and of which it is the ultimate beneficiary.

A bit of history may be instructive. Legal and illegal immigration are essentially recent categories. They appeared in the wake of the establishment of nation-states and citizenship criteria in Europe. Since then, they have been cunningly used to regulate the flow of desirable people in, while keeping the undesirables out. This is how the U.S., Canada, Australia, New Zealand, but also Argentina, Chile, South Africa, and several other countries of the global South and the former Soviet

Union, which were occupied then settled by Europeans, acquired their present populations. For a long time, they have all restricted immigration to White European Christians, and sometime even more constrained subsets of that vast

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group, while banning other races and religions. Selective immigration was, and to a large extent still is, openly discriminatory, even though advances in human rights after WWII have softened the prejudice against some formerly excluded immigrants, such as the dark skinned and non-Christian. But that is only half the story.

The other half has to do with economic cycles reaching back to the beginning of the colonial age in the sixteenth century. European colonial empires have used selective migration to move vast numbers of colonized people around the globe according to their economic needs. Thus millions of Africans were enslaved and forcibly transported to the Americas to work the huge sugarcane and cotton plantations of the new exploitative agrarian economies. Indian merchant communities were uprooted from Gujarat to serve in the outer fringes of the trade network of the British Empire in Asia and Africa. Deviously indentured Chinese and other Southeast Asian workers were imported to build the railways of the American West. More recently, with post-WWII economic prosperity, the U.S. and other rich European countries opened their doors to unskilled laborers from Asia

and Africa to fill the menial jobs that their own workers no longer wanted to perform. The practice changed at the end of the twentieth century, when many Western countries instituted new quotas for the import of skilled and highly edu-

cated citizens of the South to staff the rapidly expanding tech industries and services.

This is an expected aspect of globalization, vaunted as the hallmark of our time, which has manipulated the world political order to serve its supranational networks of trade. Western goods, images, and lifestyles have come to define a new, wired consumerist society that is admired, emulated, and acquired worldwide, while new, legally admitted, immigrant communities instill some diversity in the main Western cities, which, despite ingrained and sometimes volatile racism, have learned to cope with multiculturalism. But the underbelly of this regulated immigration is precisely its built-in, persistent, and unabashed inequity. The seduction of the West, lauded around the world in all kinds of media, is a tool used by governments and corporations alike to attract desirable immigrants. It is also the irresistible magnet that is driving millions of hapless citizens of the South to risk everything to attain it, when their chances to do that are close to zero.

The Western historical and moral responsibility for this state of affairs is clear. What is less clear is how to legally



translate that responsibility into action without resorting to rancorous recrimination and counter recrimination or incurring allegations of idealism or relativism (which in and by themselves are not categorically wrong). This is a task that no international or regional organization has been able to achieve. Besides, the enormity and mounting gravity of the problem preclude hasty or symbolic approaches. They require practical yet impartial and long-term remedies, which could alleviate the present tensions and minimize the ensuing tragedies while paving the way for more just and less dreadful conditions in the future.

The most pressing situation is that of the refugees displaced by wars and civil wars (many of which fueled by hungry extractive multinational companies), who have nothing more to lose and are thus willing to take any risk. Supporting the international organizations that have traditionally cared for them may address the immediate, material part of the problem: provision of food, basic healthcare, shelter, rudimentary education for the youth, and the like. But living in miserable, temporary, and underfunded camps controlled by reluctant and suspicious host countries, whose populations often become hostile to the newcomers, breeds a mixture of despondency, indolence, and shame that pushes the refugees to the edge of human behavior. This usually comes in the form either of desperate attempts at breaking loose by following the illegal immigration route or by committing senseless acts of violence, especially among the youth.

Tackling these issues requires new thinking. We need to pay attention to the refugees' psychological plight as much as we do their material ones, if not more. And we need to do it in ways that both restore their sense of self-worth and dignity and benefit them directly in their ostensibly temporary abode, the camp. This will mean that we need to empower the refugees to take command of their lives in the camps and improve their con-

ditions there while learning new skills and deriving not only sustenance but also meaning from their work. A new kind of self-help program, deployed creatively, respectfully, and sensibly, will channel the latent energy and ingenuity among the

This is where MIT can play a leading role both as a model institution and as an active contributor to improving the living conditions in the refugees' camps. MIT can team up with international organizations connected to the network of refugees' help. Once contacts are established and permissions acquired, MIT can put in place an extracurricular program akin to a focused and specialized Peace Corps, which will allow students to use their summers or IAPs to spend time at the camps leading refugees in solving problems.

refugees – which is otherwise frustratingly wasted in a conventional camp setup – towards productive and inventive solutions to real problems. A number of new tools may help: new production and communication technologies that are easy to implement, a focus on sustainability and recyclability, hands-on learning methods, and an emphasis on self-reliance and problem solving.

This is where MIT can play a leading role both as a model institution and as an active contributor to improving the living conditions in the refugees' camps. MIT can team up with international organizations connected to the network of refugees' help. Once contacts are established and permissions acquired, MIT can put in place an extracurricular program akin to a focused and specialized Peace Corps, which will allow students to use their summers or IAPs to spend time at the camps leading refugees in solving problems. Students' involvement would of course be voluntary, but the program will require an incremental commitment on the part of the Institute and adjustments to our perception and evaluation of research and learning.

Teams can be formed of students from diverse academic backgrounds led by interested faculty or research associates who will address issues such as camp planning, landscaping, innovative building techniques, passive and active solar

heating and energy production, sanitation, garbage collection and recycling, education and recreation, job training for the unemployed, the implementation of communication technologies, and other possibilities in creative and participatory ways. All along, teams would work in collaboration with recruits from among the refugees, who will learn from the team members and teach them at the same time, while improving their living environment and gaining experience and self-respect in the process. Funding should not be a big problem as there are several international organizations and foundations eager to explore ways of making their financial support more effective.

Of course there is no silver bullet here. A new international covenant about sharing responsibility for all global refugees may be required to truly get to the roots of the problem. But confronting the predicament of despair in the refugees' camps through programs aimed at raising self-esteem among their most vulnerable inhabitants is worth a trial in the meantime. ■

**Nasser Rabbat** is the Aga Khan Professor in the Department of Architecture ([nasser@mit.edu](mailto:nasser@mit.edu)).

### MIT's Nepal Initiative

Ravel et al., from page 1

Several days after the initial seismological event, Chancellor Cynthia Barnhart asked Professor Jeffrey Ravel, the Head of the History Section, to serve as the Faculty Lead coordinating MIT's response efforts. Ravel was joined by Mr. Aaron Weinberger, Assistant Director for Institute Affairs in the Office of the President, and Mr. Bigyan Bista, a doctoral student in the Department of Biology and a leader in the MIT Nepali student group MITeri. This article is a report on our efforts to date to pair MIT expertise with reliable partners in Nepal, in order to help the country rebuild after this natural disaster. It is also a statement of our commitment to foster a long-term relationship between MIT and the people of Nepal that we hope will prove mutually beneficial. Finally, it is a plea to *Faculty Newsletter* readers to support our efforts, a point to which we will return at the end of the article.

### The Initial Student Response, and the Bloom Nepal School

In the initial aftermath of the April earthquake, the first campus group to mobilize in support of Nepal was the Nepali student group MITeri, whose name means "friendship" in the Nepali language. (See this *MIT News* story: [news.mit.edu/2015/students-raise-donations-and-awareness-nepal-earthquake-0506](https://news.mit.edu/2015/students-raise-donations-and-awareness-nepal-earthquake-0506).) Through a donations Website, and tables set up in the Student Center and Lobby 10, these graduate and undergraduate students quickly raised almost \$37,000, which they donated to the Help Nepal Network (HeNN). This group, a 501(c) (3) tax-exempt organization in the United States, has been working since 1999 to improve access to education and health for people in rural Nepal. The students determined that a contribution to HeNN would be the fastest, surest way to send the money they had raised to support those who needed it the most, with no deductions for overhead costs or administrative expenses. This rapid mobi-

lization by our Nepali students has been an inspiration as we moved forward over the summer and into the fall. If these students could find the time and energy at the end of a busy semester to fundraise so successfully, surely we could work equally hard to identify Institute resources to aid long-term recovery and rebuilding efforts.

We were also inspired by the story of Ram K. Rijal '12, a Course 14 and 18 major who returned to Nepal after gradu-

moving when the Bloom Nepal School began an intense fundraising and rebuilding effort. As of this writing, the school has put up temporary boarding structures and classrooms for its students, and resumed instruction. Ram and his partners remain undaunted, promising to fulfill their goal of high quality K-12 STEM education for the most promising children of Nepal, regardless of socio-economic class or caste. One of our first



**A Nepalese military personnel stands guard inside a compound of Bungamati temple after the earthquake at Bungamati Village, on the outskirts of Kathmandu, Nepal, May 6, 2015.**

ation to found a private K-12 school with a STEM-based, MIT-style curriculum. The doors of the Bloom Nepal School opened in 2013, and in its first three admissions cycles enrollment grew from 17 students to over 150. Ram and his co-founders were developing plans to expand their boarding school from its Kathmandu base to satellite campuses throughout the nation, in order to serve the more isolated rural sectors of the country. They had just recently moved the flagship school from a building in densely populated Patan, just to the south of Kathmandu, to a more spacious suburban campus when the earthquake struck, destroying the building. Two school janitors died during the quake, and while the rest of the staff and all the children emerged unscathed, many of the students had to return to their families in the provinces while waiting for the school to reopen its doors. The ground was still

actions was to reach out to the MIT Alumni Association to suggest that they publish an article in their newsletter detailing the heroic rebuilding efforts of the Bloom Nepal School: <https://slice.mit.edu/2015/06/10/bloom-nepal-mit-earthquake-donate>. MISTI's MIT-India program also successfully solicited donations for the school from its supporters and alumni networks.

### Over the Summer: Identifying Goals and Partners

As we began to meet with colleagues on campus about our efforts shortly after the earthquake, we quickly realized that we needed to define our goals for potential project participants. In the immediate aftermath of any natural disaster today, media images of devastated communities compel international outpourings of food, medical supplies, donations, and other forms of immediate assistance. But

MIT is an educational institution, not a humanitarian aid organization. As much as we empathized with the plight of the earthquake survivors, we realized that the people of Nepal and the members of the MIT community would be best served by efforts to identify projects with more long-term goals and benefits. In this we were guided by previous MIT efforts, especially the Institute's response to the destruction wrought by Typhoon Haiyan in the Philippines two years ago. In that case, a working group led by Associate Professor of History Christopher Capozzola, the current Secretary of the Faculty, identified relevant Institute assets across the Institute, including the Sloan School, the Department of Urban Studies and Planning (DUSP), and the Public Service Center (PSC). Supported by charitable donations from the MIT community and a grant from the PSC, the Philippines recovery group sent a lecturer from DUSP and a Sloan graduate student to map flood mitigation projects and assist in developing plans for rebuilding Manila. (Read more about MIT's efforts in the Philippines here: [news.mit.edu/2014/mit-responds-typhoon-haiyan](http://news.mit.edu/2014/mit-responds-typhoon-haiyan).) The lesson was clear: We needed to develop projects that would increase earthquake resiliency and improve the infrastructure of Nepal over the long term.

At the end of the spring term and over the course of the summer, we had perhaps two dozen meetings with high-level administrators, department heads, faculty members, research staff, and post-doctoral and graduate students across all five Schools at the Institute, and in several research centers and labs. While we do not have space here to thank each of you individually, we would like to offer our collective gratitude to everyone who took time from busy schedules to brainstorm with us. The breadth of expertise and the depth of enthusiasm in these meetings energized us. They allowed us to identify potential on-campus partners in relevant areas such as earthquake-resilient building technologies; urban planning and infrastructure policy; water, sanitation, and hygiene (WASH); supply chains and distribution;

and medical technologies. At the same time, through Bigyan Bista and the contacts he and other MIT Nepali students have in Nepal, we were also able to identify promising collaborators there on the ground. These included the Institute of Engineering (IOE), the leading engineering school in the country; Kathmandu University, an independent, non-government-funded public institution; its medical subsidiary, Dhulikhel Hospital, located east of the capital of Kathmandu;

As we began to meet with colleagues on campus about our efforts shortly after the earthquake, we quickly realized that we needed to define our goals for potential project participants. . . . As much as we empathized with the plight of the earthquake survivors, we realized that the people of Nepal and the members of the MIT community would be best served by efforts to identify projects with more long-term goals and benefits. In this we were guided by previous MIT efforts, especially the Institute's response to the destruction wrought by Typhoon Haiyan in the Philippines two years ago.

and the Environment and Public Health Organization (ENPHO), a Nepal-based NGO that has partnered with MIT researchers in the past.

### Projects

As the summer turned to fall and classes began again, some very promising initiatives began to take shape:

**Water-testing Kits:** Research Scientist Susan Murcott, a water/waste water engineer who recently retired from D-Lab, has worked to improve WASH infrastructure around the world, including a previous water filtration project in Nepal. More recently, she has designed a low-cost, easily assembled water-testing kit. With funding from the Office of the Associate Provost for International Activities, Murcott is preparing 2000 of these kits to be shipped to Nepal, where ENPHO will distribute them to field sites around the country. Once we have the results of these tests, we will follow up with recommendations for economical, efficient water filtra-

tion systems. Such systems are much needed in many communities in Nepal where fresh water supplies have been disrupted by earthquake-related damage.

**Reconstruction of Bungamati, an Ancient Newari Community:** This town, located 10 kilometers south of Kathmandu, has been inhabited continuously since its founding in the seventh century CE. It boasts several important religious buildings and shrines; its 6000 inhabitants,

many of whom engage in woodworking and grow crops in the fields that surround the town, live in two- and three-story structures made of traditional brick building materials. The earthquake destroyed all of the main historical religious structures, and left over 85 percent of the residential structures severely damaged or uninhabitable. Sewage lines were compromised and the electrical grid damaged. The residents of this tight-knit community are determined to rebuild their town, however, and several organizations, including UN Habitat and the Catholic University of Leuven in Belgium, have focused on rebuilding Bungamati in a more sustainable and structurally resistant way that might serve as a model for urban revitalization projects elsewhere. Several groups at MIT are interested in participating in these efforts. Professor John Ochsendorf and his students in the Department of Architecture have expertise in historical reconstruc-

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**MIT's Nepal Initiative**

Ravel et al., from preceding page

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tion and earthquake-resistant residential and educational structures. Several of Professor Ochsendorf's students will travel to Nepal during IAP to assess the architectural damage to religious monuments and homes, and the potential for reconstruction. Professor Miho Mazereeuw and her colleagues in the Urban Risk Lab have worked on risk reduction and disaster resilience that would be applicable in this instance. The Tata Center is developing micro-solar grids that might help power a newly rebuilt Bungamati. In short, this is a project where MIT might provide multiple assets in a specific urban context that would then be scalable.

***Distribution of Ready-to-Install Toilets and Sludge Management Initiatives:***

Working together with the Sloan Action Learning group and ENPHO, we have developed course proposals for the distribution of ready-to-install toilets that will significantly improve residential waste management in urban and rural areas in Nepal. ENPHO has also helped us to craft a proposal for managing the installation of pre-fabricated sludge treatment systems, another WASH initiative made urgent by damage to local and regional waste management systems that in turn raises the specter of significant public health issues. These proposals will be distributed at the start of the spring term in hopes of attracting Sloan students to work on these projects, and ultimately to have them travel to Nepal to implement their solutions to these distribution problems.

***Medical Projects Through Dhulikhel Hospital (DH):***

DH is one of the major medical research facilities in Nepal. The medical school of Kathmandu University, it has 16 outreach clinics and serves as the focal hospital for more than five million people affected by the earthquake. We are exploring partnerships with DH focused

on inexpensive medical diagnostic devices, communications networks that would put DH doctors in touch with remote or isolated rural patients, and a new information management system for the hospital's administrators. The Abdul Latif Jameel Poverty Action Lab (J-PAL) in SHASS is investigating the possibility of outcome evaluation studies of DH health initiatives.

***Innovation Seminars for Undergraduate and Graduate Students:***

We have been participating in a series of meetings convened by School of Engineering Dean Ian Waitz and the Lincoln Labs Beaverworks team to design an ongoing capstone seminar program for undergraduate engineers that would harness MIT innovation in response to natural disasters. Over the course of this year, we plan to contact other Schools to explore the possibility of creating similarly innovative subjects.

In addition to these emerging initiatives, we are also investigating ways to help the Institute of Engineering complete a survey of fault lines and soil types in major urban areas. The survey would then shape new building code guidelines at unprecedented resolution. We have learned of a need for analysis of the extensive seismological data collected since the initial major earthquake, which has led us to contact faculty with this expertise in EAPS who might assist with data analysis. And MISTI, which had begun conversations about launching a Nepal program in the context of its MIT-India Program before the earthquake, is considering ways to pair MIT students with internships and teaching programs in the country.

**The Long Term, and Your Support**

As this summary of our activities makes clear, we are pursuing projects that may take months and years to come to fruition due to their complexity, and the difficulties on the ground in Nepal. We believe this is the best way for MIT to make a meaningful contribution to the reconstruction of Nepal, and the long-term well-being of its people. We also believe

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that work on these challenging issues serves MIT's global educational mission by stimulating our richly creative faculty, researchers, and students to find new solutions for real world problems. The three of us intend to be involved in this process for the long haul, and we ask you to join us. If you have ideas to contribute and we have not yet contacted you, please get in touch with us; we are eager to hear your thoughts. If we have already spoken with you, and need to renew our conversations in light of new developments or ideas, please reach out to us. And finally, many of the projects in development or under discussion require financial support. If you would like to make a donation to help purchase materials to be used in these initiatives, or to fund student travel to Nepal to work on these projects, we have set up a donations page on the MIT Giving site: <https://giving.mit.edu/givenow/start.dyn?designationId=4014310>. Your assistance will be greatly appreciated. ■

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**Jeffrey S. Ravel** is a Professor and Head, History Section ([ravel@mit.edu](mailto:ravel@mit.edu));  
**Aaron Weinberger** is Assistant Director for Institute Affairs ([aweinber@mit.edu](mailto:aweinber@mit.edu));  
**Bigyan Bista** is a Graduate Student in the Department of Biology ([brbista@mit.edu](mailto:brbista@mit.edu)).

## Reflections: My Years at MIT

William M. Kettyle

*Editor's Note: William M. Kettyle recently announced he will be stepping down after 15 years as MIT Medical Director.*

### My relationship with MIT

**LONG BEFORE POWERPOINT** was universal, I was asked to give a lecture to a class at MIT. It was 1977. The course was HST060 – Endocrine Physiology and Pathophysiology. The topic was the anterior pituitary (one of my favorite glands). The notice was short, and I did not have time to get 35-mm slides made. This was my introduction to MIT and was the start of a relationship that has continued in various forms to this day.

At the time, I was a post-doctoral fellow in Clinical Endocrinology at Beth Israel Deaconess Medical Center in Boston. My mentor directed the Harvard-MIT Health Sciences and Technology course and the designated lecturer was suddenly unable to participate. Although it would have been difficult to decline, I was enthusiastic about the opportunity to teach at MIT! I prepared some lecture notes, journeyed to Cambridge, and gave a lecture using the blackboard. Apparently the session went well, since I was invited to give additional lectures. Since then I have continued to participate in the course and have co-directed it for the last 30+ years. I still teach some of the same topics – luckily, anatomy has not changed. Of course I now use PowerPoint and, over the years, I have added a number of other approaches to my teaching repertoire: problem sets, audience response “clicker” sessions, and most importantly, clinical sessions. I invite patients to come to class to speak about their symptoms, their

diagnosis, their care, and how their condition is managed.

After completing my fellowship, I opened an endocrinology and internal medicine private practice at Mount Auburn Hospital. From that, my relationship with MIT expanded to include providing consultations at and for MIT Medical. At Mount Auburn Hospital I worked closely with Dr. Charles Hatem who was the “hospitalist” for MIT Medical (a doctor who specializes in the care of hospitalized patients) – long before the use of hospitalists became a common part of medical practice. Weekends on call frequently meant caring for MIT patients when Charlie was off duty, and I came to know many members of the MIT community. I also received referrals to care for patients who left MIT but stayed in the area.

In 1993 I joined MIT Medical as an employee. I was pleased with the opportunity to practice at MIT – a change that allowed me to continue my teaching at MIT and to practice with colleagues whom I had come to know and respect. After a few years I became increasingly involved in administrative issues, a process that led to being appointed Medical Director in the summer of 2000.

### Caring for a community

For the first half of my career in medicine, my focus was almost exclusively on individual patient care. But during my years at MIT Medical, I became increasingly interested in understanding the larger needs of the community, and ensuring the provision of services to meet those needs.

The alcohol-related death of freshman Scott Krueger in 1997 had an important impact on MIT. Shortly after his death, a medical student who had taken HST060 and who was a Graduate Resident Tutor in one of the dorms asked me to give a talk on alcohol at a study break. She suggested that I use an HST-esque format. I agreed and developed a talk that included information on the chemistry and biochemistry of ethyl alcohol: vapor pressure, fermentation, distillation, and metabolism. We discussed why many alcoholic beverages are chilled before intake. We reviewed pre-absorptive kinetics and metabolism, absorption, and post-absorption metabolism. We also discussed some of the genetically determined variations in alcohol metabolism – e.g., the Asian liver. The presentation included a problem set that predicted blood alcohol levels: a 200-pound male and a 100-pound female have very different blood alcohol concentrations with the same amount of ingested alcohol.

The talk was scheduled for 10:00. Unfortunately, when I arrived at about 9:45 am no one except for the janitorial staff was available. It turned out that the time was meant to be 10 pm. The late-night visit to the dorm provided me with an insight into the life of students at MIT. Although I gave the talk several times – almost always at about 10 pm – and the questions and discussions that followed were always lively and engaged, I am not sure what impact it had on alcohol use. I did, however, learn more about student life, especially the nocturnal aspects. This event and the related encounters with stu-

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**Reflections: My Years at MIT**

Kettye, from preceding page

dents fueled my increasing interest in understanding the health and wellness needs of our student community.

**Changes at MIT Medical over the past 15 years**

Over the past 15 years we have broadened the scope and scale of our community endeavors. Face-to-face individual care is still a major, vital aspect of what we do and will do going forward. But technology has changed our workflow as well as how we interact with our patients.

Before our electronic medical record (EMR) was deployed, patient care records were piles of paper in (hopefully and usually) chronologic order. There were some attempts at the functional separation of various components. Medication lists, laboratory results, x-ray reports, and EKGs were in a distinctive format that made review a little easier. Handwritten and typed notes recorded the details of care and had to be found and read.

After several years of hard work, hardware enhancements, and software upgrades, we now have a robust EMR with the ability to search for test results and other information. As of December 2014, 6.58 million pages of the “old” paper records had been scanned into our EMR system.

Virtually all prescriptions are now digitally produced and transmitted electronically to the MIT Pharmacy or to pharmacies outside of MIT. Although my handwriting has not changed, the readability of my prescriptions has improved drastically! In addition to increasing legibility, the EMR checks for possible allergies and for drug interactions, improving the safety of prescription writing.

The digitalization of medical records and the provision of health care in an asynchronous fashion – email and secure portals in particular – have had major impacts on the process and work of providing and receiving healthcare. Although the number of face-to-face encounters at the MIT Medical Department has not

**MIT Medical Department History**

MIT has provided medical care for its students since 1901. Over the years there have been 10 Medical Directors. The lengths of service range from 1 year to 25 years with a mean of 11.4 years. The history of the Department is outlined in a 2010 article in the *Faculty Newsletter* (Vol. XXII No.4, March/April/May 2010, pp. 10-12).

One of the most important developments occurred in the late 1960s, when MIT Medical’s offerings were expanded to include faculty, staff, retirees, and families in addition to students. This occurred at a time when HMOs (Health Maintenance Organizations) and Medicare were forming. The addition of care for non-students allowed for the development of more robust clinical operations. More services for a larger population created the ability to meet a wider variety of clinical needs, conveniently, on campus.

The provision of medical care to the MIT community has evolved in unique and important ways. MIT provides a rich menu of health care benefits for both employees and students. It is also an insurer and, for several years, MIT has been self-insured for health care programs. In addition, MIT is a provider of health care and related services. The MIT community is a consumer, an employer, an insurer, and a provider. These activities, all under the dome of MIT, offer interesting opportunities to provide care that is community-focused, convenient, and uses resources effectively.

The Medical Department also functions as the Public Health Department for the community. It provides services and programs that help support community health, and responds to potential and realized threats. Occupational health has long been an important component of the services we provide – working closely with EHS (Environment, Health and Safety). MIT Medical, through its wellness programs, strives to support the wellness and well-being of the community.

**MIT Medical By the Numbers (FY15)**

<b>Face-to-Face Care</b>	
Total Visits	128,911
Students, Affiliates & Families	61,476
Faculty, Staff, & Families	54,734
Retirees/ Other	12,701
<b>Insurance Program Membership</b>	
Traditional Plan	7,019
Choice w/PCP at MIT Medical	1,944
Student/Affiliate Extended Plan	9,599
<b>Other Clinical Encounters</b>	
Patient Portal Interactions	52,548
Electronic Medical Record Transactions	1,594,995
“Tasks”	564,574
<b>Community Health</b>	
Flu Shots Given	14,802
getfit@mit Participants	3,665



changed much in the past 15 years, the number of digital encounters has increased markedly, with more than 1.5 million electronic transactions last year alone. Managing an in-basket with a seemingly constant inflow of tasks is now an important component of our practitioners' workload.

One important EMR-related development is our capability to create a "dashboard" of clinical care. These data-mining abilities allow clinicians to identify deficiencies in care at various levels: practice wide, clinician specific, and, most importantly, at the individual patient level. For example, a dashboard allows us to see how well we are doing meeting the immunization requirements of our patients and to specifically identify individual patients in need of various immunizations.

The evolution of digitized care continues as we work to connect with our community and strive to find ways to interact, securely, conveniently, effectively, and safely.

In 2010, after several years of declining utilization, our inpatient facility closed and overnight, on-site services were discontinued. Telephonic availability in Primary Care, Pediatrics, Obstetrics and Gynecology, and Mental Health & Counseling remains available 24 hours a day. Onsite care in our Urgent Care service is available from 7 am until 11 pm daily. These changes occurred after careful study and planning and with a major effort at community education and preparation. More details about these changes were presented in the *Faculty Newsletter* in 2010 (Vol. XXII No.4, March/April/May 2010, pp. 1, 6-10).

### Looking ahead

The tragic student deaths that occurred this past academic year have led many in our community to seek a better understanding of the realities of the student experience and to more clearly assess the need for and supply of support for students on our campus. MIT Medical and our Mental Health and Counseling Service, along with multiple other services and offices on campus, provide timely and effective support for students. But because

we are MIT, we are always asking ourselves whether we can do better. Can we further lower barriers to seeking help? Are there better ways to help students enhance resilience? Can we find additional ways to identify students in need of support? Can we continue to find ways to reduce or assist in the management of the stress of being a student at MIT?

In 2010, after several years of declining utilization, our inpatient facility closed and overnight, on-site services were discontinued. Telephonic availability in Primary Care, Pediatrics, Obstetrics and Gynecology, and Mental Health & Counseling remains available 24 hours a day. Onsite care in our Urgent Care service is available from 7 am until 11 pm daily.

Late-night talks in dorms and FSILGs have given me some insights, while speaking with student patients provided some additional views. Having a nephew enroll at MIT several years ago was particularly informative. Seeing the community through an individual I knew since he was born gave me a unique perspective. For example, his emails often arrived between 3 am and 4 am, confirming my assessment that many members of the student body are functionally on Hawaiian time – shifted about six hours.

A recent survey of students (2015 Healthy Minds study: [chancellor.mit.edu/data](http://chancellor.mit.edu/data)), however, led me to rethink my assumptions. The data suggest that students – at least in the sample who responded – do get to bed at a reasonable time and sleep for a reasonable duration. How consistently that happens, and what the quality of that sleep is, are not revealed by the study. But I think I need to adjust my assumptions. Similarly, finding new or additional ways to support students requires a careful review of our assumptions and stereotypes about the student experience. It is important that we have an accurate picture of student experiences as we work together to find more ways to help them develop enhanced resilience.

Efforts are ongoing, and one such initiative, MindHandHeart, is a coordinated, campus-wide initiative of the Chancellor's Office and MIT Medical. The program aims to support innovations that promote mental health and the appreciation of the importance of individual wellness. More information about this important endeavor can be found at [mindhandheart.mit.edu](http://mindhandheart.mit.edu).

The MindHandHeart initiative is just getting started, but a key component is ready for deployment. "Don't Struggle Alone" cards and other materials are available for download at a new Web page ([together.mit.edu/askforhelp](http://together.mit.edu/askforhelp)). The card and pamphlet for faculty provide advice and encouragement for us to convey the message that "it's okay to ask for help."

What started as a last-minute invitation to give a lecture developed into an incredibly rewarding career. Teaching in the HST program has been a constant. But providing face-to-face clinical care evolved to include the entire MIT community as the patient. All the while, the style and forms of care provided at MIT Medical have evolved as well.

Nearly 300 people – employees and contractors, full- and part-time – work together at MIT Medical to provide care for this unique community. I admire, I appreciate, and I applaud their hard and devoted work. Although there have been many changes over the past 15 years, MIT Medical's commitment to caring for our community remains fixed and steady. ■

**William M. Kettyle** is Medical Director and Head, MIT Medical Department ([kett@med.mit.edu](mailto:kett@med.mit.edu)).

## A Frog in Water Part II: The Long-Term Consequences of Imperceptible Change

Thomas W. Eagar

*The parable of frogs in water suggests that a frog immediately placed in very hot water will jump out and free itself; while a frog placed in cool water will remain as the water is slowly heated until the frog expires. A rapid change of environment causes a rapid response, but gradual changes provoke no response and can lead to death. So it is with our MIT environment.*

**IN A PRIOR ARTICLE** I described some of the changes I have witnessed over nearly a half century at MIT, most notably in the nature of research and the pressure to obtain research funding (*MIT Faculty Newsletter*, Vol. XXVIII No. 1, September/October 2015). As a new assistant professor in my first meeting with my Department Head, Professor Walter Owen told me “No matter what anyone tells you, it really is ‘Publish or Perish!’” Having been a student here, I knew that the way to get publications is to have students and the way to get students is to have research funding. In that sense, research money was the almighty metric of success, short of actually having some creative ideas; but without money to pursue your ideas, even the best ideas would lie fallow.

Given the quality of the MIT students, both undergraduate and graduate, I also knew that the students (on average) could be creative as long as they were given a significant problem to address and the resources and freedom to pursue their ideas. As a new assistant professor, I started writing proposals and doing my teaching. Within four years, I had more research money than any other single faculty member in my department. In

another four years I had tenure, and as long as I was willing to work hard, I could continue to be “successful” as measured by the “system.”

Twenty years after my meeting with Walter Owen, I had become the Department Head, when I learned that I had an illness that could prove fatal within a year. As might be expected, this news caused considerable reflection. My one regret in both my personal life and my professional life, was that I had never written a book in my field of expertise. I knew that my perspective (in welding and joining technology) was unique and that it would be lost unless I archived what I had learned over the previous two decades. Today, nearly two decades later, I have overcome the illness but I still have not written the book. It is not that I have not bitten around the edges of the task, but it never gets done. Friends of mine, who are faculty in Schools other than Science or Engineering, have written several books over that time. I know that I work as many hours as they; why can I not get my book written?

The answer came this spring when one of my former students downloaded from the MIT Libraries a list of the 157 MIT theses I have supervised. Having never stopped to count these theses before, I looked over on my bookshelf and saw four volumes of my first 200 publications. There on my shelf were my “books.” Although these constituted a coherent “whole” to me, they were not in a form that anyone else could appreciate. It was then that I started to analyze the parable of the frog in water in my own career. The constant drafting of proposals, meetings

with a dozen research students, editing their theses and drafts of papers (requiring 20 minutes per page for some non-native English-speaking students), as well as teaching had consumed my time. I was continually busy trying to work on proposals, teaching and working with students as I had done in my youth, but each task was consuming larger fractions of my time, and there is room for little else.

When he became Dean of Engineering, Bob Brown told me that the faculty and students work hard because they are insecure. While this may be true for many of the students, I do not believe it is the motivation for most of the faculty. Most faculty work hard because it is what they learned to do to get tenure and they have learned that running on a treadmill is what is expected and is necessary to excel. Bob Brown misanalysed our situation; striving for excellence is not the same as being insecure.

There is no single measure of success for faculty both young and old. I have seen virtually no career counseling for faculty beyond the tenure gate. It is generally expected that faculty in their 60s and 70s will do the same things as faculty in their 30s and 40s. Some faculty transition out of teaching and research into administration; but the metrics for faculty who do not go into administration remain the same, no matter what their age or years of service.

There is little planning for the future. As Department Head, I remember meeting with an 80-year-old faculty member who was submitting a proposal for research that would involve both a graduate student and a postdoc. I told my colleague, who was 35

years my senior, that the Department was pleased to endorse his continued research, but that I thought it best that he collaborate with a younger colleague, at least in supervision of the graduate thesis. My colleague was perplexed and was angered by my suggestion that he would not be hale and hearty forever.

The real failure is MIT's inability or unwillingness to assist the faculty transition to new roles as they age. Our more senior faculty should be encouraged and honored for assuming greater roles in mentoring of both younger faculty and students.

As the environment for research funding has evolved over the past half century, MIT has not kept pace with the roles of the faculty both young and old. MIT has doubled both the administra-

tive staff and the teaching staff to give the faculty more time to seek out research funding, or to meet the new regulations; but the Institute has not reviewed the temperature of the water in our environment. The Institute grows bigger, our output increases and the media gives us ever more attention, but the pressures increase, the teaching suffers, and collegiality suffers as we all hurry in various directions. The environment has changed and because the changes have been gradual, we do not notice the trends. One might ask whether we are still in control of our environment or whether the environment has become our master.

Walter Owen's admonition that it is "Publish or Perish" remains true, but there are multiple forms of publication. Some

of the most influential publications are the textbooks written by faculty who define or redefine their field. If we want to differentiate ourselves from the other 300 research universities that surround us, we should find more effective ways for a fraction of the faculty to write the seminal texts in their field. After a career of writing hundreds of journal articles, a few more papers will have little impact; but a text that codifies what we have learned over 30 years would be a rich legacy for all who follow. MIT should establish a mechanism to pull a few faculty out of the steaming water to a cooler environment, where the faculty can preserve their life's work for future generations. ■

**Thomas W. Eagar** is a Professor of Materials Engineering and Engineering Management ([tweagar@mit.edu](mailto:tweagar@mit.edu)).

## letters

### Publishing Political Views in the FNL

To The Faculty Newsletter:

**THE PUBLICATION OF THIS ESSAY** ["Iran and the P5+1 Pact," by Noam Chomsky, *MIT Faculty Newsletter*, Vol. XXVIII No. 1, September/October 2015] is outrageous and harmful to the collegiality I have experienced in over 50 years as a faculty member at MIT. Not only is the FNL no place for a political attack on the

U.S., but giving a well-known Israel antagonist a platform for what seems to some of us outright anti-Semitism is so outside the boundaries of the FNL that it demands an apology. What's next, an attack on Republicans? The FNL is not a place for presentation of one's political views, it is for discussion of issues critical

to MIT. I demand a statement of the Board explaining the boundaries of this aberration. What's next, a recommendation on how to vote?

**Steven R. Tannenbaum**

Underwood Professor of Biological Engineering, Chemistry, and Toxicology

**Faculty Newsletter Editorial Subcommittee Responds:**

Though we respect the intensity of Prof. Tannenbaum's views, editorial decisions follow the guidelines articulated in the *Policies and Procedures of the MIT Faculty Newsletter* ([web.mit.edu/fnl/fnlpe&p.pdf](http://web.mit.edu/fnl/fnlpe&p.pdf)). These state that faculty and emeritus faculty have access to the pages of the *Faculty Newsletter* on topics of their

choice. Prof. Chomsky has served on the MIT faculty for more than 40 years and is an Institute Professor.

We are sensitive to and observe libel laws with respect to references to individuals and groups, but do not censor expressions of political viewpoints with respect to MIT, national, or international policies.

The FNL covers a wide range of issues, not limited narrowly to MIT affairs. For

example, Vol. XXVII No. 4, March/April 2015, also carried an article by Prof. Aron Bernstein on the Iran negotiations; the issue with the article Prof. Tannenbaum objected to also carried an editorial describing the international activities of Prof. Ernie Moniz, Dr. Jim Walsh, and Assistant Professor Scott Kemp; the current issue carries an article on the international migration crises. ■

## Improving the Way MIT Handles Sexual Assault Complaints

Munther Dahleh  
Suzanne Flynn  
Kevin Kraft

### SEXUAL ASSAULT HAPPENS AT MIT.

We know this from our first-hand experience on the Committee on Discipline (COD), as well as from the Community Attitudes on Sexual Assault (CASA) survey that MIT conducted in April 2014. Our experience with the COD has given us a unique opportunity to reflect on the best ways to fairly adjudicate such misconduct.

The COD is one of 12 standing committees of the faculty. The student, faculty, and staff members of the COD are responsible for equitably resolving all complaints alleging that a student has engaged in misconduct, including sexual harassment and sexual assault. The COD uses an objective process to ensure that both the accuser and the accused have a fair opportunity to be heard and their interests protected.

During the summer of 2014, Chancellor Cynthia Barnhart charged a task force to examine the COD's practices and procedures for resolving sexual misconduct and other related types of cases. The task force was specifically asked to identify any necessary changes to ensure the COD process is accessible, fair, prompt, consistent, and streamlined.

The task force – composed of students, staff, faculty, and representatives of the COD – carefully reviewed the COD's current procedures, the results of the CASA survey, the relevant legal framework, processes at peer institutions, and MIT's existing policies. Having reviewed these data, the task force engaged in sustained dialogue about the best way to handle cases of sexual misconduct.

As a result of this work, the task force recommended improvements to the manner in which the COD handles student sexual misconduct cases. These recommendations were shared with the

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entire MIT community in April 2015. The task force held a town hall meeting to discuss the recommendations with interested members of the community. Electronic comment submissions were invited and encouraged as well. We were pleased to receive many thoughtful comments and suggestions.

The task force reviewed all submitted feedback and, following consultation with Faculty Policy Committee and the current COD membership, proposed new rules to enact these recommendations. The new rules went into effect in November 2015. The final task force recommendations, a flowchart depicting the COD's new process, and other related documents are available online at [cod.mit.edu/taskforce](http://cod.mit.edu/taskforce).

While it is not possible to detail all of the task force's recommendations here, we share several observations about what the task force learned from its careful study of this issue:

1. *MIT must have a fair and functioning internal process for resolving cases of sexual misconduct and assault.* Some commenters suggested that MIT should refer all cases to the police and take no

internal action. However, having an internal process is a legal requirement that MIT must meet in order to keep our students eligible for federal financial aid. In addition, the task force believes that MIT has a moral obligation to respond as promptly and fairly to sexual assault reports as we do to all other types of complaints. The COD has experience successfully handling other issues that have potential significance in the criminal courts and, with comprehensive training, the COD can also effectively handle sexual assault cases. All students who come forward to the COD will be given the option to report their cases to the police, but will not be required to do so.

2. *The task force asserts that the COD should continue to operate with fairness to both accuser and accused as a guiding principle and should view both parties*

as individuals who deserve to be treated with dignity and respect regardless of the allegations or outcome of the case. The task force recommended that the revised COD process continue to incorporate robust procedures to ensure equity and fair treatment of both parties, and the new rules put in place do this. These procedures include the accused being presumed to be not responsible unless the COD believes that a preponderance of the evidence demonstrates that a policy violation occurred; both parties having the same right to access the evidence and information in the case; having a fair opportunity to submit and respond to evidence and statements; having the right to have an advisor of their choosing participate in the process; and to appeal.

3. *The task force endeavored to reduce barriers that a person might perceive make it difficult for them to bring an issue to the COD.* The CASA data indicate that the reasons people chose not to come forward are not related to the COD. Nevertheless, sexual assault is dramatically underreported. Some commentators and members of the task force opined that students would be less likely to come forward if a student COD member is involved in reviewing their cases. While we have great respect for the student members of the COD and remain confident in their ability to keep information confidential, the task force concluded that having more people feel comfortable coming forward was of critical importance. Accordingly, the task force recommended – and the new rules specify – that student members of the COD not participate in resolving sexual misconduct cases. This recommendation had the unanimous support of all students on the task force. The student members of COD will continue to serve on all other cases and make valuable contributions.

4. *The task force outlined steps the COD can take to make the process less burdensome on both the accuser and the accused.* Relying on a professional investigator so that the students do not have primary responsibility for preparing documents and materials for their cases; setting up a hearing procedure that uses technology so that both students can fully participate without being in the same room; and aiming for quicker resolutions are three examples of changes that have been incorporated in the new COD rules.

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5. *Handling these cases with sufficient subject matter knowledge, empathy, and respect for the rights of both students requires substantial training and targeted experience.* Accordingly, the task force recommended a small subcommittee of COD members be appointed who will receive extensive training in these areas and be responsible for all sexual misconduct complaints. This will be a major investment of time and energy for the members of this subcommittee. The task force recommended those members be selected based on qualifications and have this substantial investment of time recognized by an appropriate reduction in other time commitments. Members of the subcommittee have been seated and training has begun. Additionally, the amount of staff and resources allocated toward the resolution of these cases will be reviewed this year.

6. *There is an inherent tension between the COD's desire to be transparent to the entire community about its actions in sexual misconduct cases and the desire of both the accuser and the accused for privacy.* The task force recommended that the COD try to meet both needs when it is possible to do so. When it is not possible, the task force directed the COD to value the individual privacy of students involved over the transparency needs of the community.

With these thoughts in mind, we invite you to get involved. Learn about the COD process and share this information with students. Consider joining the COD for the 2016-17 academic year or nominating a colleague. The COD – with rigorous fairness, a commitment to holding our students accountable to a high standard of behavior, and an ethic of care – is an expression of our values as a community. ■

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**Munther Dahleh** is Professor of Electrical Engineering and Computer Science. He chaired the task force on the Institute handling of sexual misconduct. He also chaired COD from 2012 to 2014 ([dahleh@mit.edu](mailto:dahleh@mit.edu));

**Suzanne Flynn** is Professor of Linguistics and current Chair of COD ([sflynn@mit.edu](mailto:sflynn@mit.edu));

**Kevin Kraft** is the Director of Student Citizenship and serves as COD's primary liaison to students involved in COD cases ([kkraft@mit.edu](mailto:kkraft@mit.edu)).



## Gender Imbalance in MIT Admissions Maker Portfolios

Chris Peterson  
Hal Abelson

**IN AUGUST 2013, THE** Admissions Office at MIT added a Maker Portfolio supplement to the undergraduate application. Many colleges and universities, including MIT, have long offered applicants the opportunity to share their talents in the admissions application in domains such as music, art, and sports. But few, if any, colleges and universities have created instruments and processes to identify and evaluate *technical* creativity and skill with comparable rigor.

The Maker Portfolio was designed to address this gap by allowing applicants to submit a supplemental portfolio of technically creative work. Each portfolio is reviewed at least once by a member of the Engineering Advisory Board, a body constituted by members of the faculty, instructional staff, and distinguished alumni with specific expertise and experience in particular modes of “making.” These evaluations are added to the applicant’s folder for consideration in the admissions process. While submit-

ting a Maker Portfolio is neither necessary nor sufficient for an aspiring applicant, an outstanding Maker Portfolio can provide a compelling reason to admit an otherwise qualified candidate to the Institute.

In many respects, the Maker Portfolio has been a resounding success. Over the last two years, more than 2000 students have used it to show us the things they make, from surfboards to solar cells, code to cosplay, prosthetics to particle accelerators. We believe the Maker Portfolio has improved our assessment of these applicants and offers us a competitive advantage over our peers who have not developed the processes to identify and evaluate this kind of talent. After the preliminary success we’ve seen at MIT, the White House Office of Science and Technology Policy has recommended, in its “Nation of Makers” report, that more universities consider implementing a Maker Portfolio in their admissions process.

One persistent challenge to the Maker Portfolio, however, is the fact that women submit them at a much lower rate than men do, and at a much lower rate than they submit other portfolios and apply to MIT overall, as depicted on the chart below.

As you can see, 85.9% of all Maker Portfolios last year were submitted by men, and only 14.1% by women. Another way of looking at the same data is that 7.4% of all men who applied to MIT last year submitted a Maker Portfolio, while only 2.8% of all women did. Yet another way to look at the same data: of the 9531 male applicants last year who indicated engineering as a field of interest (74.7% of all men), 812 submitted a maker portfolio (8.5% of all men). Of the 3414 females last year who wanted to major in engineering (61.4% of all women), 130 submitted a maker portfolio (3.8% of all women). We note that this data does not include other possible socioeconomic intersections (e.g., by race, wealth, or parent’s educa-

Pool	All	Men	Male % of Pool	% of All Men	Women	Female % of Pool	% of All Women
Apply to MIT	18,306	12,750	69.6%	100%	5,556	30.4%	100%
Submit Maker Portfolio	1,101	946	85.9%	7.4%	155	14.1%	2.8%
Submit Research Portfolio	2,056	1,339	65.1%	10.5%	717	34.9%	12.9%
Submit Performing Arts Portfolio	1,013	642	63.4%	5.0%	371	36.7%	6.7%
Submit Art/Architecture Portfolio	848	372	43.9%	2.9%	476	56.1%	8.6%



tion) that we intend to make the subject of future research. Whatever way you slice the data at hand, however, the consistent trend is that women submit the Maker Portfolio – and *only* the Maker Portfolio – at a lower rate than men, and far below the rate they submit any other type of supplemental portfolio. The question is why?

One reason could be that adolescent women applying to MIT don't have (or do not believe they have) the portfolio of work that a Maker Portfolio is supposed to showcase. Despite recent public awareness and renewed initiatives such as Girls Who Code, the STEM "pipeline" remains tightly constricted by gender. According to the College Board, only 20% of the students who took the 2014 AP Computer Science (APCS) exam globally were women. MIT's robust applicant pool actually slightly overperforms the general population, as approximately 25% of our applicants who reported taking APCS in high school are women, but still, only ~26% of our female applicants self-reported taking a coding course in high school, lagging ~32% of male applicants. Obviously, computer science is not the only mode of "making." It is, however, a mode of making that has: a) comparatively good public data available, and b) a great deal of public attention currently invested in expanding the pipeline.

Another possibility is that women may not identify with the Maker identity with which the Portfolio is branded. The Maker Movement overall has occasionally been criticized for its lack of demographic diversity: as former MIT Professor Leah Buechley noted in a 2013 talk at Stanford (<https://www.edsurge.com/n/2013-10-29-make-ing-more-diverse-makers>) on her study of representations of makers in media, 85% of the people featured on the cover of *MAKE* magazine in her study were men, and (to its credit) Maker Media, the organizational entity supporting the Maker Movement, has been grappling publicly ([makezine.com/magazine/make-40/where-are-the-women](http://makezine.com/magazine/make-40/where-are-the-women)) with how to diversify the Maker population. On the other hand, question 46 on MIT's 2015 *Undergraduate Enrolled Student*

*Survey (ESS)* asked members of the MIT Class of 2018 to indicate what, if any, identities resonated with them. In that survey, 30% of respondents identified as

One reason we have chosen to publish this data is to highlight the continuing importance of identifying, acknowledging, and developing technical talent in pre-college women, and for MIT, both as an organization and as the individuals that constitute it, to maintain and improve its support for initiatives and programs that work toward these ends.

"maker," and the rate was the same for both men and women who responded.

Another possibility is that the association of a Maker Portfolio with specifically technical creativity (as opposed to more general artistic creativity) may be dissuading young women from submitting one. It has been long established that fewer women feel confident about their ability to succeed in engineering than in other areas of math and science. Twenty years ago, the Final Report (<https://groups.csail.mit.edu/mac/users/hal/women-enrollment-comm/final-report.html#TOC>) on *Women Undergraduate Enrollment in Electrical Engineering and Computer Science at MIT*, chaired by Professor Abelson, found that women were systematically less confident about their preparation to succeed in EECS than their male counterparts; last semester, a team of EECS undergraduates, in a survey of their classmates ([cl.ly/0l3d21242x1k](http://cl.ly/0l3d21242x1k)), found that "difference in confidence in the major is *disproportionately higher* than the difference in prior preparation [between women and men]." Some of our data are consistent with this hypothesis: of men and women who do submit Maker Portfolios – that is, of those who *already* identify as Makers – they are equivalently likely to want to major in engineering (85.9% of men against 83.9% of women).

So it's also possible that technically creative women may still not believe that the Maker Portfolio is "for them," despite specific actions taken by Admissions to try

and counteract this belief, e.g., by prominently featuring female makers and their projects during public talks about the Maker Portfolio at World Maker Faire

New York in 2014 and 2015. On this point, we can't help but notice the striking mirror-image quality of the Maker Portfolio and Art/Architecture portfolios compared by portfolio submission rates within gender, and wonder again about gendered associations of "making" vs. other modes of creative expression.

Over the last few decades, MIT has made great strides in leveling the playing field for women at the Institute. One reason we have chosen to publish this data is to highlight the continuing importance of identifying, acknowledging, and developing technical talent in pre-college women, and for MIT, both as an organization and as the individuals that constitute it, to maintain and improve its support for initiatives and programs that work toward these ends. Another reason is that we in Admissions are interested in community feedback on if and how we might make the Maker Portfolio seem more accessible to women (if indeed it does not at present). There is some reason to believe that the "problem" begins before it reaches our process, but that doesn't mean we shouldn't try to do anything about it. We are open to considering anything that can be done to help, and welcome your suggestions (addressed to [chris.peterson@mit.edu](mailto:chris.peterson@mit.edu), cc:ing [hal@mit.edu](mailto:hal@mit.edu)) to that end. ■

**Chris Peterson** is Assistant Director of Admissions ([chris.peterson@mit.edu](mailto:chris.peterson@mit.edu)); **Hal Abelson** is a Professor in the Department of Electrical Engineering and Computer Science ([hal@mit.edu](mailto:hal@mit.edu)).

## In Guarding the Well-Being of MIT Students We Should Emphasize Prevention

Elfatih A. B. Eltahir

**IN THE HEALTHY MINDS STUDY** 2015 Survey Results ([chancellor.mit.edu/2015-healthy-minds-study-results](http://chancellor.mit.edu/2015-healthy-minds-study-results)) more MIT students, compared with the national average (to be accurate about twice as many), agreed with the statement “At my school, I feel that the academic environment has a negative impact on students’ mental and emotional well being” (UG: MIT 77% vs. 36% National; Grad: MIT 65% vs. 38% National). Moreover, 15% of MIT UG and 23% of MIT Grad choose to take a “neutral” position regarding the above statement, which leaves only a tiny minority in disagreement with the same statement.

This result is worrisome. At a place like MIT, we should aspire to reverse this situation so that the majority of students would disagree with the same statement. That is where the bar must be set, acknowledging the potential positive impacts on students from sharing the excitement of discovery that routinely takes place at MIT. The difference between the current situation and where things could be is huge.

Given the serious potential consequences on these young minds and their well-being from studying in an academic environment that is persistently leaving negative impacts on their “mental and emotional well-being,” I call on MIT to take this issue seriously and respond by introducing fundamental structural changes. Incremental improvements to counseling and mental health services are useful, but are not enough. We would be wise to choose prevention over treatment. We should introduce fundamental changes that restructure our academic

environment so that the students would feel a significant and profound difference.

Here are two specific proposals offered as examples for the type of structural changes that I believe are needed:

(1) *MIT should launch an initiative to offer and enhance innovative models of learning, other than the traditional graded (A, B, C, D, F; or P/F) subject model.* Most of learning happens at MIT with the students taking subjects in which their performance is continuously monitored and eventually evaluated and graded. The absolute dominance and persistence of this model seems to enhance the level of stress among our students, leading to their negative feelings about the academic environment. In the future, to be clear, this traditional well-established model of learning will continue to be the main model of learning at MIT. However, there is plenty of room to explore other less stressful modes and models. The faculty can be called on to innovate and experiment by offering other models of learning that are more exciting and more relaxed, and where the students do not always feel that their responses are monitored, evaluated, and graded in a highly competitive environment.

One potential model would involve the engagement of a group of students from different departments to learn from a group of MIT faculty about a contemporary issue of strong interest to both faculty and students. A potential set of topics that may give some idea about the nature of the proposed activity include: autonomous cars; curing cancer; big data; bio-inspired

materials; unlocking the human genome; global change; advances in understanding the human brain; quantum computing; spread of infectious diseases; life on Mars; water and food. Faculty engaged in each research center at MIT could be expected to offer a short learning activity designed around a theme relevant to the center’s activities, integrating research further into the educational process. A typical offering may go for about one month and with a format (3-0-3) that includes a three-hour weekly meeting, consisting of a 90-minute lecture and discussion session, followed by a conversation with faculty over dinner about the lecture topic, and preceded by three hours of online learning material. *MITx* could play a significant role in the development of such material. The students can get credit (~3 units for participation), and count that against the unrestricted elective requirements of any major. Reasonable limits can be imposed on the maximum units.

(2) *MIT should take a serious initiative to enhance the quality of academic advising, and in doing that redefine the role of the academic advisor.* The need to improve advising has been recognized for decades, but limited progress has been achieved. In my view, the most effective way to accomplish such change is by modifying the criteria for faculty promotion. Instead of the current criteria that consider only research, teaching, and service, I propose we move to new criteria that include research, teaching, *advising*, and service. Advising would be elevated, and redefined to include not only MIT faculty helping the student navigate the MIT academic

environment, but also paying attention at early stages to make sure that the academic environment *does not* leave a negative impact on the student’s “mental and emotional well-being.” The latter may be viewed as a positive and preventive measure to avoid getting to the point where the student may need help from counseling and/or treatment from mental health services. The MIT faculty will need to be professionally trained on how to become successful advisors.

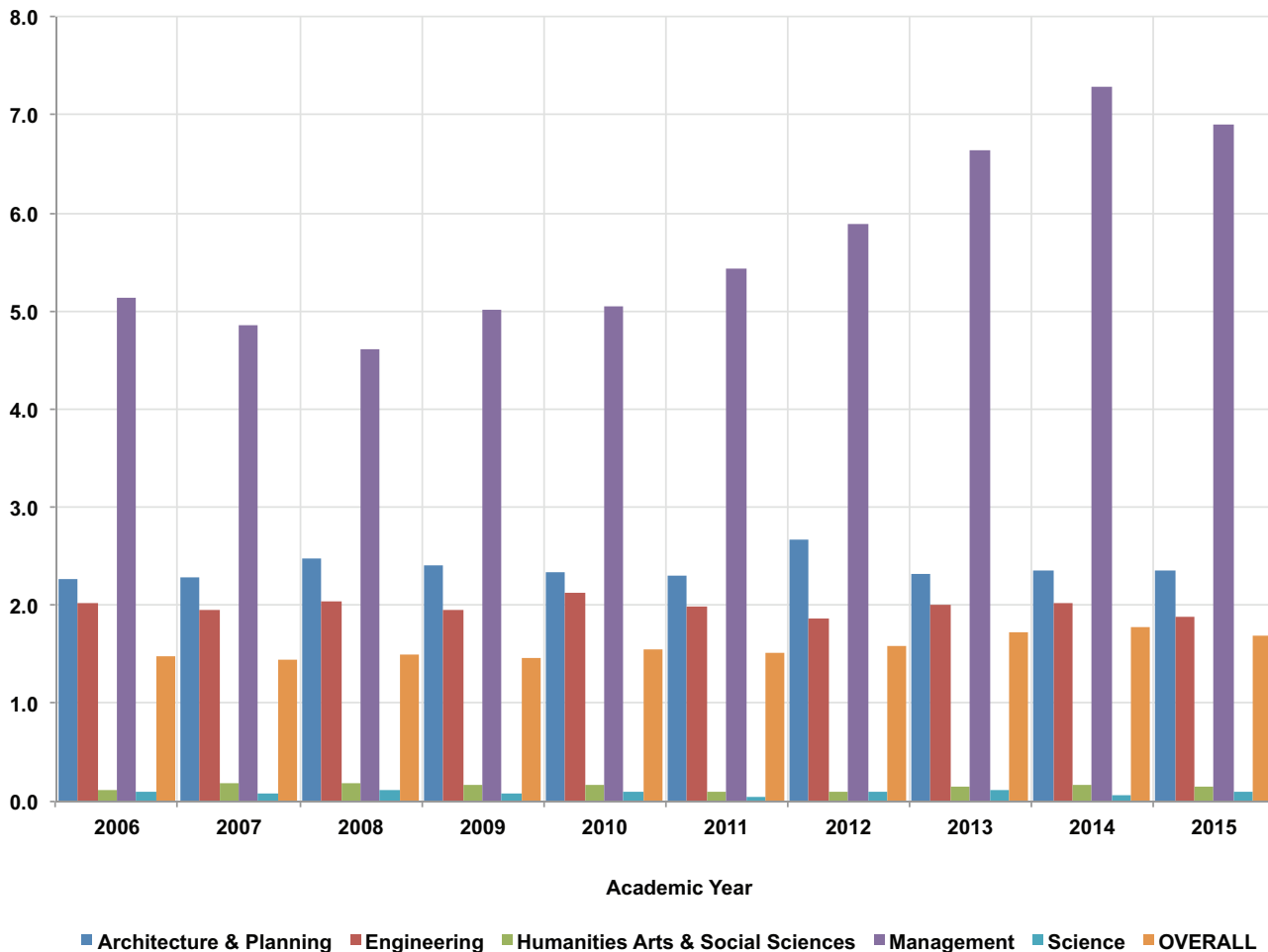
For similar reasons, I propose that we consider extending the current model of combining research and academic advising at the graduate level to offer a similar advising model to our undergraduates who are engaged in research. Integration of the undergraduate students into research groups would help improve their sense of community.

The nature of the changes in these two *examples* may seem dramatic and

disruptive to the norms at MIT. However, dramatic and disruptive change is what I believe is needed when business as usual is negatively impacting “the mental and emotional well-being” of our students. ■

**Elfatih A. B. Eltahir** is a Professor and Associate Department Head in the Department of Civil and Environmental Engineering ([eltahir@mit.edu](mailto:eltahir@mit.edu)).

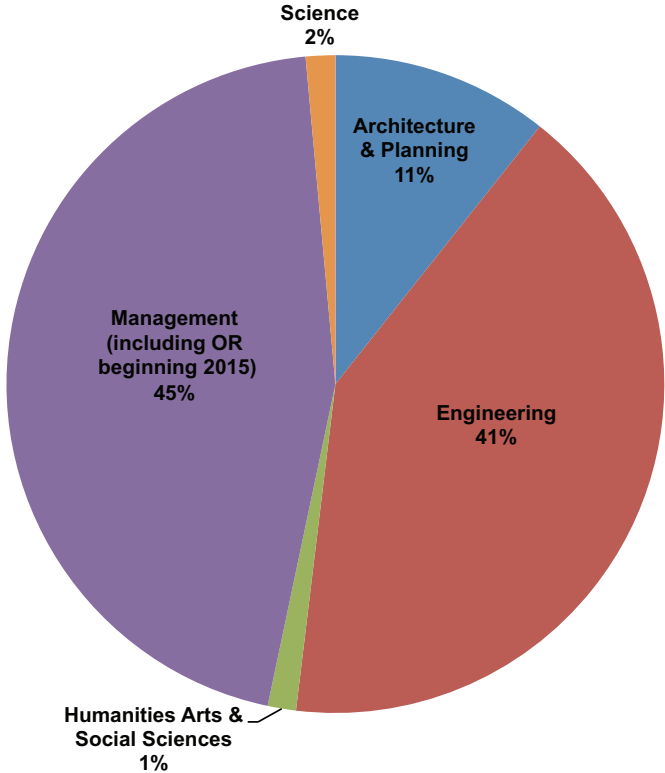
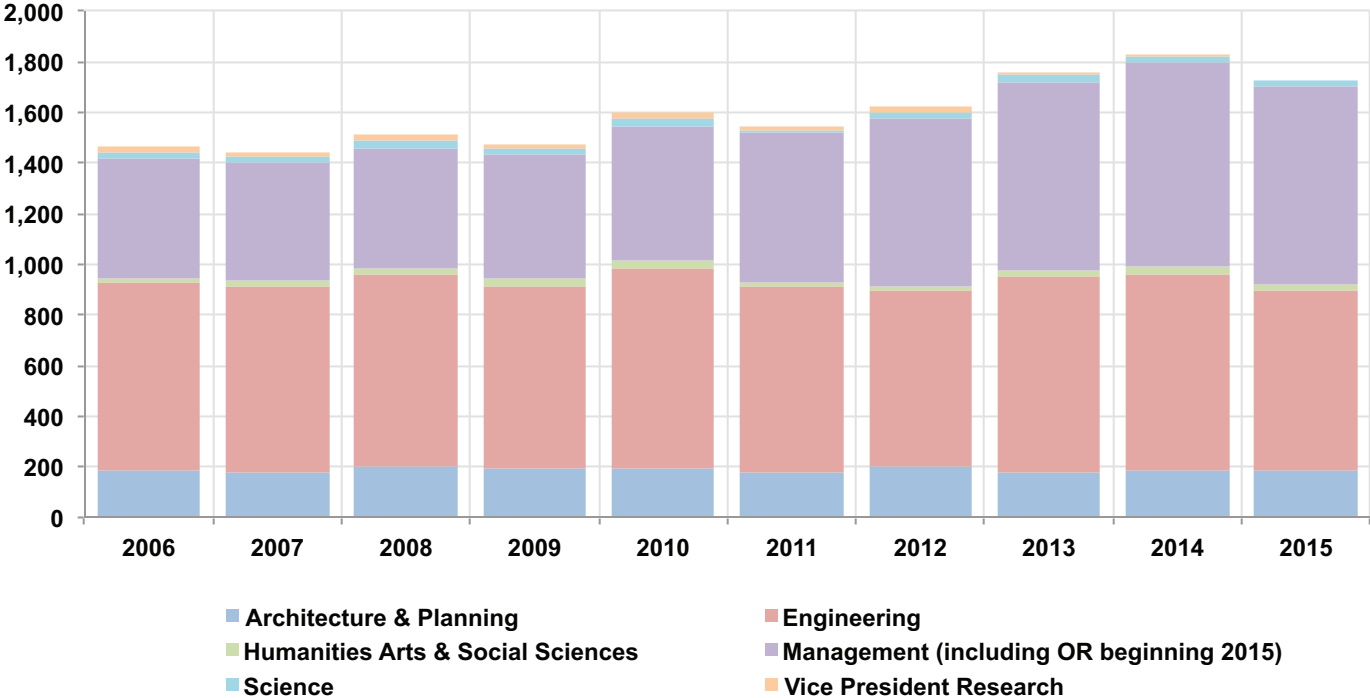
## M.I.T. Numbers Master’s Degrees Per Faculty (2006–2015)



Source: Office of the Provost/Institutional Research

# M.I.T. Numbers

## Master's Degrees (2006–2015)



Source: Office of the Provost/Institutional Research