

# MIT Faculty Newsletter

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

**in this issue** we offer several viewpoints on the new College of Computing (below, page 6, page 9); an update on current campus construction (page 10); and commentary on MIT's new web portal (page 14).

*The discussion in the article and the Editorial (below), on MIT's relationship with the Saudi Monarchy, will be continued at a forum on Thursday, December 6: "Evaluating the Relationship Between MIT and the Saudi Monarchy," from 5:00 - 6:30 pm in Room 1-190.*



Open Space Kendall Square (p. 10)

## From The Faculty Chair The MIT Stephen A. Schwarzman College of Computing

Susan S. Silbey

**ON OCTOBER 15, 2018,** MIT announced a gift from Stephen A. Schwarzman to create a college of computing. Eleven months earlier, in November 2017, President Rafael Reif began discussing with the faculty officers the possibility and prospects for a School of computing. He sought our advice about how the proposal from some members of the computer science faculty might be explored with the faculty at large. We recommended extensive conversations across the Institute to gather the faculty's collective wisdom and hear their worries.

In my role as Chair of the Faculty, I accompanied Rafael, Provost Martin Schmidt, and Engineering Dean Anantha Chandrakasan during the spring semester 2018 to meetings with all School councils and several large departments. I also

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## Ethical Obligations of Universities in Their Transnational Engagements

Balakrishnan Rajagopal

**IN LIGHT OF THE APPARENT** savage murder of Jamal Khashoggi, President Rafael Reif has called for a reassessment of MIT's engagement with Saudi Arabia. This is a highly welcome effort, and one that echoes similar assessments being conducted by many governments and leading businesses, with many concluding that they will no longer engage with Saudi Arabia as long as the current regime is in power and there is no serious attempt to ensure accountability.

However, it did not have to take the gruesome murder of a journalist for these reassessments to happen. Credible evidence of a growing crackdown against domestic dissidents and of war crimes in Yemen committed by Saudi forces – with U.S. assistance – was publicly available, for example. Is it morally defensible for a principled university to engage with a

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## Editorial MIT Entanglement with Saudi Monarchy Requires Independent Evaluation

**THE MURDER OF JOURNALIST** Jamal Khashoggi by agents of the Saudi ruling family, as well as the role of the Saudi Arabian military in the loss of civilian life from their campaign against Yemeni groups, have been widely reported. This has called attention to the MIT administration's meetings and agreements made last spring with Mohammed bin Salman, Saudi Arabia's Crown Prince, Deputy Prime Minister and Minister of Defense, and now the de facto head of the Saudi state as well as Saudi entities such as Aramco. Bin Salman launched the campaign in Yemen that has resulted in the death of tens of thousands from starvation, cholera, and collateral damage from indiscriminate aerial bombing (*New York Times*, 28 August, 2018).

Even before these events we expressed grave concern over MIT shoring up one

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**MIT Entanglement with Saudi Monarchy**  
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of the world's last absolute monarchies, with a track record of suppression of rights of women, human rights activists, and religious minorities, as well as propagating an obscurantist and militant interpretation of Islam ("MIT Should Not Be Supporting the Saudi Monarchy," *MIT Faculty Newsletter*, Vol. XXX No. 4, March/April 2018). The ethical and human rights implications of such partnerships with Saudi Arabia and others are explored in the article in this issue by Balakrishnan Rajagopal (page 1).

Associate Provost Richard Lester has reported that MIT will investigate these agreements, certainly a necessary step, which should have been taken *before* the agreements were made. However, having a committee constituted by the administration, to investigate the administration's actions, is clearly not adequate. We need a committee that is independent of the administration. Unfortunately, MIT has no faculty senate or related governance body, and all standing committees are joint committees of the faculty and administration.

The agreements with bin Salman were not broadly shared with faculty, and proceeded without prior faculty input on such international cooperation. MIT has an International Advisory Committee, (appointed by the President), which contributed to organized discussions of the Russian and Singapore initiatives before they were finalized. No open faculty engagement took place prior to the spring meetings with Mohammed bin Salman.

We suggest that the Secretary of the Faculty ask the faculty members of the Faculty Policy Committee to join with some of the faculty members of the International Advisory Committee to serve as an ad hoc committee to investigate and report to the faculty on the agreements made with bin Salman, Saudi Arabian universities, agencies, and companies.

As the Institute prepares to investigate the agreements made with Saudi monarch bin Salman, it may be useful to review other cases where MIT dealings violated norms and principles that ought to be held by academia.

In 1975, MIT and the Nuclear Engineering Department arranged with the then Shah of Iran to provide graduate training in nuclear engineering for a cadre of more than 50 Iranian students sent by the Shah's government, for \$1.4 million from the Shah's government. This was considerably different from the Shah's government providing financial support to students admitted according to MIT standards and processes. The issue was intensely debated at faculty meetings and among students, and an ad hoc committee was established to look into the issues raised. Though students voted against the program, the vote at a well-attended faculty meeting was in support, and the program went forward. In 1979, when the Shah's absolutist regime was overthrown, there were still a dozen Iranian students in the Nuclear Engineering program.

During the apartheid regime in South Africa, a group of MIT faculty, staff, and students formed the Coalition Against Apartheid, calling for the divestment of the Institute's endowment investments in corporations that did business with the brutal apartheid government. The energetic effort, including building a model shanty town on the campus, was part of a national divestment campaign. Numerous other colleges and universities had divested, as well as states and municipalities. President Paul Gray was at the helm and steadfastly resisted the divestment call, laying out the Corporation's position in an open letter (April 3, 1990). The decision, though debated in faculty meetings, was not referred to any committee or group of the faculty, but was maintained under Corporation auspices. With the fall of the apartheid government in the early 1990s and election of Nelson Mandela in 1994, the issue became moot.

In 1994, Prof. Nancy Hopkins organized an ad hoc group of senior women who began documenting inequities in the treatment of women faculty. As the evidence mounted, they were able to win the establishment of a formal Commission on the Status of Women, with the support of President Charles Vest and Dean Bob Birgenau. The report by the Commission was published in a special issue of this *Faculty Newsletter*, documenting the structural inequities in the treatment of male and female faculty. This led to significant

improvements in administration policies resulting in increased equity between male and female faculty. The report remains valuable today.

These past incidents show the way forward but also caution us about the new challenges in forming partnerships and collaborations with increasingly authoritarian, violent, and opaque governments and entities around the world. The track record of MIT's response to criticism of deals and cooperation agreements that ignored ethical and human rights issues is spotty at best. Let us hope that the planned investigation, analysis, and evaluation of the agreements reached with Mohammed bin Salman and his regime, and other entities, as well as the subsequent action taken will not be of the band-aid character, but will take the human rights and ethical questions seriously and set directions for future MIT engagements.

For those interested in the issues raised by the MIT/Saudi Monarchy connection, the discussions in this *Newsletter* as well as in *The Tech* will be continued at a *Faculty Newsletter* Forum: "Evaluating the Relationship Between MIT and the Saudi Monarchy," on Thursday, December 6, from 5:00 - 6:30 pm in Room 1-190. Panelists include Sarah Leah Whitson of Human Rights Watch, MIT graduate students, MIT Faculty Sally Haslanger and Jonathan King, and Tufts Prof. Sheldon Krinsky, hopefully joined by a representative of the MIT administration.

### **College of Computing**

The Institute recently announced the establishment of the MIT Stephen A. Schwarzman College of Computing. The "College" aspect of this initiative implies a significant change in the relations of the different disciplines represented at MIT with each other. Three articles in this issue, by Susan Silbey (page 1), Bernhardt Trout (page 6), and Haynes Miller (page 9), address important aspects of the new College.

We need to ensure that the College's organizational structure is such that it will reflect its mission and lift up all of MIT, rather than generating divisions and building new walls.

Editorial Subcommittee

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**The MIT College of Computing**  
Silbey, from page 1

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joined conversations in Rafael's office with several department heads and program directors. The MIT Schwarzman College of Computing has now been created; it has not yet been designed.

A vision for the College evolved over the course of these conversations. Most importantly, faculty beyond EECS wanted any new structure to be porous with unfettered collaborations across its boundaries, so that faculty using the computational methods which have become commonplace within most disciplines would be in more regular conversation with the computer science faculty enabling adoption, and adaptation, of new methods. Equally, faculty across the Institute wanted to engage computer scientists on the substantive disciplinary problems appropriate for computer analytics, as has been the case, for example, in computational biology. In addition, faculty across several departments offered to share the burden of teaching some basic courses in areas that involve computing and computational methods. The significant increase in undergraduate enrollments in these courses are stretching and diluting existing resources for making fundamental advances at the frontiers of computer science. Faculty consistently said that, whatever was proposed, the plan should permit more flexible collaborations for teaching, degrees, and research while providing increased manpower and material resources.

This semester, I have been accompanying Marty and Anantha on another tour of School councils, departments, and labs as they have been presenting a vision for the College, again seeking feedback and suggestions on how to enact this bold and challenging concept of a new college for MIT. The Provost's presentation is presently a sketch of what might be put in place after further consultation and design.

The task before us now – to develop and propose designs for the College – is daunting because the College is envisioned to have the status of a School,

similar to the current five MIT Schools, but with a broader mandate: to be the nexus actively connecting across the Institute those who advance computer science, those who use computational tools in specific subject fields, and those who observe, analyze, and write about digital worlds.

There are certainly observable tensions pulling and pushing the vision of the College in competing directions. Some

There are certainly observable tensions pulling and pushing the vision of the College in competing directions. Some expect the College to be a bigger and better extension of the existing Department of Electrical Engineering and Computer Science with auxiliary research labs and centers. Others want the College to be a different kind of organization. . . .

expect the College to be a bigger and better extension of the existing Department of Electrical Engineering and Computer Science with auxiliary research labs and centers. Others want the College to be a different kind of organization devoted not only to advancing computation and computer science but to fully accept – by making visible, rather than tacit – the inescapable human preferences embedded within digital technologies, both the unintended as well as predictable consequences of these technologies. To his credit, the Provost has publicly acknowledged these tensions that we must now embrace and mediate.

Facing this daunting mission, I am reminded of Admiral Rickover's cautionary advice concerning academic designers, if not specifically about designing academic organizations: *"The academic [nuclear reactor] designer is a dilettante. He [sic] has not had to assume any real responsibility in connection with his projects. He is free to luxuriate in elegant ideas, the practical shortcomings of which can be relegated to the category of 'mere technical details.' The practical [reactor] designer must live with these same technical details. Although recalcitrant and awkward, they must be solved and cannot be put off until tomorrow. Their*

*solutions require manpower, time and money [1953 letter]."*

There is much that needs to be researched and decided in a short period of time if the College is to open in fall 2019, demanding manpower, time, and money. We have not specified what opening looks like, other than perhaps a web page. We should investigate historical and contemporary examples here and at other universities with respect to, for example,

component units (shall there be departments as well as labs and centers?); roles and responsibilities (shall a member of the new College sit on each of the existing School councils and in turn members of the five Schools sit on a governing council of the new College?); distribution of resources (how shall College funds be distributed for computational teaching across the Institute, for support staff, and for hardware?); decision-making processes for faculty appointments and student degrees (how shall faculty be appointed, evaluated, and promoted if they sit in more than one department or School; what degrees shall be offered; how shall graduate students be admitted and funded?).

In active collaboration with the faculty officers and the new Dean, the Provost plans to create a task force comprised of multiple working groups to generate recommendations on the design of the Schwarzman College of Computing, a process successfully implemented during the 2008 financial crisis. Each working group will have a charge designating the central topics for its inquiry to culminate in a set of proposals and recommendations. The Provost has already created a search committee with five School representation to identify candidates for Dean

of the new college; a second committee will interview the identified candidates.

We currently expect to stand up working groups (in canonical MIT fashion with representation from the five Schools) to consider and address the following issues. The particular charges and compositions are in process:

(1) *Organizational structure*: to explore organizational configurations or structure with two tracks. One subcommittee will consider what kind of organization will provide agility while ensuring stewardship of key elements such as degrees, graduate student supervision and mentoring, faculty hiring and promotion. Should there be project-centered interdisciplinary labs? How will the internal structural elements relate to departments in the other Schools? A second subcommittee will explore the preferences and expectations of the faculty who will reside within the College.

(2) *Faculty appointments*: to specifically consider how bridge appointments will be structured, hired, mentored, promoted. What are the categories of appointments in the College, and how are these the same or different from appointments in the current Schools? What are the rights and responsibilities of faculty appointed in more than one unit? How are they hired, mentored, promoted? How are transitions managed as faculty may move from one unit to another within the College and in other Schools? Might we consider some appointments with limited terms?

(3) *Landscape of available models*: to gather intelligence about similar colleges and schools around the nation and globe. What has been tried elsewhere and how is it working? What might we envision as distinct for MIT?

(4) *Social Implications*: to explore the social implications of computing. The College aspires to integrate thinking, research, and teaching about the social implications of computing into everything it does, in education and in research. How might this be instituted?

(5) *Curriculum and degrees*: to conduct a census of all courses offered on or about computation. What degrees will be offered by units in the College? How will the courses be coordinated within the College and with the existing departments and Schools?

The Provost has already created a search committee with five School representation to identify candidates for Dean of the new college. . . .

(6) *Computing infrastructure*: to identify best practices with respect to sharing common resources. How does the College ensure that everyone has access to hardware and professional staff?

Clearly, the topics of these working groups intersect. The multiple groups will provide greater opportunity for faculty, staff, and student participation and feedback than would a smaller set. The chairs of the working groups will meet to coordinate and communicate across the groups and with the new Dean (or Acting Dean) and Provost. We expect the working groups to be in place by December 2018 with recommendations in June 2019, following interim reports during the spring semester.

From the many conversations over these two semesters, we have generated a set of questions that seem to represent the central concerns and multiple goals we have heard. In developing proposals and recommendations, we hope that the working groups will be guided by their charge and these questions, which can function as a kind of “catechism” for the design of the College.

• Will the recommendation facilitate collaboration and promote integration across MIT departments and other units in curricular planning and research?

• Will the recommendation acknowledge and maintain respect for the demonstrated expertise of colleagues with regard to computing arts and sciences?

• Will the recommendation ensure that faculty with appointments in more than one unit have clearly defined responsibilities that do not impede the normal progression of an academic career?

• Will the recommendation create an unusual burden on any unit, benefit one group at expense of others, or disenfranchise anyone?

• Will the recommendation increase MIT competitiveness with regard to faculty and student recruiting and retention?

• Will the recommended administrative structure sustain these principles for fair and appropriate allocation of resources (space and funding), appointments, teaching and related assignments within the College and with respect to the five MIT Schools?

• Will the recommended design of the College incorporate flexibility to accommodate the possibility that some current trends (e.g., in enrollments) might shift dramatically so that changes will be appropriate?

We are eager to take up this challenge and enthusiastically support the Provost’s commitment that the MIT Schwarzman College of Computing be our next step toward a better world through more socially responsible and yet even more adventuresome computing. We commit ourselves to the work of realizing this bold vision. ■

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## Ethics and the Liberal Arts in the Schwarzman College of Computing

Bernhardt L. Trout

**ALL OF CAMPUS IS EXCITED** at the announcement of the new Stephen A. Schwarzman College of Computing. Everyone is trying to figure out how they might best participate, and no doubt the administration is trying to process an overwhelming barrage of ideas, suggestions, critiques, and just plain lobbying. A billion dollar academic initiative is indeed bold, and the administration should be applauded for developing it and having already raised a good part of the funds. Of course, this scale of investment into Artificial Intelligence (AI) pales in comparison to that of Silicon Valley, not to mention to the initiatives of companies worldwide across just about every sector. In my area, pharmaceuticals, companies have been implementing AI methods for years, and our lab has played a small part in AI.

Nevertheless, despite the massive effort in AI outside of MIT, given the Institute's technical expertise and creativity, we will no doubt figure out how to have a major technical impact. However, our senior leaders have correctly stated that the technical aspects are only a part of the initiative for AI. The ethical and societal implications are intimately linked with the technical development of AI and need to be addressed hand in hand with the technical. Below is a vision of how the ethical and societal implications of AI could be addressed so that we are able to achieve the potential of the Schwarzman College envisioned by Mr. Schwarzman and MIT's leaders.

As President Reif writes in his October 15 announcement, "In this pivotal AI moment, society has never needed the

liberal arts – the path to wise, responsible citizenship – more than it does now. It is time to educate a new generation of technologists in the public interest." In the *MIT News* article released that day and the accompanying Q&A, "ethics" and its derivatives are used 25 times. Key statements include, "The College will . . . trans-

form education and research in public policy and ethical considerations relevant to computing and AI." "The College will equip students and researchers in any discipline to use computing and AI to advance their disciplines and vice-versa, as well as to think critically about the human impact of their work." President Reif is also quoted, "We must make sure that the leaders we graduate offer the world not only technological wizardry but also human wisdom – the cultural, ethical, and historical consciousness to use technology for the common good." Stephen Schwarzman himself makes it clear that ethics and society are of major concern, "The College's attention to ethics matters enormously to me, because we will never realize the full potential of these advancements unless they are guided by a shared understanding of their moral implications for society." In his announcement of the same day, Provost Schmidt writes, "A central idea behind the College is that a

new, shared structure can help deliver the power of computing, and especially AI, to all disciplines at MIT, lead to the development of new disciplines, and provide every discipline with an active channel to help shape the work of computing itself."

The administration's focus on intertwining ethics and policy with technical

Understanding the ethical and societal implications of AI necessitates an understanding of both the artificial and intelligence. Understanding the artificial necessitates understanding together the artificial and the natural. Understanding intelligence, or what might better be referred to as mind, necessitates understanding together mind and material.

advances is laudable. In thinking about how to make this vision a reality, we might wish to consider the following questions: Are disciplines the right way to think about ethics and human wisdom? Can ethics be advanced or transformed? How can the liberal arts best be the path to wise, responsible citizenship? Let's take these questions in turn.

Understanding the ethical and societal implications of AI necessitates an understanding of both the artificial and intelligence. Understanding the artificial necessitates understanding together the artificial and the natural. Understanding intelligence, or what might better be referred to as mind, necessitates understanding together mind and material. Furthermore, understanding all of these must incorporate the understanding of how human beings fit with them. Such an understanding both connects and divides each of these elements. Thus, understanding artificial intelligence together with its

connections to ethics and society necessitates understanding the whole in which each of these parts fit. A reductionist approach may be convenient for some purposes, but as one cannot understand a human being by studying only the chemical elements that compose that human being, one cannot understand the full implications of AI from separating those implications into parts. Achieving the full potential of the Schwarzman College necessitates developing an understanding of the whole and therein, the place in which AI fits within that whole. Such an understanding cannot be gained through any one discipline, or even through interdisciplinary studies, which itself presumes that the whole is divided into disciplines which can interact but not be put together into something greater than themselves.

Whether or not ethics can be advanced or transformed is questionable. We must be careful not to impose the methods that have been enormously successful in modern science on realms in which they are not applicable. Ethics and society may not be amenable to the modern scientific method. Certainly, society has been transformed by science, but it is unlikely that human nature itself has changed. The fundamental questions that are innate to humans as humans have not changed: What is our relationship with nature? What is the best political regime? What is justice? What is a good human being? What is the best life? Certainly, opinions regarding the answers to these questions can be affected by the particulars of a given society, but there is nothing to indicate that society alters or advances the answers to those questions. Aristotle is taught today both in the School of Engineering and in our Philosophy Department not for historical or sentimental reasons, but because of the wisdom he can bring to bear on these questions.

President Reif makes explicit the connection between the liberal arts and civic education. This is no doubt an invitation to explore this connection and also the divergence. While it would be a challenge to make the case that studying Bach,

Botticelli, or Browning makes one a more responsible citizen, studying them may make one a wiser citizen. Perhaps in addition to the liberal arts broadly, we should think about how to educate towards an informed citizen. This should include teaching about political institutions and about the regimes in which they exist, in particular democracy. Perhaps it would be important to include the best analyst of American democracy, Tocqueville, an author with penetrating insight, who at the same time students find most appealing.

A more specific idea to be considered for the Schwarzman College, would be including our Society, Ethics, and Engineering (SEE) Program, which is housed in the School of Engineering. We have educated over 1000 engineering students in ethics and engineering and in the

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past few years, over 10 percent of each MIT class. We include in our classes the ethical issues behind AI and have developed many bespoke versions of our Ethics for Engineers courses to meet the needs of various departments and programs. Seven of the eight SOE Departments in addition to GEL (Bernard M. Gordon-MIT Engineering Leadership Program) have partnered with us, and these departments (and GEL) together with their students seem to love our courses, and as they are not required, students take them because they wish to engage in the material. A large part of our success stems from our courses viewing both ethics and engineering as part of a larger whole. Not as two separate disciplines that are melded together, but as two parts, each of which points both inward to itself and outward to something greater.

In our Ethics for Engineers course, we start with four fundamental theories of ethics (utilitarianism, duty ethics, rights

ethics, and virtue ethics). Our students read excerpts from the authors who developed these theories, including Bentham, Kant, Locke, and Aristotle – we think that thinkers who have stood the test of time are the best introduction to their own theories. We then turn to the political and social context in which ethical (and other) decisions are made, with readings in Tocqueville and others (including Sutherland, who was highlighted by our Faculty Chair, Susan Silbey, in her article on teaching ethics in the previous *Faculty Newsletter*). We then look at the modern engineering project, with readings from Bacon and others, and we address fundamental ethical challenges faced by engineers in our time, especially in biotechnology and AI. For each class we read case studies about real situations

faced by real engineers, from the notorious Ford memo of the 1970s to the recent Volkswagen scandal, from the seminal 1966 Beecher article which led to the requirement of consent in medical studies to recent ethical quandaries at Google, Facebook, Theranos, and elsewhere. The enthusiastic student reviews that we have received over many years, tell us that we are on the right track in our approach to teaching ethics to future engineers.

In the Schwarzman College, we can go much deeper. For in order to address well the ethical and societal implications of AI, we must think directly about technology within the whole. That human endeavor which best approaches the study of the whole is philosophy, the architectonic science that has rightly been called “the queen of the sciences.” It would be tremendously beneficial if the faculty of the Department of Philosophy and those

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**Ethics and Liberal Arts in Schwarzman**  
Trout, from preceding page

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in diverse disciplines across the Institute could work together to create a vision for the future of AI that we could teach our students. My own efforts to achieve this in our grassroots SEE program have not been successful, but I hope that the vision for the Schwarzman College can promote such broad thinking and bring together scholars from philosophy, science, and engineering to think and teach subjects together in ways that have not been possible before.

Those who work in AI or related engineering and science fields (and all engineering and science fields are related to AI, as our leaders argue) need to grapple with the profound ethical questions themselves. Are science and technology ultimately utopian or dystopian, and what criteria do we use to decide? Are there things that we best not do in the name of science? How do politics play a role, and how do we promote a healthy politics that maintains freedom while not losing sight of equality and dignity? Without a doubt, those who consider themselves professional ethicists could have a role to play, but the questions ultimately come down to basic human judgements informed by experience, study, and technical knowledge of the subject.

Our science and engineering colleagues, as I have found both through individual discussions and talks that I have given (including one on the ethics of AI), are open to and interested in discussing foundational issues of ethics. Many of them have a mechanistic view of nature, consonant with the Baconian science that they pursue, but they are open-minded enough to realize that the world may be larger than just their opinions.

Of course, examining opinions is only the beginning of addressing these foundational questions that advances in AI force us to address. We need to go beyond those opinions with serious study to question the prevailing views. We need to study seriously ethics, but also need to make ethical choices that are informed by an in-

depth understanding of technology. Without both of these, we will not be able to judge what our technologies can do and therein decide what we should do. Our leaders need to discourage the narrow and ultimately false concept that ethics is a discipline that only licensed members of the guild can practice. The ethics of AI needs to start first and foremost with those practicing AI and be informed by those interested in the whole.

**We need to study seriously ethics, but also need to make ethical choices that are informed by an in-depth understanding of technology. Without both of these, we will not be able to judge what our technologies can do and therein decide what we should do.**

In fact, there is a long tradition at MIT of scientists and engineers interested in the whole. Two luminaries of the Institute whose far-ranging investigations are directly relevant to ethics and society in the Schwarzman College are Norbert Wiener and Marvin Minsky. Another part of this tradition at MIT can be found in the Lewis Report of 1949. Warren K. Lewis, “Doc” Lewis as he was affectionately known, was formerly head of the Department of Chemical Engineering before he led the Committee on Educational Survey which, among other things, led to the establishment of what has now become SHASS. Despite founding this School, his report made clear, “In practice the professional and the general elements should not be isolated; they should not be assigned to separate subjects or to separate teachers. All parts of an educational program should contribute to both ends.” (p.19) That vision has regrettably disappeared from the mainstream of MIT. Perhaps the Schwarzman College is an opportunity to get it back, but it will not happen organically. It will need, as is often said about difficult things, leadership.

Thinking about those who consider that science has a governing impact on society might turn us to seek out the wisdom in the founders of modern science and their views of ethics. As we did with Aristotle, we might suspect that these

founders have something to teach us that we would otherwise be hard pressed to learn. For example, in Part 5 of Descartes’ *Discourse on Method*, the founder of analytic geometry makes the claim that machines can never fully mimic humans. Given the work of Turing and those who followed him, we might suspect that Descartes simply got it wrong. However, if Descartes was anything, he was not simple, and we should recall that in Part 1

of the same work, Descartes had told us, “. . . I offer this writing only as a story, or if you prefer, as a fable . . .”. Thus, perhaps, Descartes is not proffering simple conclusions as facts, nor is he simply presenting the blueprint for a project. On the contrary, Descartes is helping to inform us of human possibilities that we have ignored in the slumber of our present thinking.

Given the tremendous ethical and societal challenges that AI promises for us, we might also recall that modern science by design planted at the very beginning the seeds of forgetting of its own assumptions. Warnings about the consequences of cultivating those seeds are in, for example, Bacon’s *New Atlantis*, which describes a futuristic scientific institution, and this literary description actually influenced the formation of the Royal Society, through it Benjamin Franklin’s American Philosophical Society, and by inspiration that of MIT itself. Bacon’s ideas led to the creation of disciplines, which after some time forgot their origins and the warnings that Bacon gave against staking too much on disciplines.

I urge our leaders to seek out the still and small voices of those in their midst and those far away who can help them to realize the true potential of AI for the betterment of human beings. ■

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## MIC

Haynes Miller

**THE RECENTLY UNVEILED PLANS** for a College of Computing (CoC) marks by far the largest reorientation of the Institute in the 32 years I have been on the faculty. I think the change will be much broader than is generally acknowledged.

To put it succinctly, it is likely that going forward we will be known as the:

**Massachusetts Institute of Computing  
or  
MIC**

The image of the organizational structure displayed by the administration in recent presentations has the “College” at the bottom, with the Schools riding on top of it. This is a perfect reversal of the traditional image, in which engineering subjects are regarded as resting on sound scientific and humanistic foundations.

This image replaces an earlier one, that several people independently have reported to me. In this image the Institute is viewed as a donut, made up of the existing Schools, with the CoC in the center. Perhaps a more flattering version of this image would be a flower, with the CoC in the middle, the focus and germinal center, and the five Schools arrayed around the periphery as petals, playing supporting roles. This probably accurately reflects the envisioned future.

Images are important. Traditionally, the five Schools have been carefully given equal status in any representation of the Institute. We all have equal responsibility for the education of our undergraduates and the promotion of scientific and technological research. I have treasured the characterization of the Schools as five nodes in a complete graph. In the forthcoming new order, we have a hub and spokes model. The important connections are declared to be between the center

and the periphery; other potential relationships are secondary.

The use of a novel noun for the new entity – “College” – is a further indication that the symmetry of the past order will be broken. Second-class citizenship will inevitably be reflected in many ways, starting with allocation of resources. We can see this happening already. It’s excellent news that the new MIC will have five percent more faculty than the old and discredited MIT. But rather than allow the many different parts of the Institute to

resources and infrastructure in place to assure students that they do not have to trim their choice of major to what apparently seems to them to be the only path to career security. But instead, the Institute has set its course in a direction that puts it in danger of being regarded (again!) as a technical training school. I would expect that the new organization will have a deep impact on the pool of undergraduate applicants, dramatically narrowing the range of interest of our undergraduate body.

The concerns I have given voice to here can be mitigated by abandoning the “bridge” imagery, and returning the power of appointment to the various Schools and departments.

grow organically, responding to the development of the many disciplines traditionally represented here, the plan is to add 25 “computing” faculty and earmark 25 more as “bridge appointments” between the College and other entities.

The discussion of the meaning of a “bridge appointment” has only just begun. A deep concern is that the bridge will be thought of as a one-way street: Techniques from machine learning or the like will be exported to other departments. To the extent that this model is realized, we will be missing the chance to enhance the vigor of our development of computer science by challenging its practitioners to move beyond theory, and import into their practice responses to the vast array of real and specialized questions about real data sets.

A primary rationale for this radical redistribution of wealth and power is the ascendancy of EECS as a choice of major for our undergraduates. A responsible reaction to this might have been to put

The concerns I have given voice to here can be mitigated by abandoning the “bridge” imagery, and returning the power of appointment to the various Schools and departments. The bridge concept represents an unprecedented appropriation by the administration – or of a select group of the faculty – of authority that has traditionally been vested in departments. The question of exactly how it will work has been raised repeatedly and the administration has avoided responding. The best solution is to abandon the idea entirely. If computer science has penetrated the whole of the Institute as fully as is claimed, then many of these new faculty members will naturally be well versed in its methodology. Moreover, devolving this authority to departments may be the only way to avoid the kind of corruption that follows windfalls. ■

Haynes Miller is a Professor in the Department of Mathematics ([hmm@mit.edu](mailto:hmm@mit.edu)).

# Update on Construction Across Campus

Krystyn J. Van Vliet  
Anthony P. Sharon

**OUR BUILT ENVIRONMENT IS** changing at MIT, as evidenced by the cranes and construction crews around campus. This phase of intensive renewal and selective new construction will continue to bring noticeable changes as the Institute restores its infrastructure and establishes new facilities that will help the MIT community learn and thrive. As we take note of current progress, we share with you the following updates about construction and planning activities on campus.

MIT’s 2030 capital planning framework is unusual among universities for its emphasis on capital renewal projects, including comprehensive building upgrades. Most of the recent projects – capitalized through significant fundraising partnered with low-interest debt –

represent MIT’s decision to preserve and invest in its existing buildings.

Since the implementation of MIT 2030, MIT has completed nearly 480 renewal projects, reaching almost every building on campus to improve building safety, bring older facilities up to code, and implement changes that support teaching and research. Currently, we have 120 smaller-scale renewal projects actively underway.

A larger-scale renewal project, the Central Utilities Plant upgrade – a component of MIT’s Climate Action Plan – will add a second turbine to the plant and install highly efficient equipment and controls designed to reduce on-campus emissions, enhance campus resiliency, and respond to increasing research demands. Having completed the installation of util-

ities and foundations, crews are now erecting the steel superstructure, installing equipment, and constructing the façade. This phase is expected to continue into the spring of 2019.

New construction on campus, including MIT.nano (Building 12) and the innovative new undergraduate residence on Vassar Street, reflect MIT’s commitment to LEED Gold construction. The new residence will add 450 beds in rooms clustered around shared community spaces such as lounges and study rooms. With foundation and underground utilities work completed, construction will begin this winter on the concrete frame with the assistance of two cranes on site. When completed, this frame will be enclosed by prefabricated exterior panels creating a brick-and-mortar façade.

## Projects Underway On Campus



**Completed**

- Ralph Landau Building (66)
- MIT Chapel (W15)
- Kresge Auditorium (W16)
- Morris and Sophie Chang Building (E52)
- The Simons Building (2)
- Sam Tak Lee Building (9)
- Building 31
- Theater Arts Building (W97)
- MIT.nano (12)
- New House residence (W70)
- Building E40 MicroMasters

**Under construction**

- Vassar Street Residence (W46)
  - Central Utilities Plant (42C)
- Kendall Square**
- MIT Museum (Site 5)
  - Innovation and Entrepreneurship Hub, Forum, Admissions, Graduate tower, childcare (Site 4)
  - Open spaces

**In design**

- Metropolitan Warehouse (W41)
- Wright Brothers Wind Tunnel (17)
- Green Building renewal (54)
- Hayden Library (14)
- Building 4 fourth floor

**In planning**

- Green Building addition (54)
- Pierce Boathouse (W8)
- Music Building (MB)

In Kendall Square, the excavation is now giving rise to several buildings, as the Institute continues its work to transform six MIT-owned parking lots into a vibrant, multi-use community for students, faculty, employees, and residents. These locations are currently referred to as Sites 1-6.

- Current construction activities include utility work that touches virtually every system in the area. Sections of Wadsworth, Amherst, and Hayward Streets are experiencing full and partial closures to accommodate excavations and machinery as utilities are relocated or upgraded. This infrastructure work is expected to be complete by January 2019.

- Concurrently, a parking garage is being constructed below ground at Sites 3, 4, and 5. This activity will continue for the next two years as the buildings take shape above.

- Foundations are underway at the Site 1 residential building, and initial work has started on the street-level space that – in response to community input – will be occupied by a new Brothers Marketplace

grocery store (expected to be completed in the summer of 2019).

- At Site 3, slated for retail use as well as research and development activities, the building foundation is finished and concrete core construction is ongoing.

- A range of uses are planned for Site 4, including graduate student housing, admissions, retail, child care, a Welcome Center, and the Forum. Currently, the concrete framework of the residence hall is going up (the building will be 30 floors in total), and it will soon be enclosed by a façade of metal panels.

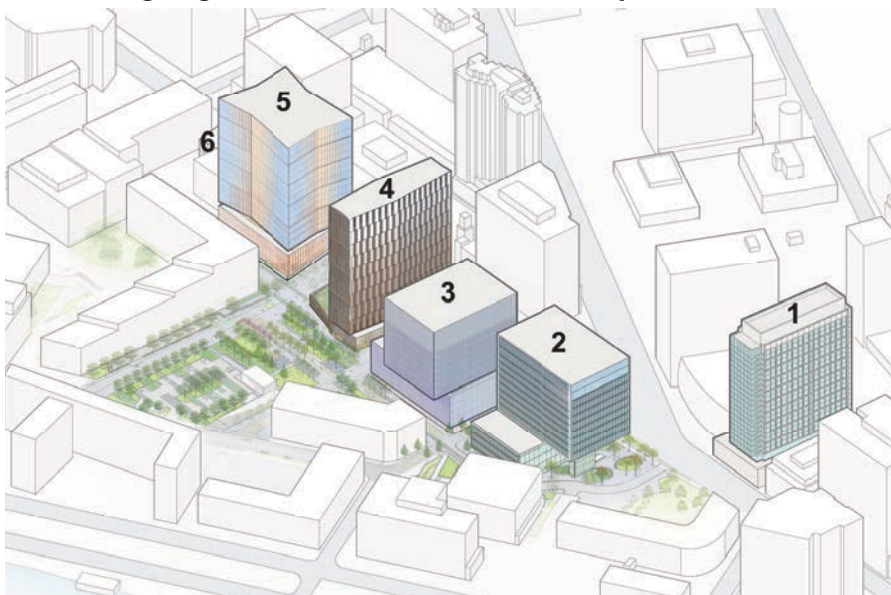
- At Site 5 – which recently hosted a ceremonial groundbreaking for the new MIT Museum – construction of the building’s steel structure has begun. Boeing plans to establish the Boeing Aerospace and Autonomy Center at the site, to be operated by Boeing subsidiary and MIT spinout Aurora Flight Sciences.

- Related infrastructure work includes the West Campus Stormwater Improvement

Project, which involves the construction of a 1200-foot underground drainage structure from Waverly Street to the Charles River via Amherst Alley. The project was identified by the City of Cambridge and enables MIT to meet our EPA regulations relating to the Kendall Square Initiative. Expected to continue until the summer of 2019, the project will impact Amherst Street from Next House (W71) to Vassar Street alongside the Westgate apartments and parking lot.

At the John A. Volpe National Transportation Systems Center site, MIT is collaborating with state and federal agencies to design the federal government’s new transportation center headquarters. Once this federal building is in place, MIT will proceed with the City of Cambridge-governed process to advance the development of the remaining 10 acres at that site. Site preparation for the federal building is expected to begin this winter.

### Ongoing Construction for the Kendall Square Initiative



- Site 1: Residential, retail; Brothers Marketplace**
- Site 2: Lab, office, retail**
- Site 3: Lab, office, retail**
- Site 4: Graduate student housing, childcare, MIT Forum**
- Site 5: Office, retail, MIT Museum, MIT Press, Boeing/Aurora**
- Site 6: Office, retail**

### Completed Capital Renewal Projects

Smaller-scale capital renewal projects on campus have focused on infrastructure – including roof replacements, building envelope restorations, and upgrades to mechanical systems – and on supporting specific academic programs. For example, a renewal project at the Grainger Energy Machines (GEM) Facility in the basement of Building 10 rejuvenated faculty and student offices, lab areas, and machine shops. Spaces were reconfigured to address programming needs, and new workstation fixtures were installed.

Larger-scale capital renewal projects, primarily comprehensive building upgrades, have safeguarded and renewed campus icons like the MIT Chapel (W15), Kresge Auditorium (W16), and the Simons Building (Building 2). Less visible but equally vital, the renovation of two floors in the Muckley Building (E40) improved infrastructure and addressed programmatic needs to support the Center for Transportation & Logistics as it launched a new Blended Master’s Program and the first of MIT’s MicroMaster’s programs.

continued on next page

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**Update on Construction Across Campus**  
Vliet and Sharon, from preceding page

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The ambitious MIT.nano project established a game-changing campus resource designed to support the activities of more than 2,000 faculty and researchers in the fields of nanoscience and nanoengineering. In early October, a grand opening event marked the occasion with a symposium and tours of the building.

At the heart of campus, structural reconfigurations in Building 31 addressed programming needs of the Department of Aeronautics and Astronautics and the Department of Mechanical Engineering by improving internal circulation and adding new specialized lab spaces. On the west end of campus, capital renewal transformed a former warehouse on Vassar Street (Building W97) into an award-winning new home for the Theater Arts program, gathering faculty offices and studios, rehearsal spaces, costume and scene design shops, and adaptable performance spaces under one roof.

Further enhancements to student life on campus were recently implemented with the renovation of MIT's New House residence (Building W70). The project included substantial infrastructure upgrades, improved accessibility, new amenities such as kitchens and quiet lounges, and other design elements that encourage community and connectivity among the nine cultural houses located within.

**Construction Projects in the Pipeline**

Several capital renewal projects are moving forward through very early stages, including proposed renovations of the Metropolitan Storage Warehouse, the Hayden Library (Building 14), and the Green Building (Building 54). The Metropolitan Warehouse is slated to serve as an interdisciplinary hub for design and education, providing a new home for the School of Architecture and Planning and for the Project Manus community maker-space. The architect selection process for this project is underway, with a selection expected this winter. The proposed Hayden Library project includes pro-

grammatic and infrastructure upgrades and is currently in conceptual design.

Upgrades to the I. M. Pei-designed Green Building – home of the Department of Earth, Atmosphere and Planetary Sciences (EAPS) – are in planning and are expected to include a renewal of the façade and building envelope, replacement of the roof, and updates to the mechanical systems. EAPS-related

events like the Hubweek Kendall Square/MIT Innovation Playground, have provided social opportunities for our campus community, local residents, and members of the Kendall Square community.

Overall, MIT is endeavoring to design buildings and open spaces that similarly invite and welcome the community. In that spirit, we introduce Jessie Schlosser Smith ([smithjs@mit.edu](mailto:smithjs@mit.edu)), recently hired as

**Kendall Square Site 1 Rendering**



renovations are also expected to take place on the fourth floor of Building 4 in the form of new wet labs and offices for faculty researchers.

Due to successful fundraising efforts, planning and design activities are also now underway for renovations to MIT's boathouse and the construction of a new music building on the West Campus. Site selection for the recently announced MIT Stephen A. Schwarzman College of Computing is also in progress.

**Community Engagement and a New Director of Open Space Programming**

While the above summary is a broad overview of current capital renewal efforts on campus, more detailed information is always available on the Capital Projects website ([capitalprojects.mit.edu](http://capitalprojects.mit.edu)). As an additional communications measure, the Kendall Square Initiative posts biweekly construction updates and responds to comments from the community via a coUrbanize web profile (<https://courbanize.com/projects/mit-kendall-square/information>). Other recent outreach efforts, including

MIT's Director of Open Space Programming. Smith has come on board at MIT specifically to think about the new open spaces in Kendall Square. Her goal is to gather input from a range of collaborators and then design public programs and spaces that engage the community and encourage people to connect with MIT and one another. Some of these activities could advance academic or research goals, and she is eager to meet with faculty to discuss possibilities. We hope you will connect with her.

Additional resources for details of capital renewal projects can be found at:

- Capital Projects: <http://capitalprojects.mit.edu/>
- MIT News: <http://news.mit.edu/topic/campus-buildings/>
- Spectrum Magazine: <https://spectrum.mit.edu/issue/2018-fall/> ■

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## Ethical Obligations of Universities

Rajagopal, from page 1

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country when it is committing war crimes and causing what the United Nations has described as the world's worst humanitarian disaster?

What about engagement with other problematic regimes such as China, Israel, or Russia? China is running concentration camps for its minorities, while artificial intelligence is used by its secret police to control its second-class citizens, a fact well known to researchers. Israel remains in serious and continuing violation of international norms through its illegal occupation and armed conflict, while Russia too engages in massive and systematic harassment of any independent voices, while illegally annexing territory abroad. Is it normal to engage with parts of the U.S. government itself which are responsible for massive abuses and outlaw behavior, including complicity with the Saudi regime for its atrocities in Yemen or with imprisoning children at its border? More controversially, if individual faculty members publicly support or belong to supremacist or violent groups – such as the KKK or the RSS in India – is that acceptable? What are the ethical obligations of universities and of individual academics with regard to their transnational (or, for that matter, domestic) engagements?

Taking the Khashoggi travesty as a lesson, universities such as MIT will, I hope, ask: On what basis should it engage with all atrociously bad regimes and organizations, not just Saudi Arabia? While high ethical standards are sought to be enforced for all research through IRB (Institutional Review Board) protocols, and many universities call for adherence to a code of ethics, the fact remains that there is currently no proactive due diligence or monitoring mechanism for ensuring that universities do not assist or legitimate odious regimes, organizations, and practices in their transnational engagements.

Strategic calculations about whether to engage with other countries or organizations rarely check, proactively, what their

human rights records are. Credible information on human rights conditions exist globally, and many organizations – global business houses for example – increasingly engage in or are expected to comply with due diligence or establish mechanisms of monitoring their compliance with human rights law. The conversation

## There is a serious reputational risk to universities when they engage with human rights violators.

about ethics in universities such as MIT too often stops with the ethics of research alone, as in the IRB protocols which tend to be narrowly focused. It does not have to be, and should not be, that narrow. There is no reason why a proactive due diligence process cannot be established by universities to ensure that they are not complicit with human rights violators.

There is a serious reputational risk to universities when they engage with human rights violators. Instead of welcoming every chance to accept the massive influx of money from oil-rich kingdoms, companies, and authoritarian states, universities should have their guard up and ask if there is a reputational risk in these engagements. The reputations of universities such as MIT are among its most precious assets, built over time, but can suffer significant harm if more care is not taken in how and whether to engage transnationally in specific cases.

The evolution of recent human rights law also strongly indicates the possibility that universities, and the states in which they are located, bear legal obligations – for example under the Alien Tort Claims Act, Torture Victims Protection Act, or the recent Justice Against Sponsors of Terrorism Act (JASTA). To avoid moral, and possible legal harm to themselves, it is incumbent on universities to verify whether well-documented allegations of human rights exist with regard to a country, organization, individual, or research collaborator before they sign agreements or announce joint initiatives. They should also commit to a meaningful monitoring of their relationship over

time. Such a commitment to a due diligence process will in no way detract from the ability of universities to engage with a diverse set of countries and collaborators. Indeed, it will enable them to engage globally on a more ethical basis.

Individual faculty members have a right to decide if and when to engage with

particular issues, collaborators, or countries, as part of their academic freedom. However, this right is distinct from the obligations that attach to institutional engagements – through labs, centers, initiatives, and the university as a whole. As an institution, universities have a responsibility to ask if their engagements may end up bolstering those who violate universally held norms. Similarly, while individual faculty have the freedom to belong to any organization or to support cause of their choice, such choices are not entirely free of the moral obligations that are inherent in being a faculty member of a university which hosts people of diverse backgrounds and is committed to making the world a better place. Such moral obligations have to be anchored in human rights. To ensure that such obligations will amount to anything more than words, a code of ethics for faculty members which lays out the minimal obligations inherent in maintaining a free learning environment seems essential.

While the end of Mr. Khashoggi's life is terrible, there are many regimes and entities in the region and elsewhere with equally bad or worse human rights records. I hope MIT and other universities will evolve towards a meaningful process of ethical international and domestic engagements which will draw lessons from the Khashoggi episode. There is a dire need for an institution such as MIT to take the lead. ■

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## Lamenting MIT's New Web Portal

Eduardo Kausel  
Philip M. Gschwend  
John R. Williams

**OVER THE COURSE OF DECADES,** MIT has consistently strived to reinvent itself. It has always sought new directions and attempted bold changes that have kept the Institute at the forefront of science and technology, not to mention a leader in educational policy. But change also brings about the risk of unintended setbacks and harm to instruments that have worked well before. An example of the latter is the recent and drastic change to the MIT web portal, which has been unanimously disliked by both the colleagues we have consulted as well as the students we polled. Not one of them expressed either support or liking of the new pages. Indeed, some colleagues were quite visceral in their expression of dislike, even while asking us not to quote them by name. We shall argue herein that the old format was highly functional and very well designed. If so, the old dictum should have applied: *"If it ain't broke, don't fix it."* We wonder then why it is that the MIT administration felt the urge to change these pages, and to do so without extensive prior consultation with, and counsel from, the faculty.

Let's first begin with a review of the old, classical MIT home page. It had all of the following excellent features:

- (1) It occupied just one page in the browser. No scrolling needed, and the page loaded in an instant. It also changed daily, which had no counterpart at other universities that, to this day, have an unchanging look.
- (2) It contained links that gave the users a mental model of the entire MIT structure, with all of the important and relevant paths to information directly available. For example, if you wished to go to the libraries, there was a direct link. Or if you wished to go to either academic or administrative offices, these were directly accessible from that main page. In addition, the

graphic was in most cases a photo of the person-of-the-day that loaded without delay, and at the same time it also referred to the latest news with links to appropriate stories and videos on current research, as well as findings and discoveries at the Institute. The Communications Office loomed quietly in the background and not overtly in the foreground.

- (3) The small search window at the top right of the page led to either direct searches by topic or searches of faculty, personnel, or students. It was operated by the familiar and very effective Google search engine, which provided a long list of relevant results in little space, often finding the sought after results in the very first search, and displaying these in appropriately colored highlights. That engine was also very tolerant of misspellings, which is crucial when searching and the user either makes mistakes or uses imprecise names, or fails to use the exact name of an MIT office or entity.

- (4) The old page was also a clear signature of MIT, with a centered spotlight, clear functionality and a unique personality, and the gravitas reflecting the long hours students and faculty spend on cutting edge research.

By contrast, the new page has all of the following shortcomings:

- (1) The familiar MIT home page is now gone, replaced by a rather dull, run-of-the-mill web page that is similar in many respects to that of many commercial websites. No originality there.
- (2) The portal displays in excessively large font over several pages, and it is necessary to scroll. It is also needlessly animated, which slows down loading considerably, especially over slow Internet connections. What for?

(3) That main page is now an information desert providing tunnel vision. It includes a dysfunctional search engine that displays suggested search terms in a kind of popularity contest. One can only wonder if groups, desiring to be "popular", might game the engine by employing Amazon's Mechanical Turk or some other campaign services to drive users to their pages.

- (4) What previously we could see in just one page is either not there, is less complete, or requires scrolling. What for?

(5) The complete organizational structure of MIT that was visible previously is no longer there, and has been replaced by a large search window together with a few perfunctory links. There is an assumption that visitors to the new portal already know what the MIT structure is, and what to look for. If one doesn't know what to look for, one cannot find it.

(6) As we already mentioned, the search engine must be tolerant of mistakes and errors. The new search engine is not. For example, try entering "humanities" deliberately misspelled. The new search engine finds nothing. But enter the same in Google, and it asks you "did you mean: humanities?" together with the results for that search. In fact, we now can often find material faster at MIT by directly using Google instead of the new search engine. Or say you remember that MIT has a digital library – called DSPACE – that you would wish to access, but can't quite remember its name. Good luck with finding it.

(7) The new site is an uphill battle to finding information. Yes, the old links are still lurking somewhere, but now they lie some three or four clicks deep. In modern sites

that is a very large barrier. People don't want four clicks to find something – they will just give up.

(8) Try finding a colleague or person in some department, perhaps his or her email, telephone, or office number. That is now an exercise in futility and frustration.

Now, if MIT decided to abandon its old web pages, an important open question is why? As of now, those reasons are obscure to us and remain to be articulated. Thus, the explication should elaborate on the purpose of the new site, the planned architecture and specifications for the new site, and the metrics that will be used to measure the intended success of the new pages – or the lack thereof. These should include standard industry tests (A/B tests) that might reveal whether or not the pages are serving their ultimate purpose. We invite the team responsible for the new website to elaborate to the Institute on the rationale for the new pages and to articulate the design process they followed in comparing the performance of this new site versus the old one. Did they, for example, consider two websites, one “outward” and one “inward” facing?

A central issue in either the continuation of the old pages or the development of the new web pages is a thorough understanding of the purpose served by those pages. Even before the change, MIT was already running Google Analytics that collected information on the geographical origin of the visitors, the pages visited by them, the duration of their visit, the links or parts of the pages that they clicked on, and miscellaneous other metrics and statistics such as papers copied from the personal web pages of the faculty, or from DSPACE, or application forms and instructions downloaded by prospective students.

We understand that top class consultants were used to redesign the site, but the results suggest that their terms of reference and scope might have been unclear. For example, there are many functional requirements for MIT's web pages. Which one is of overriding importance to MIT? Potential undergraduate and graduate applicants? Users of remote education such as edX and

Open Courseware? Faculty, researchers and students at MIT as well as at other institutions of higher learning and research? Funding agencies? The press and the media in general? In short, who is MIT targeting with these new pages, why the emphasis on some specific targeted group, and who decides on the appropriateness and desirability of those targets? Our sense is that the new pages are mainly targeting the media and information industry, not the faculty, staff, students, or prospective students.

And what makes the Communications Office think that having a visually animated page is a marked technical improvement? It may cater to young people who are used to video games, but not necessarily to serious users. A visual effect is necessary only when it conveys important information that can't be provided otherwise. It should not just be visual candy. To make an analogy, consider the old version of the TV documentary, *Cosmos*. In it, Carl Sagan shared his contagious enthusiasm for astrophysics and cosmology with serious and at times complex thought-provoking ideas and explanations. It was brilliant. You will surely recall the memorable punch lines “Extraordinary claims necessitate extraordinary evidence,” and “Absence of evidence is not evidence of absence!” By contrast, the new version of *Cosmos* was dumbed down considerably, and contained many silly animations as well as video and acoustic effects that conveyed no useful information and had no relationship to planetary science. An example of that was that silly spaceship, which was there merely to entertain and keep the attention span of those who grew up with *Star Trek*, or played for hours on end with *Pac-Man* (or some other video game). To us, much of the new web page design seems to place excessive value on the visual impact of the website, and much less on its usefulness and practicality.

One additional related observation. Together with the new page, the Communications Office began sending us a daily news brief (MIT Daily). What for? Previously, there was a link to the latest news of the day, often illustrated with small photos or diagrams as bait. Perhaps one out of 10 or 20 times, i.e., about twice a month,

there was a story of interest to us which we would click on to learn more about the latest news. In its current incarnation, the newsletter overflows our inbox with largely useless or irrelevant information, competing for our attention with all sorts of other pushed news and punch lines, not to mention emails and social media. And this is not counting the newsletters that we receive regularly in connection with our own specialties. In summary, the newsletter may well be MIT's, but it very much feels to us like junk mail. Thus, we have proceeded to unsubscribe.

We surmise that the restructuring of the MIT web portal was not an inexpensive proposition, and those involved in its development and implementation have vested interests in continuing that effort, rain or shine. This makes us think that the old format is now defunct, and that it shan't even remain available as an installable option to its users. If this is indeed the case, we mourn the passing and loss of a formerly outstanding resource. Needless to add, we no longer have the MIT portal as our home page, since Google does a far better job.

To conclude, it seems to us that the Communications Office ought to clarify and respond to at least the following points:

- Explain why this was done and how much it cost (compared to continuing the old website).
- No good engineer would suggest a new design without testing it on a representative group of users. Was that done?
- MIT should recognize this inadequate product and revert to something with the functionality closer to that of the old site, unless someone explains cogently and convincingly why that would be a mistake and should not happen. ■

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## letters

### On The Transition to Retirement

*To The Faculty Newsletter:*

**IN THE SEPTEMBER/OCTOBER** 2018 issue there was an article written by Dr. Emeritus Beaver on “The Transition to Retirement.” My first thought is the advice I give to students: “Never trust something written by someone unwilling to use their own name.” As I read further the article described the need for a faculty member of age 70 or older to retire and make way for younger faculty. I have offered MIT this option for the past 16 years but it has fallen on deaf ears by our administration. MIT does nothing to make retirement a rewarding experience and wonders why some faculty stay on past normal retirement age?

The article went on, retirement offers:

- (a) liberation from classroom teaching,
- (b) renew or strengthen family ties,
- (c) removal of the pressures to remain creative, raise summer salary, secure research funds, etc.,
- (d) find new adventures.

I could not disagree more with Dr. Beaver. I enjoy teaching; it has always been why I have stayed at MIT. I find no pressure to “remain creative.” I find my creative thinking is enhanced by the MIT environment and only grows stronger over time. It never has been a burden. Raise summer

salary: who needs it? I could make a much greater salary outside of MIT. Secure research funds. I admit that for my first few years at MIT I felt this pressure, but nearly 40 years ago I decided not to stress about funding and I have been happier ever since. Find new adventures; I have been looking for these since I came as a freshman 50 years ago. Strengthen family ties. It is a bit late to start this in retirement.

So, Dr. Beaver, you are out of step with why the faculty stay at MIT. We stay because we can and because we learn to enjoy what we do.

From the other beaver,

**Thomas W. Eagar**  
Professor of Materials Science and Engineering and Engineering Management

### Hypothesizing About Stephen Hawking

*To The Faculty Newsletter:*

**I ENJOY READING EACH** issue of the *Faculty Newsletter*, and so was surprised to read an article making unsubstantiated insinuations about Stephen Hawking (“Stephen Hawking: The Eminent Physicist vs. The Media Myth,” Vol. XXXI No. 1). I have no dog in that particular

fight, but the article contrasted particularly strongly with the piece just a few pages earlier about “beliefs based on objective truth rather than on volitional belief.” Any writer is entitled to his or her opinions, but it seems curious to publish them without having provided some basis in fact.

Nonetheless, I remain an interested reader.

Respectfully,

**Ian Crossfield**  
Assistant Professor  
Department of Physics

### Questioning the New MIT Website

*To The Faculty Newsletter:*

**I AM A LONG-TIME SUBSCRIBER** and a reader of the MIT publications and journals. I have read the Institute’s online publications for a long time and also have provided online feedback about website improvement. Being an international subscriber, I have found that the university

has reduced RSS feeds by a major percentage and for that we miss a lot of important notifications. The previous website had lots of sub-feeds that were useful in website navigation and information gathering, but as of your new website it has become time-constrained in looking for data on sub-topics on the site. Due to restrictions in availing publication of

your university activities, I am interested in seeking to avail your printed publication for general reading.

Looking for your communication in this regard.

**Arijit Mukherjee**



## Faculty Policy Committee

The Faculty Policy Committee has the following duties and responsibilities:

- a. Formulate policy on matters of concern to the Faculty, for approval by the Faculty; interpret and implement policy as approved by the Faculty.
- b. Coordinate the work of the other Committees of the Faculty, establishing liaison with them, providing guidance and direction, and referring issues to particular Committees or establishing Ad Hoc Committees as appropriate.
- c. Maintain a broad overview of the Institute's academic programs, coordinating and reviewing proposals from the Standing and Ad Hoc Committees for presentation to Faculty meeting.
- d. Maintain a broad overview of the activities of the Office of Corporate Relations and other similar efforts as they relate to the activities of the members of the Faculty.
- e. Keep informed of new problems of potential conflicts of interest and recommend appropriate modifications of policies and procedures to the Faculty.
- f. Communicate with the Faculty as a whole on important matters of policy, reporting regularly at Faculty meetings.
- g. Meet periodically with the President, Academic Deans, and others to enhance the interchange between the Faculty and the Administration on matters of concern to the Faculty.
- h. Consider issues involving relationships between Administration and both Faculty and other academic staff with teaching responsibilities.
- i. Establish the manner in which the academic program is presented in official Institute publications, delegating to other Standing Committees such parts of the responsibility as deemed desirable.

The Committee is comprised of the Chair of the Faculty; the Associate Chair of the Faculty; the Secretary of the Faculty; the Chair-elect or the immediately preceding Associate Chair (in alternate years); seven elected Faculty members; one undergraduate and one graduate student; and, ex officio nonvoting, two members designated by the Provost, and one member designated by the President.

**Prof. Susan S Silbey**, Chair (June 30, 2019)  
*Anthropology Program*

**Prof. Sandy Alexandre** (L) (June 30, 2019)  
*Literature Section*

**Prof. W Craig Carter**, Secretary of the Faculty  
(June 30, 2019)  
*Materials Science and Engineering*

**Prof. Rick Lane Danheiser**, Associate Chair of the  
Faculty and Chair-Elect (June 30, 2019)  
*Chemistry*

**Prof. David M Geltner** (June 30, 2020)  
*Urban Studies & Planning*

**Prof. Charles F Harvey** (June 30, 2019)  
*Civil and Environmental Engineering*

**Prof. John H Lienhard** (June 30, 2021)  
*Dept Heads Vice President for Research*

**Prof. Haynes R Miller** (June 30, 2019)  
*Mathematics*

**Prof. Georgia Perakis** (June 30, 2020)  
*Sloan School of Management*

**Prof. Patrick H Winston** (June 30, 2021)  
*Electrical Engineering-Computer Science*

**Ms. Kathryn Jiang**, Student '20 (June 30, 2019)

**Mr. Connor Coley**, Student G (June 30, 2019)

**Prof. Cynthia Barnhart**, Designated Representative,  
President #  
*Chancellor's Office*

**Prof. Pablo Jarillo-Herrero**, Designated Representative,  
Provost # (June 30, 2019)  
*Physics*

**Prof. Kristala L Prather**, Designated Representative,  
Provost # (June 30, 2019)  
*Chemical Engineering*

**Dr. Tami Kaplan**, Staff to Committee  
*Office of the President*

**Note:** Data in parenthesis designated term expiration.

**Legend:** \* Ex Officio Voting; # Ex Officio Non-Voting; L On Leave

## Committee on the Undergraduate Program

The Committee on the Undergraduate Program exercises oversight for the undergraduate academic program including the freshman year, the General Institute Requirements, and other interdepartmental educational activities. The Committee considers proposals that would establish or change educational policies related to the undergraduate program, and it makes appropriate recommendations on these proposals to the MIT Faculty. One of the CUP's particular responsibilities is in encouraging innovation and experimentation in undergraduate education and therefore, it has the authority to approve limited educational experiments and grant exceptions to existing policy and procedure in these cases.

The Committee on the Undergraduate Program consists of seven elected faculty members, the Associate Chair of the Faculty, four undergraduate student members, and, ex officio, the Chancellor (or designee), the Vice Chancellor, and one member designated by the Vice Chancellor.

**Prof. Duane S Boning**, Chair (June 30, 2020)  
*Office of the Provost*

**Prof. Joshua Angrist** (June 30, 2019)  
*Economics*

**Prof. Arthur Bahr** (June 30, 2021)  
*Literature Section*

**Prof. Nergis Mavalvala** (June 30, 2019)  
*Physics*

**Prof. Elizabeth Marie Nolan** (June 30, 2021)  
*Chemistry*

**Prof. Roberto Rigobon** (June 30, 2019)  
*Sloan School of Management*

**Prof. Kristel R Smentek** (June 30, 2020)  
*Architecture*

**Ms. Divya Goel**, Student '19 (June 30, 2019)

**Mr. Noah McDaniel**, Student '20 (June 30, 2019)

**Ms. Mary Jane Porzenheim**, Student '19 (June 30, 2019)

**Mr. Jason Seibel**, Student '20 (June 30, 2019)

**Prof. Rick Lane Danheiser**, Associate Chair of the Faculty \* (June 30, 2019)  
*Chemistry*

**Prof. Dennis M Freeman**, Guest # (June 30, 2019)  
*Office of Undergraduate Education*

**Prof. Jeffrey C. Grossman**, Designated Representative, Vice Chancellor \* (June 30, 2019)  
*Materials Science and Engineering*

**Prof. Krishna Rajagopal**, Guest, Office of Digital Learning # (June 30, 2019)  
*Office of the Provost*

**Prof. Ian A Waitz**, Vice Chancellor \*  
*Chancellor's Office*

**Prof. Maria Yang**, Designated Representative, Chancellor \* (June 30, 2019)  
*Mechanical Engineering*

**Ms. Kate Danahy**, Staff to Committee  
*Registrar's Office*

**Ms. Genevre Filiault**, Executive Officer #  
*Registrar's Office*

**Note:** Data in parenthesis designated term expiration.

**Legend:** \* Ex Officio Voting; # Ex Officio Non-Voting; L On Leave

## Committee on Campus Planning

The Committee on Campus Planning serves as the standing Faculty advisory body to the MIT administration on campus planning. It provides Faculty perspectives and counsel on campus planning issues, including, but not limited to, future academic and research needs of the community. The committee seeks to understand the needs of the Faculty for the campus environment and ensure communication with the Faculty on important matters related to the MIT campus and surroundings. The chair of the committee serves ex officio on the MIT Building Committee, and members may be called upon to serve on task forces and/or other ad hoc committees concerned with campus planning.

**Prof. Deborah G Ancona**, Chair (June 30, 2021)  
*Sloan School of Management*

**Prof. Jonathan P How** (June 30, 2020)  
*Aeronautics and Astronautics*

**Prof. Heidi Nepf** (June 30, 2020)  
*Civil and Environmental Engineering*

**Prof. Lisa Parks** (June 30, 2019)  
*Comparative Media Studies/Writing*

**Prof. Brent Ryan** (L) (June 30, 2019)  
*Urban Studies & Planning*

**Prof. Boleslaw Wyslouch** (June 30, 2020)  
*DLC Heads Science*

**Ms. Sarah Edgar**, Student '19 (June 30, 2019)

**Mr. Jonas Brunschwig**, Student G (June 30, 2019)

**Mr. Jon H Alvarez**, Director, Campus Planning \*  
*Office of the Executive VP & Treasurer*

**Prof. Peter H Fisher**, Designated Representative, Provost \*  
*DLC Heads Science*

**Prof. Erica C James**, Designated Representative, Provost \*  
*Urban Studies & Planning*

**Prof. James Wescoat**, Designated Representative, Provost \*  
*Architecture*

**Ms. Amy J Kaiser**, Staff to Committee  
*Campus Planning*

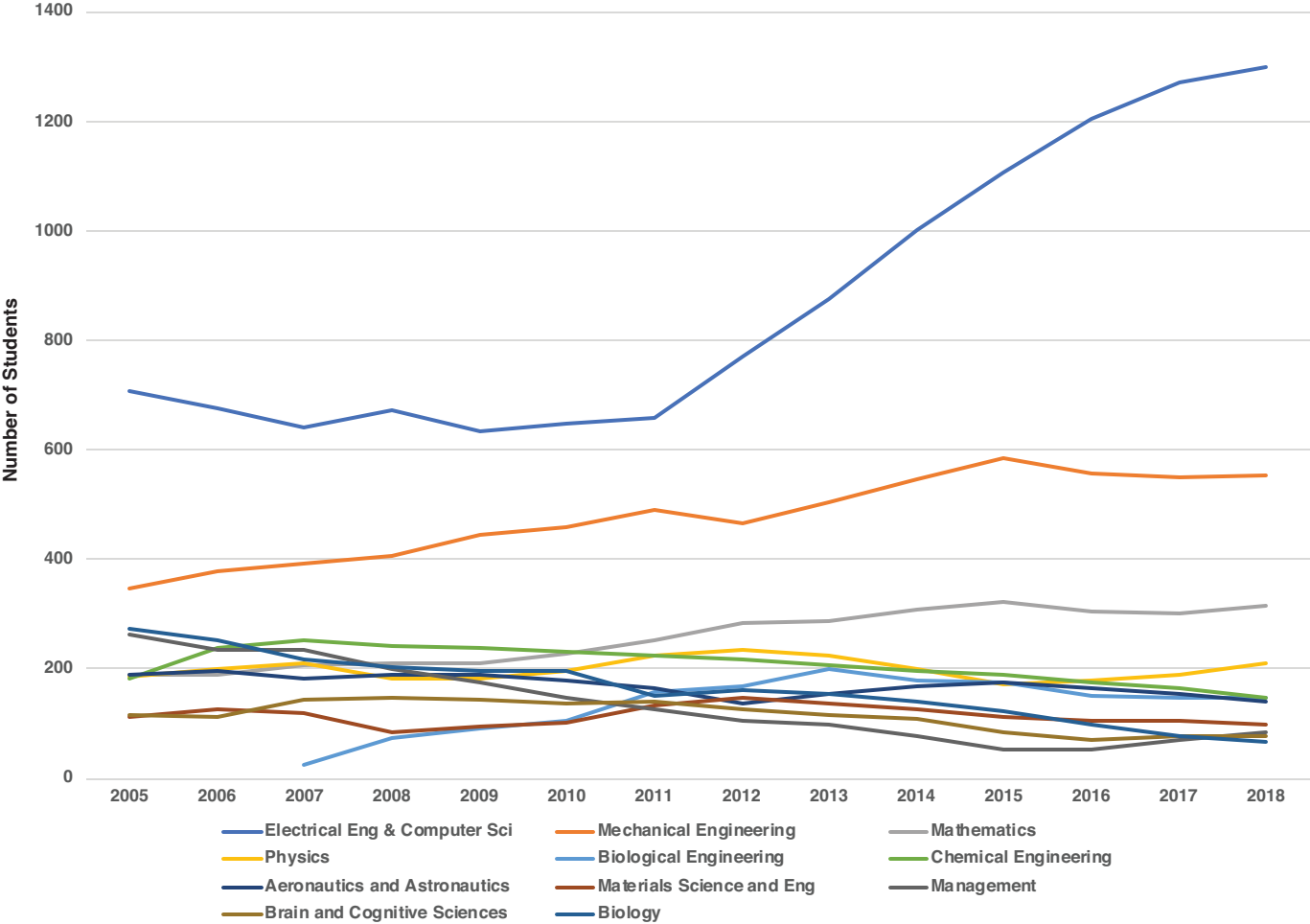
**Note:** Data in parenthesis designated term expiration.

**Legend:** \* Ex Officio Voting; # Ex Officio Non-Voting; L On Leave

**For a complete list of Faculty and Institute Committees and Councils  
see the MIT Faculty Governance website at: [facultygovernance.mit.edu](http://facultygovernance.mit.edu)**

# M.I.T. Numbers

## Most Popular Undergraduate Majors 2005-2018



Source: Office of the Provost/Institutional Research