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The Point and the Field: MIT's Evolving Campus in Perspective

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The Report of the Presidential Task Force on Student Life and Learning

In July of 1996, MIT President Charles M. Vest appointed the Presidential Task Force on Student Life and Learning to undertake a comprehensive review of the Institute's educational mission and its implementation. The last review of this scope was carried out in 1949 by the Committee on Educational Survey (also known as the Lewis Commission), which reconsidered the educational experience at MIT in light of the changes taking place in the aftermath of World War Two.ⁱ

Fifty years after the Lewis Commission's report, MIT recognized it had reached another historical crossroads triggered by rapid changes in science, technology, and human organization. "The information revolution," observed the Report (released in 1998), "has changed industry, economics, and society on a similar scale as the industrial revolution, which precipitated MIT's founding." As a result, MIT must consider how to create an educational environment "far richer than [that] connected only to the delivery of instruction."ⁱⁱ

The 1998 Report subdivided its findings and recommendations into three areas: (1) student life and learning, (2) academics and research, and (3) community. Notably, the themes of "enhancing community" and broadening the conception of the "learning environment" figured prominently in all three areas of the Report. "If the goal of an MIT education is to develop the elements of reason, knowledge, and wisdom that characterize the educated individual," stated the student-faculty Task Force, "MIT cannot rely on structured learning alone... in the future, the third element of the triad—community—will play a larger educational role."ⁱⁱⁱ Similarly, continued the Report, the Institute must support this community in the context of a swiftly changing environment where "the traditional line between in-classroom and out-of-classroom experiences may become less obvious."^{iv}

Enhancing Community through Physical Design

The Report recognized the strengths and prominence of MIT's various communities, but conceded that "graduate and undergraduate students have few opportunities for informal interaction with each other, and students and faculty have even fewer."^v While multiple factors have contributed to this problem^{vi}, the Task Force identified the physical design of the campus as a major cause for concern. Simply put, MIT's campus, which has evolved around its nuclear academic, community, and research groups, lacks space for community-wide interaction.

As a result, the 1998 Report explicitly called for the provision of more attractive and convenient spaces for community interaction on campus. In the words of the Task Force, "MIT's design should encourage faculty and students to linger in areas they visit in common. All aspects of MIT's design—from laboratories, classrooms, and office areas, to dining, performance space, library space, and housing—should include space for informal interaction. Wherever possible, spaces for formal and informal interaction should be intertwined. Above all, more resources should be devoted to creating new common spaces and retrofitting existing facilities to create common space."^{vii}

The Evolving MIT Campus

MIT's President Vest arrived to campus determined to respond to the Institute's changing needs. Much like the Task Force's Report concluded in 1998, Vest felt that "parts of the MIT campus lacked the vitality of the people who occupied its buildings." This set the tone for a new wave of construction at MIT that would serve as an opportunity for the university to reinvent itself once again as an educational institution on the cutting edge. "At the threshold of a new century and a new millennium," Vest proclaimed, "the time had come once again for a bold and visionary building plan at MIT."^{viii}

The goals behind the Institute's construction initiative would be comprehensive. First, the building campaign would "create an infrastructure for invention that fosters the unfettered cross-fertilization of ideas... [bringing] together colleagues in related fields, strengthening existing synergies and sparking new ideas for research and teaching."^{ix} Second, the new facilities would respond to the findings and suggestions of the Task Force on Student Life and Learning, providing new spaces that would "inspire

teamwork, communication, and collaboration at all levels of campus life.”^x Third, the buildings would serve as a marketing tool: iconic, state-of-the-art facilities would act as a powerful means to engage industry and recruit both faculty and students.^{xi} Fourth and last, the buildings would fulfill a symbolic role. In Vest’s words, “the buildings on this extraordinary campus should be as diverse, innovative, and audacious as the community they support. They should stand as a metaphor for the ingenuity at work in them.”^{xii}

These high ideals proved to be no idle talk –starting in the late 1990’s, MIT has effectively embarked on a major rebuilding program that, to date, has added three major buildings to its campus: the Zesiger Sports and Fitness Center (2002), designed by Kevin Roche and John Dinkeloo & Associates; Simmons Hall (2002), an undergraduate dormitory designed by Stephen Holl Architects; and the Ray and Maria Stata Center (2004), designed by Gehry Partners, LLC. In addition, the McGovern Brain and Cognitive Sciences Center (projected occupancy in 2005), designed by Charles Correa Associates and Goody, Clancy & Associates, is currently under construction. The design for the Media Arts & Sciences Building, by Maki & Associates, is complete but awaits funds to begin construction. Other projects of smaller scale are also underway.

Open Architecture

Although they exhibit wide differences in typology, user groups, and program, the new buildings on campus have responded to the various new needs and conditions faced by the Institute. An analysis^{xiii} of the physical qualities of the Ray and Maria Stata Center, Simmons Hall, and the Media Arts & Sciences Building reveals significant similarities in the way that this group of contemporary buildings utilizes internal space to foster exchange, flexibility, and dynamism within them. The following set of five principles speak to these common attributes:

Variance	Each of these buildings is characterized by a broad range of spatial typologies, exterior forms, and scales in the treatment of surfaces, facades, and building volumes. Rooms, offices, circulation corridors, and public areas also vary widely in size and shape, often breaking away from the uniformity of grids and other regular patterns.
Multi-Functionality	Some spaces in these buildings are strategically designed to perform a variety of uses. Rooms can be opened or closed off from public spaces to generate privacy, laboratories can be expanded according to a project’s changing requirements for equipment and staff, corridors serve not just as circulatory space, but also as lunch areas and impromptu classrooms. This multiplicity of uses introduces flexibility into the building’s program by allowing certain spaces to adapt to changing needs and occupational patterns.
Openness	Separation gives way to integration. Public space –and the openness it provides– thus becomes a prominent feature within each building, sometimes even serving as the primary feature for spatial organization. Central atria, gardens, sitting rooms, alcoves, and corridors are treated not as ancillary spaces, but as primary elements that permeate and often correlate the horizontal (plans) and vertical (sections) relationships within the building. They are also the crossroads for human interaction –spaces designed to stimulate social contact, rather than simply contain crowds, within particular building regions.
Connectivity	The openness of spaces and abundance of visual connections create multiple links between different components of the building, allowing users to experience and/or participate in manifold activities at the same time. The visibility of activity and movement adds a dynamic –in fact, urban– dimension to the building seldom found in more static, hierarchically-organized spaces. In the process, the distinctions between public and private space loosen.
Constellation	The planned spatial uses within the building’s fabric are dispersed and organized into constellations. Sometimes referred to as “neighborhoods” by the architects, clusters of offices or laboratories paired with “pockets” of shared and semi-public space create the working environments for the buildings’ primary users. While the distribution of these clusters creates spheres of influence within the building and regulates the accessibility of different groups to specific spaces, it also decentralizes the use of internal space and generates a multinucleated arrangement. This organization of special usage aims to animate, rather than segregate, the different sectors of building use.

The five principles of design outlined above indicate that, as a group, the new buildings on campus actively attempt to infuse their architecture with an increased openness that allows for greater flexibility, transparency, sociability, and variety of use. While only time can tell how these new facilities will impact the interactions between activity, space, community, and technology on campus, it is clear that they provide, at the very least, an enhanced infrastructure that strives to make new connections amongst these factors possible, desirable, and more pervasive.

The Point and the Field

O. Robert Simha, the Director of Planning at MIT from 1960 through 2000, observes that since the 1960 Campus Master Plan was drafted, MIT has engaged in a philosophy of campus development that employs a variety of distinguished architects who are each assigned to design discrete buildings or sections of the campus.^{xiv} As the new buildings on campus show, that strategy of planning and development –which hinges on the premise that architects can effectively invigorate portions of the campus and increase its cohesion through surgical interventions in its building fabric– continues to be employed at MIT through the present day.

This approach to planning deserves to be rethought. The Institute’s new buildings are beginning to increase their potential value, dynamism, and functionality via a layering of functions, public & private uses, and spatial arrangements. With few exceptions, however, the campus is failing to extend these qualities and principles –which stem from the willingness to accept the complexity of the environment– to the realm beyond that which is contained *within* its buildings and corridors. MIT’s planning and urban design thus lags behind its architectural reforms, leaving new, functionally-intensified buildings as “points” in the Institute’s spatial layout instead of creating “fields” of influence which could create new uses, integrate a broader community into the activities of the campus, and ultimately generate a more energetic, coherent, and “eminently livable” space.

Spaces In and In Between

Recognizing the challenges it faced in terms of urban design, MIT convened a forum entitled “Spaces In and In Between” in 1999, which examined the complexity of the Institute’s spatial needs with the aim of generating new ideas about the design of the campus as a unified entity and how it relates to its environs.^{xv} The Institute invited six designers to participate in this visioning session: Charles Correa, Fumihiko Maki, Frank O. Gehry, Laurie Olin, Stephen Holl, and Harry Ellenzweig. Together, these designers addressed design issues that revolved around questions of external approach and identity, internal movement, enclosure, openness & community, internal diversity of campus sector experience, as well as cohesion and continuity to promote what they called “an Institute-wide campus.”

The architects that participated in the forum identified the following strategies, which MIT could pursue in the future to increase the spatial cohesiveness and enhance the urban fabric of its campus:

Main Campus	Seek through design the integration of its diverse places to make a functional and experiential transition from its grand places to the urban cityscape in a respectful way
West Campus	Complete a residential green and make the journey to and from other parts of the campus more pleasant
East Campus	Complete the campus along the Charles River and transform the area marked by parking lots into a more collegial environment
Northwest Campus	Create a new residential community that will be the fabric that connects MIT to the city
North Campus	Create an academic quadrant that forms a new North entrance to the campus and contributes to the urban character of Central and Lafayette Squares

The forum's findings present a valuable analysis, from an architectural and urban planning standpoint, to invigorate the spatial qualities of the MIT campus. However, the conventionality of the group's findings betrays a certain shortsightedness with regards to the degree to which it envisioned that the very nature of MIT's campus could evolve.

The Evolving MIT Campus Revisited

There is good reason to rethink the idea of the campus beyond its traditional boundaries. At a point in time where MIT emphasizes multidisciplinary, a mission of public service, sensitivity towards its host community, and the importance of creating a vibrant environment that is conducive to ingenuity and innovation, how can MIT begin to think of its physical campus as serving not just the needs of its students, faculty, and staff, but also engaging industry and its surrounding Cambridge and Boston community as part of what it considers to be its "campus"? How can MIT further develop a physical identity and spatial definition, while at the same time engaging its surroundings more cohesively?

Perhaps the very aspects that the architects who participated in the "Spaces In and In Between" have identified as problems that need to be solved –defining the campus' edges, providing gateway points, reusing existing space more efficiently, and developing new academic and residential quarters– present the greatest opportunities to evolve MIT's campus in the years to come. Now that the Institute has developed a critical mass of new facilities, there is time to engage in a broader conversation and visioning process: one which is not limited to designers, but one which embraces a truly multidisciplinary view and includes developers, industry interested in partnering with MIT, local residents and government, students and faculty, as well as entrepreneurs. Charettes, competitions, and congresses that involve all of these groups are prime avenues through which MIT can involve a broad user-base to develop innovative ideas and identify new opportunities for its future development.

Borrowing the qualities that the Institute's new buildings have employed –variance, multi-functionality, openness, connectivity, and constellation (among others)– and applying them to the urban sphere can also help to transform the campus into an entity that remains defined, but is more active, porous, and versatile. For example, the vicinity of Lafayette Square on Massachusetts Avenue (North Campus) has seen the recent development of University Park and Novartis, both considered to be high end mixed-use and R&D developments. Although both developments benefit from their proximity to MIT, they are hardly integrated into its urban fabric and function as independent entities. This is a missed opportunity in terms of the campus' development, considering that the university could have forged relationships with industry that may have led to the development of joint facilities. This strategy, which could still be pursued in the remaining land, could enable the Institute to define a northern gateway, meld with the Central Square neighborhood, and combine a multiplicity of uses (such as residential, laboratory, studio, and community-space) to simultaneously activate this sector of the campus and the Cambridge community.

Another example for a new kind of campus redevelopment involves the area comprising the Stratton Student Center and its connection to the Infinite Corridor, which forms the spine that connects MIT's more formal, central campus with the ad-hoc maze of laboratories and academic buildings to the East. The open land located between the Stratton Center and 77 Massachusetts Avenue provides a prime opportunity to raise the density of this sector by adding to the built fabric of the student center towards Massachusetts Avenue, combining building uses, and creating new spaces create new connections and amenities.

Renovations have already "opened" the edges of the Infinite Corridor by replacing opaque walls with glass partitions, thus allowing the passerby to visually experience activity within the rooms lining the passageway. But much more could be done! The Student Street at the Stata Center is a corridor too, but it is purposefully wide and lined with a broad cross-section of niches, ancillary spaces, lecture halls, even a gym, which encourage this space to be used in more ways than one. Similar qualities could be grafted on the Infinite Corridor by transforming existing private spaces into communal areas, freeing space in both the horizontal and vertical dimensions, and layering more activities where only one –circulation– currently dominates.

In conclusion, the opportunities to redevelop MIT's campus, both inside and out, abound. More than single instances, however, these opportunities present a field of opportunity that must be *simultaneously integrated* at the architectural and urbanistic level. Failure to do so will continue to generate isolated nodes in a network, rather than broader spaces of intensity and variety that tie together to forge an Institute-wide sense of place. In contributing to its own future and that of Cambridge as a "New Century City," MIT's open architecture should not only offer flexibility at the small scale but also stress the continuation of larger building fabric; it must invite a merging of public space networks from project to project. In this way, public space would once more become an autonomous structure holding together interventions within a single field.^{xvi}

Appendix A: Comparative Matrix

	Ray & Maria Stata Center	Simmons Hall	Media Arts & Sciences Building (Media Lab Extension)
Groups Housed	Computer Science and Artificial Intelligence Laboratory (CSAIL), the Laboratory for Information and Decision Systems (LIDS), Department of Linguistics and Philosophy	350 undergraduate students	Media Lab, Center for Bits and Atoms, Media Arts and Sciences
Qualities of Office/Lab Space	Research laboratories are located within the tower wings and are divided into neighborhoods, generally of two levels each, within which groups that share a common area of research assemble. Each neighborhood includes a central elevator core, a central double-height lounge and double-height laboratories that create a visual and physical connection between the two levels of the neighborhood. The neighborhoods are generally organized with laboratories at the core and offices at the perimeter. Laboratories are opened or enclosed according to the intended research activity.	N/A	6 double-height research laboratories are specifically designed to support the cross-disciplinary style of research and learning for which the Media Lab is recognized. They are flexible and highly serviced, enabling them to quickly reconfigure to respond to the changes in research direction. Within the labs, offices are clustered around double-height, shared research space to encourage social interaction, peer-to-peer learning, and close interactions amongst staff, professors and students. Glass is widely used in the partitions for labs, workshops, and offices to increase the visual porosity within the building.
Qualities of Circulation Space	Wide variety of circulation spaces. Typologies include student street, bridges & cantilevered walkways, linear corridors and semi-public spaces. The public/educational parts of the program and the private/research spaces meet along the student street –at once a separation and an intersection point.	Linear corridors with access to group lounges that connect group spaces vertically in atypical configurations at different points in the building	Circulation paths and social spaces are arranged to bring members of the building community into frequent contact with one another, promoting frequent encounters and cross-connections. Catwalks and floating stairways connect research labs around and across the atrium.
Square Footage	730,000 GSF	195,000 GSF	163,000 GSF
Number of Floors	9 + 3 levels below grade	10	6
Atrium	Various atrium spaces of different scales throughout the building	Partial central stairway/atrium joining street level with 2 nd floor of building. Multiple “porous” lounges serve as partial vertical atrium throughout the building	Central atrium is a primary feature within the building. Research, office, and communal space “clusters” around it, enabling visual communication across the internal realm of the building.
Auditorium	3 indoor auditoriums and 1 outdoor amphitheater.	Multipurpose room accommodates theatrical performances lectures and film-screenings	Rooftop auditorium
Scientific Laboratory	State-of-the-art research facilities	N/A	State-of-the-art media research laboratories
Computer Laboratory	State-of-the-art research facilities	One computer laboratory for general student use	State-of-the-art research facilities
Meeting/Communal Space	The ‘student street’ at ground floor level serves as a multifunctional gathering/circulation space; various double-height lounges, “town-square” in the fourth and fifth levels.	10 group lounges (5-15 people, shared by various floors); 20 small study lounges (2-4 people).	The building’s <i>raison d’etre</i> is to supply much-needed communal space which the present Media Lab building lacks. The popularity of “The Cube” at the Media Lab –one of the primary research spaces– inspired the central atrium, which opens the internal layout of the building and provides a broad spectrum of public and semi-public areas. The rooftop level features event and display spaces.
Other	Childcare center, underground parking garage	Game room, two music rooms, photography lab, multipurpose room, laundry facilities.	Exhibition space at top-floor level
Fitness	1 fitness facility	1 exercise room	N/A
Terraces	A complex of cascading outdoor terraces q43 accessible from the third level	Two external (roof) and one internal terrace –one of which accommodates a Dan Graham installation.	The top floor level features a terrace, theater/auditorium, café, and display space.
Variation of Scale	Wide variety of scale in both the exterior and interior of the building. Complexity of curved forms and interstitial spaces, both in plan and in section. Non-orthogonal orientation and configuration of space within the building.	Nearly 6,000 undersized windows constitute the façade, which is further fragmented by cutouts of the building mass	The fragmented façade and the use of overlaid materials (steel tubes partially shielding research spaces) breaks down the scale of the building, providing variety of scale in the exterior. The quality of space also varies greatly in the interior: from expansive atria to double-height laboratory space and intimate catwalks.
Urban Connectivity	Large footprint (most expansive one on the MIT campus) extends into the site in a series of folds and crenellations. The building connects to the Fairchild building on campus and, through it, to the wide network of university corridors. As a major anchor point, it serves as a hinge between the MIT campus and Kendall Square developments.	The building stands alone between railroad tracks and MIT football fields. The uniform treatment of the façade with nuanced volumetric cutouts addresses all sides of the site with equanimity.	Adjacent to the current Media Lab building, the extension completes the undeveloped southwestern portion of the site that forms a corner between Ames and Amherst Streets. The building is envisioned as an important addition to the Amherst Street corridor, which will strengthen the link between the main campus and the Sloan School of Management. The profuse use of glass throughout the building will allow the pedestrian to establish a visual link with the building at the street level.
Spatial Legibility	Complexity of form in both the interior and exterior governs the building. Two main towers.	Conceived as a ‘vertical slice of a city,’ the building is a single block fragmented by cutouts from the general building volume and a field of punched windows	The building retains the architectural vocabulary of rectilinear volumes, but adds to its complexity by fragmenting the façade into various components –a move that distinguishes it from the more uniform treatment of the façade in the original Media Lab building.
Dining	Dining facilities on the student street and on the fourth floor in addition to student lounges	One double-height dining hall	Café located at the top floor

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Notes

ⁱ Task Force on Student Life and Learning Report

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^{iv} Task Force on Student Life and Learning Report

^v Task Force on Student Life and Learning Report

^{vi} Other causes cited were the fragmentation of the Institute's support structures and the divisions amongst campus groups (living groups, graduates, undergraduates, etc.)

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^{viii} The Evolving MIT Campus –A Word from the President

^{ix} The Evolving MIT Campus –A Word from the President

^x The Evolving MIT Campus –A Word from the President

^{xi} John Guttag, Chair of the Electrical Engineering and Computer Science Department at MIT, expects that the Stata Center "will be a great tool for recruiting." Tom Gyerin, a sociologist at Indiana University who has studied science buildings, also claims that "these research centers can serve as a political compromise by providing new space for multiple departments." See Dizikes, Peter

^{xii} The Evolving MIT Campus –A Word from the President

^{xiii} See Appendix A: Comparative Matrix

^{xiv} Simha, O. Robert. MIT Campus Planning 1960-2000. P. 9

^{xv} Spaces In and In Between <http://web.mit.edu/buildings/spaces/spaces_spotlight.html>

^{xvi} Habraken, John. "Cultivating the Field: About an Attitude When Making Architecture." P. 18