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MIT Faculty Newsletter

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in this issue we initiate our new feature, Faculty Travelogue, beginning with Havana, Cuba (page 5); we offer "Core Mission," by Faculty Chair Mary Fuller (page 9); a piece analyzing the role of the GIRs at MIT (page 18); and several articles reflecting on the effect of the current US administration on universities. *[Deadline for submissions for the May/June FNL is April 28.]*

On Travelogues

Franz-Josef Ulm

MIT FACULTY MEMBERS travel the world, professionally or privately, but always with a purpose. With this in mind, we offer a new feature in the FNL, the Faculty Travelogue. We do so in the hope of receiving your travelogues about what you, the traveler, see, hear, taste, smell, and feel in the external world, the colleagues you meet, the new friends you make.

If you're looking for inspiration, consider Mark Twain's 1869 *The Innocents Abroad*, or Ludwig Boltzmann's 1905 "A German professor's journey into Eldorado." The first is about Twain's travel to Europe and the Middle East accompanying a group of pilgrims. But it is foremost a testimony of the author's identity as an American in the expansion of the United States post-Civil War, when confronted with shattered illusions of

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From Innovation to Inquisition: The Political Assault on Universities

Rafael L. Bras

POLITICS ARE A FACT OF LIFE. Universities have always been subject to political decisions and influence. After all, we in academia are trusted with taxpayers' money in a variety of ways and we should work to provide returns on that investment. Overwhelmingly we have done so by educating students, producing knowledge, innovating, and being the drivers of a very large proportion of the wealth creation that makes this nation strong.

These days, we are not dealing with politics but with inquisition. To the Trump administration and many in Congress, higher education is the enemy. And like all enemies, it must be slain. So far, they are doing a good job.

In just two months, we have seen arbitrary changes to policies related to essential federal reimbursements of costs. We

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Editorial

Eyes on the Price

Editorial Subcommittee

THESE ARE UNDENIABLY challenging times, perhaps among the most perilous in MIT's history. At this moment, the Institute's strength and resolve may face an unprecedented test. So, how should a major research university navigate an existential crisis while staying true to its mission and values? Like other world-class institutions, MIT has long prided itself on excellence, inclusion, and innovation, embracing a unique collective "can-do" problem-solving ethos. And has lived up to that pride. Yet as the administration preemptively enacts sweeping, top-down budget cuts – all put forth as necessary precautions against potential federal overhead cuts and the looming threat of an endowment tax – these very principles are being called into question. They rock the very foundations of the Institute.

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The cuts are extensive, and the consequences are severe. Notably, DEI scholarship programs have been canceled, RA and postdoc contracts have been left unrenewed, and a hiring freeze has been imposed. Soon, we might very well be asked to prepare for staff layoffs. Also concerning are the propositions emerging in this frame of preemptive austerity: among these are cuts for libraries, replacing human workers with AI, for example, and using this crisis as an opportunity to push through changes that would normally face resistance.

We certainly acknowledge and support the administration's responsibility to manage finances prudently and plan for economic uncertainties, and we agree that numbers matter, and matter a lot. Yet, this apparently singular emphasis on budgetary matters – devoid of clear and strong reaffirmation of fundamental values and principles – is deeply troubling. This sole focus on finances undermines its very intent: it overlooks the fact that people are willing to make significant sacrifices when there is a clear and unwavering commitment to the shared values we uphold. People will accept cuts, not simply point to cuts for others. Instead, stark as it may seem, this moment evokes Oscar Wilde's *timeless critique:* "*[They] know the price of everything and the value of nothing.*"

We cannot enable this crisis to erode what makes MIT exceptional. We must stand firm in upholding the values that define the Institute. Now more than ever, we must protect the very foundations that make MIT strong:

• **Science and Humanities Together Define MIT.** MIT's remarkable transformation over the past two decades has been driven by a dynamic integration of science and the humanities – one that recognizes how the trajectory of scientific research and its societal applications depend on a deep understanding of philosophy, history, sociology, the arts, and more. Rooted in an increasingly diverse community, MIT's interdisciplinary strength is neither incidental nor accidental; it is fundamental to MIT's problem-solving ethos. This interdisciplinarity fuels innovation and enables meaningful contributions to society, the nation, and the world; it addresses urgent and growing challenges such as the climate crisis, income inequality, artificial intelligence, gender equity, the energy transition, and public health; to note the most obvious. However, if we fail to effectively communicate the value of science – if we cannot demonstrate the tangible impact of rigorous, ethical research – then those who seek power through deception and misinformation may well prevail. That is, MIT does more than pioneer groundbreaking solutions; it shapes future leaders in both the public and private sectors who are dedicated to fostering lasting, socially responsible change. Now more than ever, we must reinforce – not weaken – our commitment to educating these future leaders as critical citizens first, and as engineers, scientists, and entrepreneurs second. To abandon this foundation in a moment of financial anxiety would be a profound error.

• **Democracy Begins at Home.** In a healthy democracy, institutions must serve as guiding lights, actively upholding and embodying democratic ideals. This stance requires more than just stating our values – it means embedding democratic principles into our own governance, especially in critical decisions like budget cuts that threaten mission-driven programs such as DEI. Faculty governance and participation are vital to ensuring such decisions maintain their integrity. If we fail to uphold democracy within our own institution, we weaken our ability to advocate for it, or even protect it, on a larger scale. For MIT, an institution dedicated to advancing a better world, this responsibility is even more urgent. At a time when democracy is under threat and its fundamental principles are being eroded, we must make a deliberate effort to hold firm to procedures and principles that ground our own decisions as legitimate. Moreover, when executive orders or political forces put members of our community at risk – whether directly or indirectly – MIT must take a stand. Silence is not neutrality; it is complicity.

• **Academic Freedom is Our Collective Power.** Academic freedom is the cornerstone of MIT's success – not just as an individual right, but as a collective force that unites scholars in the shared pursuit of knowledge. This principle is fundamental to MIT's mission and must be fiercely protected. Without it, we risk weakening the intellectual rigor, creativity, and fearless inquiry that long define our community. This is not a fight MIT can or should take on alone. Defending academic freedom requires a coordinated, strategic response from America's 4,000 colleges and universities. MIT has already taken important steps, such as joining peer institutions to challenge the NIH's overhead cuts in court. Now is the time for bold and unwavering leadership. The Institute must take an active role in mounting a strong defense against the federal government's escalating attacks on higher education including restrictions on faculty teaching about race, gender, or climate change, threats or retaliation against students, faculty, or universities, bans on DEI initiatives, limitations on university governance, or politically driven research budget cuts. The stakes are simply too high for inaction.

If MIT must truly prepare for the worst, we – faculty, students, and staff – must ask: *What kind of institution will we become in the process?* Are these budgetary decisions aligned with the values we claim to uphold? And when the crisis passes, will MIT still be the institution we believe in, or will it have traded its core principles for short-term financial expediency? These are not just questions of numbers and money – they are questions of identity, legacy, and the future we choose to build.

The choices we make today will shape MIT for generations to come. This is a responsibility that cannot and must not

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Eyes on the Price
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rest solely with the Institute's executive leadership. We are ready to support and endure sacrifices when they come with a clear and steadfast commitment to core values. Let us not allow this crisis to pass without seizing it as an opportunity to unite around the values we all uphold for the greater good, rejecting divisions and fractures that only serve to weaken us. When future generations look back, they will see an Institute that stood resolute in its mission – not one that faltered in a moment of uncertainty. Or, as Pete Seeger – no stranger to MIT[*] – *once called upon us to sing*:

"The only thing we did was right
Was the day we started to fight
Keep your eyes on the prize, hold on." [**]

—-

[*] See: Sarah H. Wright, "Pete Seeger talks and sings about community and technology", April 12, 2000, MIT News Office, https://news.mit.edu/2000/seeger-0412.

[**] "Keep Your Eyes on the Prize" is a folk song that became influential during the American Civil Rights Movement of the 1950s and 1960s. It is based on the traditional song, "Gospel Plow," also known as "Hold On," "Keep Your Hand on the Plow," and various permutations thereof. The lyrics to the modern Civil Rights version of the song, "Keep Your Eyes on the Prize" are often attributed to Alice Wine from Johns Island, South Carolina." (cited from: https://secondhandsongs.com/work/226128/all)

On Travelogues
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biblical places magnified by the prejudices of his time. Boltzmann's travelogue is about his trip to a summer school at the University of California in Berkley. It introduces us to the emerging academic enterprise of the United States through the eyes of an old-school Central European academician, who with at times self-depreciating humor finds affirmation abroad of his vulnerable self and home at the fin de siècle.

So, when you travel next, consider making us part of your journey. Whether this is abroad to untraveled destinations, a new research collaboration, a stunning exhibition, or to your birthplace that has irrevocably changed since you grew up, every travel is worth a travelogue, for it is always a journey in oneself.

Our initial *Faculty Travelogue,* from Havana, Cuba, begins on the next page.

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Faculty Travelogue

Havana, Cuba

Tanalís Padilla

AS AN HISTORIAN OF Latin America, my work long focused on Mexico, the country of my birth and the place where I spent my childhood. After completing my second monograph however, I began a research project on Cuban medical internationalism, an effort to understand the significance of the over 600,000 doctors Cuba has sent to treat patients in 165 countries over the past 60 years. As part of my research, I spent this past January in Cuba, visiting hospitals, speaking to doctors, clinicians and medical professors, and reading bound, dusty newspapers whose fraying edges left a visible trail of my work on the table and floor of the National Library.

When not working, I spent much of my time exploring the city on foot, an activity especially pleasant in January when temperatures hardly creep above the mid-70s. My meandering walks took me from Vedado, the tree-lined residential neighborhood where I stayed, through the thickly populated center of Havana where 1980s-model Russian cars, *almendrones* (1950s Chevies used for collective transport) and electric scooters speed by. As one approaches old Havana, the colonial architecture, bright colors, cobblestone streets and souvenir shops are not unlike other Latin American cities. But Havana's music, food, and ocean breeze are distinctly Caribbean. There is a vibrancy, warmth and joy to the environment, even as there are some notably empty establishments, visible signs of a tourist industry that has not recovered from pre-pandemic levels.

My favorite part of these long, meandering walks was returning by way of the *malecón*, the walkway that runs along the water where the restless ocean pounds the stone wall, at times producing dramatic waves that crest several feet in the air and drench sidewalk, street, and anyone along them.

I'm tempted to say that it was the sound of the ocean that made these walks therapeutic. In some ways it was. But more than that, it was the utter lack of commercial advertising that, these days, is unheard of in urban spaces. The overpowering flashing lights and billboards, the scripted, ebullient voices on screens and speakers selling you a lifestyle you won't achieve or a product you don't need, the towering malls now ubiquitous in our modern world, are absent in Cuba. It is a welcome respite for the soul and the senses.

Cuba is not, as some may claim, a land frozen in time – despite the 1950s Chevrolets that have become such an iconic representation of Havana imagery. As in other places, there are people glued to their cell phones, electric vehicles occasionally whiz by, and the towering hotel buildings are indistinguishable from those in other tourist sites. But there is a precarity and simplicity to the way things are done, one that puts in sharp relief the wasteful nature of our lifestyle in the land of plenty. Cuba, according to some

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The Malecón

Faculty Travelogue: Havana, Cuba
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studies, ranks among the top 10 nations in the sustainable development index as it has a high human development with a low ecological footprint.

The island's current economic crisis threatens this high human development. The signs of hard times are everywhere: high food prices, long fuel lines, empty pharmacy shelves, blackouts, and infrastructure in visible disarray. Daily life is hard, very hard, people tell you. Triggered by the pandemic which shut down tourism – a key source of capital – and locked in place by a barrage of sanctions imposed by the first Trump administration (and maintained by Biden) the Cuban economy has been unable to recover. People spoke to me openly, and, in typical Cuban fashion, passionately, about the difficulties of the current moment. Perspectives came from across the political spectrum: from those wholly dissatisfied with their government, to those expressing constructive criticism, to those hailing the revolutionary project. Not a single one of them thought their situation would improve through continued Washington-based sanctions. On the contrary, all anticipated even harsher times knowing the incoming administration would harden US policy towards Cuba. This reality was quickly born out when, on day one, Trump overturned Biden's last-minute removal of Cuba from the US-designated State Sponsor of Terrorism list. Secretary of State Marco Rubio's new measures pro-

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Old Havana

Faculty Travelogue: Havana, Cuba
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hibit Western Union from processing wire transfers to Cuba and sanction officials in other countries who collaborate with the island's international medical missions.

In the context of such difficulties, it was moving to experience the annual *Marcha de las antorchas* (The March of the Torches), a visually striking and joyful celebration of the birth of José Martí, the poet, essayist, journalist, children's writer, and revolutionary who died on the battleground fighting for independence from Spain in the 1890s. During his lifetime, Martí traveled the American continent (north and south) denouncing colonial domination, warning of the threat of imperialism and urging for a multi-racial coalition to fight for self-determination.

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Every year, on January 27th thousands gather in the late afternoon at the University of Havana to honor Martí's memory and celebrate his example. By the time dusk takes hold, the university steps and the street to which its passage descends, is spilling over with students, families, and contingencies from various organizations. Music playing on loudspeakers adds to the festive mood. Many come with their own makeshift torches – an empty food can with a flammable cloth atop a wooden stick – but most pick these up from the vast piles already there. I was

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Across the Bay

Faculty Travelogue: Havana, Cuba
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told that in the days leading up to the march youngsters across school grades are charged with bringing one such homemade torch, which are then gathered and handed out to attendees. Knowing from the previous year's celebration how crowded the event gets, I arrived early to secure a good spot. Coincidentally, as in the previous year, I found myself next to the contingency from the Latin American School of Medicine, the 25-year-old medical school that has graduated thousands of doctors from the global south. These international students carried flags from their homelands – including Palestine – a way to honor, I thought, Martí's internationalist yearnings. Once darkness fell and student leaders had pronounced some brief speeches, a specified signal began the lighting of the torches. The line of fire gradually grew into a stunning orange river of lights flowing along the designated avenue and winding its way to *malecón*.

The following day, next to the National Library where I conducted my daily archival work, Martí's commemoration had children at its center. The spectacle of lights of the previous night was matched by a spectacle of color as elementary and junior high school students who, in their iconic red and blue uniforms carried flags, flowers, and wreaths to the towering statue of Martí in the Plaza of the Revolution. This vast, open space is Cuba's administrative center and the surrounding government buildings have giant steel murals of revolutionary heroes Ernesto Che Guevara and Camilo Cienfuegos.

On my last day in Havana, a taxi driver, astounded by how much time I had spent doing "library work" and had seen next to none of the attractions he listed off, urged me to at least let him take me to the Christ of Havana. Dismayed, once again, that I did not know what that was, he explained that it was a statue located on a hilltop across the bay that would give me the most beautiful view of the city. Once

The lack of violence in the island allows for acts unthinkable in other parts of the Americas, like walking alone at night or having children play outdoors without supervision. . . .While there has been an increase in petty theft, violence as we know it in the rest of the Americas, including the US, is non-existent.

across the water, the panoramic view – its historic fortress, capital building, hotels and *malecón*, all against a clear blue sky – indeed proved stunning. "Oh, and by the way," he commented as we arrived at the hilltop, "that's Che Guevara's house over there." The residence of the guerrilla leader and former economic minister had been turned into a museum where visitors could see the office where he met with dignitaries; as well as view numerous historical artifacts, and read an account of his expeditions.

I conversed at length with the driver about Mexico, about the US, about the difficult times in Cuba. "But there's no violence here," he kept emphasizing. Indeed, amid otherwise woeful outlooks, this fact emerged time and again in different ways. When I reflect on my visits there, that fact, along with the absence of pervasive advertising, stand out. The lack of violence in the island allows for acts unthinkable in other parts of the Americas, like walking alone at night or having children play outdoors without supervision.

Such public safety has held despite the current crisis. While there has been an increase in petty theft, violence as we know it in the rest of the Americas, including the US, is non-existent. When interviewing Cuban doctors, one of the experiences they recount is the novelty of treating gunshot wounds abroad, "It's just something you don't have in Cuba," they explain.

Heading back to the taxi from the Che Museum the driver and I walked across a small park. A man sleeping on a bench would probably have remained unnoticed by both of us but for the fact that the parking attendant was running toward him and shouting something with a sense of urgency. I assumed, of course, it was to reprimand him for making a public bench his resting place. Instead, the guard alerted him to the fact that his glasses were sliding down his face and would break if they hit the floor. The driver and I chuckled as he said to me, "Imagine if this were Mexico or the US, they'd haul the guy off – bench and all!"

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From The Faculty Chair

Core Mission

Mary C. Fuller

NO PROFESSIONAL ACADEMIC will have any trouble thinking of reasonable topics for complaint. There are always plenty of pebbles and even real boulders in our professional paths, and perpetual work to be done in moving them aside. Yet whatever we may say around the water cooler it is equally and more broadly true that American universities and the American research enterprise are major national assets.

This larger claim about higher education seems exceptionally clear from my desk in Building 14. It's readily demonstrable in terms of discoveries, companies created, attraction of global talent, taxes paid by graduates, and many other real and enduring if more intangible measures. Yet it is not equally clear to our political class, our fellow citizens, even – perhaps – our own families and neighbors. Because the message has not been clearly heard, this national asset is at risk. The risk bears on more than universities. Would it save money in the short term to off-shore basic research, allow or force talent to relocate, sell off infrastructure, and let someone else run trials, collect data, and also train the coming generations of researchers in AI, in ethics, in biosciences, in leadership? Would it help to radically limit the questions that can be asked and answered? I don't like the world that would result from saying yes. We could build an iron perimeter around this nation, bristling with armament and guarded by warriors; if, within those bounds, we have sown the very ground with salt, the point of defending it becomes less clear.

The case for research universities must be made, both in the corridors of power and in the minds of other Americans. Some advocacy is best done privately and face to face – I will always remember hearing Chuck Vest speak about his persistent, quiet advocacy on "don't ask, don't tell" policies to secretaries of defense in the 1990s. But we also need to connect in the open with broader publics. Many of us are thinking about how this might be done. I hope some of you are also thinking along these lines, and seeking to discover what resonates and connects — with our families, our neighbors, and on Capitol Hill where MIT's leaders, faculty, board, and students have been having many conversations.

The bottom line is, if the United States did not have an MIT, we would give a very great deal to create it. If some rival *did* have an MIT, what resources would we not devote to the moon shot of building an MIT of our own?

The bottom line is, if the United States did not have an MIT, we would give a very great deal to create it. If some rival *did* have an MIT, what resources would we not devote to the moon shot of building an MIT of our own? Today we're lucky: America does have an MIT, and together, you and I and our students and colleagues *make* MIT what it is. We are also responsible for making it what it can be. In that light, I want to turn towards what we are stewards of, and in particular the core mission of education.

Transformation

In the early 1300s, Dante imagined his protagonist walking a spiral path up a mountain that was located at the antipodes of Rome, and as he walked, marking time by sensing the Sun's position relative to points on the Earth's surface.[1] Two centuries later, European mathematicians, cartographers, and instrument makers were quantifying what, for Dante, was an imaginative projection, and making it amenable to calculation. With the rediscovery of Ptolemy's *Geographia*, location could be understood in relation to a grid of longitude and latitude that was in turn mapped to a spherical surface. Terrestrial globes were made for the first time in centuries, but now they functioned as precision instruments. Other instruments were being designed to perform accurate survey on land and fix position by the Sun and stars at sea. European mariners had long relied for wayfinding on the accumulated knowl-

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1 MIT students have pointed out *Purgatorio*'s pervasive attention to optics and astronomy. For a wonderful look at the use of scientific instruments in the medieval Mediterranean world, see Franz Lidz and Clara Vannucci, "This 1,000-Year-Old Smartphone Just Dialed In," *The New York Times*, March 12, 2024.

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edge of landmarks and soundings, and calculated position from estimates of speed, time, and compass heading. This deeply conservative craft, largely practiced in known waters, was transformed by techniques of celestial navigation and the mathematical literacy required to pioneer and map new routes. Artists were enlisted to produce accurate renderings of new coastlines and landfalls; the visual arts themselves had been transformed by the advent of perspective. An English treatise on navigation from the 1590s – roughly contemporary with Shakespeare's *Midsummer's Night's Dream* – praises "mathematical" achievements that include not only advanced work in algebra and geometry but also globe-making, astronomy, painting, and ship design.[2]

If we just stopped there, the consequences of mathematical thinking and practice to a world ca. 1600 would already be startling – and of course those consequences would grow and spread. The mathematical primers of the day also make clear how far new mathematical skills penetrated into the professions and into daily life. They sought to guide farmers in how to calculate planetary cycles for sowing and planting; to guide practical sailors who simply wanted to get from point to point reliably; to guide merchants in using arithmetic to calculate foreign exchange in unfamiliar and distant markets. As trade was undertaken with unfamiliar partners, weights and measures enabled exchange between disparate economies; beyond their practical function, the presence of systems of weight and measurement was understood as a signal of political and cultural sophistication.[3]

It should be said that a variety of sophisticated mathematical traditions, related and unrelated, predated the particular collision of theory, applications, and dissemination that characterized the 16th century European context. Western Europe didn't invent math. But within that context, widespread adoption of mathematical methods for new purposes catalyzed transformations whose effects were felt at every scale, from the local to the global, from mathematical theory to daily life. The consequences of this era were foundational to the world we live in now, both for better and for worse.

We know our extraordinary strengths in human capital and the infrastructure we've built to enable discovery. We don't know how science and engineering will find ways to flourish if the "social contract" with the federal government that has long enabled them no longer holds good.

Why tell this story? One of the benefits of serving as faculty chair is the chance to learn about research across MIT. Deans explain the promotion cases in their schools to Academic Council. Colleagues in computer science share copies of their books and offer tutorials on how machine learning works. Other colleagues in physics, or biology, or mechanical engineering tell stories about how the use of AI is changing their fields in fundamental ways. Yet without being right inside what's going on, it's been hard to integrate across this information and imagine what it will mean. A colleague in science remarked a few weeks ago that "in the past, math completely transformed STEM – it's happening again with AI." It's not a perfect analogy – but if computation is now what mathematics was in sixteenth-century Europe, that gives some indication of how profound and pervasive the transformation will be, in virtually all areas of research and study at MIT.

This is the landscape within which the Task Force on the Undergraduate Academic Program is working, as it reviews our mission of undergraduate education and considers how education may change in tandem with changes to the disciplines themselves. As I write, the Task Force is just over a year into its process of discovery and deliberation, and in the late stages of reviewing more than 70 white papers submitted for its consideration. They will be returning to School Councils next month, and plan to work intensively over the summer so that scenarios can begin to take shape for discussion next year. As we all know, it has been a long time since the faculty have approved significant changes to the undergraduate program. That isn't to say that nothing has changed – within departments and Schools, and within individual GIR subjects, there has been continuous innovation and effort. Yet what we have undertaken now is a system-level examination of where we are and where we could be, to set MIT on a trajectory for those who will come after us as both students and teachers. It's always hard to let go of the "now," but I hope the Task Force will be able to galvanize us with the needs and possibilities of "next."

Depth

To revert back to the first section of this column, transformations and advances in our disciplines and our educational program seem likely to be unfolding at a time when research universities themselves may face a kind of change that is unprecedented – a trajectory that might reverse their expansion in the post-World War II era, when federal funding for research shaped a financial model of interdependence that presented both risks and tremendous opportunities.

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2 John Davis, Epistle Dedicatorie, *The Seamans Secrets* (London, 1595).

3 Such systems were admired by English traders in West Africa; those traders were advised to display their own weights and coins as bona fides to counterparts in China (should they succeed in arriving there).

Core Mission
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This level of change – the transformative power and risks of new computational methods, the foundational challenges to the mission of research universities – raises questions for us, for our students, and indeed for all of MIT. We know our extraordinary strengths in human capital and the infrastructure we've built to enable discovery. We don't know how science and engineering will find ways to flourish if the "social contract" with the federal government that has long enabled them no longer holds good.[4] As an institute of technology, MIT may be a very different place in five- or 10-years' time, let alone 20 or 30.

How will we be living in the world that stretches forward from this present, with the change it promises and the challenges we already inhabit? Some of us work in fields where research projects have already been slowed or cancelled by changes in federal policy; others are trying to estimate how to plan for very significant future risk. Yet other aspects of the university are not likely to change at the same rate and that, itself, can be a resource. A colleague in engineering remarked that reading is good for us, emotionally and cognitively – and books are hard to cancel or defund. When the waves of the computing revolution really reach the humanities, we may find ways to empower new readers far beyond our campus, not by generating summaries of complex texts – that, honestly, has been in process for centuries – but by broadening access to a deep experience of the real thing, whether it's a classic of the Eastern or Western literary canon or a rap crafted yesterday. (If that happens, I'll be ready to dive in.) But when push comes to shove, language art not only doesn't call for compute or decadal investments – it can persist and flourish if it must with no more than voice, hearing, memory, and skill.

It's good to remember that some things are inalienable. What can they do for us? As I've repeatedly heard from colleagues on Academic Council and on the MIT Corporation, art can help us think imaginatively or systematically about the futures we may be living into, and the responses we might create. I've been thinking more, though, about the record of the past.

We are living in unsettling times – yet while they are new to us, not much is unprecedented in human history, and the humans who live through things often write (and make art) about their experiences. History tells us what it's like to live in a world where you have to fear a 3 a.m. knock on the door, or where it takes courage and ingenuity to defend and exercise everyday freedoms. How best to remain human in circumstances that challenge your humanity. How to hold onto hope when home is no longer a refuge. We may not absolutely need those particular lessons, but there are other ones: how to exercise patience and discipline through difficult times, how to exercise empathy across apparently unbridgeable divides. Neither as individuals nor as a generation are we alone in bearing the burden of what is intolerable and insoluble in the world as we try to make it better. Generations before us have passed through the valley of the shadow and left their marks.

Reckoning with the resources provided by all times past seems especially compelling in a moment when the arcs of physical and moral universes alike appear to bend towards a future we might not have chosen. No counselling service can meet all the demands of living in a difficult world. Art and history can help – and what else? Here at MIT, we know that deep work also feeds us. Whatever is going on – economic insecurity, disease, fear for the world itself, or simple sadness – feeling the charge of using our gifts to their fullest provides a resource that goes far beyond promotion or a strong GPA. Excellence isn't only when you win – it's also going all-in, burning down the candle together, getting up to keep working on the obstacles that have so far defeated us.

How will we be living in the world that stretches forward from this present, with the change it promises and the challenges we already inhabit? Some of us work in fields where research projects have already been slowed or cancelled by changes in federal policy; others are trying to estimate how to plan for very significant future risk.

If universities, MIT in particular, are a national treasure, it is because we and our predecessors have collaborated and contributed to make it so. In doing what we do, we have continually redefined through our practice the excellence that is at the heart of our endeavor. I don't believe that entities or agents outside of higher education can do a better job of making us MIT than we can. Let's take heart, and let's keep at it.

Mary C. Fuller is a Professor of Literature and Chair of the Faculty *(mcfuller@mit.edu).*

4 I borrow the phrase in this context from "Written Testimony of Dr. Kelvin K. Droegemeier" to a House Appropriations Subcommittee hearing on "The Role of Facilities and Administrative costs in Supporting NIH-Funded Research," 10/24/2017, https://www.cogr.edu/sites/default/files/Droegemeier%20Full%20Written%20Testimony%20FINAL.pdf

From Innovation to Inquisition: The Political Assault on Universities
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have seen wanton and unjustified termination of grants and contracts. We have seen the use of cuts in federal research money as a weapon to hurt those whose sole mistake has been to be a convenient target for political vengeance. All of the above is bad enough, but it pales in comparison to the damage being inflicted on a whole generation of young students, researchers and faculty who are losing hope and their dreams. They now live in fear of repercussions from the US government about what they say and do. They are beginning to self-censor, inhibiting innovation and the open exchange of ideas. The individuals that could have propelled the best higher education and research system in the world to even higher levels are being censored and stymied.

The arbitrary capping of "indirect costs" or "overhead" paid by government agencies that fund research was the first salvo in the war against universities. Indirect costs are expenses that cannot be attributed to any particular effort. They are standard practice in the private, non-profit and government sectors. The Trump administration chose the National Institutes of Health (NIH) as its first trial agency for these cuts since they are the biggest non-defense fish in the federal funders' pond. Indirect costs are real; every penny, and more, is needed to keep the research enterprise going, to support the buildings, the labs, the libraries, and much of the supporting infrastructure.

If NIH were the only agency affected, the impact to places like my present home institution, the Georgia Institute of Technology (GT), and my previous home, the Massachusetts Institute of Technology (MIT), would be painful but manageable with cuts and reallocation of money, in the short run. Each would be experiencing annual deficits on the order of $25-$35 million, amounts that would need to be paid somehow if the research in the health sciences funded by NIH were to continue. For universities with large medical schools and hospitals, the proposed cap on NIH indirect costs is existential, amounting to hundreds of millions. But nobody believes that the Trump administration's actions will stop at NIH. Word on the street is that indirect costs will be capped somewhere in the 30% range (presumably of the modified direct cost base – a quantity that excludes certain direct costs) for all federal funding agencies, including big research funders like the Department of Defense, Department of Energy, NASA, National Science Foundation, etc. Even if we assume that research from the Department of Defense is spared, the impact of an across-the-board cap could be in the realm of hundreds of millions of dollars. Most universities would be unable to weather those impacts.

The arbitrary capping of "indirect costs" or "overhead" paid by government agencies that fund research was the first salvo in the war against universities. . . .The Trump administration chose the National Institutes of Health (NIH) as its first trial agency for these cuts since they are the biggest non-defense fish in the federal funders' pond.

Research funding is also quickly disappearing. Practically all federal agencies have cancelled existing contracts and grants. The elimination of efforts funded by the United States Agency for International Development (USAID) has resulted in firings in several institutions and weekly losses in the millions. As an aside, the millions of dollars lost to universities in the United States pale relative to the unconscionable harm to people around the world.

Broad cuts in research funding are one thing, another is the use of stop payments and cancellations in transparently punitive actions. Columbia University had $400M in grants and contracts cancelled because of allegations that it failed to control antisemitism on campus. The University of Maine received pause orders on about $30 million from the US Department of Agriculture (USDA), clearly in response to governor Janet Mills challenging President Trump in public. Some among us will rationalize the above actions as deserved – based on political beliefs or social norms. I suggest thinking twice – you could be next.

Proposed increases on taxes on endowment incomes are particularly serious for private universities like MIT and Harvard with heavy (ca 50%) reliance on that income for annual operations. Much of endowment income is not discretionary, but subject to donors wishes. A significant percentage goes into providing financial aid to students.

I cannot imagine a scenario where all the above actions against universities can be absorbed without retrenchment and reduction in workforce. Serious pain is unavoidable. Perhaps that is the point.

Possibly more significant than the slashing of funding are the non-monetary and indirect impacts of the recent federal government actions. Values like diversity, equity and inclusion are being cleansed from government and private websites. DEI is a "scarlet letter," use it and you will be branded and punished – a throwback to the McCarthy era and accusations of communism. Climate and climate change are also verboten. The effect of this

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censoring of intellectual and social pursuits is to discourage research and innovation. Recently a senior faculty member in a well-known university questioned whether the institution should even bother to respond to an opportunity dealing with climate change. Already the attacks are creating an atmosphere of fear without even the need to persecute, as the targeted will begin to self-police out of fear and resignation.

The spectacle we are experiencing, and the open censoring of ideas, discourages young people from pursuing careers in academia and in government. Most top universities are already beginning to see softness in applications of graduate students. No international student that stops and thinks will be comfortable coming to the US when they can be denied entry, detained, or threatened with deportation for publicly expressing opinions. My own graduate students are wondering why they should continue following their dream – at least in the US.

It should be evident to all that the reduction in research and the coming drop in enrollments translate to more budgetary woes. In my opinion, the Trump administration's attack on universities has already permanently damaged the country's ability to remain the central hub of research and the wealthiest and most powerful country in the world.

Over the last few weeks, I have spoken to over a half dozen university leaders and many faculty from different institutions. Never, in nearly 50 years in education, have I seen such a frazzled group. All are doing their very best to deal with the barrage of attacks and adversarial requests. Some are mad as hell, others are numb. A few hold the pollyannish view that all will settle back to business as usual.

Our leaders need our support. They are in a tough and difficult position. But I do have concerns. When asked to talk about what they are doing to deal with the situation, all are implementing prudent controls on expenditures. They all are working directly or through friends (mostly private sector) to try to influence federal policies. They all are cheering for legal challenges led by organizations like the Association of American Universities and the Association of Public Land Grants Universities – although not all have explicitly or publicly joined these challenges. They are cheering at a safe distance.

The scariest thing to me is that some of these leaders say, explicitly or implicitly, that they will be OK because they are better off than others – because of their missions, location, political "color" of their home states, or all the above. If at this point institutions resort to the instinct of self-preservation without concern about the fate of others our enemies can declare victory.

The scariest thing to me is that some of these leaders say, explicitly or implicitly, that they will be OK because they are better off than others – because of their missions, location, political "color" of their home states, or all the above. If at this point institutions resort to the instinct of self-preservation without concern about the fate of others our enemies can declare victory. And no matter how strong or well-aligned, institutions that chose to stay away from the fray and claim the fallacy of institutional neutrality will be consumed by their own inaction and acquiescence.

I am convinced that the only way to stop this situation is to have a loud coalition of leaders, faculty, staff and students that rise, nationally, to defend the future of the best higher education in the world. Nothing else will work but making our collective presence felt.

I had finished the first draft of this opinion piece when I read the March 12 issue of The Scholarly Kitchen. In a guest post, Dr. Nason Maani, of the University of Edinburgh, writes "[r]ecent governmental efforts to halt health research funding, defund government research bodies, intimidate universities with the threat of financial penalties, and the circulation of terms in research and academic papers to be "flagged" for review are concerning far beyond the disciplines directly affected, and pose a risk to the collective global enterprise of scientific discovery and knowledge development." He calls for a march of Ents. Ents were the slow, deliberate, non-confrontational, tree-beings in the *Lord of the Rings* series who ultimately, at the sight of their forest being burned and destroyed, decide to act and use their awesome collective strength and march on the enemy. We are the Ents. We in academia must act together, now, to prevent further damage to higher education. I am not talking of just legal challenges, lobbying, or writeups like this one. I am talking about making our physical presence and unhappiness known (peacefully), and seen, by those that can stop the madness but so far refuse to act.

Note: I want to thank the *Faculty Newsletter* for inviting me to publish this opinion piece. It has been a while since I last wrote directly to my MIT colleagues! This piece first appeared in my Personal Blog. Needless to say, the content of this piece is my opinion and does not represent the position of GT, MIT or their leaders.

Rafael L. Bras was Chair of the MIT Faculty from 2003-2005 *(rlbras@mit.edu).*

Affirmative Action: Is it Legal? Does it Work?

Ian Hutchinson

THIS BRIEF COMMON-SENSE opinion is intended to encourage thoughtful civil discussion at MIT of one of the most fraught topics of the contemporary academy.

Giving special preference to applicants belonging to certain minority groups, because of historic discrimination against those groups, has long been the major part of so-called Diversity Equity and Inclusion (DEI) programs. It nevertheless amounts to reverse discrimination, and therefore, on its face, appears to violate the Civil Rights Act of 1964 that prohibits discrimination on the basis of "race, color, sex, religion, or national origin." "Affirmative action" was originally promoted by executive orders of Presidents Kennedy and Johnson, in which it simply means ensuring that discrimination does not occur. Its evolution into a system of racial quotas was ruled unconstitutional by the Supreme Court in 1978. Since then, Affirmative Action has continued in less explicit forms where politicians, justices, and the American populace have been willing to tolerate the apparent legal contradiction. It is rationalized by asserted benefits to the employer or university of "diversity," and as a means to overcome the lingering disadvantage suffered by (e.g.) black Americans because of prior organized discrimination.

But the question has always been "for how long?" In the past few years an answer seems to have arrived for a majority of Americans: "no longer." The new Presidential Administration has surprised many by its abrupt and often chaotic actions to end DEI. Many critics justifiably doubt that conforming to the rule of law could be President Trump's major motivation. Yet for the majority of us, it ought to be a substantial reason to welcome the removal of the legal self-contradiction. In recent years the bureaucratic bloat of DEI, and the expectation that everyone must endorse DEI activities including Affirmative Action, has seriously threatened academic freedom of thought and greatly impeded free expression. Affirmative Action as preferences was always an inconsistent approach to civil rights. It does not seem extreme for government agencies to be told not to fund it.

Justice John Roberts' aphorism that the best way to overcome discrimination is not to discriminate introduces the second question. Does (or perhaps did) Affirmative Action work? One does not have to deny the progress achieved by affirmative enforcement of equal Civil Rights to ask questions about the effectiveness of today's Affirmative Action. Here answers differ because opinions differ about what the objective is, what it would mean for it to work. If one considers the objective to be producing "proportional representation" in colleges, professions, and across hierarchies, then perhaps that could be achieved by continuing reverse discrimination; but at a substantial sacrifice of attention to the actual mission of organizations, and at a substantial disadvantage of provoking ill feeling toward the beneficiaries of the special preferences on the part of those who do not share those preferences. Alternatively, if one considers the objective to be to encourage a well-integrated society in which individuals are respected appropriately on the basis of their "character", regardless of their race, sex, or religious or ethnic identity, then the past 60 years, and especially the severe political polarization evident today, appear to demonstrate that Affirmative Action does not work. Indeed, it is perhaps surprising that a country as heterogeneous as the US, with centuries of assimilating different immigrant ethnicities together with some of their cultural traditions into the society at large, has (according to the DEI advocates) failed in respect of today's minorities. Assimilation seems generally to take a couple of generations before it is relatively seamless. But two generations have passed since the Civil Rights Act, so it makes sense now to wonder why integration has proven so difficult for black Americans.

The reason often implied, that it is prevented by white supremacism, is too facile, despite the continuing existence of racists and supremacists. And the supremacist explanation is ludicrously implausible in the US academy, which draws faculty from across the Globe. But one contributing factor may well be DEI and Affirmative Action itself. In surveys at the University of Michigan, after their massive DEI efforts (costing over a quarter of a billion dollars) ". . . students actually reported feeling less included, less of a sense of belonging, less likely to engage across racial, religious, political differences, not more . . . ." This result supports what many people have observed about DEI's influence on the campus climate: if anything it promotes sensitivities that undermine a feeling of belonging, and cross-cultural engagement, rather

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than enhancing them. So maybe Affirmative Action and related DEI activities, however well intentioned, are in part responsible for delaying or even preventing the achievement of a well-integrated society. At the least the evidence does not show it produces the benefits that are asserted in its defence.

MIT, and individuals in it, have their faults; but I have found over many decades that there is an enormous store of good will at MIT toward people who don't look or speak or live like us. That is what can become the driving force for integration and mutual respect; but only if it is not undermined by a false ideology that, contrary to Academic Freedom, insists we must affirm MIT as a place of ongoing "systemic racism" to justify the unwise and often counter-productive over-reach of DEI and Affirmative Action.

Ian Hutchinson is a Professor Emeritus in the Department of Nuclear Science and Engineering and Co-President of the MIT Council of Academic Freedom *(ihutch@mit.edu).*

On the Trump Administration

The MIT Black Students' Union

WE, THE MIT BLACK STUDENTS' UNION, reaffirm our right to exist as an organization dedicated to supporting, uplifting, and celebrating Black students at MIT. The Trump administration is engaging in a broad, anti-intellectual campaign to undermine the place and value of Black students in higher education. One such attempt is a letter sent by the Department of Education requiring that universities halt support of race-based programming. This letter denies the existence of systemic and structural racism in the United States and deliberately misrepresents the principles of the Civil Rights Act of 1964. This policy, along with others rooted in the same rhetoric, serve as political stunts designed to pressure universities into withdrawing support for organizations like ours. While these policies will likely fail under legal scrutiny, they propagate a narrative that discredits higher education, DEI initiatives, and Black scholars.

We stand in solidarity with our community, with the Latino Cultural Center, and with other student organizations working to support marginalized groups in an increasingly hostile climate. While the future is uncertain, one truth is clear: Black and Brown students belong in higher education, and no efforts to exclude them will prevail. Throughout American history, many have tried to block students of color from accessing quality, equitable education.

This battle is decades old. The Black Students' Union has been fighting it since our inception in 1968. We will not back down now.

In community,
The MIT Black Students' Union

The Black Students' Union executive board can be reached at *bsu-exec@mit.edu.*

MIT Faculty Meetings: A Broken System

Yossi Sheffi

MIT'S FACULTY GOVERNANCE structure is characterized by disengagement, inefficiency, and a lack of accountability. These dynamics foster an environment where a vocal minority dominates governance processes while most faculty remain disengaged. As a result, faculty meetings are no longer platforms for productive debate and robust decision-making. Key issues include the following:

Faculty Alienation

Even during times of crisis, faculty meetings attract only a small fraction of eligible attendees. The median attendance at faculty meetings last year was 102 participants,[1] a figure that underscores the lack of widespread engagement. Consequently, votes at faculty meetings do not represent "the voice of the faculty" but rather that of a minority – those who either feel strongly about specific issues or have more time to participate.

Students' Appearance in Faculty Meetings

Student participation in faculty meetings contributed to an increasingly performative and polarized environment. Examples include:

- ***Intimidation:*** Faculty members reported feeling uneasy speaking up about polarizing issues in the presence of students, especially those they recognize from their classes. They also expressed concerns about colleagues being labeled as racists for raising dissenting viewpoints, especially regarding the students' presence.
- ***Perceived Monitoring:*** When online voting failed, faculty reported seeing students taking note of their votes. At other times, students were seen taking notes of faculty comments. These actions created discomfort among some participants, contributing to their disengagement.
- ***Snapping:*** During the past year, students participating in faculty meetings were consistently responding to presentations and statements with unified snapping to express agreement as "the voice of the students," applying pressure on faculty who, for the most part, care about the students and want to support them.

These dynamics contribute to an environment that undermines the seriousness of discussions. The performative atmosphere exacerbates polarization, distracts from governance priorities, and drives further disengagement among moderate faculty members.

Implications

These failures reflect the broader institutional tendency to avoid confrontation and accountability. Without reform, faculty governance will continue to erode, undermining MIT's ability to respond cohesively to crises or implement necessary changes.

Revitalizing Faculty Governance

Faculty governance has to be restructured to foster greater engagement, inclusivity, and effectiveness. Decision-making processes must become more representative and disciplined. Key actions include the following:

1. Restrict Faculty Meeting Attendance

Limit attendance at faculty meetings to faculty members, ensuring that discussions remain focused, productive, and confidential. Others, including students, may attend by invitation from the faculty chair. Standing invitations can be extended to specific non-faculty administrators whose presence is important. This change is supported by the majority of the faculty, as indicated by the following Pulse question:[2]

> *How appropriate was it to close a major part of the February 21 faculty meeting to non-faculty? (231 responses; 171 expressing an opinion. Of those, only 4% thought faculty meetings should never be closed to non-faculty.)*

2. Broaden Participation in Voting

The current system imposes a "poll tax," as busy faculty members cannot attend faculty meetings even remotely. I suggest transitioning all faculty voting to a secure online platform where the entire faculty is invited to vote following the faculty meeting, ensuring maximum representation. Faculty meeting debates should be consolidated into structured notes, providing confidential pre-vote documentation that includes summaries of

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[1] It was not clear how many members actually voted and how many abstained or otherwise did not care to vote in faculty meetings.

[2] While some colleagues think the Pulse does not represent the faculty voice, the number of votes is significant.

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arguments for and against each motion, ensuring faculty are informed voters. This change will make governance decisions more representative and inclusive. Ranked choice voting can deal with amendments to the motions introduced in the faculty meetings, thus simultaneously voting on the motions and any amendments.

This change is, again, supported by a Pulse response:

> *Should final voting on motions be open to all faculty or just those attending the relevant faculty meeting? (246 responses, 231 expressing an opinion. 75% support the idea of having all faculty vote).*

This change may require a modification of Robert's rules, but there is no reason that MIT cannot adopt its own version of Robert's rules.

3. Reform Faculty Elections

Increase the transparency of the nomination process and the voting. The faculty chair should be chosen through an open election by the faculty. The argument against this (when I proposed this in the past) was that faculty members would not want to stand due to the fear of not being chosen. Anybody afraid to stand in front of colleagues should not be the faculty chair. Open elections will result in stronger candidates, independent of any administration pressure, who can faithfully represent the faculty, regardless of the administration's position. This open election can follow a slate of 3-4 candidates presented by the nomination committee (in addition to nominations from the floor in an open faculty meeting). As part of the election process, each candidate should submit a written piece about how they view the job, their points of focus, and their qualifications.

As I hope will always be the case for anyone who holds office at MIT, the chair should issue scheduled reports about their actions and be subject to mid-term assessment (and removal by faculty vote). One of the chair's goals should be to increase the share of faculty voting so that MIT will have an authentic "voice of the faculty" when we agree and a signal that the faculty is split when we do not.

4. Redesign Meeting Agendas

Adopt structured agendas for faculty meetings that prioritize actionable items and meaningful debate. Summarize decisions in public reports to increase transparency.

A Final Note – Authority without Responsibility

While MIT operates shared governance between the faculty, administration, and board, accountability is disproportionately placed on the administration and the Corporation. Faculty who wield significant influence through the Institute's formal and informal governance structures are often shielded from accountability for policies enacted or actions taken (or not taken) by the institution.

A prominent example occurred last year: The Institute was called to participate in a congressional investigation following its challenges in addressing campus protests. This process included a subpoena of communications involving the upper administration and the Corporation's executive committee, which raised many professional and personal challenges for their members. Meanwhile, under the guise of faculty governance, a group of faculty members actively opposed the administration's actions to address antisemitism, rein in unauthorized protests, and educate or discipline students. It is not excessive to say that these individuals caused significant challenges to the Institute and its leadership, yet they faced no consequences for their actions. As in all organizations, a person or group's authority must be proportional to their responsibility and accountability.

While faculty governance can be improved, there are no easy solutions to the problem of authority without responsibility. One solution is possibly to explain to the community the impact of certain choices and rely on the goodwill of the faculty and the rest of the community, who deeply care about the Institute. ■

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

A Habit of Courage: The Role of the GIRs at MIT

Steven B. Leeb

THE TASK FORCE ON the Undergraduate Academic Program (TFUAP) issued a call for whitepapers in December of 2024 requesting inputs regarding the undergraduate program (see ovc.mit.edu/tfuap). I am thankful for this invitation, and have sent a whitepaper, which I would be grateful to précis here. I am offering a heartfelt appeal to take extreme care with the maintenance and growth of what has, up until now, served as a robust yet flexible foundation for our entire curriculum: The General Institute Requirements (GIRs).

Training and education are complementary – but different – activities. Professor Woodie Flowers taught me this, and I'm stealing from him directly as I write. Learning to spell is training; learning to communicate effectively is education. Education leads to a habit of courage. Training alone does not. We have stumbled at critical times in our history when we have wavered in our focus on education combined with training. We made this mistake, for example, in the 1930s when we over-taught the use of manual tables and handbook calculations to satisfy industrial demands, instead of instilling the educational tools necessary to invent the solutions that helped to stop U-boats, free children from behind barb wire, cure disease, and elevate the human experience. The General Institute Requirements (GIRs) serve as our red-carpet entryway to an MIT education. The *educational* experience afforded by the GIRs is, by far, a most democratizing and egalitarian experience. The GIRs greet the newest members of our community and offer them a compact: "Master the ability to think with these languages, and you are welcome in any major, laboratory, studio, or pursuit on our campus." The GIRs have served this role since MIT's founding. At our best, when educating the mind and the hand, we capture the heart. Hundreds of hours of committee meetings and listening tours will not automatically produce changes that celebrate and enhance our purpose: to educate young minds to stand with courage in front of problems that we do not yet even know, and design creative solutions that justify society's faith in and support of our Institution.

I am worried by the idea that, in our efforts to review and revise the GIRs to meet the needs of an evolving future, the 10 learning goals identified by the TFUAP in their call for whitepapers should serve as the North Star.

Learning goals 1 and 3-10 are laudable and superficially inarguable. What objection, in the context of any curriculum revision, could one make to the desire for "lifelong learners," "big dreams," "time management skills," "self-care," "collaborative teaming," and the ability to "take on leadership roles?" But the timing of the development of many of these skills is a debatable subject even amongst the faculty. For example, during the process in EECS that led to seismic changes in the department's structure and curriculum as well as the formation of the College of Computing, the Course 6 CS Excellence Committee asserted that "Leadership positions are unattractive to CS faculty." Students and faculty alike are not ready to be functional team members, to intelligently exercise choice, to plan wisely for the future, until they have individual skills and mental perspective to use and share. We must take care not to buckle and break the GIRs through a poor redesign in the futile attempt to design a curriculum that attempts, in a scant four years, to impart personal attributes that are developed over a lifetime. I propose that the learning goals 1 and 3-10 should rather be viewed as a general guidance to the actual specific work of crafting an educational program that prepares new minds for energized participation in a vibrant MIT community.

We start our students on the road to contributory membership in their professional communities when we lead by example. The current SME core classes teach the ability to communicate ideas in the powerful languages of physics, chemistry, mathematics, and biology that do in fact underlie or "infuse . . . disciplines across MIT." The wise decision, for example, made by the faculty in the early 1990s to add biology to the SME core recognized the advancement of biological sciences to a point where a wide-spread, modern framework for understanding life on earth was extant. Like all science, this framework is not "finished," but it is sufficiently defined to be recognized as a foundational way of thinking about our world. We devalue the compact we offer to our new community members when we lose sight of the relatively unique educational opportunities that our best teachers and curriculum have provided in the GIRs. As a freshman advisor and undergraduate instructor, I have seen firsthand how often our Advanced Standing Exams, extended

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Pass/Fail system, and loose scheduling that allows GIRs to be back-burnered until senior year, make it easy for both students and faculty to lose sight of how the GIRs define our community and our Institution. During this curriculum redesign, we must not make changes to service a superficial notion of progress, which ultimately and predictably devalue the practice and intent of the SME core.

Learning goal 2 presents what could be interpreted as an *a priori* demand from the Task Force to alter the Science, Math, and Engineering (SME) core of the GIRs to include "computational thinking." I'm not sure I agree. Computing is in a very different state compared to other disciplines in the SME core.

The importance of computing as a tool and an economic engine is undeniable and exciting. I am very grateful to be part of MIT and EECS and ME during this socioeconomic revolution, and I am excited about the future. I teach embedded control, and I use computing extensively in my teaching and research, and I do not think that computing is a bubble or a fad. At the present time, computing is largely a tool, one that primarily necessitates *training*. The *education* required to invent and model and create solutions may or may not require computing context, depending on where the evolving definition of computing goes next. We may surprisingly quickly, for example, enter a world where "programming" as an enterprise becomes a vastly smaller undertaking for humans as computers further develop the ability to code for us. The nature of a computer, and what can be computed, both appear to be on the verge of potentially radical change in the coming decades as we develop new computing models and biological interfaces for computing. Will computing ultimately become a discipline, like biology, such that all well-educated MIT graduates should learn to see the world through its lens? Or will it be more like the infrastructures of electrical lines and plumbing pipes that undergird our society: most people use these systems to great advantage, and at MIT's inception it may well have been believed that all well-trained graduates should know the intimate secrets of these exciting new developments. But ultimately, neither plumbing nor power systems became a universal language. Physics was, is, and will be the palette with which these systems are created, and physics is something every MIT undergraduate did, does, and will continue to need to understand. I strongly believe that the jury is out on which way computing is headed, and that it is not yet the time to radically re-center our undergraduate curriculum and GIRs around it.

In recent conversations I have had or overheard, common opinion seems to hold that there should be "no science GIRs beyond the department pre-requisites." This is a superficially reasonable notion. What GIR would make sense if no department "needed" it? Unfortunately, this seemingly reasonable statement is profoundly irresponsible, as it can be interpreted in two very different ways, one nurturing for our community and one corrosive. For better or worse, our departments operate as business units that receive budget and other resources based on enrollment. Departments experience an overwhelming pressure to be "popular." We would be poorly served as an Institution if we allow the pressures on departments to spill over into our considered curation of the GIRs. We need to view the GIRs not with a departmental lens, but an Institutional one, with recognition that the GIRs define us as a community. The departments, of course, *should* use a carefully crafted GIR program as prerequisites. The reverse should not be true.

The Institute should retain the GIRs and the SME core as the ongoing vital "roots" of the "tree" that is the undergraduate experience. I respectfully recommend the following:

1. The passage of time has made it clear that the 1964 Zacharias Committee Report, which observed that "we believe that flexibility, choice, and early branching are desirable within the framework of the core," was largely incorrect. The REST subjects, Institute Laboratory, and other changes implemented at the time both were and also continue to be formless. Rethinking the allocation of these valuable curricular slots might make for interesting opportunities for a new GIR subject in design, or problem solving, or computing in some form. Recapturing the REST subjects and limiting them to a tighter list, perhaps focused on computing, may be a functional option.

2. The SME core should **not** be further penalized or altered from the 1964 decisions in order to make a slot for a computing GIR. We effectively have a computing GIR now as a REST subject taken by a large number of freshmen.

3. The *training* aspect of computing may best be combined with domain-specific *education* in solving different kinds of problems. The algorithms and data relevant to a Political Scientist, for example, may be very different in structure and use from those used by a Materials Scientist. A colleague suggested an idea I find compelling: create a computing-intensive "CIC" requirement, analogous in some respects to a CIM or CIH requirement, with course offerings from many or all departments that could satisfy the requirement.

4. Other than point 3, I strongly encourage that we avoid the sorts of fashionable curriculum changes that our past efforts have again and again found wanting: six-unit classes are frequently an inadequate exposure to any serious technical material that we expect someone to learn. I'm suspicious of P/NR after the first term, and also of "take X of Y" curricular plans. The "X of Y" plans have consistently proven to be an "every person for themselves" plan at

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all levels, for both the students and the faculty. These plans use competition to replace leadership, and they waste resources.

5. The GIRs are not a sinecure. Our highest expectations for educational caliber should be brought to bear on the teams and units offering these experiences. The most important aspect of our core should be committed and passionate instruction for every minute of these classes. These teachers must bring a love for the material they teach and for the intellectual growth of the students.

6. The SME core instructors have met this challenge for decades. They have held the line on quality, innovation, and dedication. They created some of my most vivid memories from when I was an undergraduate, and they have earned our thanks and respect. I would prefer that our "GIR re-examination process" *begin* with asking the current stakeholders for their recommendations. How could the outstanding service our community has received for decades be further improved in the estimation of the field personnel currently leading the charge? Should the Institute have a central physical laboratory for GIR students to conduct experiments in physics, chemistry, etc.? What staffing would this require? What, in the estimation of the core instructors, could and should be updated? Can introductory physics as a combination move to introduce thermodynamics or quantum mechanics in a non-trivial way that fits in the allotted units? Could and would introductory chemistry classes benefit from a physical laboratory component? Is there a practical way to offer 24 unit "fusion" classes that connect a GIR with a writing requirement? Does the Math Department see a foundational change in either the preparation of incoming freshmen or the mathematics introduction required to participate in modern science and engineering? Do these changes suggest useful revisions or enhancements to our 18.0x entryway that would be applicable for the vast majority of freshmen?

I am grateful to be here, excited to participate in the future, and I appreciate your time and patience.

Steven B. Leeb is the Emanuel E. Landsman (1958) Professor in the Department of Electrical Engineering and Computer Science *(sbleeb@mit.edu).*

letters

A Painful Personal Reality and a Call to MIT Faculty

To The Faculty Newsletter:

I'M A LONG-TIME Cambridge resident and retired educator, and I wanted to share how touching and sad it was to read Richard Solomon's letter "A Painful Personal Reality and a Call to MIT Faculty" published in the November/December edition. I hope you publish more stories by students and champion divestment more generally. MIT faculty like Noam Chomsky used to be bold and morally courageous. I hope to see more of that from you all.

Blessings,
James
James Gorge

Question About the Faculty Newsletter

To The Faculty Newsletter:

I HAVE BEEN ON MIT staff as a research engineer at Haystack for 15 years but today is the first day I found out that there was a *Faculty Newsletter*, because a coworker forwarded the *Newsletter* link on Slack (the latest issue is on the topic of overhead costs, which of course directly affects my work).

I have no idea if I am the only off-campus researcher who is unaware of the *Faculty Newsletter*.

I just thought I'd let you know.

Sincerely,
Bob S.
Robert P. Schaefer

New Podcast From MIT Energy Initiative Looks at Energy Solutions to Climate Change

Kelley Travers

ENERGY POWERS OUR HOMES, our cars, and our lives. But the kinds of energy we use – and the ways we use it – are rapidly changing our climate. A podcast launched this year by the MIT Energy Initiative (MITEI), *What if it works?*, examines this challenge, looking at the energy solutions to climate change.

Every two weeks, *What if it works?* features faculty and researchers from across MIT to explore the science, technology, and policies that can transform the world's energy systems and promote a more sustainable future. The podcast invites listeners to hear from the people testing new ideas and working on breakthroughs in labs, industry, and government – the ones who aren't afraid to ask, "What if it works?"

"Without greater public awareness about the climate crisis and the solutions needed to mitigate it, the world will fail to meet the goals expressed in the Paris Agreement," says William H. Green, the director of MITEI and Hoyt C. Hottel Professor of Chemistry, who was a guest on an early episode of the podcast. "The labs across the MIT campus are doing world-changing energy research and we want to share that work with the world. We want to encourage hope that the world can successfully transition to a much cleaner energy future and to spur investment, invention, and the new tools, new institutions, and new policies that will make it happen."

Guests include former US Secretary of Energy Ernest Moniz, the Cecil and Ida Green Professor of Physics and Engineering Systems, Emeritus, who lays out the role of government in decarbonizing energy, and Climate Project Policy Mission Lead Christopher Knittel, the Associate Dean for Climate and Sustainability at MIT Sloan, who takes that conversation a step further with his examination of what the next four years of US energy and climate policy might look like under the new Trump administration.

Susan Solomon, the Lee and Geraldine Martin Professor of Environmental Studies and Chemistry, brings her expertise from working to fix the hole in the ozone layer to provide practical advice to solve the great challenge of global temperature rise. "I really believe we're right on the cusp of succeeding with this problem," she says in the podcast. "We are right on the inflection point. And the reason is that basically when I look at environmental issue after environmental issue, I see the same factors that characterize when we start to achieve success. It's the public being engaged and interested and feeling that it's personal; the technology steering going on that makes solutions practical. We've seen all of that."

In one episode, Larry Susskind, professor of urban and environmental planning, describes his work as a mediator between renewable energy project developers and affected communities, highlighting the social implications of energy work and illuminating why so many renewable energy projects are stalling. "Right now, we're down about 20% of the megawatts that could be running if the projects that had been planned and financed had been able to go ahead," he shares.

Other episodes tackle the various technologies important to meeting net-zero emission goals, from carbon removal technologies such as direct air capture with Howard Herzog, a MITEI senior research engineer, to nuclear energy with Jacopo Buongiorno, the Battelle Energy Alliance Professor in Nuclear Science and Engineering, to fusion energy with Dennis Whyte, the Hitachi America Professor of Engineering.

Another episode digs even deeper: Climate Project Decarbonization Mission Lead Elsa Olivetti, the Esther and Harold E. Edgerton Career Development Professor, explores the environmental impacts of the materials that make up these technologies. "Materials and the manufacture of materials are responsible for over a third of greenhouse gas emissions globally," Olivetti says. "And so the choices we make at every stage of designing materials, of recycling, and manufacturing are going to have a global impact."

In an episode with Associate Professor of Civil and Environmental Engineering Desirée Plata, the podcast explores the role of methane in climate change. Plata says that "methane is the only thing, the only greenhouse gas, that will change the rate of warming in our lifetimes," and shares the work she is doing to help mitigate these harmful emissions.

The goal of the podcast is to take a balanced, optimistic approach to pressing energy and climate topics while featuring influential MIT researchers working in a wide range of energy applications. *What if it works?* does this in part by pairing energy expert Robert Stoner, founding director of the MIT Tata Center for Technology and Design and president of the Kendall Square Project, with journalist Kara Miller, *Boston Globe* columnist and former host of the public radio program *Innovation Hub* as co-hosts.

"I'm in the business of finding solutions to climate change – finding those low-carbon technologies that are going to enable us to move the economy of the world into a very different place," remarks Stoner in the first episode. "Making the case for climate optimism" sets the tone for the podcast, distilling the current energy landscape and setting the stage for future conversations.

Future guests on the podcast include Nobel Laureate Moungi Bawendi, the Lester Wolfe Professor of Chemistry; Brad Hager, the Cecil and Ida Green Professor of Earth Sciences; and Ariel Furst, the Paul M. Cook Career Development Professor of Chemical Engineering. *What if it works?* is available on Apple Podcasts, Spotify, and more. For episode notes and transcripts, visit energy.mit.edu/podcasts.

Kelley Travers is Communications Manager of the MIT Energy Initiative (MITEI) *(ktravers@mit.edu).*

Understanding the Importance of Healthcare Proxy Forms

Cecilia Stuopis

HEALTHCARE IS A CRITICAL part of our lives at every stage. As small children, we experience healthcare through childhood illnesses, vaccinations, and occasional injuries. In college and in our young adult years, healthcare becomes more about episodic issues. Eventually, healthcare evolves into care for chronic conditions and health screenings, such as routine blood work, colonoscopies, and mammograms.

The part of healthcare we rarely address is end-of-life care. We all die eventually, but few of us have taken steps to share our wishes for what we would like to have happen when the time comes. According to a 2018 survey from The Institute for Healthcare Improvement, only 32 percent of individuals have had a conversation with loved ones about their end-of-life care (https://theconversationproject.org/about/). A 2020 study in the Journal of Palliative Medicine (https://www.liebertpub.com/doi/10.1089/jpm.2020.0111) reports that only 10–41 percent of individuals have formally addressed advance care planning by completing a written document to ensure that their wishes are met. Interestingly, the numbers are not skewed by younger individuals. A 2023 study showed that 31 percent of young adults aged 18–21 had filled out formal paperwork expressing their end-of-life care wishes (https://www.sciencedirect.com/science/article/pii/S2949923223000259).

April 16 is National Healthcare Decisions Day. This is a day for addressing the importance of advance care planning. It is a day where everyone is encouraged to speak with their loved ones about their end-of-life wishes. It is also a day to document those requests to ensure that healthcare workers have the information they need to respect and carry out your wishes. In Massachusetts, the legal document used for this process is known as a Healthcare Proxy form. The form designates an individual to serve as your healthcare proxy. Your proxy dictates your healthcare wishes to your doctors and nurses in the event you are unable to speak for yourself. This could occur at the end of life, but it can also take effect anytime you are unable to make decisions for yourself – for example, if you are injured and in a coma. Healthcare proxy forms allow clinical staff to speak with your proxy about your condition. Therefore, your proxy will have access to your medical record with respect to your condition. Without the form, clinicians cannot speak with proxies due to federal privacy laws.

To fill out the form, you must first choose your healthcare proxy, then have a conversation with that individual and discuss what you would and would not like to have happen if you cannot make healthcare decisions for yourself. Once you have completed the form, you need two witnesses to attest to your signing of the form. The proxy does not need to sign the form – though the form needs to include their contact information. You don't need a notary public or lawyer.

MIT Health is here to help facilitate this process. On April 16, from 3–5 pm in the Vannevar Bush Room, (10-105), we will be available to answer any questions you have. We will also have healthcare proxy forms on hand for you to sign, witnesses to attest to your signature, and a copy machine to provide you with free copies to give to your proxy, healthcare providers, lawyers, or any other people you think should have a copy of the document.

Importantly, if you are an MIT Health patient, we will scan your completed document directly into your electronic medical record. It will stay with you as long as you are an MIT Health patient. In the future, if you leave MIT Health, our medical records team can forward the document to other clinicians who need to have it on file.

Accidents and sudden debilitating illnesses are scary and unpredictable. When they occur, they are among the most stressful experiences your loved ones will ever deal with. This kind of planning can help to alleviate some of this stress. Discussing your healthcare wishes with your loved ones can be difficult. But taking the time to have those conversations – and filling out the proper paperwork now – is a huge step toward providing peace of mind for those who care about you.

Healthcare proxies help ensure your wishes are being met. And they give your loved ones comfort in knowing they are taking care of you as you would want. Join us on April 16 in the Bush Room to complete this important step.

You can learn more on our website at health.mit.edu/decisions.

Cecilia Stuopis, MD is Chief Health Officer, MIT Health *(cstuopis@mit.edu).*

To Our Readers

Editorial Subcommittee

IT HAS BEEN BROUGHT to the attention of the Managing Editor and Co-Chairs of the Editorial Board that the erratum, "Setting the Record Straight," made unwarranted claims. Among them was that the Pulse does not have a faculty-wide election for Keepers of the Pulse. We have since learned that the Pulse holds faculty-wide elections, including emeritus faculty. In our experience, the term "faculty" is used in different ways given the many kinds of instructors and researchers at MIT. But we should not have said what we did and apologize for the confusion.

Really?

Yossi Sheffi

THE LAST ISSUE OF the FNL includes an unsigned FNL Editorial article responding to my November/December article about the Pulse and the FNL. This (unsigned) article titled "Setting the Record Straight" claims as follows:

1. *They quote my article: "Prof. Yossi Sheffi writes, 'It [the FNL] also betrays its own rules by allowing unsigned articles to be published, sometimes by non-faculty members of the community.'"* The unsigned FNL Editorial article claims, "This statement is inaccurate." Of course, this is a rich assertion in an unsigned article in the FNL.
2. The FNL Editorial article quotes my article: "Prof. Sheffi writes, *'To our knowledge, it is false that the Keepers of the Pulse are elected by the faculty in open elections.*'" Again, the unsigned FNL Editorial article is inaccurate in that open and free elections were held (using the Pulse). On August 27th, 2024, an email to the entire faculty announced the results of the elections. The result was that Roger Levy and I became Keepers.
3. The FNL article also states, "*The editorial board of the Faculty Newsletter strives to maintain the highest degree of accuracy and integrity within every one of the articles offered in each issue of the FNL.*" Perhaps making one phone call or sending one email to check whether or not their "Setting the Record Straight" statements are correct would improve their "*highest degree of accuracy*"?

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

Upcoming FNL Editorial Board Elections

Newsletter Staff

THE ANNUAL FACULTY-WIDE, electronically based elections to the *Faculty Newsletter* Editorial Board will be held later this spring. In addition to the standard Institute faculty and emeritus faculty voting lists, we plan on expanding the eligible "faculty" designation to include the following categories (listed by number of members):

Postdoctoral Associate
Research Affiliate
Postdoctoral Fellow
Visiting Scientist
Lecturer
Senior Lecturer
Club Coach
Visiting Scholar
Technical Instructor
Staff Affiliate
Affiliated Faculty
Instructor
Senior Postdoctoral Associate
Assistant Coach
Lecturer II
Senior Research Scientist
Affiliated Artist
Research Fellow
Visiting Professor
Coach
Housemaster

If we have omitted your MIT faculty affiliation, please let us know at: *fnl@mit.edu.*

The Red Lines We Will Not Cross . . . Will We?

- We understand attacks on any university to be an attack on our values. The university is an ideal, and we will defend it everywhere.

- We will not compromise on the autonomy of academic judgment. We will not allow outside pressure to intrude upon or affect teaching, grading, research, or hiring.

- We affirm the absolute right to academic and political speech, within the bounds of civil engagement, by all members of the community. We commit to defend these rights, including the provision of assistance to members of the University community whose legal status makes them vulnerable to state authority.

- We affirm the dignity and worth of all members of the University community and understand equality of dignity to be a precondition for freedom of speech.

- We will not assist in the removal of any person from the University on the grounds that their speech causes offense. Furthermore, we will help any member who travels abroad to rejoin our community of inquiry.

- We will not bury our principles in private communication or direct messaging. The values that we endorse are worthy of speaking aloud, in the voice of the University, or we are not committed to them at all.

Source: Clifford Ando, "The Lines We Will Not Cross," published in *The Chicago Maroon*, March 27, 2025; included here on the suggestion of the Editorial Subcommittee.