PLACE

# Rooms to grow in

Funky, nerdy, and just plain ugly, MIT's World War II-era Building 20 was low-end architecture but a good home for nurturing the intellect.

**BY MORRIS HALLE**

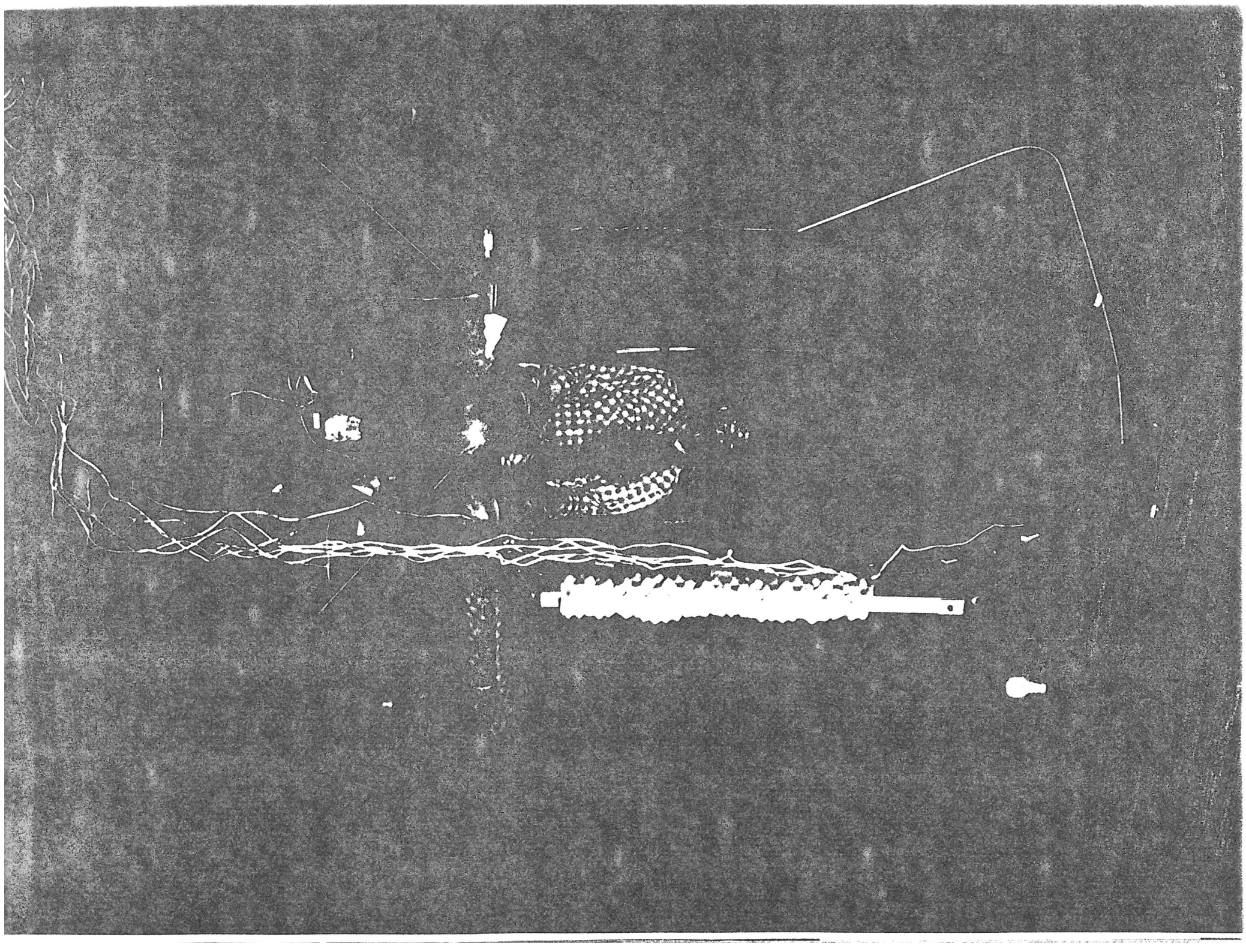
AN ARTICLE THAT I READ some time ago quoted an architect to the effect that every new building is like a jail. Once a building is up, he said, the people for whom it was built have to stay in it. Escape is difficult, in most cases, impossible.

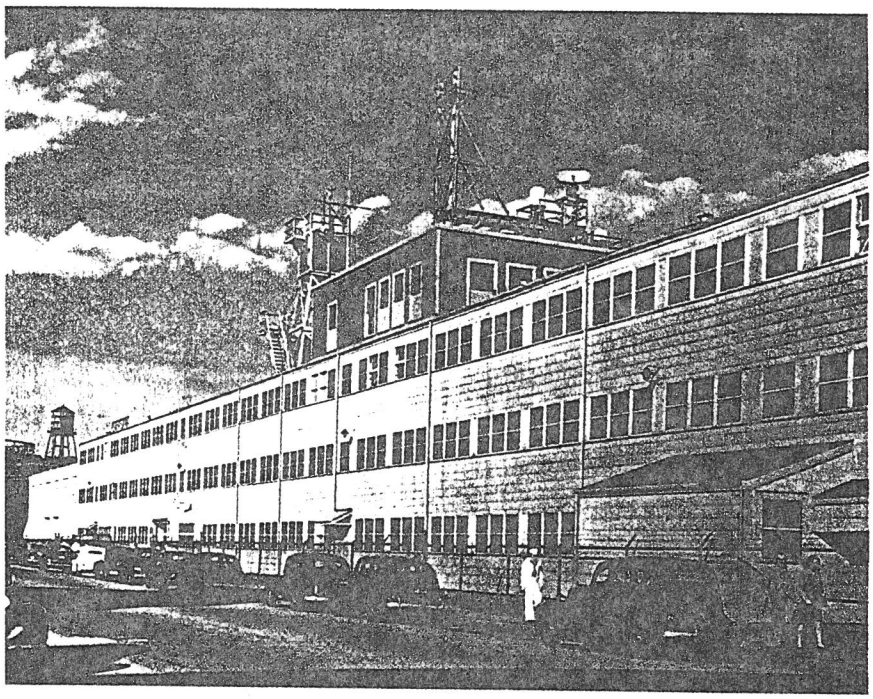
The architect didn't describe the situation correctly: Inhabitants of a building think of escape and jails only when the building does not fit their needs, and life inside becomes hard to bear. To my mind, buildings are rather like shoes: One thinks of changing shoes or of not wearing shoes at all mainly when they don't fit. When the shoes fit, we wear them without conscious thought and would not dream of being without them.

These thoughts occurred to me as I was considering the building in which I had an office during my entire teaching career (1951-1996) at the Massachusetts Institute of Technology. The building at 18 Vassar St. in Cambridge was erected in 1943 as a temporary home of the Radiation Laboratory, charged with development of aircraft radar and other electronic devices important to the conduct of World War II. Similar

**Opposite: An echo chamber in Building 20**

JOHN F. COOK





**Early on, radar dishes were placed on Building 20's flat roof.**

temporary structures were erected all over the country, but almost all were taken down soon after the fighting ended. Our building, known in MIT nomenclature as Building 20, remained in constant use for more than half a century after the war.

It was very horizontal, 250,000 square feet in a long, three-story, flat-roofed block sprouting four parallel wings from one side. MIT graduate Don Whiston designed the building in an afternoon, and it was readied for occupancy in six months. All steel was committed to the war, so Building 20 was framed with heavy wood timbers (which required an exemption from the city's fire code), and it was covered with asbestos shingles. It's been called funky, nerdy, and plain ugly, but Building 20 fit many of us perfectly. The basic room module was large, 12 by 24 feet, with asbestos walls and an acoustic-tile ceiling. Exposed pipes and wires ran overhead the length of the corridors. When the layout of an office or laboratory had to be changed, the alteration could be done at little expense and with a minimum of disturbance to the neighbors.

**The building kept us dry and warm, except when a window fell out.**

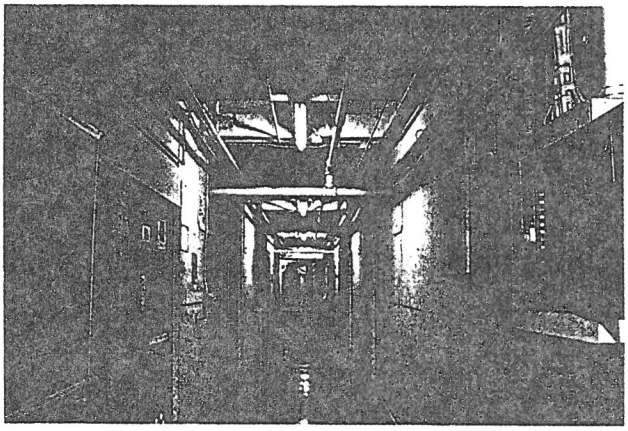
The building kept us dry and warm in winter except on those rare occasions when a window fell out because it had never been reputtied. Most of us in Building 20 were also comfortable in summer because the windows were so simply constructed that installing a room air conditioner was completely straightforward, at least most of the time. I recall one occasion when an installation did not go altogether smoothly, but since we were in Building 20, the matter was quickly fixed. In about 1967 my office mate, linguist Noam Chomsky, and I decided that the summer was unbearably hot and that we needed to air-condition our office. As we had no budget for this extravagance, we decided to pay for it ourselves, and we had two air conditioners ordered from a department store. Some time after the units were up and running and we were enjoying their effects, I received a call informing me that we had failed to obtain a permit for installing the air conditioners. My caller identified himself as a representative of a committee charged with safeguarding the architectural outlines of the buildings at MIT. I pointed out that we were talking about Building 20 and added that I was not about to do anything about our air conditioners. We hung up, and I

never heard about the matter again.

Not everybody liked Building 20. I remember interviewing a secretary for possible employment in our group. At the end of the interview she said that the building was so unappealing, so deadening to the soul, that accepting our offer–even if one were to be forthcoming–was out of the question. And Chomsky has had occasional visitors who asked him whether he had another office and expressed surprise when the answer was no.

The greatest virtue of Building 20 was that during most of its existence space in it was not at a premium and did not have to be fought over in the way space is fought over in really desirable campus locations. Of all the blessings that came to us from occupying Building 20, I consider this the most important. I estimate that it added five years to my scholarly life, years that would have been spent fighting for space. Moreover, because it was a relatively undesirable site, Building 20 could perform its most important function, that of incubator for new developments. We know that research is risky, that new ideas often are wrong. But without trying them out one cannot tell the few good ideas from the many that are less good. To find out, one needs not only money but also space. No one at MIT keeps records of such matters, so we do not know how many deserving projects stalled at the talking stage because there was no space for them. But we do know that because there was space in Building 20, many quite risky projects got off the ground. Innovative laboratories for the study of nuclear science, cosmic rays, dynamic analysis and control, and food technology incubated in Building 20. Among the many successful projects that found a home there were the important experiments by Jerome Y. Lettvin on the physiology of vision and audition of the frog; Jerrold Zacharias' work on the atomic clock; and Harold Edgerton's studies on stroboscopic photography.

Of course, not every project housed in Building 20 was successful. For example, around 1950 the great Norbert Wiener (1894-1964), the father of cybernetics and one of the leading mathematicians of his generation, conceived that humans could learn to perceive speech if the signal were filtered into a



JOHN F. COOK

**Exposed pipes and wires ran overhead in the corridors.**

number of frequency bands and transmitted to different spots on their bodies, say, to the fingertips. (Wiener, I believe, got the idea from Aldous Huxley's *Brave New World*, where in addition to movies there were spectacles known as feelies.) The idea did not fly, and I know about it only because in 1951 I shared 20B-201, that is, Room 201 in Wing B of Building 20, with a graduate student who was trying to put Wiener's idea into practice.

Linguistics, my own field of specialization, was one of those high-risk projects that but for the existence of Building 20 would not have developed at MIT. The availability of space had an enormous influence on the way the linguistics program evolved not only at MIT but worldwide. Linguistics has been part of the humanities or liberal arts since the Middle Ages, when grammar, rhetoric, and logic formed the trivium, the set of studies required of all who would obtain the bachelor's degree.

**But for Building 20, linguistics would not have developed at MIT.**

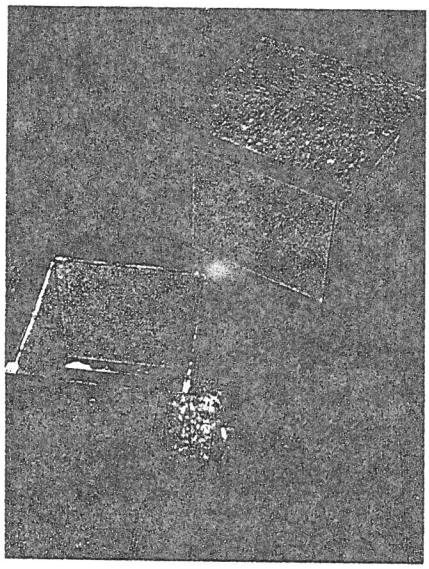
Study in the humanities has traditionally involved much reading and thinking and relatively little doing. A library reading room is typically where students do much of their work, and conversation there is discouraged, if not altogether prohibited. As a consequence, students in the humanities often conduct their thesis research in isolation from their peers and colleagues.

This approach is very different from the way advanced study is conducted in the sciences and engineering. In these fields the main site of activity is the often noisy laboratory, where there are a great many people working on related problems. Some of them are students; others may be faculty members, visitors, or researchers employed at the laboratory. In such a setting learning frequently results from interactions with others. Characteristically, new students in a laboratory are taught much of what they need to know by their colleagues, and the teaching is largely informal.

By a fortunate coincidence I was exposed to this type of learning when I first came to MIT in 1951 as an assistant professor. I did not have a Ph.D., and the biggest attraction of the job was that it provided an opportunity for doing research on speech, which I could then use for my Ph.D. thesis at Harvard. I was given a bench in 20B-201, which I shared with another graduate student in electrical engineering who was also interested in speech. The student had set up some equipment to measure various acoustic properties of speech. I did not know the first thing about this equipment, nor did I have much of an understanding of the acoustics of speech. But my laboratory mate and others in Building 20 turned out to be excellent teachers from whom I was able to learn a great deal, especially since somebody always seemed to be available to answer questions or carry on discussions. I soon learned enough to begin research of my own and to collaborate with others who were working on related problems. One of the people with whom I collaborated was Ken Stevens, a

chaired professor of electrical engineering. We coauthored our first paper in 1959, and the ninth in this series, which we hope is not the last, should be completed later this year.

In the 1950s there were a number of other research projects in Building 20 that employed linguistics. The biggest of these was a project on machine translation, which, as its name implies, had the aim of translating text from one language to another by computer or other mechanical means. When the MIT Ph.D. program in linguistics was established in 1961, the faculty was naturally recruited from among the linguists who were working at MIT and whose experiences had been quite similar to mine. We agreed that in our teaching we would follow the model that we saw all around us at MIT, that of the laboratory group at work on a common problem. The centerpiece of our program would be research in which students and faculty would participate and interact, each according to his or her abilities. To this end we obtained a few offices in Building 20. Unlike the laboratories around us, our offices did not contain special equipment, but they provided space where students could work in a way that did not isolate them from one another; rather it encouraged them to interact, to review issues that had come up in their classes, and to try out on each other ideas of their own.

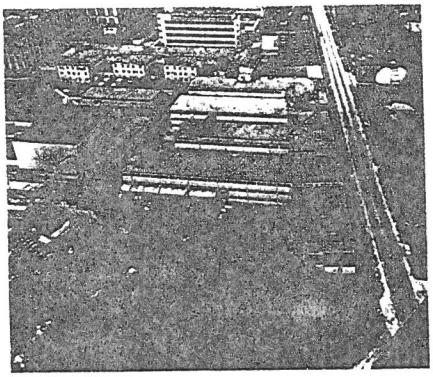


**A hole in the floor accommodated a tall vacuum tube.**

This combination of graduate study and research was immensely successful. Students completed their work in relatively short time, and what was more important, they were enthusiastic about it and communicated their enthusiasm to others. A general effect was that our program was widely copied, and linguistics departments nationwide found space in relatively undesirable real estate and thrived there. A more parochial effect of the success of our teaching methods was that our department tied for first place in the first evaluation of graduate departments conducted by the American Council of Learned Societies in 1965, barely four years after our first graduate students were admitted and MIT linguistics became a going concern. The MIT linguistics program has continued to rank first in the nation in all subsequent polls.

Our teaching methods also had an unanticipated byproduct: They revolutionized the meetings of the various professional societies, first and foremost those of the Linguistic Society of America. Whereas half a century ago it was all but unheard of for a student to speak at such

meetings, students are now major participants at all meetings. Members of the society who were active in the 1960s and '70s will not fail to recall meetings that were enormously enlivened by the interventions of MIT graduate students. And as I have been told repeatedly, an important reason they were able to overcome the natural diffidence of beginners and talk freely in a big public forum was Building 20, where they had honed their arguments and gained self-confidence in innumerable sessions in their offices.



**Blimp view, 1945**

THE PERMIT that the city of Cambridge granted for Building 20 in 1942 was a temporary one; it anticipated that the building would be dismantled when the war ended. Because MIT didn't urgently need the tract, the university repeatedly persuaded the city to extend the permit, and Building 20 survived into the 1990s. By then, MIT needed a new home for its computer science department, which almost since its inception has been housed in expensive rental premises. The obvious decision was to replace Building 20 with a new structure appropriate for the many needs of computer science, which at present is arguably the most important area of research and teaching at MIT. In the fall of 1997, just before the old building was closed for demolition, a commemorative meeting was held at MIT. Several hundred mourners, most of whom had begun their careers in the building, came from near and far. Demolition of Building 20 was completed this May.

As we bid good-bye to a place that for many of us was home for decades, there have been numerous attempts to put into words the essential qualities of the building. My own suggestion is that in spite of its unprepossessing exterior Building 20 was a great luxury. It was like money in the bank that could be invested in–or gambled on–projects without guaranteed payoff. The money has now been taken out of the bank and is about to be invested in a spectacular structure designed by Frank Gehry. There are myriad reasons for moving on. The building was beginning to show its age. MIT cannot afford to maintain space that in many ways was substandard. Gehry has promised us a building that will not only look great but will also provide for the needs of its inhabitants much better than its predecessor.

Still, there is something to be said for fallow land, for space that not everyone wants to move into, most especially in a place like MIT, where everything moves at top speed and where, according to the local myth, you must be able to take a drink from a fire hose if you want to thrive.

*Morris Halle is institute professor emeritus of linguistics at MIT.*