

Digital City: New York and the Rise of an Urban Tech Culture

The explosive growth of the tech industry in New York in the past decade is more than a boon for the city's economy. As *James Sanders* explains, it is propelling an extraordinary transformation in urban life—one with significant implications for the future, and surprisingly deep roots in the past.

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Photography by Joshua Simpson





There are few places where the outlines of 21st century New York can be glimpsed more clearly than the lobby of the Ace Hotel, on Broadway and 29th Street in Manhattan. Within the ornate, high-ceilinged room, built as a showroom around the start of the 20th century and renovated a few years ago by the hip Portland-based hotel chain, the ranks of old-fashioned sofas and long wood tables are filled daily, generally to capacity, by an intent cohort of young New Yorkers and out-of-town visitors, mostly in their twenties and thirties, their faces illuminated less by the period Mazda bulbs of the lobby's vintage pendant fixtures than by the cool blue glow of scores of laptops, tablets, and smartphones on their desks and laps.

Many sit alone, earbuds in place, immersed in the screens in front of them, poring over business plans, strategy decks, email chains, and Skype chats. Others work in small groups, laptops open in front of them, hashing out ideas and approaches, their conversation energized by the self-fueling fervor of young entrepreneurs, filled with references to “first-round financing,” “seed stage funds,” “exit strategies,” and other terms of art. Still others are evidently pitching their ideas (with maximum enthusiasm) to potential investors or partners, an activity which turns out to be merely one part of an energized web of social and business interactions that is in many ways the most striking quality of the place, and a prime source of its energy—as introductions are made, colleagues are connected, apps in progress

described, new technologies sketched, partnerships proposed, job possibilities floated, gossip exchanged, and countless networking opportunities explored and advanced.

Though a great deal of intense, productive work is proceeding there, the Ace is not an office. Nor, despite its buzz of market-like interaction, is it the floor of a stock exchange or a trade fair. And it is certainly not an ordinary hotel lobby. It is instead the heart of a new culture—an *urban tech culture*, which has arisen with astonishing speed over the past decade, and now stands in the sharpest possible contrast to the widespread notion (burnished over the past half-century) that advanced technology finds its natural home in low-density, autocratic suburban environments remote from any tra-

ditional urban center. Places, in other words, like California's Silicon Valley.

Fifteen years ago, the notion of an “urban tech culture” did not exist. Just ten years ago, it barely existed. It has been made possible only by the stunning rise of the city's tech *industry*—which has propelled New York into becoming the second most important hub of digital activity in the world, after Silicon Valley itself. By any measure, the city's growth has been extraordinary: in its number of funded start-ups, the success of its fastest-growing companies, the meteoric rise of its venture-capital firms, the boom in its commercial leasing, and, not least, in the increasing gravitational attraction it has exerted on established tech companies from the West Coast and elsewhere. “It's not being hyperbolic to say that early-stage business formation in the tech sector in New York has exploded,” observes Thatcher Bell, a principal of the venture-capital firm DFJ Gotham Ventures. “In 2006, I wouldn't have put New York anywhere on the map [of leading tech hubs],” adds the tech entrepreneur and academic Vivek Wadhwa. “Now it is literally number two.”

The economic importance of this surge has been recognized for some time—not least by city officials and agencies, buoyed by this positive (if, in fact, largely unanticipated) source of new revenue and jobs. But beyond the obvious economic and employment impact of this new industry lie important consequences for the physical development of New York and other cities, consequences which are only now being surveyed and gauged. And still beyond that lie the larger, more transformative implications of a tech culture whose shape is now, for the first time, coming clear—one with immense significance not only for the future of New York, but the nature of urban life in the 21st century.

The Rise of Urban Tech

TO MANY OBSERVERS (including government leaders), the explosive rise of the city's tech industry seems to have come out of nowhere. In reality, New York City enjoyed substantial tech-related employment for decades, fueled by its large financial companies, who required sophisticated information technology (and cadres of skilled IT

engineers) in order to carry out their increasingly complex lines of business. It had also been the scene, in the late 1990s, of a rush of promising but ultimately underfunded Internet companies, collectively dubbed “Silicon Alley,” that (for the most part) perished in the crash of 2000. But it was only in the first years of the 21st century—and especially since 2005—that New York emerged as the nexus of a vigorous (and, this time, solidly financed) tech *start-up* community, along the celebrated, now-familiar lines of Silicon Valley. This led to a kind of redefinition, in which the city's large but low-visibility tech population, joined by a smaller but high-profile cadre of newcomers, suddenly lifted the city to overall prominence as a world-class hub of digital activity. The arrival of the entrepreneurial sensibility of the start-up world, furthermore, would prove crucial to the character of the new urban tech culture.

Though a variety of factors contributed to this sudden growth, the driving force behind the change lies in technology itself. Since the 1960s, the vanguard of digital innovation had

resided largely in the realm of *hardware*—faster, smaller, and more powerful computers and chip sets, whose research and development required the kind of large-scale, specialized plants, often with “clean-room” facilities, that found their natural home in the suburban office parks and “innovation campuses” of California and elsewhere. But at the start of 21st century, as venture capitalist Nick Beim has noted, “the cost of bandwidth, processing power and storage dropped dramatically, and reliable open source computing stacks began to emerge, making it increasingly cheap and easy to launch web services.” Accelerated by the arrival of the smartphone in 2005, these advances began to shift the cutting edge of innovation from hardware to software: to social media, and smartphone apps, and digital services designed to bring a host of traditional industries into the online and mobile worlds. “The innovation shift from infrastructure to services had profound implications for New York, and indeed for major cities everywhere,” writes Beim.



In December 2010, Google carried out the largest real-estate transaction in the United States of that year, purchasing the full-block 1930 Port of New York Authority building for \$1.9 billion to serve as its New York headquarters.

“As digital technology grew to be less about itself and more about its integration with the larger world, many of its entrepreneurs began gravitating, perhaps inevitably, to the vast commercial universe of New York.”

Since technology was much easier and cheaper to deploy, it meant that business and product ideas could drive innovation as much as technology ideas and that one didn't have to be a technologist to start a technology-driven company. This led to a significant increase in the number of credible entrepreneurs who could start technology-driven companies, be they creative urban hipsters with social product ideas, aspiring business-school graduates seeking to disrupt existing industries or vertical industry veterans with ideas to solve industry problems with information technology. This shift substantially favored big cities. Equally important, these new web services had their biggest impact on information-centric industries, which tend to cluster in big cities. These include financial services, advertising, marketing services, publishing, entertainment, real estate and design. These industries are all driven by information, and their end products are partly or totally digital.

As digital technology grew to be less about itself and more about its integration with the larger world, many of its entrepreneurs began gravitating, perhaps inevitably, to the vast commercial universe of New York, the single largest urban economy in the world. One by one, fast-growing tech companies began to emerge not from the Bay Area but from Manhattan and Brooklyn: Shutterstock, Etsy, BuzzFeed, Betaworks, Gilt Groupe, Tumblr, Foursquare, Mashable, Business Insider, Warby Parker, Kickstarter, FreshDirect, Seamless, ZocDoc—funded by a host of enterprising venture-capital firms, themselves based in the city, who recognized the opportunities of this new city-based tech world.

A key turning point came when the Silicon Valley search-engine colossus Google made the decision, in 2006, to lay a stake in New York's fledgling tech landscape—then expanded so rapidly that, in the single largest U.S. real-estate transaction of 2010, it chose to purchase the immense 1930s building on Eighth Avenue in which its offices were located (and where it now hosts over four thousand engineers and other employees). Soon nearly all of Silicon Valley's mainstays—Microsoft, Facebook, Amazon, and Twitter, among them—had followed suit,

establishing substantial engineering operations in New York. The city's business-friendly mayor, Michael R. Bloomberg (himself, unusually enough, the founder of a giant digital information firm), encouraged this rapid expansion through seed funding of new “incubator” spaces, and in 2012 addressed one of the city's largest challenges for continued growth—the lack of a sufficient supply of high-level software engineers in the New York area—by establishing, in partnership with Cornell and Israel's Technion, a two-billion-dollar graduate-level campus on Roosevelt Island dedicated exclusively to applied science and tech. (His successor, Bill de Blasio, declared early on his own administration's intent to continue the city's active support of the tech community.)

Today, while still significantly smaller than Silicon Valley in the number, size, and track record of its start-ups (none of which, except Tumblr, have experienced a global breakout on the order of a Twitter, Facebook, Snapchat, or Uber), and in the quantity and value of its venture-capital deals, New York's tech industry has become an immense economic sector (the second largest in the city, after financial services). In a study conducted in 2013, HR&A Advisors determined that New York City's “tech companies” (in their narrowest definition) employed a total of 141,000 people—larger than the city's entire manufacturing sector—while another 150,000 people held tech positions in other kinds of companies, from banks and financial houses to media agencies and engineering firms. The combined total of 291,000 jobs comes strikingly close to the total of 347,000 tech-related jobs in Silicon Valley—Santa Clara and San Mateo counties—in that same year, measured by the same metrics. (It has also grown by thousands in the years since.)

By the time of the HR&A study, however, it had become obvious that the rise of the city's tech industry, while *enabled* by technological advances, was in fact built on a far broader range of considerations. The younger generation of talent founding New York's start-ups and staffing its tech companies has been attracted to the city for cultural as much as economic reasons, preferring its dense, historic, mixed-use environments to

“Atop the new tech industry... an urban tech culture has been taking shape, one whose identity is tightly interwoven with the physical fabric of the city itself.”



View of Grind, a co-working space on Park Avenue South. The modest floor plates of New York's older buildings offer ample natural light and interesting city views for nearly every user.



Anne Hathaway, in Nancy Meyers' film *The Intern*, riding through her company's prewar building in Brooklyn.

PHOTOFEEST

the suburban settings of Silicon Valley. Once in the city, moreover, they have been adapting and transforming those environments in distinctive and provocative ways. Atop the new tech industry, in other words, an urban tech *culture* has been taking shape, one whose identity is tightly interwoven with the physical fabric of the city itself.

While its name may be new, the notion of an “urban tech culture” has quickly become entrenched in the popular imagination, almost to the point of cliché; Nancy Meyers’ 2015 big-budget feature film *The Intern*, for example, breezily and familiarly deploys the milieu of a new fashion tech start-up in Brooklyn to frame its story of a young entrepreneur (Anne Hathaway) and an older, retired businessman (Robert DeNiro), her unlikely “intern.” The forces behind it are also widely recognized—and sometimes caricatured—as an outgrowth of the larger desire of many American millennials—tech-minded or otherwise—to reject their suburban upbringing by moving en masse to “hip” urban neighborhoods across the country. In an article about the shifting geography of the tech industry, the author and academic Richard Florida ticks off the “distinct lifestyle advantages of setting up shop in the hurly-burly of real urban districts. Compared with previous generations, today’s younger techies are less interested in owning cars and big houses. They prefer to live in central locations, where they can rent an apartment and use transit or walk or bike to work.” The founder of Tumblr, David Karp, summarized matters even more succinctly: New York, he declared, is simply “cooler than Palo Alto.” Such comments make it easy for some observers to dismiss the rise of tech culture in the city as a fad; others are put off by the self-confident and sometimes entitled attitude of youthful tech entrepreneurs, whose numbers, energy, and evangelical certitude in their superior, “futuristic” ways can make them appear, to established city-dwellers, not unlike some alien invasion.

Yet for all the widespread familiarity of this urban phenomenon, it had not yet been the focus of a detailed, systematic examination—one that explicates its internal workings, charts its implications for physical growth and development, and explores its significance for the larger patterns of life in the 21st century city. What emerges from that study is a complex and perhaps surprising portrait. Urban tech culture is indeed transforming New York, sometimes quite dramatically, and bringing new ways of using and understanding the fabric of the city. Far from being “alien,” however, the shape of this new culture is actually reaching back to the city’s essential commercial heritage—its DNA, so to speak—and, in many ways, restoring and even reanimating some of its deepest urban roots.

A Homecoming

The recent digital explosion in New York builds on a long—though surprisingly little-known—history of urban tech innovation

What if legions of [tech] engineers lived among us? What would they wear? Where would they eat? What kind of space would they take up in our imagination?...“New York just doesn’t feel like an engineering town,” a friend, a native and astute observer of the city’s culture, remarked to me recently. I wanted to disagree, but in truth, I couldn’t.

—Ginia Bellafante, *The New York Times*, November 18, 2011

IF THE NOTION of an urban tech culture still seems surprising (or, as the columnist Ginia Bellafante could write as recently as 2011, essentially unimaginable), it is likely in part because for nearly half a century—from the mid-1950s to the early 21st century—high-tech activity was identified almost exclusively with the kind of sprawling, low-density settings exemplified by California’s Silicon Valley, filled with industrial parks, tract houses, highways and parking lots. But any longer view reveals a dynamic history of dense urban centers—and above all New York—offering the primary setting for advanced technological innovation, especially in the world of telecommunications.

It was in Manhattan, after all, just off Washington Square, where that world was born—when, in the late 1830s, the inventor Samuel F.B. Morse developed both the practical hardware to push a signal through a wire—the electromagnetic telegraph—and the “software” to do so: Morse code. No single advance in human communications was more dramatic, or far-reaching, than Morse’s invention, which instantaneously accelerated the pace by which information could travel from that of a man on horseback to, literally, the speed of light—and resulted, within a matter of years, in the first wired “networks” lacing together cities, states, and (just two decades later) continents.

Revealingly, Morse did not accomplish his revolutionary leap in isolation, but in a kind of 19th century “innovation lab”: the University Building, a Gothic Revival structure built in 1835 by the University of the City of New York, today known as NYU. Here, in a structure described by one writer of the time as an “exotic combination of apartment house, scientific laboratory, clubhouse, and [bohemian] haven,” a variety of inventors and academics lived and worked side by side, collaborating to achieve a string of impressive technological advances (including, besides the telegraph, the Colt revolver, early chemical batteries, the first photographic portrait ever made in America, and the first photo ever taken of the moon), all achieved in what might be considered, in today’s terms, an early “tech incubator.”

In the early 20th century, the notion of the dense, bustling commercial city as the natural home for technological innovation expanded still further. In the 1920s and ‘30s, lower Manhattan was not only the America’s largest manufacturing center but home to the world’s undisputed leader in telecommunications, the two research and development wings of the American Telephone and Telegraph Company (AT&T): Western Electric and Bell Labs, both operating from a full-block industrial complex on West Street, at the western edge of Greenwich Village. (The complex, designed by architect Cyrus W. Eidlitz, is now the artists’ cooperative, Westbeth.) Indeed, the parade of innovations that emerged from this high-rise congeries made much of the 20th century possible: from long-distance telephoning (allowing people in different cities to speak to each other), to electrical recording (replacing the Victrola’s acoustic



Located on Washington Square, the 1835 main building of the University of the City of New York (now known as NYU)—designed by Town, Davis & Dakin to recall the Gothic spirit of Oxford and Cambridge—was an early “mixed-use” structure containing classrooms, studios, laboratories, and apartments for faculty members.



For decades, Western Electric and Bell Labs—research and development divisions of AT&T—occupied a complex on the edge of Greenwich Village, on West Street. The High Line passed directly through the buildings, causing minute (but, for acoustic and semiconductor research, highly troublesome) vibration throughout the structure.



With its new research facility in Murray Hill, New Jersey, “Bell Labs invented the fundamentals of the corporate campus,” Louise Mazingo writes in her 2011 book *Pastoral Capitalism*. “Three-story height limits, generous landscape setbacks, and specifically white-collar uses...permitted the incursion of a large corporate employment center into a swank suburban residential community.”



Hailed for its futuristic design and high-performance building envelope by Lord Norman Foster, the Apple Campus 2 in Cupertino, California—like nearly all Silicon Valley headquarters—is in fact built around the suburban “office park” model of the early 1960s, now more than half a century old.

horn and birthing modern recorded music), to synchronized sound for motion pictures (enabling the movies, astonishingly, to *talk*), to information theory (the conceptual basis for much of the digital revolution), to a simple but futuristic new device conceived in the late 1930s: a combination switch and amplifier, made of a single material, that would replace the complicated, balky, and fragile vacuum tube.

Ironically, it was the exacting process needed to develop that last new device—one that, when perfected, would usher in the digital world—that was responsible for leading the culture of tech innovation out of the city, and into the suburb. The unimaginable precision required to create the deliberate, infinitesimal imperfections needed to produce the first semiconductor (later dubbed a “transistor”) proved frustratingly difficult to imagine in the old labs on West Street, whose general age and lack of cleanliness and climate control were compounded by a particular problem: a tendency to vibrate slightly, as the building’s steel frame transmitted the movement of trains passing through it—literally—on the still-active High Line.

But the difficulties of the urban location were suddenly solved when work moved to the pioneering research complex that Bell Labs had just built in the exurban precincts of Murray Hill, New Jersey, thirty miles west of its old headquarters in lower Manhattan. Conceived and laid out by Bell Labs engineers, the new facility was truly something new: a low-rise series of linked glass-and-brick buildings set among acres of landscaped open space within a distant suburb, far removed from the density and pedestrian life of the city, and literally isolated from the rest of the world by a guard booth at the entrance. In part because of the spectacular impact of the transistor itself, which seemed upon its announcement in 1948 to presage a new world, the Bell Labs “campus” became *the* postwar model for research facilities for large American corporations, and, in time, for corporate offices generally.

Nowhere was the impact of this shift felt more than in the digital universe the transistor had brought forth, whose vanguard of research and development, having left Manhattan, now departed the metropolitan sphere altogether. In 1956, one of the device’s inventors, William Shockley, flush with success (and a Nobel Prize in Physics) and frustrated at Bell Labs, chose to locate his new company, Shockley Semiconductor, three thousand miles to the west, in the remote agricultural expanses of the Santa Clara Valley, south of San Francisco (where, as it happens, he had grown up).

Shockley’s reputation allowed him to recruit a cadre of brilliant young engineers who, in the coming two decades, would establish their own “start-up” companies to pioneer the integrated circuit and the personal computer, drawn to the locality by its inexpensive land, its proximity to Stanford University (whose visionary provost, Louis Terman, made it his mission to recruit new companies to the area), and its expansive highway system—all of which encouraged the development of what was soon renamed “Silicon Valley” to take the form of suburban-style research parks and office parks, often hundreds of acres in size, and accessible only by automobile. That model would become the very “image of the new economy,” Manuel Castells and Peter Hall have written, a “series of low, discrete buildings...set amidst impeccable landscaping in that standard real-estate cliché, a campus-like atmosphere. Scenes like these are now legion on the periphery of every dynamic urban area in the world.”

It would be only at the start of the 21st century, five decades later, that, in a stunning reversal, the forward edge of digital culture returned to the kind of dense urban environment it had jettisoned decades before, and New York’s tech industry became one of the fastest growing in the world—a transformation that for all its startling and unexpected character could be considered, in some sense, a homecoming.



The commons area at General Assembly, a Manhattan co-working space, includes a bleacher seating (far right) and a floor-to-ceiling blackboard for group meetings.

A New Kind of Office

IT IS A QUALITY of urban tech culture that its innovations have proven transformative at a startling range of scales—from the single desktop at one extreme to the multi-borough metropolis at the other. Moreover, these innovations interlock tightly with one another, with smaller-scale changes having a clear and causal impact on larger ones. Understanding the full impact of tech culture on the urban landscape, therefore, calls for a methodical, almost primer-like investigation, rising step-by-step: from the workplace, to the building, to the district, to the city.

The basic building block of this culture is found at the level of the workplace, and especially in a new kind of space that, although it shares many characteristics with other, more “conventional” tech offices, best epitomizes the kinds of changes tech culture is bringing to the city.

These are the new collaborative workplaces, known variously (and with different shades of meaning) as “co-working,” “incubator” or “accelerator” spaces. More or less unheard-of just a decade ago, these spaces now number more than two hundred in New York City alone, and range from more familiar names such as WeWork, General Assembly, and Grind—each offering several locations in the five boroughs—to scores of smaller operations.

In one sense, the co-working model is a real-estate proposition, an ingenious market solution to the dilemma faced ten years ago by newly-formed tech start-up companies in San Francisco and New York. Those fledgling operations had begun, often enough, in their founders’ homes or apartments, but soon, meeting some initial success and needing to expand, they found themselves unable to rent conventional office space because they lacked the required multi-year credit history and business record to obtain a seven- or ten-year commercial lease from a landlord or management company.

A group of imaginative real-estate entrepreneurs came to the rescue by establishing the co-working and incubator model, effectively serving as middleman between the new start-up culture and the traditional real-estate market. Leasing sizable blocks of urban office space, they offered well-equipped office space to tech start-ups

“More or less unheard-of a decade ago, these spaces now number more than two hundred in New York City alone.”

on a monthly membership basis; individuals or nascent companies without a lengthy credit or sales record could now simply pay a monthly fee and have access to the space they need to transform their promising idea into a successful business. (If their idea failed, of course, as a large proportion of tech ideas do, they were not trapped in a long-term, possibly ruinous lease commitment, but were free to move on to the next concept—another key attraction of the co-working model.)

It is in their physical layout and functioning, however, that co-working spaces have proved even more innovative—and influential. Indeed, some of the concepts—especially the notion of “hot-desking”—have already spread far and wide, and are having an impact on workplaces of nearly every kind, in a variety of professional and business sectors (and in some cases, not without controversy over their appropriateness). But it is worth exploring those concepts in their original, seminal incarnation, to return to their basic principles and constituent elements, in order to grasp their significance in the reshaping of not just offices, but the buildings they fill, and of the urban districts in which those buildings sit.

The prime driver of change has, once again, been technological: the potent combination of powerful mobile hardware (laptops, tablets, and smartphones), broadband wireless internet access, the unlimited storage capacities of “the cloud” (allowing endless quantities of information to be accessed from any device), and the ability to achieve near-instantaneous communication with people almost anywhere in the world. Scarcely more than a decade old, this represents nothing less than a commonplace miracle, and it has impacted the lives of just about everyone, to varying degrees. But it is in tech co-working spaces, and the districts surrounding them, that its implications for urban life can be glimpsed most clearly.

Members who join a co-working space do not receive a conventional office. Indeed, they have no need for one, since nearly all of the functional elements that an office once provided—phone, computer, and cabinets filled with business files—are now located in the lightweight portable device they carry, and the computer “cloud” with which it links. They take their entire office with them, wherever they go—perhaps *the* crucial key to the

transformative nature of urban tech culture.

The first environment to be designed specifically around this new reality, the co-working space functions less like a traditional office than something akin to a university library. As in a library, members generally do not have an assigned desk space, but instead can choose from a variety of settings in which to work (and can easily move from one to the other across the day). Inventiveness on the part of the founders and designers of these spaces has expanded the range of these settings, which include communal tables of various lengths and shapes; lounge-like areas furnished with upholstered sofas and chairs; clusters of café tables and chairs, and hightop tables with stools (adjacent to a serving bar with espresso engine), enclosed meeting rooms of various sizes; single-occupancy, acoustically isolated “phone-booths” for

private conversations; a high-backed, deep-set chair designed to muffle surrounding sound; and, depending on nature of the co-working space, a range of studios and theater spaces. The complexity of these interiors is further enriched through a secondary layer of specialized spaces and amenities: mailboxes, lockers and bicycle storage; classrooms for courses in coding, marketing, graphics, and the preparation of business plans; and areas of dedicated desks, intended for start-up companies that have begun to grow and need some kind of fixed abode.

Though they make careful allowance for focused individual activity, co-working spaces (as their name implies) are generally intended to encourage informal interaction among its entrepreneurial members, a quality which has proved to be one of their greatest attractions. Individuals laboring intensely on their promis-



Furniture manufacturers are responding to the needs of co-working spaces with new designs, such as the Alcove Highback Sofa, designed for Vitra in 2006 by Rowan & Erwan Bouroullec.

“The co-working space—in both its layout and workings—resembles less a traditional office than something akin to a university library.”

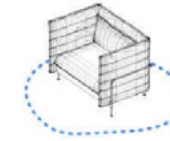
A Variety of Settings

A research study carried out in 2013 by the Center for Urban Real Estate (in partnership with Arup) analyzed the diversity of environments within co-working spaces and revealed the variations among them to have significant impact on the number and type of social and work interactions they create.



Phonebooth

A semi-isolated compartment, resembling traditional phone booth and usually located off a hallway or perimeter of a larger space, this space allows a single person to make private cell-phone conversations without disturbing (or being overheard by) others.



High-Back Chair

A new furniture designed produced by Vitra that provides comfortable seating and partial privacy for one or two users within a larger interior space. The chair's high backs provide considerable visual isolation but only modest acoustic isolation.



Hightop Café Table Grouping

A high round table surrounded by high stools or chairs; these are usually arranged in groups in a “café” layout, near a serving bar. Informal and flexible, these groupings accommodate one person working alone or several people in meetings or joint work.



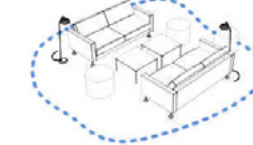
Communal Work Table

Also known as “benching,” or a “hot seat,” the long communal table—used on a first-come, first-served basis the workhorse of coworking spaces. A dedicated version of the long table can provide room for start-up's permanent desktop computers and storage.



Work Desk

Similar in height to a communal work table but shorter in length and not continuous, these tables are generally intended for four to six people working on a single project.



Lounge Grouping

Comprised of one or more comfortable upholstered sofas or lounge chairs around a coffee table, these living-room-like spaces serve meetings with clients or visitors, formal or informal team meetings, individual work sessions or reading, or individual relaxation.



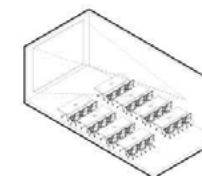
Conference Room

An enclosed room, designed for acoustic privacy, these rooms usually center on a large conference table and include seating for 6 to 12 people working on a project. Walls may be glazed (or flexibly opened) to allow for communication with larger space.



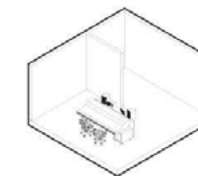
Editing Room or Suite

A small, fully isolated room intended for working with media projects such as film, video or music production, the editing suite is acoustically and visually isolated in both directions and typically a low-light level, “inward-focused” environment.



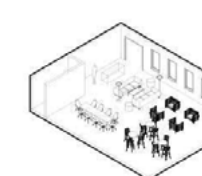
Classroom

A medium to large-sized room, generally acoustically isolated from the larger space, intended for classes and other formal programs. Furnishing consists of a series of long, narrow tables with desk chairs (for 10 to 40 persons) in rows.



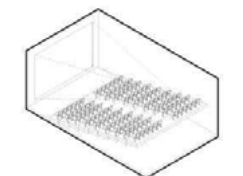
Studio/Media Room

A visually and acoustically sealed environment intended for video or music production, sometimes accompanied by a control room. These studio spaces usually feature a simple lighting plot, a camera on tripod, “stage area” and background “green-screen” wall.



Commons

A large area near the center of a coworking space, combining café tables and lounge groupings with general circulation space, and serviced by a bar and kitchen area. The commons serves as a “town square” where members circulate, work, socialize.



Theater or Screening Room

A large auditorium-type space for screening films or video, or presenting talks, lectures, or performances, which usually feature raked rows of fixed seating, a high-quality digital projection and audio system, dimmable lighting, and a large projection screen.



A meeting space at Grind's co-working space in Manhattan's financial district demonstrates the congeniality woven into the design of co-working spaces.



This view of the "library" at General Assembly shows one of the distinctive, smaller rooms that contribute to the overall variety of working environments.

ing idea can, on the one hand, ease feelings of loneliness and isolation, and, on the other, pick up practical tips, ideas and support from fellow members. ("It's an emotional roller coaster doing a start-up," observes Vivek Sharma, whose online marketing firm, Moveable Ink, started life in General Assembly's co-working space. "One day you're elated and the next you think you're going to be wiped out. Being around 20 people in the same boat normalizes things.")

Indeed, what stands out in the design and layout of co-working spaces is the degree to which they seamlessly combine work and sociability. Most of them are organized around a central "commons"—a kind of town square, in effect, complete with café—where members can informally intermingle, chat, exchange ideas, present concepts. Like a good square, the commons changes character over the course of the day, and fill up in the evening with talks, panels, "meet-ups" and networking events that are open to the public, encouraging still more

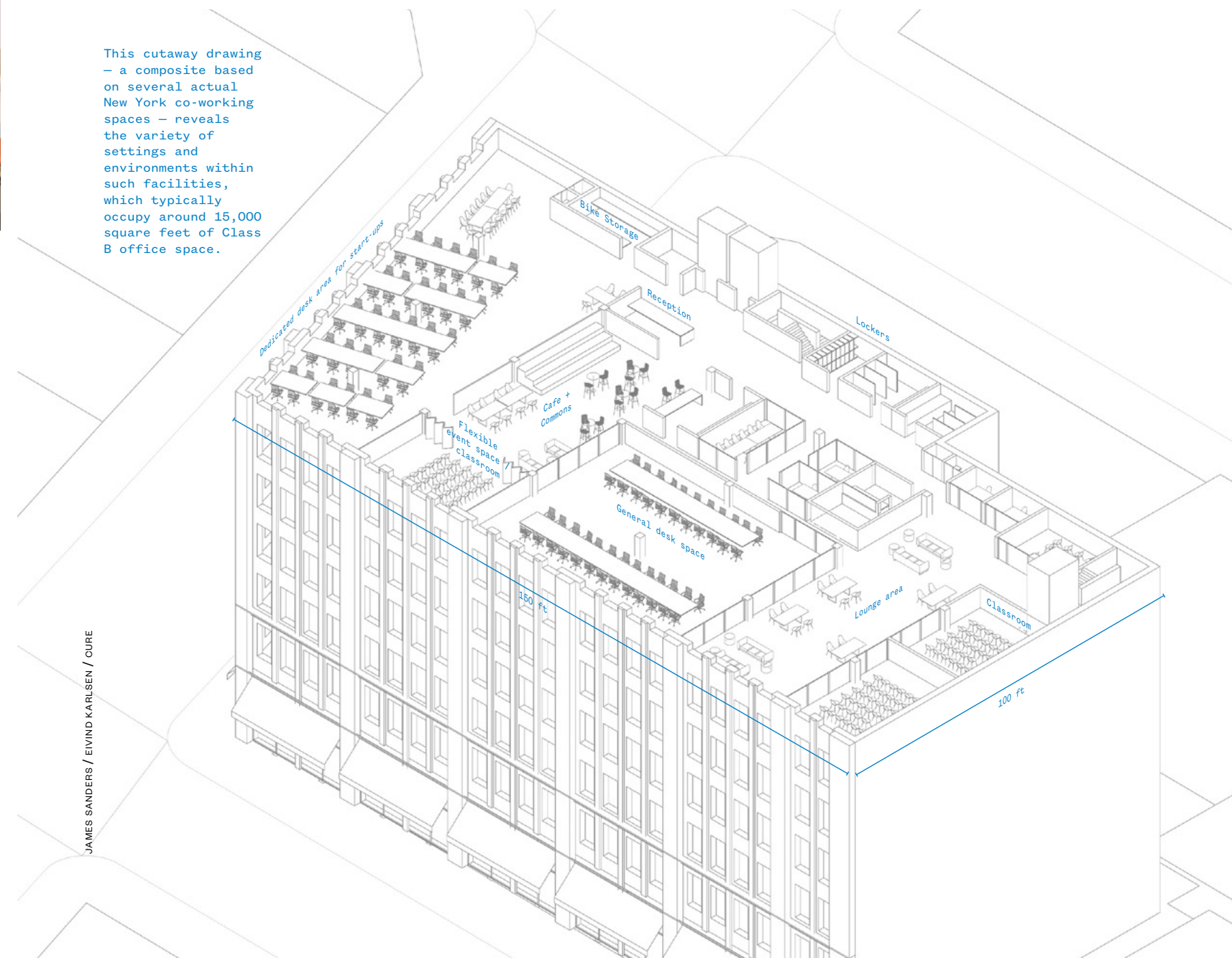
sociability and interaction. Also, like a vibrant square, the commons (like the co-working space itself) generally stays active well into the night, especially when compared to the strict "nine-to-five" schedule of traditional office environments. (Enabling this after-hours activity by extending the landlord's air-conditioning service beyond 6 pm, the standard cutoff time in most commercial leases, was not the least achievement of co-working and tech spaces.)

In some ways, co-working and start-up spaces resemble less a conventional office landscape than a miniature urban neighborhood, whose multiple activities and spaces serve to encourage round-the-clock vitality. It is an analogy that inevitably suggests the precepts of the writer Jane Jacobs, who railed against the reductive monoculture of mid-century urban renewal projects and downtown office districts in favor of a more complex order based on a mixture of uses and structures. It is also an analogy not unfamiliar to those

who have designed and developed these spaces. As Bart Higgins, the director of ?What If!, an innovation partnership located in the historic Stuyvesant Polyclinic building in lower Manhattan, observed about his company's headquarters: "In the design of this space we took inspiration from the places people want to be, where they like to be as themselves. We looked for inspiration in cafes, great hotel lobbies and people's homes."

The resemblance to an urban neighborhood, it turns out, is more than incidental. The innovations embodied in the co-working space stretch beyond its walls, and into the city. As the co-working space offers not a single fixed desk but a broad inventory of settings from which people can freely choose, so the tech district—using the same principles, and enabled by the same technology—offers not a single office building, but an even broader variety of environments in which to work. Nothing less, in fact, than the city itself.

This cutaway drawing — a composite based on several actual New York co-working spaces — reveals the variety of settings and environments within such facilities, which typically occupy around 15,000 square feet of Class B office space.



A Future in the Past

*Strange that the youngest people I know
Live in the oldest buildings*
—George Oppen, “Of Being Numerous” (1968)

THE SPIRIT OF Jane Jacobs grows even stronger—and certainly more obvious—on the next rung up the ladder, as the frame of vision expands from the single interior workplace to the buildings and districts in which those workplaces are located.

In largest terms, the entrepreneurs driving New York’s driving the rise of New York’s tech industry have steered clear of midtown Manhattan, the city’s modern commercial core, whose wide avenues are filled with near-uniform ranks of towering postwar skyscrapers. Instead, they have shown an overwhelming preference for older, smaller, more idiosyncratic structures, located in traditional, mixed-use districts.

To some degree the choice of these buildings emerges directly from the layouts of the new tech workplaces themselves. With no need for long ranks of vertical file cabinets stuffed with paper (which occupied a surprisingly large fraction of older office layouts), nor endless interior “bullpens” filled with tiny cubicles (lacking natural light and exterior views), tech companies have had little interest in the vast interior acreage of postwar Class A office buildings, whose floor plates generally occupy 40,000 square feet or more. Instead tech start-ups and co-working spaces veered toward the smaller floor plates (10,000 or 15,000 square feet, on average) of prewar New York commercial buildings, which inevitably offer a higher percentage of naturally lighted space, usually with handsome city views through large sash windows.

But it is not just a matter of square footage. A distinct cultural aesthetic is at work, one that shuns the perceived conformity, oppressiveness, and soullessness of modern corporate offices. (As one tech entrepreneur told the researcher Jonathan Bowles, “Last thing I want to do is be in a building my father would be in.”) Gone are the miles of dropped acoustic-tile ceilings and fluorescent lighting of postwar office buildings; the new tech spaces almost invariably seek to reveal the original high plaster ceilings and architectural detail of the older buildings in which they are



Urban tech spaces such as Grind’s lower Manhattan facility, shown here, offer contemporary interior design within the exposed shell of older commercial buildings.

located. “Not just any space will do,” notes Sean Black, a broker with Jones Lang LaSalle. “[T]ech firms almost exclusively want prewar buildings with lofty ceilings and open floors. They like the ‘old world meets new world’ look.”

This interest in older Class B buildings led, initially, to the area of Manhattan known as Midtown South and its adjoining neighborhoods. Filled with hundreds of solidly constructed structures built in the first decades of the 20th century, and superseded after World War II by newer development in midtown proper, these aging commercial districts below 34th Street had already been “discovered” in the 1980s and ‘90s by creative and professional tenants looking for an affordable alternative to midtown; responding to market demand, owners and management companies had upgraded their buildings’ lobby finishes, elevator cars, bathrooms, mechanical systems, roofs and windows, and restored (or at least cleaned) their historic facades. Yet due to the larger economic troubles in the late 2000s, rents in these areas remained relatively modest (*see following page*).

There was more to the appeal of these districts, however, than simply their buildings. In contrast to midtown’s corporate avenues, the areas south of 34th Street offered a vibrantly dense but not overwhelming scale, a fine-grained grid of streets and open spaces, and a far greater mix of uses and building types and ages (apartments, lofts, shops, restaurants, bars, clubs, lounges, etc.)—the very recipe for neighborhood desirability that Jacobs had prescribed in the early 1960s. Here, tech pioneers establishing their brave alternative to suburban Silicon Valley would seek to establish not merely a place in the city but *an urban way of life*—not necessarily the same thing. “I lobbied for this building,” recalls Google’s former Director of Engineering, Craig Nevill-Manning, of his effort to persuade his California-based employer to establish their New York headquarters in Chelsea. “I love the neighborhood. You can live across the street. There are bars and restaurants.” “I think the real catalyst is that New York is totally walkable, you can walk everywhere and ever place is safe,” adds the venture capital pioneer Brian Cohen. “Where else would you go to live this life? Nowhere.”

Tech Start-ups in Prewar Buildings
A 2013 CURE map of New York tech start-ups determined that 86% were located in structures built before 1945, and 70% in landmark buildings or historic districts.

- Built before 1900
- Built 1900–1920
- Built 1920–1945
- Built 1945–1975
- Built 1975–Present



The attraction of these buildings and districts could be traced, in no small part, to the distinctive character of start-up culture, which—while exhausting in its intensity and sometimes brutal in its demands—puts immeasurable value on providing its people with a pleasurable environment in which to work (the recruitment and ongoing satisfaction of “talent” being, in the tech world, a kind of a holy grail), and is at heart an entrepreneurial, rather than corporate, enterprise. Despite its white-collar sheen, the mid-20th

century office tower was essentially an industrial operation—a “factory for shifting papers,” in the words of writer Greg Lindsay—laid out for the supervisory convenience of its managers, not its employees, and often located in high-rise central business districts that relatively few workers, on their own volition, would likely choose to spend much time in. Freed to create a workplace that would be appealing not to a corporate executive but to themselves and their peers, tech entrepreneurs turned to precisely the kinds of idiosyn-

“The entrepreneurs of New York’s tech industry have steered clear of the city’s modern commercial core, filled with towering skyscrapers. Instead, they have shown an overwhelming preference for older, smaller, more idiosyncratic structures, located in traditional, mixed-use districts.”

cratic and urbane districts that Jacobs and others had identified years before.

The sheer pervasiveness of that turn, though intuitively evident to many, was demonstrated systematically in CURE's Building the Digital City study. Mapping the location of tech companies and start-ups in New York, the Center's research revealed an astonishingly strong preference for prewar buildings (86%) to postwar buildings (14%). A similarly striking finding showed that fully 70% of New York's tech companies are located in a designated New York City Landmark or Historic District, versus only 30% which are not. (Only 9% were located in towers of thirty stories or more.)

There are obvious policy implications in these findings—not least for the city's Landmarks Preservation Commission, whose designation practices (sometimes criticized, even to this day, as sentimental, nostalgic, backward-looking actions) may well have proven to be one of New York's most effective strategic planning and economic development tools, especially for a city eager to encourage a sector it now regards as crucial to its long-term prosperity. But there are also broader implications—as well as profound ironies—in the fact that the most advanced, technologically driven, and forward-minded industry has decided overwhelmingly to make its home in historic districts and landmark structures. It would not be incorrect to say that the city's future has chosen its past, that its youngest industry has chosen its oldest buildings.

“It would not be incorrect to say that the city's future has chosen its past, that its youngest industry has chosen its oldest buildings.”

Shifting Geographies and New Challenges

Born in the blocks of Midtown South, the city's tech landscape is now shifting to waterfront districts in Brooklyn and Queens

WHEN NEW YORK'S tech start-up community began its sudden rise in the late 2000s, its growth centered largely on the commercial district known as Midtown South, abetted by an uncommon and perhaps unrepeatably market situation—a “silver lining” amidst the otherwise chilling economic conditions of the time.

In the decade previous, the area had prospered, filled with creative and professional tenants who were optimistically adding square footage in which to expand. By late 2006, however, as clouds appeared on the economic horizon, companies had growing cautious and were no longer leasing new space, dampening the market. Then, as the financial crisis broke in late 2008 and conditions dramatically worsened, many tenants sought—sometimes desperately—to unload space they had taken on in the expansive cycle a few years before. Just as New York's tech industry began its period of rapid growth, therefore, it could thus take advantage of cheap pricing in the area's Class B buildings (as low as \$35 per square foot per year), renting from landlords or subleasing from other companies. The result was a rare moment of affordability: tech companies could find attractive, functional, reasonably priced work space in Manhattan even as they quickly expanded—an unusual historical situation that allowed New York to “incubate” an entire industry, as has rarely happened in the past half-century.

Today, the city's original tech districts—as is so often the case with pioneering urban areas—have become the victims of their own success, their desirability raising prices and making them inaccessible to newcomers (rents in some Midtown South buildings have exceeded \$70 per square foot per year, double what they were seven years ago).

In response, the tech industry's expansion has largely shifted elsewhere: to the financial district in lower Manhattan and to the older manufacturing and warehouse districts of Brooklyn and Queens—a centrifugal trajectory sketched recently by Christine Lagorio-Chafkin:

New York City's startup scene physically is spreading out from its former neighborhood hub of Union Square. More fast-growing companies and co-working spaces are planting roots far downtown, around the financial district and the area surrounding One World Trade Center. They include plenty of fintech companies, of course—but also the fashion- and media-oriented Refinery 29 and Of a Kind....Then there's Brooklyn. Dumbo is now home to a significant creative-agency hub and a cluster of music-industry upstarts as well. The cornerstones of the hundreds-of-companies-deep start-up scene are now-public marketplace Etsy and the agency Huge. Some adventurous startups are hoping to become the centerpiece of future hubs: Genius and Farmigo have new offices in Gowanus; Livestream has a new home in a massive warehouse in Bushwick.

This outward migration carries its own long-term implications, challenging the the city's historic “hub-and-spoke” orientation toward midtown Manhattan in favor of the development of a more complex, diffuse, multi-centered urban network.

But it also points up a major challenge for the city: continuing to provide affordable tech workspace in the five boroughs. The cost

New York's New “Tech Corridor”

- Initial Tech Districts
- Emerging Tech Districts
- Major Tech Hubs + Campuses Existing and Proposed
- Proposed Brooklyn-Queens Connector (BQX)
- Existing Ferry Lines
- Proposed Ferry Lines



The Brooklyn-Queens Connector (BQX), a new surface rail line in the planning phase.



The Williamsburg Generator, an eight-story, 480,000 SF office building in Brooklyn, developed by Heritage Equity, is one of the first “ground-up” tech-related construction projects in the city.

The emergence of a corridor of new tech-oriented development along the East River is encouraging transportation proposals from the BQX light-rail line to the Citywide Ferry System. Linking Brooklyn and Queens districts to each other as well as to Manhattan, these lines at once expand and challenge the traditional “hub-and-spoke” orientation of the city's existing transit system.

of constructing new commercial buildings in New York remains daunting, while the inventory of existing Class B and C space has been declining (in Manhattan, by 47 per cent between 1995 and 2009) as older buildings are converted to condominium apartments, which, given the tight market, still command higher prices than nearly any tech-related uses.

Recognizing both the civic good and the commercial opportunities in tech development, however, a variety of public and private interests have been actively pursuing a range of projects (in an increasingly wide variety of building types, new and old) along the East River waterfront, stretching from Brooklyn, to Queens, to the newest frontier, South Bronx. These include the mixed-use structures Dock 72 (Boston Properties) and New Lab (MacroSea) at the Brooklyn Navy Yard; the transformation of the immense World War I-era

industrial complex of Industry City in Sunset Park (Jamestown); the promotion by a consortium of public and private groups of the “Brooklyn Tech Triangle” (including Forest City Ratner's 1980s Metro-Tech campus); the current and proposed conversion of dozens of industrial buildings in DUMBO and Domino (Two Trees Management), as well as the Watchtower site (Kushner Companies and RFR Realty); the Williamsburg “Generator” (Monadnock), and a whole string of proposed projects along the Long Island City waterfront, across the channel from Roosevelt Island.

Amidst all this development—linked by proposed new surface rail and waterborne lines and anchored by the emerging Cornell Tech campus and NYU's Center for Urban Science and Progress—it is possible to glimpse, rising along the shore of the East River, the lineaments of an emerging “tech corridor” for the 21st century city.

The City as Workplace

TO BE SURE, the “Jacobs-like” appeal of mixed-use districts like Midtown South has scarcely been limited to the digital world; long before the tech population arrived, the media agencies and creative firms who colonized the neighborhood in the 1980s and ‘90s plainly valued its area for its vibrant street life, urbane character, and rich layer of amenities: interesting restaurants, lively cafés and lounges, stylish shops, and so on.

But even a cursory look at the area today reveals something quite different—and more significant—in play. That earlier population valued the amenities and streetscape of an area like Midtown South because they enhanced the overall character of the district in which one’s office was located—making it, on the whole, a pleasanter place in which to spend one’s weekdays. The tech culture’s population, by contrast, *has turned the entire district into a workplace*. Enabled by lightweight mobile devices, free broadband wireless service (now available almost everywhere, indoors and out), and the advent of the computing cloud, they have become “untethered,” carrying their offices anywhere they go. This represents a profound change in the use—and the perception—of the urban fabric. In this new understanding, the elements of the city’s ground-floor domain—its cafés, lounges, hotel lobbies, parks, and plazas—are no longer simply “amenities,” supporting a business district’s overall quality of life; they are the *site of business itself*, where one’s office is located (for a while), and work is constantly being carried out in groups, or singly. (One consequence of the shift, visible everywhere in cities today, has been the rediscovery of a pleasure once familiar mostly to authors: that of working individually, with intense focus and attention, in a bustling public space. An unexpected prototype for the 21st century tech entrepreneur might thus be found in Ernest Hemingway, writing his short stories at a café table, amidst the pleasant clatter of the Closerie des Lilas, in 1920s Paris.)

The nature of the transformation becomes all the more striking when compared with the postwar central business district model, pioneered in New York (and exported around the world) in the 1950s and ‘60s and filled with vast,

self-contained corporate office towers whose armies of workers entered in the morning and remained all day (often taking lunch in internal cafeterias provided by management) until they departed in the evening. Located in the middle of the busy city, these structures were nonetheless profoundly internalized environments, self-sufficient and complete unto themselves, requiring almost no interaction with the world around them.

The tech start-up workplace, in contrast, represents an *incomplete* space, not an inward-facing fortress but an outward-facing “perch” from which to alight into the larger environment, whose multiple settings (public park, sidewalk café, or, for that matter, the lobby of the Ace Hotel) serve, in a sense, simply to extend the variety of workplace options found within the individual interior. A crucial element not only to the appeal but the successful functioning of tech districts, this fundamental interweaving of workplace and city has long since spilled beyond the limits of Midtown South and parts of San Francisco, where it began, to become a defining quality of newer tech areas in New York as well as a host of other older cities—from Boston and Seattle to London and Tel Aviv—where start-up culture has thrived.

But there is somehow a special resonance in the rise of this culture in New York, where the new capability to work *anywhere* has been supercharged by the ferociously entrepreneurial spirit of the start-up world—a world which sees the entire city as a marketplace, with ideas and opportunities to be found *everywhere*. In this sense, tech start-up culture—for all its futuristic trappings—can be seen as simply the reassertion of one of the city’s oldest and most deeply-woven identities: a place whose fine-grained urban fabric was designed to be the instrument for a vast entrepreneurial “ecosystem” of thousands of enterprises, small and large.

The original layout of the city, after all, the famed Commissioners’ Plan of 1811, was intended specifically to maximize linkages among thousands of small mercantile and artisanal enterprises, by way of a distributed “broadband” network of wide avenues and closely-spaced cross-streets. Ever since, the



Class A office towers in midtown Manhattan, built in the 1960s and ‘70s, contained immense floors of 40,000 SF or more, along with interior corporate cafeterias and convenience stores allowing workers to remain in the buildings all day.



For urban tech, the attraction of districts like Madison Square lies not only their historic buildings and architecture but their array of ground-floor amenities—from parks and plazas to cafés and hotel lobbies—which have become an integral part of the work environment.

city’s multiple points of connection have encouraged endless economic opportunities through a distinctively urban blend of social and commercial interaction—including, most obviously, the bustling merchant’s exchanges and curb exchanges of early Wall Street and the specialized markets for seafood, produce, apparel, furs, radios, electronics, and entertainment that snaked fluidly in and out of the city’s buildings, streets and sidewalks for gen-

erations. (In this respect, the self-contained corporate office towers of the mid-20th century, with their rigid hierarchies and vast, insular seas of desks, were a kind of historical outlier, despite occupying core blocks of Manhattan real estate.)

Deploying its advanced technology, the new tech culture has reaffirmed and even improved upon this deep-seated heritage, creating an even more seamless “field” of commercial and

entrepreneurial interaction, stretching from the streets and sidewalks to the upper floors of buildings, and turning nearly corner of the city into a potential site of economic activity. Not merely located in the city, the new tech culture has proved to be quintessentially urban in character, reanimating one of New York’s oldest and most defining traditions, even as it points the way to an extraordinary future for cities everywhere. [t](#)

“The elements of the city’s ground-floor domain—cafés, lounges, hotel lobbies, parks, plazas—are no longer “amenities” supporting a business district’s quality of life; they are the site of business itself.”