Patterns for Working and Living in the 21st Century:
Real Estate Development for the New Workplace

by

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Submitted to the Department of Urban Studies and Planning and the Center for Real Estate in Partial Fulfillment of the Requirements for the Degrees of

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Abstract

Emerging mobile and digital technologies are providing individuals with greater flexibility in the way they structure their working environment. At the same time, the knowledge-based economy is growing based on ideas generated through collaborative processes. Working patterns are changing, creating a demand for physical and virtual environments that address changing preferences. The goal of this thesis is to survey and examine technology-enhanced alternatives to the old working environment that are now being developed, and to synthesize their main attributes into a set of guidelines for the creation of new real estate products.

Many groups are now involved in creating such innovative alternative workplaces, but speculative real estate developers are hardly among them. Perhaps the term “real estate developer” has evolved to describe any individual or group who adapts and adds value to the built environment to meet the needs of their intended users. A Catalogue of New Workplace Typologies documents such projects at the individual, office, and neighborhood scales. At the individual scale, working environments are appropriated ad hoc and adapted to meet personal needs. New office environments are providing more services and building a sense of community through open, shared spaces. Entire live/work/play neighborhoods are emerging as a place for interaction and the development and testing of new technologies.

Developers of these new working environments are advised to consider 1) a greater focus on accessibility to information, amenities, and partnerships; 2) the mixed-use campus as a potential model for development; 3) the hybridization of both the home and the workplace; 4) the marriage of technology with the environment; 5) the intense use of space and time; and 6) the treatment of real estate as a service industry that balances risk between the developer and the client.

Thesis Supervisor: Dennis Frenchman
Professor of the Practice of Urban Design

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Prologue

This thesis explores the working environments of the digital era. Emerging mobile and digital technologies allow for the recombination of living and working, creating a demand for physical and virtual environments that meet changing preferences. **The goal of this thesis is to survey and examine technology-enhanced alternatives to the old working environment that are now being developed, and to synthesize their main attributes into a set of guidelines for the creation of new real estate products.**

Several questions were established early-on to guide the research and analysis process:

- ***What new work and lifestyle patterns are emerging with the ongoing spread of digital technologies?***
- ***What specific real estate products take advantage of these trends?***
- ***How can real estate developers profit in this new digital environment?***

Chapter 1, “Introduction” sets the scene, with a discussion of changing working and living patterns, environments, and technological tools. Chapters 2, 3, and 4 present “A Catalogue of New Workplace Typologies”, describing existing development products which address new ways of working. Specific vignette examples are discussed in a narrative style, but categorized into broader development typologies. “Lessons for Developers” are broken out for each category. The catalogue is the result of extensive site visits, interviews, and documentation review. Specific business strategies, fee structures, and other financial models are intentionally excluded in the vignettes, at the request of many of the individuals interviewed. Chapter 5, “Implications for Developers”, provides a set of guidelines for those seeking to build and capture the value of

alternative working environments in the future. Finally, the Epilogue concludes the thesis.

The thesis takes an optimistic tone that describes the benefits technology brings to the workplace and the value to be gained by developers who understand and take advantage of this new market. New technologies, such as wireless Internet access and other mobile communications devices, allow people to work in a style that is more flexible and collaborative then ever before.

However, in *Smart Mobs*, a book about "transforming cultures and communities in the age of instant access", Howard Rheingold wonders:

> If the citizens of the early twentieth century had paid more attention to the ways horseless carriages were changing their lives, could they have found ways to embrace the freedom, power, and convenience of automobiles without reordering their grandchildren's habitat in ugly ways? Before we start wearing our computers and digitizing our cities, can the generations of the early twenty-first century imagine what questions our grandchildren will wish we had asked today? (Howard Rheingold, *Smart Mobs: The Next Social Revolution* [New York: Basic Books, Perseus Books Group, 2002]: 183 – 184.)

One question might be, "Will technology help broker a better work-life balance, or create even more demands and responsibilities?" Ubiquitous communications technology blurs the separation between the professional and personal components of everyday life. The mobile workplace also implies that tasks can no longer be left at the office. In the end, the use of new technologies are a matter of choice, whether individual or societal. The workplace examples presented illustrate how the marketplace has risen to meet the emerging demands implied by these new choices. Developers of real estate would do well to be aware of these changes in demand, lest they get left behind.

Chapter 1: Introduction

While developers may talk about place-making and community-building, real estate development is ultimately driven by the bottom line. A project that is not profitable should not be built, and rightly so. However, much of the financial feasibility analysis undertaken by developers is based on standard assumptions regarding vacancy and rentable square feet. Yet commercial office property is anything but standard. While developers adjust their rent assumptions according to the desirability of the location and "class" of the office space, many other factors are not taken into consideration. For example, the gross income component of traditional proformas focuses on the rentable square feet leased by each tenant. This model excludes the value that developments with shared spaces for their tenants provide. Other "waste" spaces such as multi-function lobbies, cafés, and circulation zones are valuable components of the new working environment. According to David Clem, Managing Director of Lyme Properties, the largest life sciences property developer in New England, there is a disconnect between the financial portion of real estate and its longer term purpose as a builder of cities: certain values such as livability and synergy are not quantified in the capital markets.[1]

There is a further disconnect between the demand and the supply sides of the market. While companies and individual workers may be looking for a specific type of workplace, they are limited by the office products available to them. The new office is just a part of the transforming working environment. Technological advances in the last two decades have dramatically changed the way people work. Mobile technology and telework are freeing people from the restraints of a downtown office address. They are able to take their work with them wherever they go, creating a flexible concept of the office. Work is becoming separate from the workplace, affecting the demand for office space.

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Alternative ways of working are represented in the changing space needs of major corporate users of office property. Regus, the world's largest serviced office provider, predicts that most of the Fortune 500 will soon hold 20 percent of their total real estate assets in the form of short-term and flexible space.[2] This includes the use of satellite offices, neighborhood work centers, and other distributed and shared workplaces. In 2002, 25 percent of IBM's total workforce of 320,000 participated in a telework program, saving the company $700 million dollars in real estate costs.[3] However, telework and alternative ways of working do not signal the complete extinction of commercial real estate. Most teleworkers typically spend an average of just five days per month away from their regular workplace.[4] Over 40% of teleworkers utilize a combination of working environments, including the home, client offices, and satellite offices.[5] Rather changes in the demand for working environments point to a recombination of living, working, and urban spaces, and the need for a larger variety of office products to suit different needs.

Many groups are now involved in creating such innovative alternative workplaces, but speculative real estate developers are hardly among them. In my view, the real estate industry has yet to fully understand the changing landscape of work or to create products that can capture its values. The vast majority of the new workplace typologies discussed in detail in the next three chapters of this thesis were not driven by traditional developers. Instead, their proponents were private companies, entrepreneurs, public institutions, and cities. Perhaps the term "real estate developer" has evolved to describe any individual or group who adapts and adds value to the built environment to meet the needs of their intended users. Much of the value in developing the new workplace is not easily commodified into a series of cash flows.

Where does this leave the development industry? Are traditional development types that are easier to build and finance, such as the old commercial office building, becoming dinosaurs? According to Francis Duffy's *The New Office*:

> …the entire notion that offices are a distinct building type may not be taken for granted for very much longer. A system that involves vast expenditure on buildings which are only partly used for a limited number of hours during weekdays is almost certainly doomed. Indeed, the office tower may soon be as redundant as the steam-powered mill. (Francis Duffy, *The New Office* [London: Conran Octopus Ltd., 1997], 96.)

While the demise of the mill may have been difficult to imagine at the height of the industrial era, cities were left with empty factories, many of which remain unused 75 years later. The same may happen to the single-purpose office building, as a result of the digital revolution and its changing working and lifestyle patterns. The following sections provide an introduction to these changes in terms of society, individuals, technology, working styles, and the new office environment.

What social factors are affecting changes in working patterns?

The industrial revolution in the 19th century signified an unprecedented change in working patterns. Before this time, people worked in or near the home, in an economy based on agriculture and mercantilism. The rise of the factory spurred urbanization, as people clustered in cities to live near manufacturing jobs. This pattern of metropolitan clustering continued as work became more paper and information-based, moving jobs into the office. Today, over 50 percent of the working population in western nations work in offices, as opposed to 5 percent in 1900.[6] However, the digital revolution is now upon us, bringing a greater sense of mobility and access to information. As William J. Mitchell notes, "Whereas the industrial revolution forced the separation of home and workplace, the digital revolution is bringing them back together."[7] More specifically, the digital revolution creates further options that inform an individual's decision of where to live and work.

How does the digital revolution affect social organization? Manuel Castells's concept of the network society describes a specific form of social structure based

on personal networks powered by information technology.[8] While networking is not a new form of human social organization, communications systems in the pre-electronics era were inefficient, resulting in a limited, one-way flow of information.[9] However, wireless communications can transform a network (a series of nodes) into a net of information, making the "multiplication of points of communication possible almost at the level of each individual."[10] The spread of information and communications technologies (ICT) in the last 30 years is not the only driver of the network society:

> It was on the foundations of informationalism that the network society gradually emerged as a new form of social organization of human activity in the last lap of the twentieth century. Without the capacity provided by this new technological paradigm, the network society would not be able to operate, just as industrial society could not fully expand without the use of electricity. But the network society was not the consequence of the technological revolution. Rather it was the serendipitous coincidence, in a particular time and space, of economic, social, political, and cultural factors that led to the emergence of new forms of social organization which, when they had the historical chance of harnessing the power of informationalism, prevailed and expanded. (Manuel Castells, *The Network Society: A Cross-cultural Perspective* [Cheltenham, UK, Northampton, MA: Edward Elgar, 2004]: 13.)

Therefore, technology is an enabler which, combined with other factors, contributes to changes in working and living patterns.

The products of modern business are often intangible. The digital revolution is the instigator of this "New Economy", a model based on "the increasing importance of digitizable knowledge products in the economy, and the shift to knowledge as the fundamental source of value".[11] This shift has a drastic effect on the integration of business and pleasure, as noted in *The Distributed Workplace*:

> The new economy is characterized by an increasing virtualization of products, processes, organizations and relationships. New economy production no longer requires people to work together in the same physical space to access the tools and resources they need to produce their work. Production can be spatially decentralized and reintegrated back into other aspects of life. Once work and life are no longer rigidly separated in space, the temporal boundaries between them can be refashioned according to different imperatives. If the demarcation between work and leisure is no longer a lengthy period of commuting, a much

> finer granularity of interplay between work and leisure becomes possible. (Andrew Harrison, Paul Wheeler, and Carolyn Whitehead, eds., *The Distributed Workplace* [London: Spon Press, 2004]: 6.)

This recombination of work and leisure has interesting social consequences. As it becomes unnecessary to work in the constant presence of others, what occasions and settings will bring us together? Does a finer "interplay between work and leisure" combined with communications technology mean that the home and workplace will merge, creating a society of recluses? Fortunately, the role of social interaction as the driver of innovation emphasizes the importance of face-to-face meetings. The working environment is a place to reiterate the ties between virtual and in-person communication. Instead of working from home, people may be given the option of "homing from work", where some personal needs can be taken care of at the office.

Who are the new workers?

What types of people are operating the new economy? According to Richard Florida, they are the creative class, a group that includes artists, engineers, scientists and consultants: people that use their creativity to develop new ideas and products. Florida estimates that 30 percent of the US workforce is a member of this group.[12] The creative class values challenge, flexibility, location, and community.[13]

Other descriptions of the changing working population emphasize their use of technology. For example, a knowledge worker "takes information and data and uses experience to apply it in novel contexts and situations to create value for the business".[14] They "typically work in a team (whether local or virtual) and make extensive use of IT".[15] In summary, the new workers are technology-savvy, mobile, and "self-programmable"[16]: able to structure their own tasks. Their days will most likely include a combination of autonomous and collaborative activities.

How is technology enhancing the work environment?

Several technologies make the workplace more flexible and mobile. The following uses of ICT gained widespread public acceptance at the beginning of the 21st century.

- **cellular phones** – The number of cell phone users in the US rose from 1.7 million in 1999 to 24 million in 2005.[17] Pocket-size mobile phones allow users to take calls, send text messages, and check email wherever they are, making travel and commuting time more productive.

- **wireless Internet access (WiFi)** – The wireless network standard commonly used today was first approved by the US Federal Communications Commission in 1999.[18] Since then, wireless networks have been set up in homes, offices, universities, and public spaces. Without the need to physically plug in, more users can be accommodated by one network at a range of approximately 100 feet from the access point. Figures 1.1 and 1.2 illustrate the projected improvement in wireless coverage at the Massachusetts Institute of Technology (MIT) campus from 2001 to October 2005.

- **BlackBerry** – A BlackBerry is a portable electronic device which can serve as a mobile phone, text message and email system, web browser, and organizer. "CrackBerry" has become a slang term for the device, due to its addictive nature.[19]

- **Bluetooth** – Bluetooth is a technology protocol which offers "a low cost short-range wireless specification for connecting mobile devices".[20] It allows the wireless transfer of information among compatible tools. For example, an address book change on your cell phone is simultaneously updated on your laptop and PDA using Bluetooth.

- **voice over internet protocol (VoIP)** – This technology transmits packets of sound over the internet, making phone calls virtually free. Calls are made from IP address to IP address.

- **integrated message systems** – This concept, still in development, manages email, fax, and voicemail retrieval through one Internet-based system. "Faxes will be forwarded straight to the laptop and voice messages will either be accessed as attached recordings or will be transcribed into text by voice recognition software."[21]

- **location-aware systems** – Radio frequency identification (RFID) is a form of wireless ID that can track individuals and goods. In the workplace, special tags communicate with sensors that are linked to an online system. Mapping systems show the locations and activities of workers, while the tags also provide a form of security, allowing access only to people with the appropriate RFID.

- **self-organizing tools for space management** – Meeting and presentation rooms can be reserved either online or at a dynamic digital display connected to the Internet, located by the door to each space.

Growth of Wireless Internet Access Coverage at MIT

Figure 1.1: August 1, 2001: Only the student center has complete coverage. Academic buildings have partial coverage, however student dorms have none.
Source: MIT IS&T: Wireless Network Coverage <http://web.mit.edu/network/wireless-map.html>

Figure 1.2: October 31, 2005 (projected): Nearly complete wireless coverage. The Media Laboratory retains its own private network, while some maintenance and storage buildings are not covered.
Source: MIT IS&T: Wireless Network Coverage <http://web.mit.edu/network/wireless-map.html>

What are "new ways of working"?

Francis Duffy describes recent changes in working:

> Based on new and very different assumptions about the use of time and space, new ways of working are emerging fast. They are inherently more interactive than old office routines and give people far more control over the timing, the content, the tools and the places of work. Office work itself is gradually becoming more varied and creative. Many straightforward procedures are being automated or exported to economies where they can be carried out far more cheaply. (Duffy [1997]: 46.)

Knowledge workers have more choice and freedom over their schedules, although collaborative projects require them to meet the schedule needs of others, whether this interaction is virtual or in-person. In general, office workers have a greater range and variety of tasks, although Duffy makes note of corporate outsourcing strategies. Less desirable or essential activities are shipped out to people and economies willing to do them for less, so the key workforce can focus more on idea generation and creative work. Computers have further simplified and eliminated other menial and complex tasks.

The following chart summarizes the differences between old and new working patterns and their use of IT:

	Conventional office assumptions	New ways of working
Patterns of work	▪ routine processes ▪ individual tasks ▪ isolated work	▪ creative knowledge work ▪ groups, teams, projects ▪ interactive work
Use of information technology	routine data processing at fixed terminals	tools, including laptops and shared specialized equipment, facilitate group and individual work

Chart 1: Comparison of old and new working patterns.
Adapted from Duffy [1997:, 58.

In addition, knowledge workers may be able to distribute their daily use of time between work and other activities differently. The following chart illustrates the average daily time use for the working American in 2003, based on a sample of nearly 150,000 employed people over the age of 18 on both weekdays and weekends.

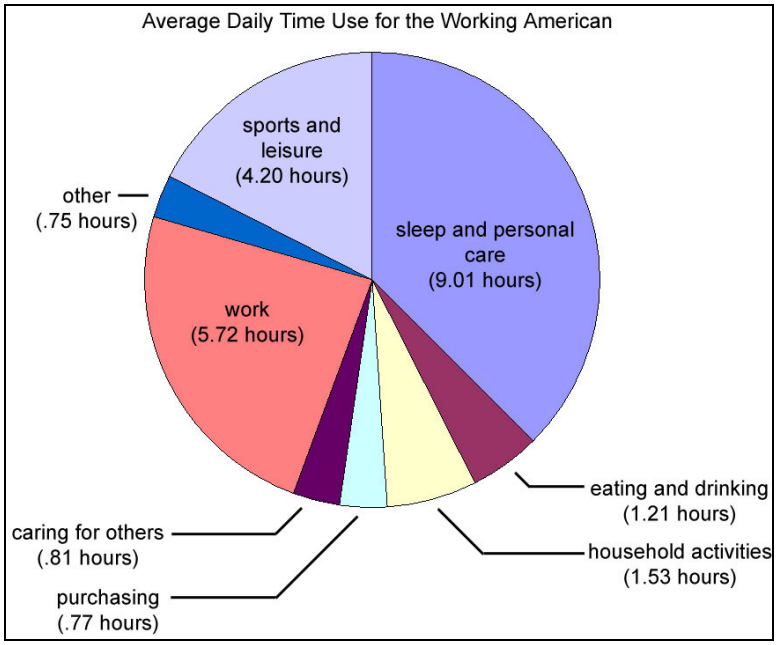

Chart 2: Average 24-hour time use (including both weekdays and weekends) for a working American over the age of 18.

Data Source: US Department of Labor, Bureau of Labor Statistics, 2003 American Time-Use Survey, <http://www.bls.gov/tus/home.htm>

How might new ways of working change this distribution of daily activities in the future? The boundaries of each section of the pie may become more difficult to define. Locational flexibility, such as the option to work at home, will allow people to combine work with personal tasks, such as caring for others or household tasks. Also, the data analyzed does not address the places that these activities occur. Analysis is needed that breaks up the work section of the pie into time spent commuting, at the office, at home, or elsewhere. Finally, another interesting comparison would examine the changes in time spent working and relaxing, tracked against advances in digital technology. Since technology enables people to do more in more places, are they working harder at the expense of their leisure time, or simply working more efficiently? Does the ability

to work outside of the office mean that less time is spent there? How long does it take for time use and working patterns to change after a new technology is introduced and accepted?

What are the characteristics of the new workplace?

Although individual workers have more freedom in the places they can work, companies are creating their own environments to encourage innovation. The design qualities of these spaces are generally more open, less formal, and more flexible:

Key Elements of the New Workspace	**Objective:**
Open office design and layout	• create a flexible, non-hierarchical environment
High ceilings	• add to the sense of openness
Exterior wall circulation path	• allows everyone to share the windows
Communal spaces	• facilitate group work
Abundant "hang out" spaces	• encourage informal social interactions
No clutter, lots of concealed storage	• emphasizes the fact that space is shared; no one's stuff is allowed to claim space
An experiential environment, abundant art	• provides a creative atmosphere

Chart 3: Elements and objectives of the new workplace.
Adapted from Tim Allen, Adryan Bell, Richard Graham, Bridget Hardy, and Felicity Swaffer, Working Without Walls: An insight into the transforming government workplace [London: DEGW/OGC, 2004]: 23.

The new workplace also allocates less space to each individual, creating a savings in the amount of rented office space needed. In some cases, the use of shared, non-proprietary workstations can reduce a company's space needs by

two-thirds.[22] The option to work outside of the office also allows people to manage their schedules more effectively. "Although technologies have the potential to enable people to work anywhere, people will still always choose to work somewhere. If their choice is no longer conditioned by the need to be in a specific place in order to have access to information or to communicate with colleagues, other factors will come into play."[23] If work really can take place anywhere, what are the factors that convince someone to go the office? Essentially, the office must be worth the travel time necessary to reach it. It must provide a balance between accessibility and suitability for the task at hand.

The old office was about hierarchy: doors and corner offices created a clear separation between executives, managers, and clerks. However, this environment was neither the most efficient nor the most effective. Even within a company, there is variation among employees in the amount of time they spend working alone or in groups. A work environment which includes a variety of zones, including quiet, private areas, allows employees to match the appropriate space to their task.

The office may inevitably remain the most accessible and suitable place to work with colleagues on group projects. It also serves as an important base to catch up with coworkers informally. As a result, centrally located offices will not disappear. Instead, they may serve more as meeting places or company flagships. As offices shrink in size, companies will have additional resources to make them richer and more suitable environments where workers will want to come.

What are the broader implications for urban space, where living and working intersect?

The locations of these new workplaces are changing as well. In the distributed workplace model, the working environment is comprised of a range of public, private, and privileged (collaborative project and meeting) spaces.[24] Some corporate office space is becoming more distributed, with working environments located in a combination of places based on the convenience and cultural amenities they offer. *The Distributed Workplace* describes this model as "the dispersed organization":

> As technology improvements increase the feasibility of remote working, it may not be desirable to house all types of workplace in the same location. Distributing workplaces around the city may allow staff to reduce the amount of commuting they need to do and allow the organization to start using the attributes of the city to reinforce organizational culture and community. For example, an organization that wants to be thought of as innovative and trendy could choose to locate drop-in work centers in downtown retail/leisure areas such as Soho, in London, or Chelsea, in New York, while the bulk of their workplace could be in more traditional business locations. (Harrison, Wheeler, and Whitehead, *The Distributed Workplace* [2004]: 46.)

The dispersed organization may also function as a series of satellite offices in suburban locations. The "city is the office" model takes distributed work to the extreme.[25] In this model, a company's knowledge resources exist virtually, to be accessed in public, private, or group space that is rented as-needed. In this way, a company eliminates its need for leased real estate. Neighborhood work centers, located in suburban shopping malls, libraries, or transit stations can serve as venues for private and group tasks outside of the home.[26]

Authors writing about the effects of technology on society and urbanism have many different visions for future living patterns. In *E-topia,* Mitchell envisions a world where "we will certainly see increasingly flexible work schedules and spatial patterns, and many people will divide their time, in varying proportions, among traditional types of workplaces, ad hoc work settings that serve while they are on the road, and electronically equipped home workplaces".[27] This pattern

supports the distributed work model. Mitchell goes on to stress the importance of digital technology's role, providing better connectivity that allows people to strengthen and maintain their face-to-face relationships even when they are away. However, while telecommunications can improve the value of places, they must still have some intrinsic value.

Joel Kotkin describes a system of "Nerdistans" and "Valhallas", first initiated by the '"white-flight" that occurred in the United States in the second half of the 20th century. Middle-class whites fled to the suburbs and beyond, leaving the inner city for minorities and the poor. However, Kotkin's models are also related to the rise of digital technology. Nerdistans, as exemplified by Irvine, California, and Raleigh-Durham, North Carolina, are populated by knowledge workers and their industries.[28] The campus-like master plans of these communities are intended to support flexible ways of working. "Much of this has to do with the perceived work styles of these unusually highly educated skilled workers, who need to collaborate not only with one another but also between research, engineering, and often manufacturing functions."[29] Nerdistans are high-tech clusters, where large concentrations of high-tech workers live. Valhallas, on the other hand, are elite rural communities, where technology (and wealth) allow executives to manage their business, supplemented by frequent trips into the city.[30] Kotkin cheerlessly notes, "Although these new areas often lack the social diversity and cultural richness associated with urban areas, these are things many engineers and scientists are more than willing to dispense with in order to escape the pathologies common to urban areas".[31] This model is an inequitable (but non-deterministic) view of the present and near future. The cultural and historic qualities of cities are important lifestyle components for the new workers, indicating that they might not choose to live in the sterile Nerdistans that Kotkin describes.

What happens to those who lack the opportunity to make choices about where to work and live; people who are living behind the "digital curtain"? If digital

technology provides choice and flexibility in the way people create their own workplaces and living environments, does it exclude those without access to this technology? In Castells's network society, globalization has affected the distribution of wealth tremendously. While poverty has decreased worldwide, income disparity has increased. People in the poorest parts of the world are disconnected from the network society, because they have no access point.

Instead of contributing to the demise of the city, technology has allowed them to expand rapidly, making metropolitan regions the key settlement pattern of the information age.[32] ICT serves as a management agent, controlling transportation and economic networks. Metropolitan regions are multifunctional, multinodal, and multicultural. Livability and culture still comprise the essential glue that holds cities together, and provide a setting for entrepreneurship. In *Technopoles of the World*, Castells describes the success of Tokyo as a center of innovation, with its prestigious schools, while designated Japanese technopoles, such as Tsukuba Science City, have been less successful due to their lack of amenities.[33] The central business district still remains the place where face-to-face deals happen.

Cities will not die off, nor will they stay the same. Social, technological, and economic changes have all contributed to the changes in working patterns discussed in this thesis. Work is becoming more increasingly global with information as the primary product of business. This information can be accessed from anywhere, allowing knowledge workers more freedom and choice in the way they schedule their days. Companies are creating environments that foster creativity and suit a collaborative work process, enhanced by digital tools. The result is an urban environment ruled by choices – at least for those fortunate enough to live on the right side of the digital curtain. Developers of real estate face a market where new types of buildings and neighborhoods are forming to meet the spatial requirements of this recombination of working and living. They are well advised to partner with the cities, entrepreneurs, and companies that are leading these changes to create products that better suit the emerging demand.

The following chapters are a collection of interesting approaches that address new ways of working. They are intended to provide developers not with a holistic solution set, but a collection of small and large ideas that can be incorporated into future projects.

The Old Office

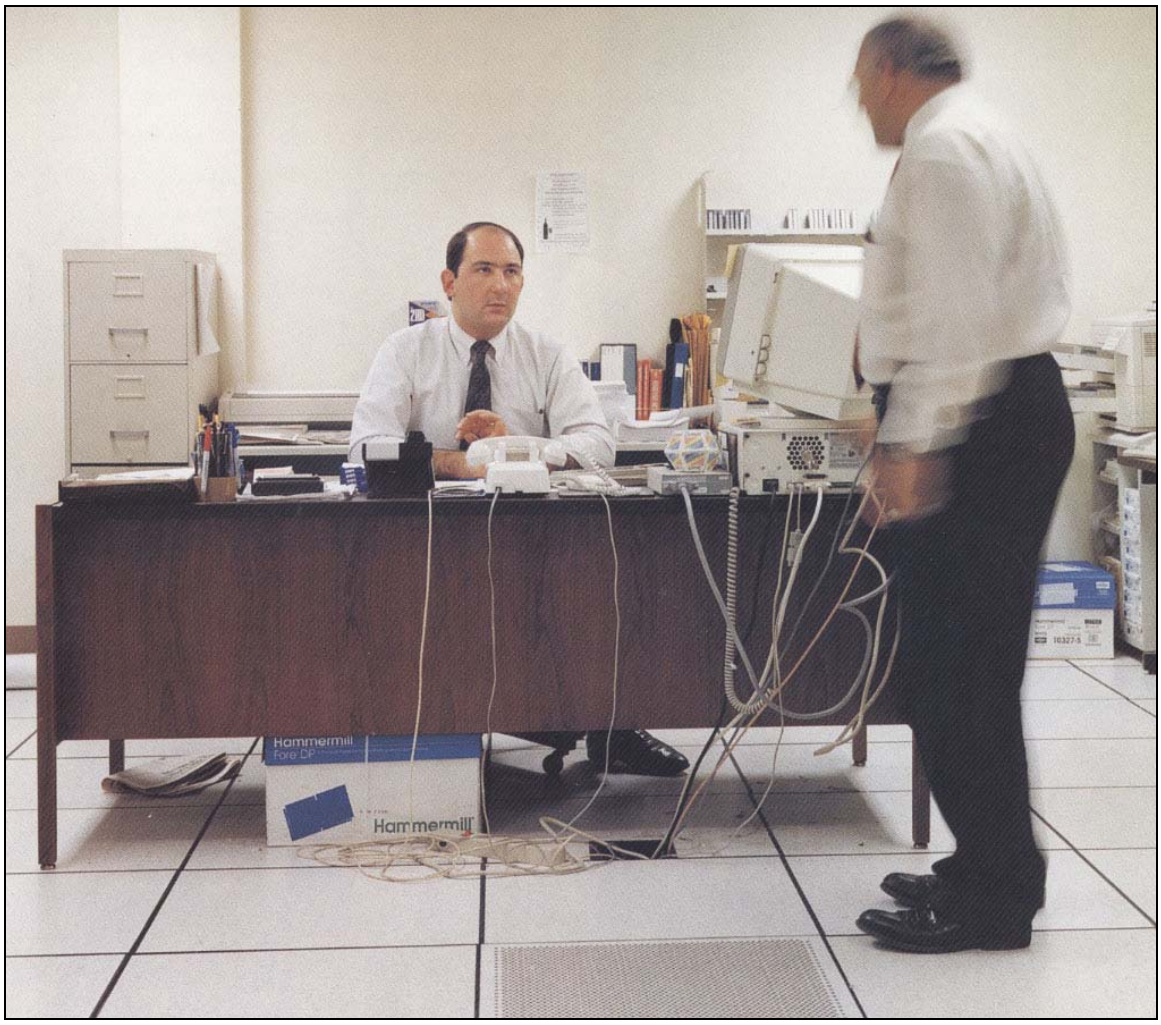

Figure 1.3: The office of the 1980s was a tangle of cords and wires.
Source: Francis Duffy, The New Office (1997): 53.

Chapter 1 Endnotes:

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Definitions

ad hoc workplace – A temporary workplace that is appropriated as needed.

distributed workplace* – Workplaces that are in more than one location within a city, country, or region depending on the work process and work life preferences of individuals and organizations.

hot-desking* – System of workplace sharing where workspaces are assigned to employees upon arrival at the office building.

hotelling* – System of workspace sharing in which employees make reservations for workspaces in advance.

ICT – information and communications technologies

IT – information technology

mobile (nomadic) worker* – An individual who conducts work from a variety of settings.

neighborhood work center* – Work location located close to the home of the people who use the center. These centers provides a range of work settings, IT, technical, and social support for people who want to work near home but who cannot be adequately supported there.

satellite office* – A telework office facilitated by the employer.

serviced office – A workplace within a managed facility that offers individually fitted suites, along with shared access to amenities such as reception services, meeting rooms, and advanced IT infrastructure.

shared office – A membership-based workplace within a managed facility that typically offers a variety of non-territorial working environments intended to facilitate interaction and networking among members.

teleworking (or telecommuting)* – A work practice where individuals conduct work away from the main office using computers and telecommunications.

virtual office – A package of services including mail and call handling, providing a prestigious address for a business, detached from the actual workplace.

*Definitions adapted from Andrew Harrison, Paul Wheeler, and Carolyn Whitehead, eds., *The Distributed Workplace* (London: Spon Press, 2004): 156-159.

A Catalogue of New Workplace Typologies

What are the physical, organizational, and digital components of 21st century working environments that address changes in the balance between workers' personal and professional roles?

Through a collection of vignettes, the next three chapters present examples of such environments that apply technology to fit the lifestyle needs of the knowledge-based workforce. The examples are not meant to be an exhaustive list. Instead, the objective is to organize and present a catalogue of ideas and inspirations that can be drawn upon when creating the next new working environment. Where relevant, each example is presented according to its use of digital technology, physical and spatial qualities, and unique strategy. The vignettes are described as a series of narratives, with a more critical analysis following each grouping of examples.

The chapters are categorized by scale of activities:

- **Chapter 2: Individual Scale:** The working environment is chosen and created by people to suit their own needs.

- **Chapter 3: Office Scale:** The environment is intentionally designed to be a workplace.

- **Chapter 4: Neighborhood Scale:** Working and non-working environments combine to create a place for interaction and overlap of uses.

Summary Matrix of New Workplace Typologies

	TYPE	EXAMPLE	DIGITAL TECHNOLOGY		PHYSICAL QUALITIES		UNIQUE STRATEGY
INDIVIDUAL	Ad Hoc Workplaces	Starbucks	workers bring their own custom tools such as cellular phone and laptop	fee-based wireless Internet	temporary, appropriated as needed, space not specifically designed for work	comfortable, café atmosphere	convenient, omnipresent location
		Home House (London)		free wireless Internet		posh private club	unique and fresh among private clubs, social networking opportunities
		Airports		free or fee-based wireless		waiting areas and cafés for travelers	accommodate captive business travelers
		Transit		wireless Internet and cell phone use on airplanes coming soon		planes, trains, and automobiles	
	Virtual Office Services	Regus and eOffice	message forwarding via SMS, call forwarding		separation between business address (prestige) and workplace (comfort)		separate and repackage need for prestige, convenience, and low cost in multi-locational solution
OFFICE	Serviced Office	Regus/HQ	broadband Internet, digital telephones (nothing too innovative) are offered as options		some shared spaces, but tenants control their own space	in general: standard office design	short-term lease structure, many services (optional)	large enough to allow members access to a network of 750 offices
		Landflex (London)				shared meeting rooms, shared reception, club space, and cafeteria		blended leases
	Shared Office	eOffice (London)	high-speed Internet (often wireless)	top quality AV equipment		hip interior; library, relaxation room	month to month leases, "unintentional community"	creative atmosphere, some events, pay for what you use
		United Spaces (Stockholm)		intranet, member and company profiles online	shared lounge and café space	open plan; option of fixed or mobile workspace		networking focus, many programs for members
		Cambridge Innovation Center (Cambridge, MA)		self-organized online meeting room reservation with dynamic signs		cool design, configurable bays for working, hot-desking area		much included, tech atmosphere
	Club Office	Chiat/Day (New York)	could vary, but would probably include wireless Internet and digital phones		office with different zones - café-style, open, private		flexible working environment for one firm, designed to give employees flexibility and choice
NEIGHBORHOOD	Large-Scale, Mixed-Use, Technology-Oriented Developments	Ørestad Nord	living lab, technology at the research scale, universities	IT, media, and communications research projects	high quality architecture, transit, natural environment, density, existing neighborhood	campus-like, canal infrastructure provides coherence	Crossroads Copenhagen: serves as matchmaker to create research partnerships, events
		Arabianranta		plasma screens link community, Helsinki Virtual Village website		neighborhood-like, public art	Art and Design City Helsinki: manages intranet, runs events, theme of "design city", mixed-income residents
		MIT and Environs	campus: ubiquitous wireless, OpenCourseWare, programmable screens, MIT museum; environs: research, spin-offs		flexible growth over time, connectivity, transparency, need to improve livability		entrepreneurial environment, inter-department collaboration, research partnerships
	Lifestyle-Oriented Office Park	Chiswick Park	online concierge services: bike rental, dry-cleaning, information		place: transparency, water features, event space, green Enjoy-Work: quirky, unexpected		Enjoy-Work management strategy for all tenants: events, services, health -- aim to replicate management system elsewhere

Chapter 2: Individual Scale

How are new technologies being applied at the individual level to achieve a balance between living and working?

Mobile and wireless technologies have the inherent potential to detach themselves from a physical place. What happens when this flow of information is attached to the individual instead? Decisions of when and where to access information become a personal choice. Information becomes flexible and can be crafted and tailored to each individual's needs. Email, news sources, and cellular phone calls exist in a floating cyber-realm that can be accessed at nearly any global location. Many working activities can now be separated from the workplace.

However, the future working environment will not become entirely placeless. People will still sit down to work. The flexible characteristics of digital technology give them the power to decide where to sit. Now that the wires are cut, where might we choose to go? This chapter discusses ad hoc workplaces, working environments which are chosen and created by individuals to fit their needs. There is also a discussion of virtual office services, which support ad hoc working styles, making them more feasible.

Ad Hoc Workplaces

Qualities of the ad hoc workplace:

- **unofficial** – These places are not designed primarily for work and serve other functions which may be social or commercial.
- **temporary** – Users may not establish a permanent presence in one spot.
- **first-come, first-serve** – Space is provided informally.

- **appropriated as needed** – However, ad hoc workplaces may serve as "destination" (the individual sets out to the place with the intention of working) or "make do" working environments (a workplace is established when the need arises).

As the potential of popular ad hoc working environments is realized, many owners of these spaces are offering services that cater directly to the needs of workers. The following examples illustrate ad hoc workplaces that officially serve as retail shops, private social clubs, transportation centers, and modes of transit.

Starbucks

For the price of a latte, Starbucks can be your office. The famous coffee retailer's shops are being increasingly used as impromptu business meeting and work spaces. The attractions of a café as a working environment are apparent: the setting is comfortable and relaxed, the atmosphere is amiable, the location is usually convenient, and most importantly, space is cheap. If equipment needs are minimal and portable (i.e. cell phone and laptop), much work can be accomplished at Starbucks.

Omnipresence and wireless service differentiate Starbucks from other café environments. Its strong branding makes the stores easy to spot and their numerous locations are highly accessible. There are 6,604 retail locations in the United States – a shop within walking distance in every major metropolitan area. In August 2002, Starbucks launched a fee-based wireless Internet service in partnership with T-Mobile HotSpot, priced at an hourly rate of $6.[1] As of mid-2005, over 50% of Starbucks' American retail locations offered the service.[2]

Groups that make Starbucks their occasional office include consultants, students, homeworkers, and people otherwise away from their regular workspace. However, a clean table and work-conducive environment is never guaranteed.

Ad Hoc Workplaces

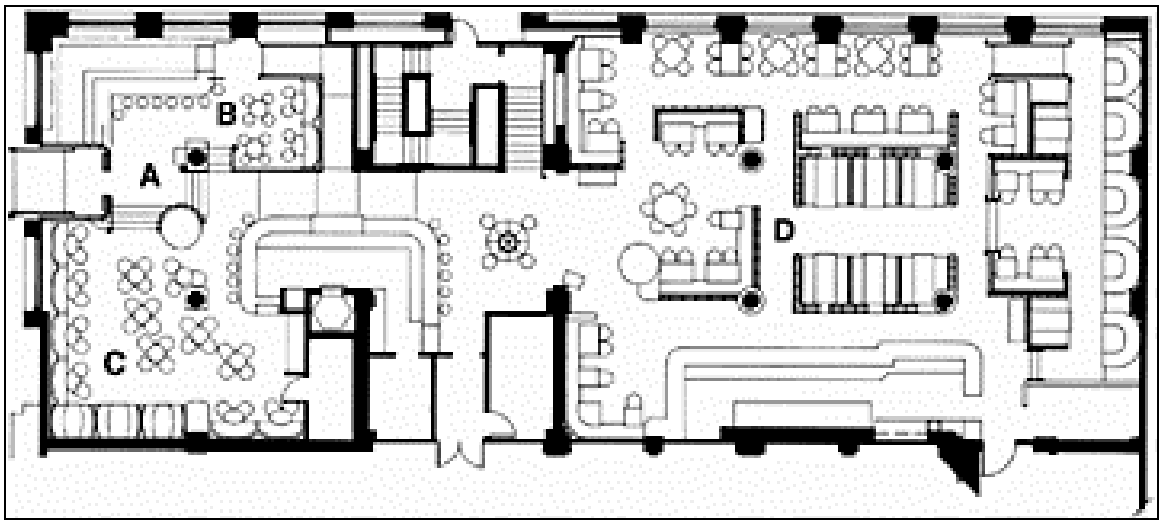

Figure 2.1: Café plan typical for Starbucks: A mixture of seating types provide different settings for informal meetings or individual work.
Source: Interiors & Sources Magazine <http://www.isdesignet.com/Magazine/>

Figure 2.2: The garden at Home House in London: Outdoor wireless Internet access.
Source: <http://www.homehouse.co.uk>

Due to the smaller seating groups and background noise, the space is suitable only for very small, informal meetings. Individual work schedules are at the mercy of opening and closing hours.

From a profitability perspective, Starbucks claims that its wireless service is successful. However, it remains to be tested whether the possibility of offering free Internet access would generate more revenue from additional beverage sales than from the access fees.[3]

Home House

Home House, a private members club in London, boasts "full butler service, no dress code or restrictions on gadgets".[4] A Friday afternoon visit to the club (a signless historic row house on Portland Square that once served as the French Embassy) revealed smoke-filled 18th century drawing rooms filled with members chatting, smoking, drinking, working on their laptops, and watching sports on plasma screens. Opening to members in 1999, Home House is one of the few private London clubs to allow the use of computers and provides wireless Internet service. The sense of anachronism in the place is charming.

As a workplace, Home House is suitable for focused work, informal networking, and important deal-making. The atmosphere is comfortable, friendly, and impressive all at once. Different zones in the club allow for different uses, all in the most posh style. There are quiet corners in the garden as well as private rooms, drawing rooms for mingling and relaxing, a boisterous bar, a full gym and spa, and an elegant restaurant. A web portal allows members to share pictures, send messages to each other, and view the schedule of private parties and other events at the club.

Home House may be the ultimate example of "homing from work", the idea of mixing business and social or personal needs in one hybrid environment.[5]

However, the club is available only to the elite. Members must pay a joining fee of up to £1500 with monthly dues of £125.[6] Willingness and ability to pay such fees is not the only requirement: potential members must be invited by the club's management or nominated and seconded by existing members. While the atmosphere and amenities of Home House may be superior to Starbucks, it can never be as competitive in terms of accessibility.

Airports

Airports serve as places to wait, eat, shop, rest, and increasingly, work. The continued importance of face-to-face meetings coupled with more efficient modes of transportation make travel an essential component of doing business. Increasingly, transportation centers are catering to the business world by enhancing their services for working.

In their 75-year history, airline clubs have transformed from lounges to business centers.[7] While the clubs still serve as bars and places for relaxation, they may now include conference rooms, AV equipment, wireless Internet, and copying services. As at Home House, airline clubs require a level of membership fees and dues that are beyond the reach of many travelers. However, most airports include public working amenities. Wireless Internet in the waiting spaces of transportation centers has become more common over the past couple years, whether it is offered free-of-charge, or by a fee-based private service such as T-Mobile HotSpot. Internet kiosks serve those without their own laptops. In Copenhagen's Kastrup airport, passengers can also ascend to a cell phone-free mezzanine with lounge chairs for focused tasks or naps.

The users of such services include a captive constituency of travelers, many on business. They have a great need and desire to fill time otherwise spent waiting. The airport working environment is only meant to pass the time between one meeting and the next. However, although travel remains the main reason to

Ad Hoc Workplaces

Figures 2.3 and 2.4: Air Canada's Maple Leaf Lounge offers different zones including a business center (top) and catered lounge (bottom).
Source: <http://www.aircanada.com>

go to an airport, work is becoming more than just a secondary use. Many airline clubs are morphing into executive or business centers, which can be used by non-passengers. (These centers exist in an almost nation-less realm, where participants can meet without clearing customs.) In situations where meeting time is tight, airport business centers can be an efficient solution.

Modes of Transportation

Many modes of transportation incorporate features and strategies for the mobile worker. These elements tend to be minimal at this point, yet they go a long way to make trains and airplanes more work-conducive.

A reliable power source enables passengers to work on their laptops for extended periods of time. However this simple feature is available in the United States only in upper class airplane cabins or on heavily-used rail lines, such as Amtrak's high-speed Acela Express service between Washington, DC and Boston.[8] While passengers may use cellular phones on most areas of the train, Amtrak also offers Quiet Cars which prohibit phone conversations and electronic devices with audible features. Many trains also include conference table seating arrangements where passengers face each other, facilitating group discussion.

Airlines restrict cellular phone use in-flight due to concerns over interference with the plane's communications and navigation system. However, this policy may soon change as cellular technology overcomes the safety issue.[9] (The issue of the annoying seatmate is another concern in an environment where people have the right to speak on their cell phones, but not to get up and move if they are bothered by another's conversation.) Broadband Internet on flights is also becoming more readily available. Connexion by Boeing, which uses satellite communication to supply high-speed Internet without compromising the plane's flight systems, provides its service to a few international carriers on a handful of long-haul flights.[10] At $30 for unlimited access on flights over 6 hours, the pricing

strategy is more competitive than Starbucks's hourly rate. However, airline companies in the US has been slow to invest in such services following the post-September 11, 2001 industry downturn.

Implications for the ad hoc workplace

The ad hoc workplaces described above illustrate the adaptability of the modern workforce, and the desire of the service industry to accommodate them. However, these places are not total substitutes for other working environments. All of the examples given constitute "third places" for working; settings that fulfill working needs between the home and office.[11] They all lack a sense of permanency and do not supply the entire range of requirements and services needed by most workers. These amenities are rarely free, but they do come in a range of prices. Individuals further customize the space with the addition of their own working tools which can range from a pen and paper to a wireless-enabled laptop.

From a livability perspective, ad hoc workplaces offer both advantages and disadvantages for individuals. The main advantage is convenience. They appear when and where they are needed. They also increase efficiency. People are able to occupy their time by working instead of waiting when in captive situations, such as on an airplane.

Ad hoc workplaces give people control and choice over their work atmosphere. However, one criticism is that they may actually take away the option of when *not* to work. Airplanes will soon disappear from the dwindling list of places inaccessible by cellular phone or e-mail. Does this further increase the pressure to always be available? Does working on the plane free up time for more pleasurable pursuits – or just more work? This decision is still in the hands of the individual (or at least between the individual and his employer) and not a result of technology per se.

Ad Hoc Workplaces: Lessons for Developers

- **Workplaces are not just offices.** They are cafés, clubs, waiting rooms, and vehicles: third places.
- **Technology can transform dead space into workspace.** Wireless Internet services as well as the individual's own cell phone are powerful tools.

Virtual Office Services

Qualities of the virtual office service:

- **prestige-oriented** – The virtual office is a professional front for any business, providing a higher-profile downtown office address without a need for a physical presence.
- **service-oriented** – Staff handle mail and message services.
- **detached** – The official business address is separate from the individual's actual place of work.

Is the prestige of a downtown office address possible without the high rent? Can a small company have the services of a mail room and receptionist at an affordable price? Can an individual benefit from the advantages of the central business district while working in the suburbs? Virtual office services, such as those provided by Regus worldwide and eOffice in London, attach some administrative and formal aspects of a business to a place, while individual work tasks happen elsewhere. Call, message, and mail handling are the basis of most virtual office packages while extra services such as meeting room privileges, message transfer via SMS to a mobile phone, and discounts on secretarial support may also be included.[12]

Virtual Office Services

Figure 2.5: Regus diagram of virtual office services.
Source: Regus

The virtual office is composed of two places: the formal business address, selected for prestige, and the workplace, selected for convenience. Companies pay for the prestige of their official address at a premium above the call and mail handling services. For example, Regus charges a range of prices for its virtual office packages ranging from £5.00/per day for a mailing address in a smaller UK city to £7.00/per day for a prime London address such as Trafalgar Square or Canary Wharf.[13] From the individual perspective, virtual offices offer services that make ad hoc working lifestyles possible for an even greater range of businesses types. This clever separation and repackaging allows the objectives of high prestige, workplace suitability, and reasonable cost to be met in one multi-locational solution. However, the virtual office is still a façade in many respects. The locational prestige of the business address is literally only as big as a mail box.

Virtual Office Services: Lessons for Developers

- **The virtual office eliminates the need for a formal office – almost.** While some business functions can operate through a virtual office system, the need for meeting space in a central and convenient location will remain.

The individual scale of workplaces focuses on a sense of personal freedom and choice that is made possible by digital communications technology. Services, such as the virtual office and Internet access, add amenity to an individual's choice of workplace, and influence the decision to turn a café into an office. Wireless technology broadens options even further by untethering workers from their leash of cords and plugs. The next chapter describes spaces specifically designed for working, purposefully reattaching technology to the space instead of the individual.

Chapter 2 Endnotes:

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[8] Amtrak, “Travelling With Amtrak – Onboard – Personal Electronic Devices”, <http://www.amtrak.com/servlet/ContentServer?pagename=Amtrak/am2Copy/Title_Image_Copy_Page&c=am2Copy&cid=1080080554523&ssid=146>
[9] Frank Ahrens, “FCC Considers Cell Phone Use On Airplanes”, *The Washington Post*, December 16, 2004.
[10] Connexion by Boeing, <http://www.connexionbyboeing.com>
[11] Ray Oldenburg, *The Great Good Place: Cafés, community centers, beauty parlors, general stores, bars, hangouts, and how they get you through the day* (New York: Paragon House, 1989).
[12] Regus, “Discover a world of better business”: 13.
[13] Regus, “Discover a world of better business”: 12.

Chapter 3: Office Scale

How are developers and entrepreneurs incorporating technology at the office scale to address new patterns of working?

This chapter presents working environments at the office scale. As enterprises grow, there is a need to look for more formal meeting spaces for presentations, expanded business services, and a sense of permanency. Other people may join the business, requiring a workplace that meets the needs of the group and not only the individual. Digital technology has afforded a sense of freedom and personal choice in selecting work environments. In turn, developers have capitalized on this notion by offering new office models that are flexible and more attuned to personal needs.

The office must evolve as working patterns and markets change in order to stay competitive as a development product. In the 1980s, computers moved from their own rooms to the desktop, "dragging their cables behind them".[1] The current move to wireless technology will increase individual mobility, within and outside of the office. Office design has a new opportunity to evolve. Globalization is another trend that has transformed the way people think about work and markets. With the rapid transfer of information and even people through more efficient transportation networks, speed to market is essential. Imagine the new office as a globally-available space for people to anchor their mobile devices (cell phone, laptop) and focus on their core business immediately. Some developers and entrepreneurs are beginning to create such environments.

The examples presented in this chapter fit into the categories of serviced office and shared office. In addition, the club office is discussed as a model that many companies have chosen to provide for their employees to encourage creativity and accommodate flexibility.

Serviced Office

Qualities of the serviced office:

- **emphasis on place** – Users choose a serviced office based on a location that will allow them to expand, test a new market, or commute less.
- **emphasis on service** – Companies are able to get out of the real estate business and focus more on their core activities.
- **emphasis on flexibility** – Short term leases combined with essential services allow companies to reduce their risk.

The concept of a flexible, ready-made office is not new. Serviced offices, once known as "executive suites" emerged in the late 1960s as small-scale workspaces operating in conjunction with existing secretarial services and telephone-answering firms.[2] According to the Office Business Center Association International, there are 5,500 serviced office centers worldwide, with 4,000 concentrated in North America.[3] These centers typically range in size from 10,000 to 75,000 square feet. Regus, the world's largest serviced office provider, predicts that most of the Fortune 500 will soon hold 20 percent of their total real estate in the form of short-term leases.[4] As a result, Regus has set the ambitious goal of occupying 10 percent of office real estate in the central business districts of major US metropolitan areas as well as 30 percent of space in certain commuter-heavy suburban markets.[5]

Regus

With 750 locations in 60 countries, Regus is the largest player by far in the serviced office business. In 2004, Regus provided 59,541 workstations to clients at an occupancy rate of 77 percent.[6] Regus leases office property in strategic locations worldwide and in turn offers space and services to clients ranging from independent consultants to the largest companies. Because of its size, Regus can provide satellite, overflow, temporary, and start-up office space. Although

Regus

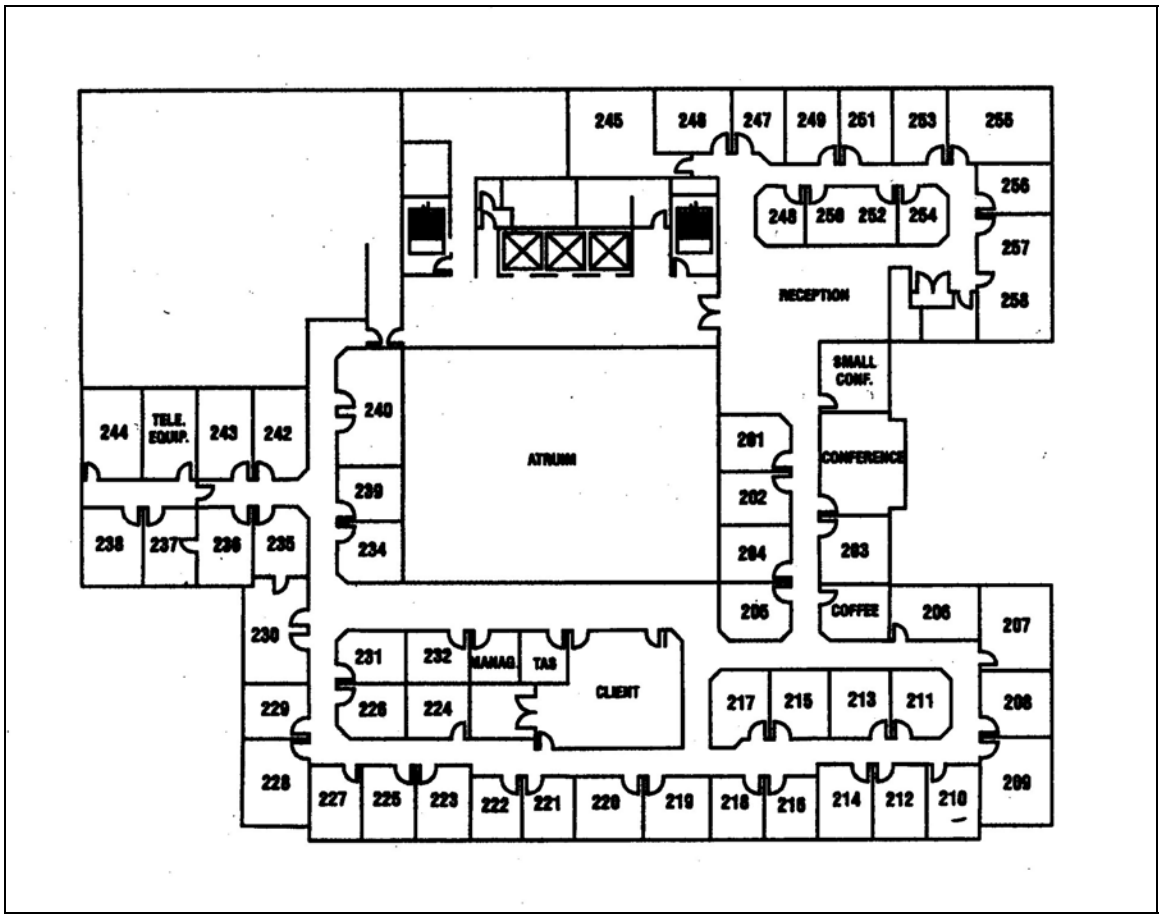

Figure 3.1: Regus office in Harvard Square:
Conventional design of cellular offices.
Source: Regus

Regus

Figure 3.2: Touchdown desks for Regus Network Access users: Chiswick Park.
Source: Photograph by author

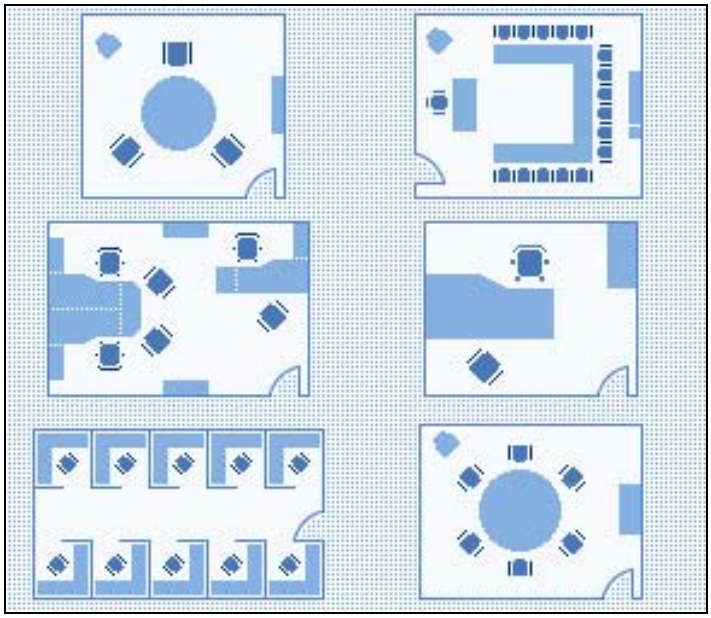

Figure 3.3: Generic Regus office and meeting room layouts.
Source: <http://www.regus.com>

each property varies, the environment generally consists of shared reception, copy, meeting, and coffee areas, giving each tenant control over their own workspace. Options range from enclosed private offices to open plan space covering entire floorplates. Lease agreements are for a minimum of three months, with packages usually including furniture, mail handling, and utilities. All other essential services, such as Internet, telephone, and meeting rooms, are additional costs. The quality and character of the environment depends on the building. While I found Regus's Harvard Square location in Cambridge, Massachusetts standard and uninspiring, the space at Richard Rogers's Chiswick Park building near London was bright, well-designed, and featured Regus amenities such as an Internet café for tenants and their clients as well as a "relaxation room".

Regus's many locations open up the interesting possibility of global access to temporary workspace. A Network Access Card allows members the use of an equipped private office for an hourly rate at any Regus center during normal business hours.[7] This service is more expensive than a coffee and hour of wireless Internet access at Starbucks, but also offers a quieter, more professional working environment.

Landflex

Landflex, a subsidiary of Land Securities, the largest property holder in the UK, is an interesting hybrid between corporate real estate developer and serviced office provider. Unlike Regus, Landflex's tenants often use their space as their long-term primary office location. Leases may be "blended", including a range of lengths from 6 months to 15 years with a series of break options. Landflex owns and manages two buildings in central London, for a total of 482,500 square feet. Although tenants have control over the fit-out of their space, several services and shared spaces are designed to allow them to reduce their number of private

Landflex

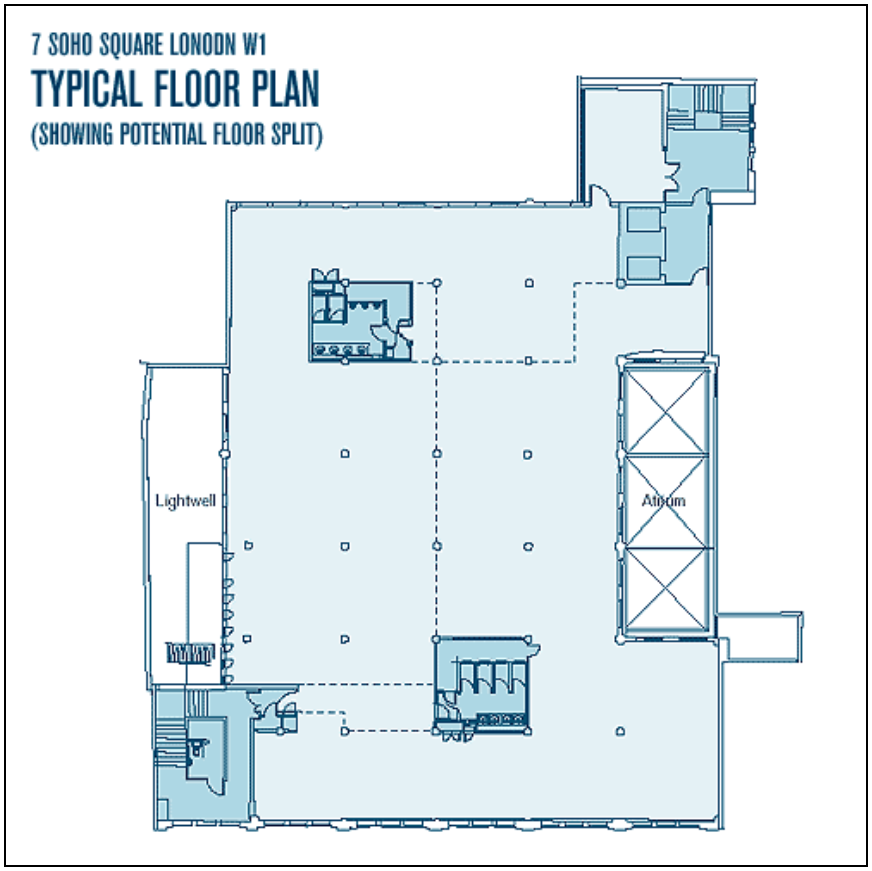

Figure 3.4: Typical floor plan of Landflex's 7 Soho Square: Tenants fit out their own space, unlike standard serviced office.
Source: <http://www.landflex.com>

Figure 3.5: Exterior view of Empress State.
Source: Landflex

Figure 3.6: Shared meeting room at 7 Soho Square.
Source: Landflex

meeting rooms and reception staff. The Empress State building in Earl's Court has an entire floor of Landflex-managed meeting rooms that can be rented as needed. In addition, there is a large shared "club lounge" on the first floor for informal meetings and a revolving lounge space on the top floor. The first floor receptionists greet visitors and notify individual hosts within tenant companies, making some tasks of a typical company floor receptionist redundant. Cleaning, maintenance, and mail sorting are included while telephone answering and online concierge services are optional. According to Susie Gray, Landflex Portfolio Director, the subtle branding of the space (purple furniture and accents) is designed to be subordinate to the identity and brands of the tenants.

Landflex repackages elements of the serviced office concept to suit the needs of larger corporate tenants in their primary office space. By transforming some fixed space needs (such as meeting rooms and reception areas) into variable or inclusive costs, tenants can affectively rent less square footage. While the lease terms are longer than Regus, there is greater built-in flexibility than conventional office space rental. Finally, Landflex handles the most basic management and maintenance of the office, allowing companies to focus on their core business instead of on real estate. This service may be the greatest draw of the Landflex concept. At Empress State, the London Metropolitan Police chose to lease all 30 floors of the building. While many of the opportunities to share common space with other firms are lost, they will continue to benefit from the flexible lease and office management aspects of Landflex.

Serviced Office: Lessons for Developers

- **Think in terms of service, not just real estate.** Serviced offices recombine physical space, technology, communications, and business services into one package, allowing companies to think of their working environments as an integrated service.
- **Location still matters.** Qualities such as prestige, shorter commutes, and access to a target geographical market are dependant on place.
- **Convenience and flexibility are the two main advantages of serviced office.** An office that is accessible, includes the basic business services, and has a short-term lease serves a valuable market segment.
- **Networking among tenants is secondary.** Serviced offices focus on the needs of their tenants separately, not as a group. In turn, users of serviced offices might consider networking opportunities a bonus, but not a component of the service they are purchasing.

Shared Office

Qualities of the shared office:

- **common culture and community** – Whether intentional or unintentional, a shared value system is implied.
- **social scene** – Possibilities for networking are part of the package.
- **transparency** – Open plan office, mobile workstations, shared resources, and visibility create a new layer of information about workplace neighbors.

eOffice

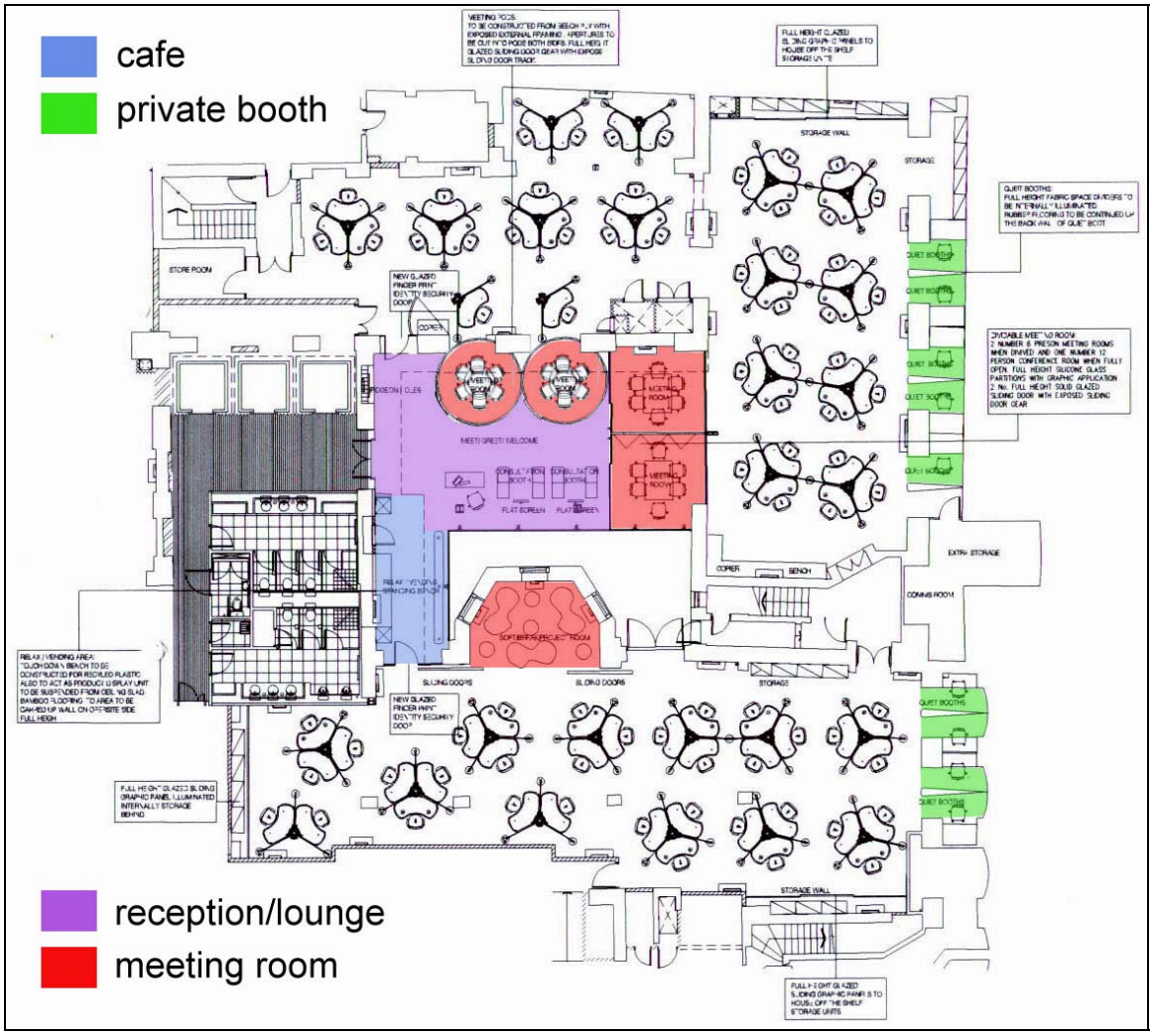

Figure 3.7: Plan of eOffice showing club-style uses.
Source: eOffice

eOffice

Figure 3.8: Conference room with top-of-the-line A/V equipment.
Source: Photograph by author

Figure 3.9: Colorful reception area with view into meeting room across atrium.
Source: eOffice

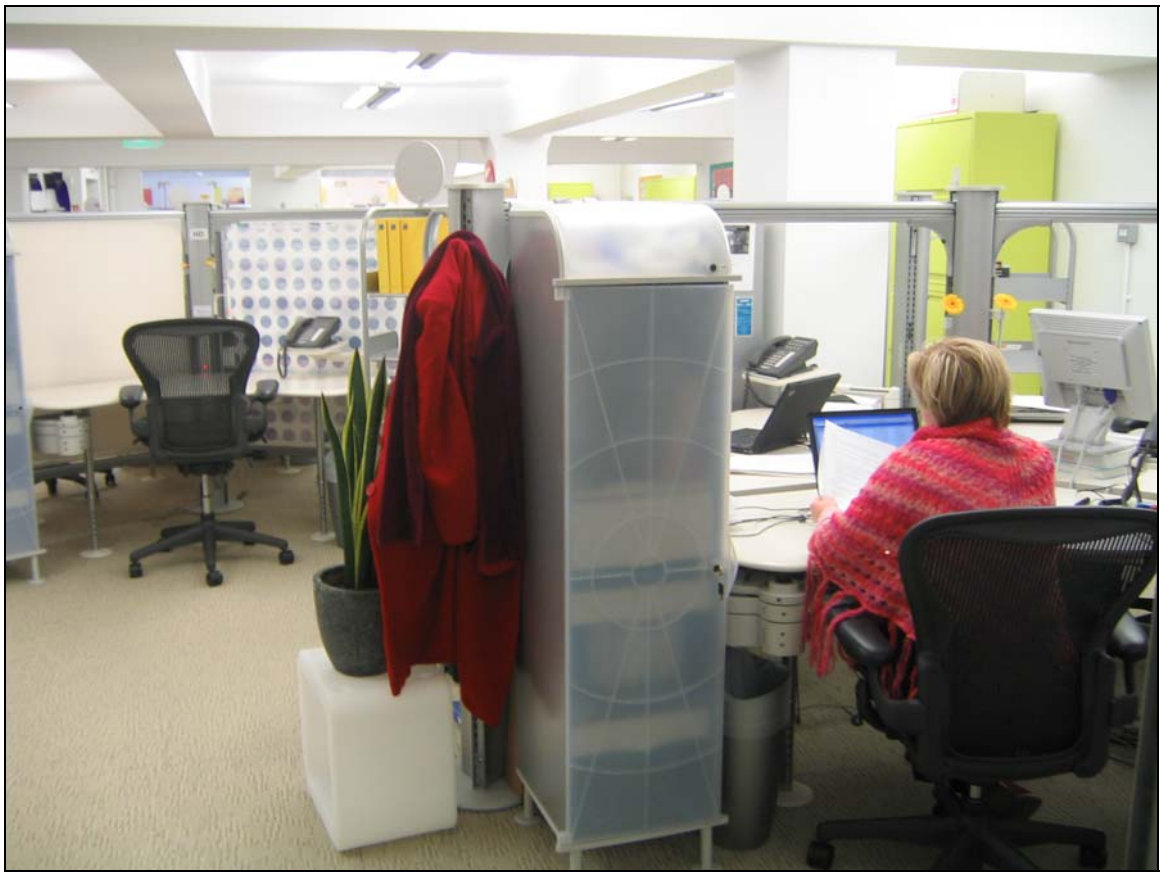

Figure 3.10: Open plan workspace with Herman Miller furniture.
Source: eOffice

As a formal building type, the shared office projects discussed are a recent phenomenon: all were opened within the last five years. Although there is much overlap in the way the three projects function as offices, each started with a unique vision: to be a workplace with style, an entrepreneurial haven or a social networking arena.

eOffice

eOffice opened in April 2002 as the brainchild of Italian Pier Paulo Mucelli.[8] Located in London's trendy Soho neighborhood, the shared office attracts a large number of media and advertising entrepreneurs. The space is compact but carefully designed, home to about 50 members with permanent workspaces and 80 hot-desk members. Bright colors, high-quality furniture, and quirky objects create an atmosphere that is playful, professional, and cutting-edge. eOffice is divided into several different open and private zones. One receptionist greets guests, who can choose to wait on one of the café stools in the coffee area or in the small lobby preceding a conference room with the latest audio-visual equipment. The open plan workspace contains Herman Miller workstations for permanent and hot-desk members that are leased on a month-to-month basis. Private calls can take place in one of several booths. Other quiet, private spaces include small meeting rooms and an extensive design library.

eOffice provides many of the same workplace services as Regus, including serviced office, virtual office, and meeting room rental. Instead of tenants, eOffice has members. They lease completely furnished workstations instead of square feet. According to Mucelli, services are provided in a menu format: members pick and choose which telecom, Internet, printing, and copying services they need and pay for them à la carte. At eOffice a new member really can sit down at his own desk and begin working immediately. This is partly because all of the furniture and design decisions have already been made. The only caveat is that you like them!

Cambridge Innovation Center

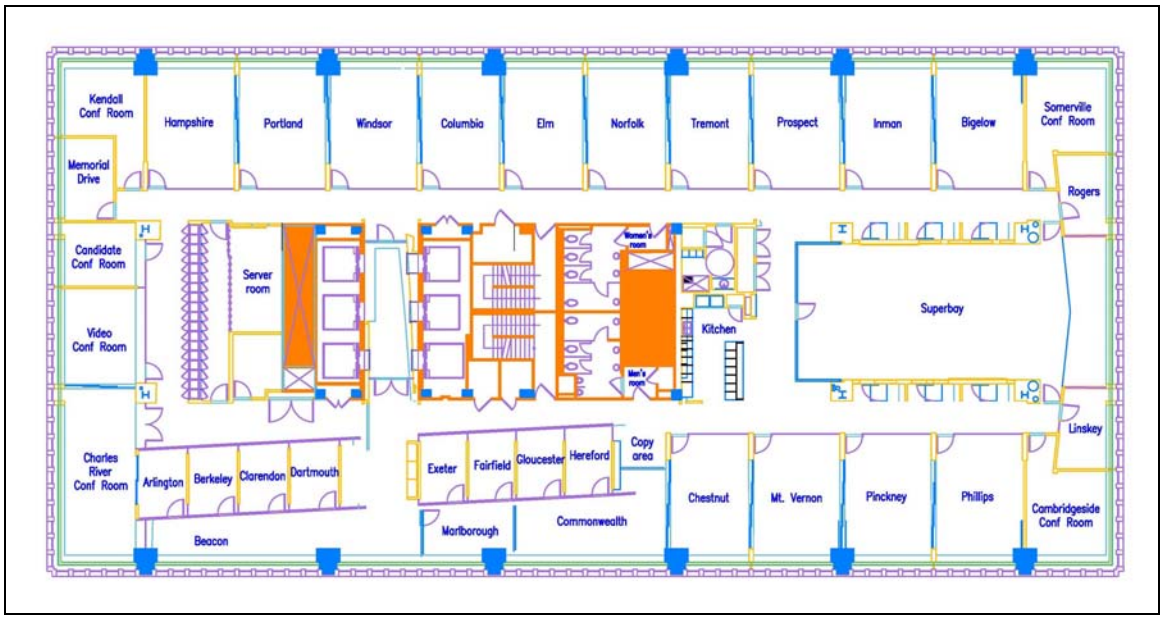

Figure 3.11: Plan of Cambridge Innovation Center:
Company bays with movable walls allow for seamless growth.
Meeting rooms occupy the corners for the best view and maximum prestige.
A superbay serves hot-desk workers.
Source: Cambridge Innovation Center

Figure 3.12: Lobby of Cambridge Innovation Center with view of reception.
Source: <http://cambridgeincubator.com>

Figure 3.13: View into expandable bay used as team work space.
Source: <http://cambridgeincubator.com>

eOffice builds on and adds to the success of its members through co-branding, says Mucelli. Although none of this is forced or prescribed, by choosing to work there, members associate their business with those of the other members and with the eOffice culture. Ultimately, eOffice is an excellent space for those who value a certain image. The location, the design, the art – all are incredibly chic and possibly essential workplace components for someone in the world of media or design.

Cambridge Innovation Center

Located in Kendall Square adjacent to the Massachusetts Institute of Technology, the Cambridge Innovation Center (CIC) provides high-tech shared office space to growing companies. Created by MIT Sloan School of Management graduates Tim Rowe and Andy Olmsted, CIC is also home to the founders' venture capital fund, adding to the entrepreneurial environment. Like eOffice, CIC emphasizes high-quality design. The layout incorporates transparent elements with glass fronts on the conference rooms, office doors, and even the server room. Groups are generally housed in expandable, open plan bays and lease workstations on a month-to-month basis, designed to allow new businesses to expand and contract flexibly. Touchdown desks are available for part-time tenants. Meeting room use is included and completely self-managed through an online reservation system. Once a room is reserved, a small digital display at the door lets others know who is using the room and for how long. Nearly all of CIC's services are bundled including copying, faxing, and a well-stocked kitchen. A large staff take care of IT support and other service details. Basically, small companies are able to reap the efficiencies of operating at a larger scale while paying only for the space they use at the time.

The Cambridge Innovation Center separates itself from the standard serviced office by tailoring its space and strategy to the specific needs of growing companies. The project first opened as an incubator in 1999 during the dot-com

boom. According to CEO and co-founder Tim Rowe, tenants may be of any business type but are carefully selected based on qualities of integrity and business legitimacy. The result is a place where tenants may have much in common but did not necessarily choose to be part of a specific community. Many companies seem to move to CIC for practical reasons but find opportunities to network and interact with their neighbors. "There is a spirit of entrepreneurship and innovation that pervades CIC that I think is really different than just about any office space, " said Amy Salzhauer, one of CIC's clients.[9] Such an entrepreneurial atmosphere may be difficult to quantify, but certainly contributes to the perceived value of the space. CIC's recent plan to more than double in size is an indication of the success of the business.

United Spaces

United Spaces is "a unique blend of workplace and club where people get together to create a networking office".[10] Located in Stockholm and formerly in Copenhagen, United Spaces provides meeting rooms, a café, wireless Internet, and networking events for members who pay a monthly fee. The project was built in April 2000 with the involvement of NCC, one of the largest construction and development companies in the Nordic countries. The completely open plan design of the space aims to generate interaction among members: in the "networking arena" where the main workstations are located, members are encouraged to sit at a new desk each day.[11] Possessions are secured in a mobile cart brought to the work space. There is also a public website and private intranet which present detailed profiles of United Spaces members.[12] Lecture series, workshops, parties, and other events are a large part of the general concept and culture of the place.

While eOffice and the Cambridge Innovation Center provide a passive environment for interaction, United Spaces actively facilitates it. The clustered, barrier-free workstations force members to confront each other. There are few

United Spaces

Figure 3.14: Main work area at United Spaces: each member has a mobile cart.
Source: <http://www.unitedspaces.net>

Figure 3.15: Lockers and mail sorting at United Spaces.
Source: <http://www.unitedspaces.net>

United Spaces

Figure 3.16: Informal meeting area, directly adjacent to open plan workspace.
Source: <http://www.unitedspaces.net>

Figure 3.17: Lectures and courses are part of the extensive schedule of programs at United Spaces.
Source: <http://www.unitedspaces.net>

enclosed spaces. The heavy schedule of activities and events brings a variety of people to the workplace. United Spaces is undoubtedly for extroverts who put a high value on interaction and a lower value on privacy. While the open environment might not be well suited for companies with confidentiality concerns, individuals who already have access to a quiet, more private workspace (such as the home) may find it invigorating. Is the highly social atmosphere at United Spaces transferable to other markets? Scandinavian society is inherently based on group cooperation and social organizing, however many other cultures put a greater value on individuality and private ownership.[13] Regardless, the members of United Spaces elect to be a part of the networking atmosphere and culture.

Shared Office: Lessons for Developers

- **Create an image.** Each of the three shared offices discussed are crafted to appeal to a certain demographic who choose to buy into the culture of the place. The spaces have a specific feel and unique brand.
- **Be a visionary leader.** These projects are labors of love, led by people who are personally invested in the business. During my visits, I met with the CEOs of both eOffice and Cambridge Innovation Center. Both of these men are founders of their projects, manage the daily and future operations of the office, and know their clients personally.
- **Set the price point carefully.** An expensive design can make membership fees prohibitive for emerging companies and entrepreneurs. One commonly held view is that United Spaces Copenhagen went bankrupt after two years because its premier building and location were simply too costly to support the business model.[14]

- **Make the shared office experience different than that of serviced office.** The notion of sharing implies a positive interaction with other people. Successful shared offices are places with added social value. However, networking need not be forced or programmed. The scheduled events of United Spaces may suit Scandinavian societies, however, the Cambridge Innovation Center takes a more casual, personalized approach. CEO Tim Rowe encourages interaction by simply introducing his tenants to each other in the corridors.

Club Office

Qualities of the club office:

- **zones** – Clubs provide a work atmosphere with many different flexible environments. Just as a nightclub has quiet spaces for sitting, lounge areas for interacting with new people, and dance floors for expending energy, a club office has spaces to accommodate both individual and group activities.
- **intermittent occupancy pattern** – The club office is designed to serve a mobile workforce with flexible schedules.
- **knowledge work** – Users of the club office are focused on a variety of intellectual tasks ranging from highly autonomous to highly interactive work.[15]

The club office is more a model for workplace design than a separate type of office product. All of the projects described above contain elements of the club office. The model was originally described by Francis Duffy as a component of his four-part categorization of offices types into hives, cells, dens, and clubs.[16] Many companies, particularly advertising or design firms and management consultants, have adopted this model for their workspaces. The idea is to provide a working environment that encourages fluidity and choice for employees, increasing productivity and general satisfaction.

Chiat/Day

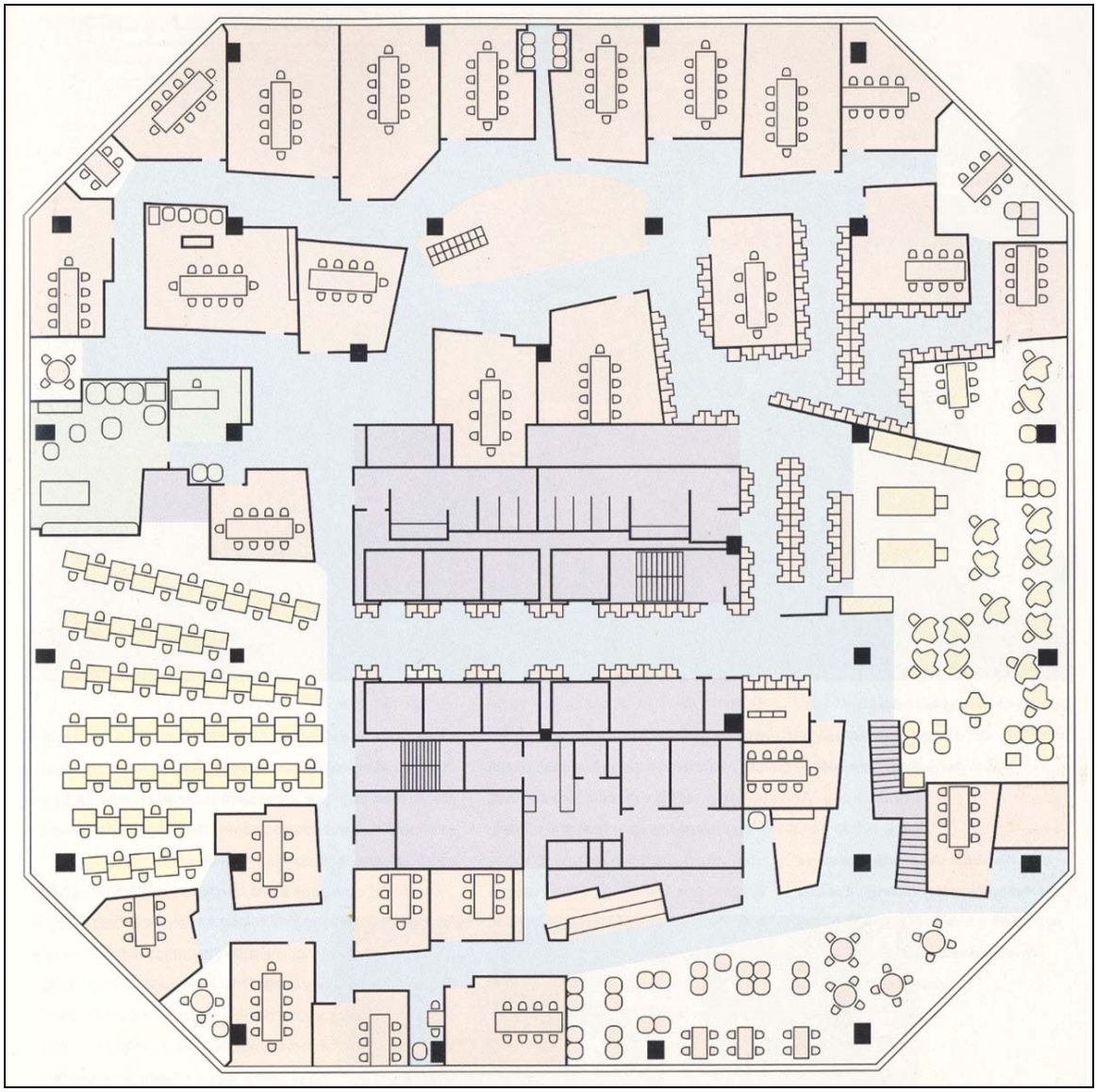

Figure 3.18: Plan of Chiat/Day's New York office: This club office consists of rooms for project teams, café and hot-desk space, and meeting rooms with support services centered at the core.
Source: Francis Duffy, The New Office (1997): 195.

Chiat/Day

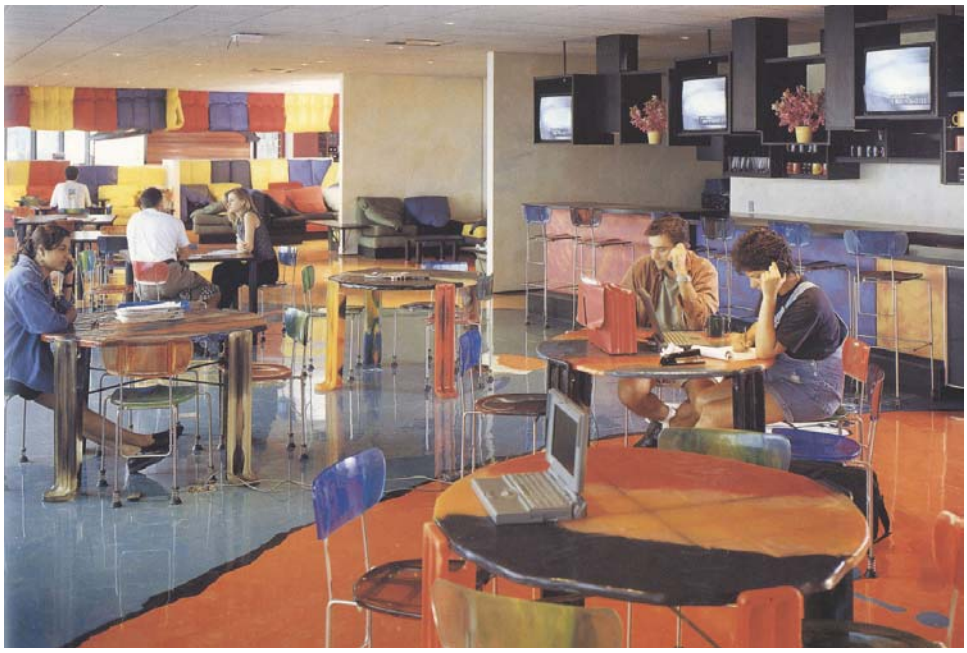

Figure 3.19: The tables in this café area at Chiat/Day must be reserved.
Source: Francis Duffy, The New Office (1997): 193.

Figure 3.20: A team office, individual workstation, and informal break or meeting area blend together.
Source: Francis Duffy, The New Office (1997): 105.

Chiat/Day

The advertising firm of Chiat/Day is known for its unusual work environment. This club office from the mid-1990s provides individual and group work spaces in a colorful and playful atmosphere. Gaetano Pesce's interior is filled with strange elements such as red lips, dog houses, and baby bottles. Working at the office is optional, and the assumption is made that most Chiat/Day employees would choose to work either at home or on the road, checking in at the office only occasionally. All of the spaces and equipment are shared, although a place to work must be reserved in a process known as hotelling. The move to create an office without private, territorial space is as much about the company's non-hierarchical organizational strategy as design. Lockers serve as the one area where employees can store their personal papers and other equipment. One critique of this environment is that it has all the personal space and privacy of an airport lounge: getting work done there is certainly possible, but there is no option for a more permanent situation.[17] The interior design is restless and possibly distracting, but its radical approach challenges older conventions of what a corporate office should be.

Club Office: Lessons for Developers

- **It's not just about fashion.** Do not be fooled: the defining quality of the club office is its varied and intense use of space to meet the needs of a mobile workforce. Bright colors and whimsical furniture may help create a dynamic atmosphere, but they are nothing without the careful layout of zones and an effective strategy of flexible use.
- **Plan for the future.** A good office design should support a company's evolving style of work. In this way, strategic business planning is coupled with workplace planning. As levels of both autonomy and interaction increase in the general business environment, club-style offices will become more prevalent.

Working environments at the office scale provide a place to sit down and get to work. As at the individual scale, these workplaces are predicated on the notion of increased flexibility and personal choice. Workers are able to combine formal workplaces with mobile and home working options. Spontaneous and planned interactions with other people within the office might lead to new possibilities. What happens when networking is taken to yet another scale? At the neighborhood level of working environments, interaction occurs between universities and private companies, entrepreneurs and students, and even researchers and residents. The next chapter discusses large scale, mixed-use projects where working and non-working environments overlap.

Chapter 3 Endnotes:

[1] Francis Duffy, *The New Office* (London: Conran Octopus Ltd., 1997): 53.
[2] Scott Peltier, *Analysis of the Supply of Serviced Office Space* (MSRED Thesis, MIT 2001): 22.
[3] Office Business Center Association International, Office Business Center Industry Facts, <http://www.obcai.org/news.html>
[4] Peltier (2001): 26-27.
[5] Peltier (2001): 54.
[6] Regus Group plc, "Regus Recovery on Track", March 14, 2005, <http://www.regus.com/assets/en-us/financial/Prelimsmarch2005.pdf>
[7] Regus, Network Access Overview, <http://networkaccess.regus.com/default.htm?lnk=NET-HDR-TAB&grp=GEN>
[8] eOffice, <http://www.eoffice.co.uk/>
[9] Cambridge Innovation Center, <http://www.cambridgeincubator.com/>
[10] *Eciffo Magazine*, "United Spaces", Autumn 2002, <http://www.eciffo.jp/en/project/project015_e.html>
[11] Torben Elgaard Jensen, "Topologies of Networking", August 2004, <http://web.cbs.dk/departments/ioa/staff/elgaard/The_Networking_Arena.pdf>
[12] United Spaces, <http://www.unitedspaces.net/>
[13] Jørgen Staunstrup, IT University of Copenhagen, personal interview, March 8, 2005.
[14] Pouline Middleton, IT University of Copenhagen, personal interview, March 8, 2005.
[15] Duffy (1997): 63.
[16] Duffy (1997): 61.
[17] Duffy (1997): 63.

Chapter 4: Neighborhood Scale

How is technology used to create new city neighborhoods to suit all facets of workers' professional and personal lives?

As the approval process becomes more stringent, developers must make proposals that are well received by the city and the community, as well as profitable. Projects that provide amenities for the proposed and surrounding neighborhood and perhaps offer something innovative are more likely to go forward. Many developers are using digital technology as a theme for projects that are "vibrant 24-hour communities", to use the latest buzzwords. What makes these "broadband wonderlands" successful?

Large-Scale, Mixed-Use, Technology-Oriented Developments

Qualities of the large-scale, mixed-use, technology-oriented development:

- **density** – Uses are placed close together to facilitate the sharing of high-tech infrastructure, amenities, and transit lines
- **mix of universities, residences, public institutions, and private companies** – Different uses create opportunities for spontaneous interaction and provide a critical mass of people.
- **formation of research partnerships, often by a facilitating organization** – These projects aim to be more than the sum of their parts. Co-location is used as a common thread to create collaborative research partnerships, which are often initiated and managed by an outside group.

The projects in this section are considered holistically, as mixed-use neighborhoods. They all contain elements of the individual and office scales of working previously discussed. In addition, areas for living, working, and studying are integrated into one place. As the projects increase in scale, changes in

working patterns are occurring at the level of the company as well as the individual employee. A remarkable leap occurs where new digital technologies are not only used, but created and tested. The neighborhood scale of working brings opportunities for companies to use their community and environment as a resource and gives individuals new ways to be involved. Technology first acts as an enabler to link groups together and then becomes a product as new applications are developed.

Arabianranta (Helsinki Virtual Village)

Arabianranta is both a cyber and a physical community, connecting universities, residents, technology companies, and artists around themes of design and culture. This 210-acre mixed-use development is home to six educational institutions, 18 apartment buildings, and businesses that support 8,000 jobs.[1] The area population, including students, residents, and daytime workers, is linked by the most modern fiber-optic communications backbone in Finland, as well as by the Helsinki Virtual Village (HVV) portal.[2]

Places for working in Arabianranta overlap with areas to live, study, shop, and play. New buildings integrate seamlessly with old factories. Most striking is the feeling of density and connectivity. Figure 4.2 gives a sense of the tight co-location of a pottery factory, media center, university, and business park with an apartment building across the street. The master plan of the area concentrates industry, educational institutions, and private companies along Håmeentie Street. The shoreline itself is reserved as a recreation area with bicycle paths directly adjacent to new residential buildings. These apartments range from luxury condominiums to student and subsidized housing. A “space axis” links the commercial and residential areas via an indoor pedestrian shopping gallery, eventually connecting to the shore’s proposed ferry terminal.[3] The City also extended its bus and tram lines to the area, dubbing the route along Håmeentie Street the “Design Line”.[4]

Arabianranta (Helsinki Virtual Village)

Figure 4.1: Illustrative plan of Arabianranta.
Source: ADC Helsinki

Arabianranta (Helsinki Virtual Village)

Figure 4.2: Dense mix of uses in Arabianranta: A factory, the University of Art and Design, and the Portaali Business Park are directly adjacent to each other.
Source: Photograph by author

Figure 4.3: Housing on the Arabia shore.
Source: David Borland

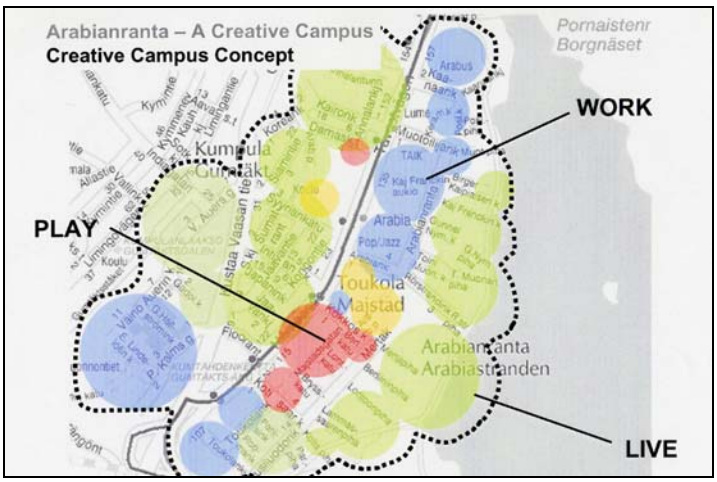

Figure 4.4: Creative Campus Concept: Diagram illustrates a blend of uses.
Source: University of Art and Design Future Home Institute

The Helsinki City Planning Department conceived a plan for residential expansion in Arabianranta, the eastern shoreline of Helsinki's inner city, in the early 1990s. The Arabia Pottery factory had been operating continuously on the site since 1874, leaving many older warehouse buildings suitable for reuse.[5] The prestigious University of Art and Design Helsinki established itself in one of the old Arabia buildings in 1986, becoming the first of many educational institutions to locate in the area.[6] In addition, historic mill and water works buildings at the mouth of the river Vantaa were converted into the City's Museum of Technology. In 1995, Art and Design City Helsinki, Ltd. was formed by several public and private partners to coordinate the physical development of the area as well as the distribution of services. The partners include the Ministry of Trade and Industry, the City of Helsinki, Hackman Ltd. (owner of Arabia ceramics and other design brands), Pop&Jazz Conservatory (a music program for students at the high school level and below), Eläke-Varma Mutual Insurance Company, and Metra Ltd. (a company with real estate interests in the area).[7]

Art and Design City Helsinki (ADC) and its partners are the groups responsible for taking the city's residential expansion plan and turning it into a strategy for the large-scale integration of technology, design, work, and lifestyle at Arabianranta. ADC has the essential task of coordinating the many projects, alliances, networks, and research initiatives in the area. Many of these projects have interesting implications for the merging of professional and personal interests. Some allow companies to create and test their products in a living laboratory setting while others focus on the human side, allowing people more freedom and choice in how they structure a work-life balance. The activities and working environment at Arabianranta are briefly described from both the corporate and individual perspectives.

How do companies benefit from the unique working environment in Arabianranta? Arabianranta is the largest concentration of new media, design, and audio-visual companies in Finland, many located at the Portaali ("Portal")

Business Park. In addition, several technology companies such as Digia, a start-up that creates and tests applications for cellular phones, are also present in the area. These companies hope to use Arabianranta and the Helsinki Virtual Village as a living laboratory to test new technology products and services. Several initiatives are taking place through the IntelCities project, an EU "research and technological development project to pool advanced knowledge and experience of electronic government, planning systems, and citizen participation from across Europe."[8] For example, Siemens, one of the world's largest electronics companies, is testing a car-heating pole (essential for cold climates) that can be controlled by cellular phone via Bluetooth technology.[9] Helsingin Arabian Kotiranta Housing Company piloted the PlusHome open building concept which allows potential occupants to customize the interior layout of their apartments and evaluate the price online.[10] Finally, the Helsinki Virtual Village is intended to serve as a place where companies can develop and host their websites.

How does the high-tech environment at Arabianranta benefit individuals in their working lives? Currently, one of the most distinct advantages is the opportunity for self-marketing. The Helsinki Virtual Village has 1,500 registered members who live or work in the area. Profiles about each member display their skills and interests, while links and notices on the HVV website can direct them to jobs or potential employees. Also, ADC uses the HVV portal to announce office space for rent at Arabianranta, intended to attract individual entrepreneurs and small firms. Still, many of the other advantages of living and working in a networked community remain difficult to measure. What is the value of online professional interaction? What encounters are facilitated by technology and how many are simply a matter of co-location? How many people both live and work within Arabianranta?

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Often the reality is less exciting than the fantasy. A March 2001 article in *Wired* describes the plans of Digia and Sonera (Finland's largest telecommunications

provider) to develop and use the Helsinki Virtual Village as a platform for an interactive community that can be accessed via cellular phone, PDA, digital television, or personal computer.[11] Four years later, the virtual portion of HVV is still a rather unremarkable (but useful) system of local information and online message boards. However, truly ubiquitous wireless internet is coming in the future. The plan is to construct a shared wireless local area network with enough capacity and reach to serve the main cluster of businesses, cafés, and residences near the Arabia pottery factory.[12]

Ørestad Nord (Crossroads Copenhagen)

A new community of students, workers, and residents has been formed in the Ørestad Nord district of Copenhagen, providing a control group for the study of new technology applications in society. Crossroads Copenhagen is a partnership between the University of Copenhagen, the Danish Consumer Agency, the Royal Library, the Danish Broadcasting Corporation (DR) and the IT University of Copenhagen (ITU), all located in Ørestad Nord. A residential and working community of over 20,000 people occupies this formerly vacant waterfront site, which is linked to central Copenhagen by the new metro line and to Sweden by a bridge crossing the Øresund. According to Copenhagen City Planning Director Holger Bisgaard, Ørestad is "a special place to use special technology".[13]

The Ørestad Nord site is characterized by high-quality modern architecture in a campus-like setting along a main canal. Uses are entirely mixed and arranged in a non-hierarchical manner, with no outward distinction between private companies and universities. Apartment buildings are distinguished only by their individual balconies. A series of parks and canals within the site create a network of open space that is shared by all of the tenants. Ørestad Nord is the northern part of the 1,000-acre Ørestad district, the largest concentrated section of new development in Copenhagen. A Finnish design team won the 1995 master plan competition for the design of Ørestad and are currently working with

the Danish firm ARKKI on the implementation of the plan.[14] According to Tom Mose Petersen, managing director of ARKKI, the main strategy has been to build the infrastructure (including canals, pumping stations, roads, and light fixtures) well before the buildings, thereby guiding the location and general footprint of any new construction.[15] ARKKI has also written guidelines that are specific enough to create a cohesive urban form yet flexible to allow for growth and changing needs.

Crossroads Copenhagen is a matchmaker. Their mission is to create research partnerships for member organizations in the specific areas of media applications and location-based services for mobile platforms. Crossroads Copenhagen also offers PR support and mediates equitable agreements for partnering companies by supplying legal counsel.[16] Like Arabianranta, Ørestad Nord promotes itself as a Living Lab, which is managed by Crossroads Copenhagen. Plans are in place to create a wireless local area network encompassing the entire area, including residences. The system will include a 3D positioning system which will be able to locate a mobile device within one meter.[17] Once completed, this system will be used as a testbed for a variety of location-dependent mobile devices.

The working environment at Ørestad Nord is based on the close interaction between the Crossroads Copenhagen members, particularly the IT University, University of Copenhagen, and DR. As a result, many traditional notions of territory seem to have dissolved. The buildings of these core members are located directly adjacent to each other, connected by pedestrian pathways, outdoor space, and the canal. People use the separate buildings as parts of a campus environment. Cafeterias and cafés as well as exhibition space are located on the public ground floors, while private offices remain visually accessible through the use of glass and other transparent materials. Figure 4.8 shows the large atrium of the IT University, where activities are clearly visible in the “hovering” conference rooms and floors above.[18]

Ørestad Nord (Crossroads Copenhagen)

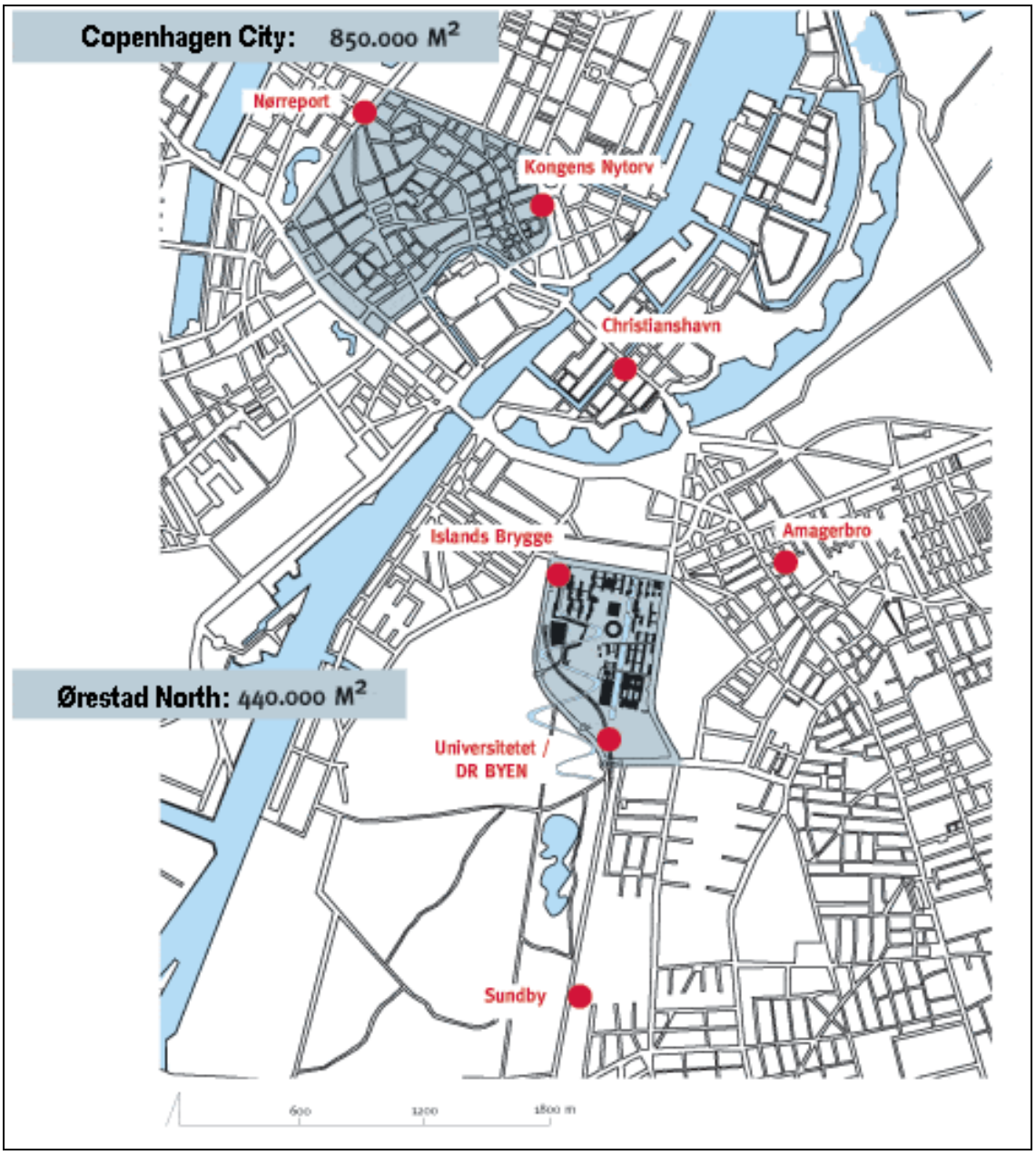

Figure 4.5: Location map of Ørestad Nord with Metro stations.
Source: Crossroads Copenhagen

Ørestad Nord (Crossroads Copenhagen)

Figure 4.6: Cohesive infrastructure: Metro station, rail line, bicycle storage and canals provide an integrated streetscape.
Source: City of Copenhagen, Ørestad (2003): 101

Figure 4.7: Tietgen Kollegiet: Student dormitory.
Source: < http://www.orestad.dk>

Figure 4.8: Interior of IT University: Transparency and hovering rooms.
Source: Photograph by author

Figure 4.9: Exterior of IT University along the Emil Holmes Canal.
Source: <http://www.orestad.dk>

How do companies benefit from the unique working environment in Ørestad Nord? Many successful research projects have been completed or are ongoing under the umbrella of Crossroads Copenhagen. A typical public-private initiative is Mobiconomy, involving DR, Copenhagen Business School, the Danish Consumer Council, Nokia, and Hewlett-Packard, among others.[19] Mobiconomy tests the economic feasibility of new cellular phone applications and conducts research on current user trends. This one project is able to serve the working objectives of a media company, university, government agency, telecommunications firm, and producer of high-tech products.

An innovative shared office project offers advantages to large companies as well as individual entrepreneurs and students. ITVæsthuset, or "IT Hothouse" is a project of Symbion, which also manages an IT and biotech science park in Copenhagen.[20] The office is located on the top floor of the IT University building and opened in February 2005. IT Hothouse is home to several technology and software companies of 6 people or less, ranging from start-ups to Microsoft project groups. The companies also serve as mentors to students at ITU. Students are encouraged to take a free workspace on the floor and even use the Hothouse as a springboard for their own businesses or consulting projects.

How does the high-tech environment at Ørestad Nord benefit individuals in their working lives? Currently, students have the most to gain from living and working within Ørestad Nord. Numerous opportunities exist for involvement with the Crossroads Copenhagen research partnerships, both before and after graduation. With a beautiful new dormitory under construction, there will be a critical mass of young people in Ørestad Nord to both test and use the planned wireless infrastructure. In many ways, students already practice alternative ways of working – they keep flexible hours, lack a regular office, occasionally work at home, and are accustomed to using ad hoc workspaces. The blurring between the private companies and universities at Ørestad Nord, as well as the planned

ubiquitous wireless system, will give students even more choice and opportunity to shape their own working environments.

MIT and Environs

MIT and its immediate surroundings also constitute a high-tech neighborhood for living and working. Unlike Arabianranta and Ørestad Nord, MIT has been growing and adapting on its site for the past 100 years, while new industries and companies have emerged around it, many on land owned by the MIT Corporation. The grand vision for the area was not created by one group, but cultivated over time. The Institute itself is of municipal size with over 20,000 faculty, staff, and students working and studying in Cambridge.[21] Thousands more highly educated people work for the R&D centers and start-up firms that have gravitated to the area in order to take advantage of the human and scientific capital clustered around MIT. This human capital is truly unique: a nation comprised of MIT-related companies would have the 24th largest economy in the world by gross domestic product.[22]

Universities, particularly MIT, are places to develop and test new ideas in a progressive environment. The primary objectives and responsibilities of academic institutions are long-term and free from some of the restraints that corporations (or developers of real estate) face, allowing further risk-taking. This spirit is reflected in the experimental form and character of MIT's campus and environs, which represent a progression of new visions and ideas over time. MIT's early Cambridge campus, completed in 1916, consisted of interconnecting buildings organized around a great court to facilitate interaction among students and departments. This theme of combining industry, technology, and society in one physical place has been a constant in the evolution of the MIT campus. In turn, the courtyard system has allowed MIT to grow with flexibility. Corridors are extended and undeveloped areas are filled in with new buildings as needed. The timeless, industrial character of the old buildings has smoothly allowed the

replacement of outdated machinery and lab equipment with computers and other new tools. Complete wireless Internet coverage on the campus adds another layer of connectivity.

The Institute has successfully managed to combine its real estate investment activities with its support of new technology companies in the area immediately surrounding the campus. MIT instigated one of Cambridge's first large-scale commercial developments with the creation in the early 1960s of Technology Square, a research and development park. University Park, a mixed-use development centered around biotechnology firms, is an ongoing development project of Forest City Enterprises on MIT-owned land. At Kendall Square and East Cambridge, old factories and industrial sites have been transformed into office space for high-tech and related companies. These developments make space available for new projects and companies emerging from MIT's own laboratories.

How do corporations benefit from the unique working environment around MIT? Cambridge has moved away from the industrial uses that characterized its first round of development, evolving into a high-tech mecca. Companies such as Genzyme, Novartis, Forrester Research, and the Broad Institute have established themselves within walking distance of the Institute, along with many firms founded by MIT graduates. According to Gayle Farris, President of Forest City Boston, University Park's location within a five-minute walk is essential in maintaining an association with MIT.[23] This connection is extremely valuable to companies, whether the association is formal or merely locational. Branding has also played a large part in establishing an MIT connection: Hotel@MIT, in the center of University Park, markets itself as "Cambridge's High-Tech Hotel".[24]

How does the high-tech environment at MIT benefit students, research groups, and visitors? MIT is built around themes of entrepreneurship and interaction. A strong relationship with industry begins at the Institute where faculty are

encouraged to take on consulting roles and students often work on projects for industrial clients. Challenges such as MIT's $50K Entrepreneurship Competition provide mentors, partners, and possibly investors for teams with intriguing business plans. Cross-collaboration is evident in the Stata Center, which houses several MIT departments as well as a child care center and public café. It is a physical place that reinforces the digital ideals of interaction and rapid information transfer. The environment encourages social interaction by providing informal, spontaneous meeting places. Hierarchical barriers between students, professors, and visitors are broken down with spatial elements that are open and transparent. In addition, several new ideas are being developed at MIT to make the campus more interactive. The MIT Wireless Museum Project would allow visitors to download information to their cell phones as they explore the campus.[25] New visions for MIT's main hallway, known as the Infinite Corridor, might include displays personalized to individual preferences, enabled by RFID tags.

Although MIT and its environs grew more spontaneously and with less intent than the Finnish and Danish examples, it serves as a benchmark of what technology-oriented development can become. The entrepreneurial environment has cultivated many of the partnerships and interactions that more recently planned projects hope to achieve. However, MIT is far from perfect. While it may be a flexible place to work and study, it is not an ideal place to live. If MIT's ultimate goal is to attract, educate, and retain the most talented people in the world, a cutting-edge environment that is a pleasant and stimulating place to live and work is key. MIT is still surrounded by several underdeveloped areas, leaving a dead-zone between the main entrance at 77 Massachusetts Avenue and Central Square. An engaging street presence of stores, cafés, and residences would create a more dynamic approach to the campus.

MIT and Environs

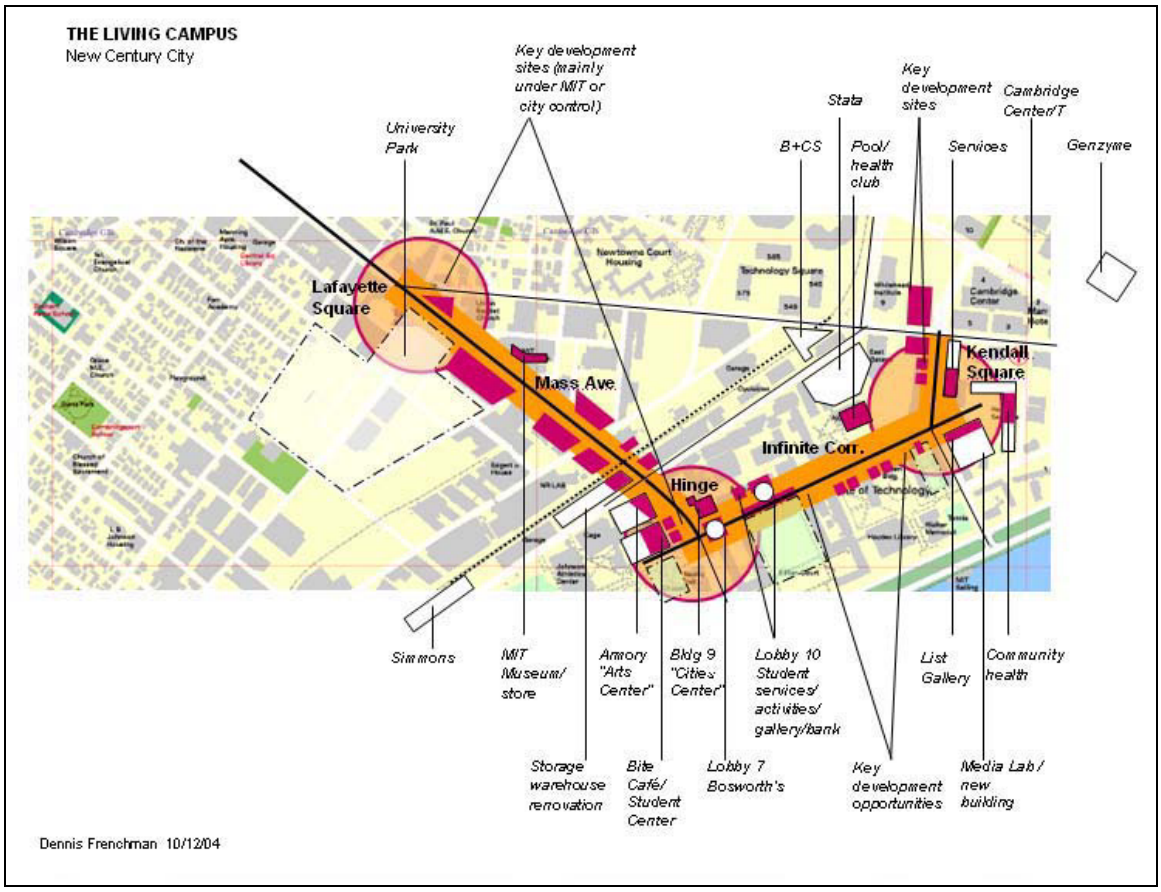

Figure 4.10: MIT Living Campus: Main pathways through the campus and its environs in need of retail development.
Source: Dennis Frenchman, MIT

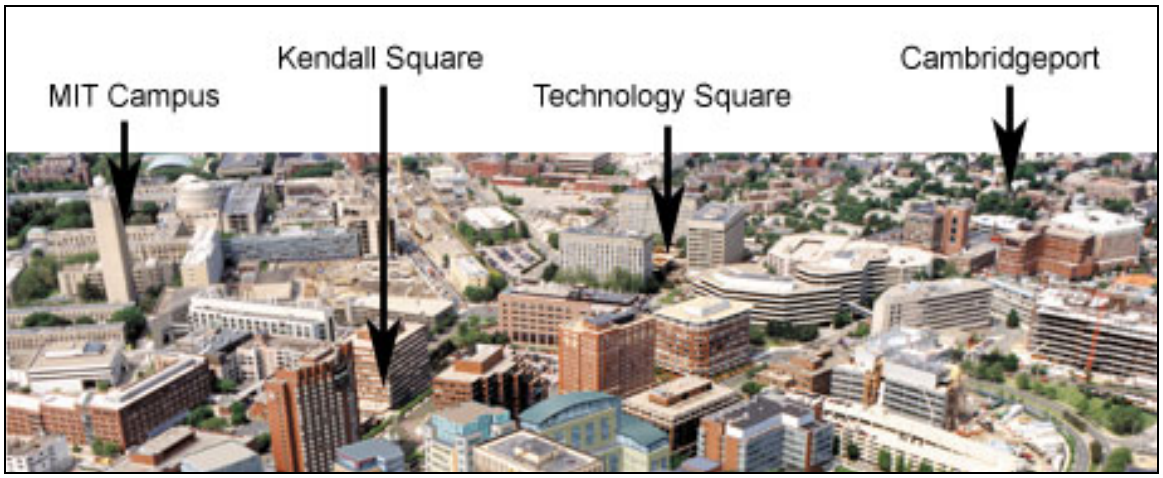

Figure 4.11: View of East Cambridge showing MIT's relationship to commercial (Kendall and Technology Squares) and residential uses (Cambridgeport).
Source: Goody Clancy Eastern Cambridge Planning Study, <http://www.gcassoc.com>

MIT and Environs

Figure 4.12: MIT campus system of connected buildings with courtyards.
Source: MIT

Figure 4.13: View into Stata Center work area illustrates transparency.
Source: <http://www.boston.com>

Figure 4.14: MIT Media Lab Cube: A highly flexible work environment
Source: MIT Media Laboratory

Large-Scale, Mixed-Use, Technology-Oriented Developments: Lessons for Developers

- **The design quality of the space is vitally important.** All of the projects described above have made significant investments in creating spaces that will remain beautiful and useful in the future.
- **It takes time…** Early on in the planning stages of Ørestad Nord, Christian Nissen (one of the visionaries behind the project) asked designers, "What does it take to create life in a new quarter?" Their answer was 300 years.[26] These projects must take a long-term view and contain the ability to adapt to changing needs and technologies .
- **… and people.** Restaurants, stores, homes, and cultural amenities are essential for attracting talent. A critical mass of people both living and working in the area are essential for the formation of a vibrant neighborhood.
- **National and local government play an essential role.** Both Arabianranta and Ørestad Nord receive financial and political support from their national governments. MIT receives 84 percent, or $445 million, of its research sponsorship from government sources.[27] As the largest tax payer in Cambridge, MIT is also a major contributor to the local economy.[28]

Lifestyle-Oriented Office Parks

Qualities of the lifestyle-oriented office park:

- **focus on convenience and fun** – Services are designed to make everyday tasks easier and regular events provide opportunities for a break.
- **primarily a management concept** – Although design plays a part in creating spaces for recreation and relaxation, the events and services are what set these developments apart.

Chiswick Park

Can a property management company help you enjoy work through atmosphere, events, and online services? This is the goal of Enjoy-Work, the management philosophy behind Chiswick Park, a 33-acre office development led by Stanhope plc, located 5 miles from central London.[29] When the remaining 6 of the 11 planned buildings are complete, Chiswick Park will be a workplace for 10,000 people. Chiswick Park is not just a business park, the marketing brochures claim. "It is not a building or even a set of buildings. It's an idea. It's a place that helps people to enjoy work. The logic is simple – if people enjoy work they do better work. If they do better work you have a better business."[30]

Chiswick Park is located just off the main shopping and dining street of one of London's outer neighborhoods on the site of a former bus depot. The office buildings, a series of mid-rise steel and glass structures designed by Richard Rogers, are arranged around a central lake. A large paved court hosts sports and a regular schedule of events. The tenants consist mostly of media and broadcasting companies, such as Discovery and Disney, however Regus also has a branch at Chiswick Park. Although the design is sleek, modern, and intended to be environmentally sustainable, the most innovative aspect of the project is its management style.

Chiswick Park

Figure 4.15: Chiswick Park postcard for discount laundry service: An example of Enjoy-Work's "quirky" approach to work-life balance.
Source: Enjoy-Work

Figure 4.16: Chiswick Park's campus and lake on a rainy day.
Source: Photograph by author

Enjoy-Work is a management concept that emerged early on in the design process of Chiswick Park. This philosophy was part of the developer's goal to create "an entire live-work experience" and was integral in the inclusion of spaces for events and recreation in the overall program of the project. According to Sarah Glasscock, one of Enjoy-Work's "Lifestyle Managers", the two key elements behind Enjoy-Work are thoughtfulness and surprise. Thoughtfulness manifests itself in the form of free bicycle and umbrella rentals, wireless Internet which allows "guests" (not tenants) to work outside, and an online concierge service to manage dry-cleaning and travel arrangements. Evening classes provide an opportunity to learn guitar or other hobbies. Surprise pops up in the form of speed boat racing on the lake, barbecues, and carnival games, especially in the summer months.

How do companies and individuals benefit from the unique working environment at Chiswick Park? From the employee's point of view, Chiswick Park offers overwhelming advantages. The activities and environment certainly make the average work day more pleasant. The services are useful, convenient and reasonably priced. As boisterous as the fun and games may be, employees also have the choice to escape and concentrate on business within their offices. However, the benefits of the Enjoy-Work environment are less clear at the corporate level. Everything the management company offers is free, but certainly reflected in the rent. No attempts to measure increases in employee productivity and retention have been made at this point.

Is the Enjoy-Work management style profitable for developers? The overall feeling is that Enjoy-Work has been successful in attracting tenants even though it currently operates at a loss, said Kay Chasten, Chief Executive of Enjoy-Work. Plans are in place to replicate this brand of management at other Stanhope projects. "Scalability will be a challenge", said Chasten.[31] Chiswick Park has the necessary space and critical mass of people to make its larger events worthwhile, but that may not be the case for smaller projects with only a few

hundred tenants. Although it is clear that employees appreciate Enjoy-Work, more time and quantitative analysis is needed to determine whether lifestyle-oriented management is worthwhile for developers and their corporate tenants.

Lifestyle-Oriented Office Parks: Lessons for Developers

- **Location and transit accessibility are other important components of the lifestyle equation.** The trip to work must also be relatively short and convenient to achieve a smooth transition between work and personal time.
- **The physical environment must support the events and services.** The design of Chiswick Park is intended to provide a venue for sports and programs.
- **One size does not fit all.** A certain amount of critical mass is necessary to make certain events and services feasible.

Live/Work/Study/Play

Arabianranta, Ørestad Nord, and the MIT area are ambitious public-private partnerships, atypical of mainstream development. Some of their qualities do not, at first glance, bode well for the real estate developer. The more flexible and efficient use of the workplace coupled with the decline of proprietary space for each employee means that companies will require less office space. However, the projects described are also inherently dense, providing an opportunity for high returns on the value of the land. As the space needs and expectations of corporations change, will the bottom of the office market drop out again as it did in the early 1990s, leaving cities of half-empty buildings? Not if developers continue to adapt their products. Lifestyle-oriented projects such as Chiswick Park add a dimension of surprise and fun to the standard office park. Spaces that are more than just office buildings, but flexible places to live and play as well, have the potential to outlast economic changes.

Chapter 4 Endnotes:

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Chapter 5: Implications for Developers

How can real estate developers profit in this new digital environment?

The examples in the Catalogue of New Workplace Typologies illustrate several projects that seek to accommodate new working and living patterns, providing a variety of new choices for individuals and corporations. However, real estate developers are *not* the driving force behind these projects. Instead, several other groups are leading them:

- *Private corporations*: Starbucks and T-Mobile HotSpot have successfully partnered to add personal internet access to the café environment.
- *Private clubs*: Home House provides a posh, informal work atmosphere to Londoners.
- *Entrepreneurs:* Individuals, such as the CEOs of the Cambridge Innovation Center and eOffice, are intricately involved in the management of their shared office projects.
- *End users:* Many companies, as exemplified by Genzyme and their headquarters in Cambridge, Massachusetts, aim to create "an exciting, healthy, and productive workplace" for their employees.[1]
- *Universities:* Perhaps because of the ivory tower, universities have the freedom to experiment with new ideas through the design of their campus facilities. However, universities are also primary partners in establishing new research partnerships, as shown at Arabianranta, Ørestad Nord, and MIT.
- *National and local governments:* Even if they lack the knowledge, government partners have the money and necessary power to implement systemic change. Government involvement is vital for very large-scale projects, whether the intention is to spur economic development for the neighborhood or the nation.

According to Francis Duffy, founder of the workplace design and consulting firm DEGW, the real estate industry has a crisis on its hands. The products that speculative real estate developers provide are conventional at best. "Most developers think they know everything about office design already and meet new ideas with hostility," said Duffy.[2] Profitability in real estate development is a careful balance between risk and return. While unproven markets are inherently risky, development products that no longer meet the needs of their constituents are equally so.

Yet, developers also claim to be looking out for "the next big thing", a valuable market niche that leads to new development opportunities. There is no need to maintain the status quo. "Development is a complex and creative function that at its best displays great vision, at its worst enormous greed, but in almost all cases, considerable risk-taking on the part of the developer."[3] These themes of creativity and vision need to become a larger part of real estate for the field to move forward.

Perhaps developers need to begin thinking of themselves differently. Gayle Farris, President of Forest City Boston, describes her company as, "a real estate technology company, driven by economic development and driving economic development".[4] This attitude has been extremely successful for Forest City Enterprises, making them the top publicly traded real estate company with a total value of $7.2 billion.[5] Forest City's University Park project in Cambridge, Massachusetts, a 25-acre mix of residential, retail, and high-tech lab space, has been one of their more successful projects. However, Shirley Jaffe, Director of the Downtown Alliance, Lower Manhattan's business improvement district, notes developers' reluctance to make indirect investments in their buildings.[6] One developer she mentioned as being different from and ahead of the rest is Rudin Management Company, developer of the New York Information Technology Center (NYITC) at 55 Broad Street in Lower Manhattan.[7] When a tenant bankruptcy left this older holding completely vacant, Rudin invested $41 million in

high-tech upgrades, seeking to attract new media start-ups.[8] The project opened in 1996 and was fully leased a year later. Other elements of the new working environment were incorporated into the project, including a shared lounge called the Hearth, and a networking event and presentation center, dubbed the Digital Sandbox.[9] Nearly ten years later, the project is still commanding competitive rents. As these examples have shown, there is ample opportunity for developers to make a profit by creating technology-enhanced workplaces.

The earlier parts of this thesis informed developers of the changes taking place, while this chapter is intended to give them an idea of where the value can be found in building alternative work environments. Changing working patterns and lifestyle preferences cannot be ignored. The new workplace typologies cataloged in this thesis demonstrate the range of scales over which change in the workplace are occurring. Nevertheless, they represent only the initial responses to changing patterns that are sure to accelerate in the coming years as the digital revolution continues to take hold. Although the value of incorporating digital and wireless technologies into development projects is difficult to quantify at this point, the speed of take-up of these new tools at all scales is a testament to their future potential. The following six suggestions provide a set of general guidelines for developers wishing to take advantage of the changes in demand for different types of workplaces. The guidelines are based on a synthesis of the ideas presented in the examples and readings. Like the workplace typologies they are also grouped by scale, moving from site and location considerations to human-scaled services:

- ***Neighborhood Scale:*** location choice and setting
- ***Office Scale:*** elements of the building itself
- ***Individual Scale*:** provision of services and strategy

Neighborhood Scale

1) Focus on accessibility to information, amenities, and partnerships.

Technology can eliminate the future need for the 20th century's most precious real estate resource: adjacency (or location, location, location). Although business activities no longer need to be co-located, accessibility to information and contacts is essential. The substitution of telephone and email for many face-to-face interactions is already common place. However, rather than replacing in-person meetings, technology helps to facilitate them.[10] Digital information adds a new dimension to face-to-face encounters, as information can be accessed immediately and others have the capability to contribute remotely. Robust communications give knowledge workers a variety of options for interacting with people.

Of course, accessibility has a physical sense as well as a virtual sense. Although workers today can travel further faster, commuting times are increasing to the detriment of their health and sanity. Working environments that are linked to transit networks or convenient to where people live make travel less of a burden. For example, Regus's D-Office is actually three separate locations around Amsterdam that are positioned as serviced-office suburban outposts.[11] The peripheral locations reduce commute times for workers. Although the central business district will remain a key meeting place because of its common accessibility, most workers no longer need to be there on a daily basis. Increasingly, workplaces will be chosen according to the task at hand, or the need to meet in person. Given such choices, workers have the freedom to consider other quality-of-life factors. Workplaces that are located near homes, services, restaurants, and cultural amenities are preferable.

The locations for these new working environments can be extremely varied. Some, such as eOffice in London's Soho neighborhood, are found in the urban core. Others, such as University Park, are redevelopments of old industrial sites. Even small cities in remote locations, namely Finland's Oulu, can be venues for high-tech living and working. However all of these places are located near a major concentration of brain power: As the second largest university in Finland, the University of Oulu's 14,500 students make up nearly 15 percent of the city population.[12] University Park is situated within a five minute walk of MIT. eOffice is located in London's main district for new media and advertising firms, which is the core business of its clientele. According to Gayle Farris, Forest City focuses its technology development strategy on the "brains and beautiful people markets, the places where the intellectual capital exists".[13] A concentration of intellectual capital also provides a setting for the creation of research partnerships. The majority of the projects catalogued stressed opportunities for spontaneous interaction as a main selling point. For these interactions to reach their full potential, there must be a critical mass of like-minded people with the will (and a place) to meet.

2) Consider a mixed-use campus model of development.

If centers of intellectual capital are the right geographic location for new styles of working, university campuses provide the proper milieu. The neighborhood-scale examples of Arabianranta and Ørestad Nord share the overall spatial qualities of the university campus. The developments are patterned after the universities that are at their cores, growing in the dense, interconnected style of the campus model, complete with public open space. The university model already incorporates the mixed-use elements of living, working, and playing in one place. As Mitchell states in *E-topia*:

> In an ironic turnabout, some residential colleges and universities will recognize that their ancient pattern of live/work spaces clustered around communal facilities such as laboratories and classrooms are not anachronisms, but appealing templates for the future. These institutions will not fragment into scattered

> distance-education enterprises, as some have suggested, but instead will differentiate themselves and compete for the best talent by emphasizing intense face-to-face community linkages to a wider world. These silicon towers will simultaneously be both more concentrated and more connected than campuses of the recent past. (William J. Mitchell, *E-topia: "Urban life, Jim – but not as we know it"* [Cambridge, MA: MIT Press, 1999]: 79.)

At universities, students and faculty from many different fields are concentrated in one area, utilizing adjacent and overlapping facilities. Students have the freedom to plan their own day and use of space: they work where they want to for maximum efficiency, whether at home, the library, or the lab. The student's day is dynamic and broken up by flexible changes of location which are often decided on the fly. In addition, universities serve higher purposes. Their campuses are places of knowledge creation, as well as physical environments for growing and strengthening "membership to academic networks and communities".[14] This organizational and spatial model is also applicable to the development of neighborhoods for work and innovation.

Thinking of the workplace as a stand-alone, single-purpose office tower is outmoded. Developers need to consider the holistic, long-term impact of their projects as part of a neighborhood context, and as a complete environment for living and working. Instead, they should envision a community that provides highly flexible and configurable apartments and office space as well as shared facilities, located near existing amenities and transit stations. The university campus is one effective model for this type of neighborhood.

Office Scale

3) See the home as a workplace and the workplace as a home.

As the boundaries between live, work, and play continue to blur, hybrid building types that address these needs will emerge. Changes in working patterns affect not only developers of commercial real estate, but residential builders as well. Many successful live/work situations of the past have been designed for artists

looking for cheap space, interesting people, and a stimulating and unique environment. However, there is a niche in this phenomenon for other types of creative geniuses: web developers, entrepreneurs, designers, and others looking for a flexible lifestyle that enables them to work independently. Instead of the hip artist neighborhoods of Williamsburg in Brooklyn or The Mission in San Francisco, some might prefer the brainpower-heavy environs of Cambridge, Massachusetts. Residences can be equipped with the same quality of high-speed information infrastructure as office buildings. A few housing options also provide outlets for social interaction as well as space for work. For example, aWarehouse in San Francisco combines the idea of a networking office with living space.[15] An old factory was converted to apartment and shared work space by Stanford graduates interested in maintaining a university environment after graduation. Homes will include more deliberate and technologically-enhanced zones for working in the future, allowing people to address their personal needs while keeping professional commitments.

While live/work space describes a home that provides for the functions of working, the concept of work/live brings elements of the home into the office. "Homing from work", is the idea of mixing business with social or personal needs in one place. Such hybrid workplaces include (or are networked with) spaces for chatting, relaxing, eating, and exercising. Services and corporate policies are also designed to help workers balance their professional and personal lives.

4) Marry technology with the environment.

Although devices and applications that use new technologies are appearing on the market at a remarkable rate, buildings operate much the same as they did before the digital revolution. Office buildings are far from becoming the "programmable devices that can respond actively and intelligently to changing needs and conditions", which Mitchell envisions.[16] What considerations should developers make when constructing buildings to accommodate new

Implications for Developers

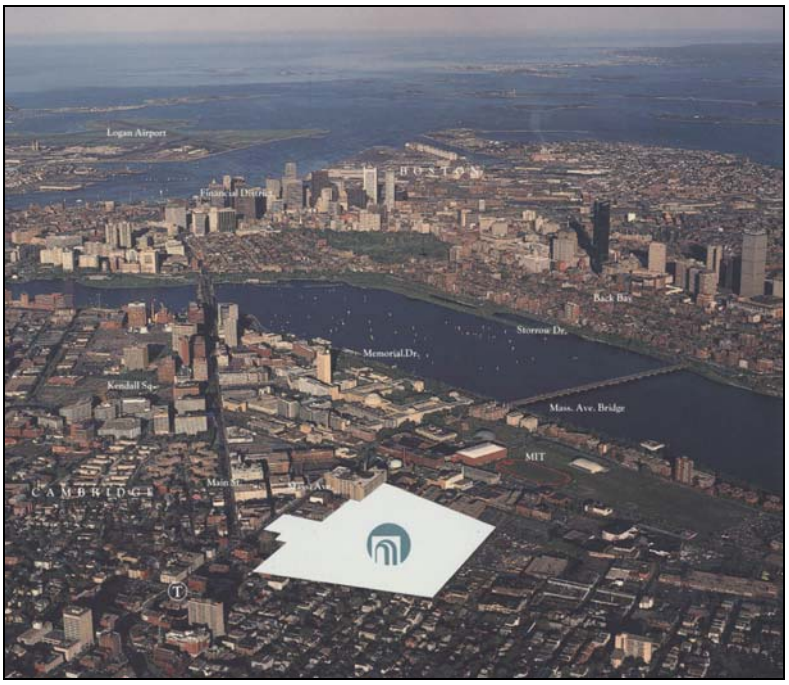

Figure 5.1: University Park is situated within a five minute walk of MIT.
Source: Forest City Enterprises

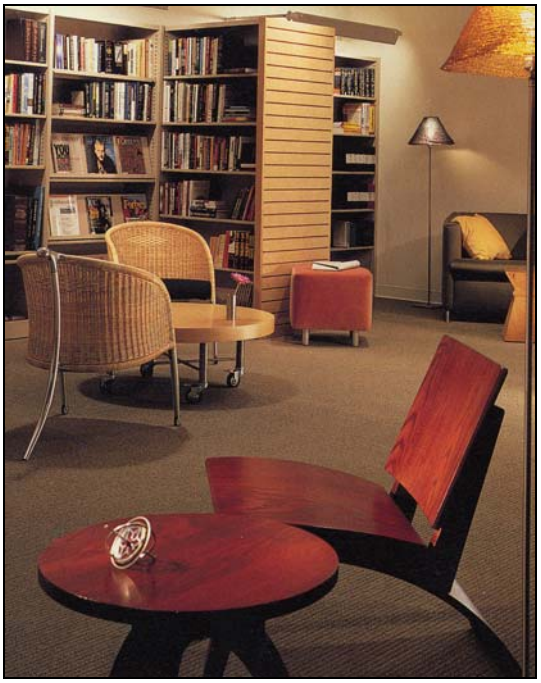

Figure 5.2: This comfortable library as part of life science company Monsanto's working environment illustrates the concept of "homing from work".
Source: Jeremy Myerson and Philip Ross, The Creative Office (1999): 189.

technologies? Building materials must be carefully chosen to either allow the passage of radio waves from wireless networks, or selectively block them for security purposes. Special screens and coatings effectively contain specified frequencies within a space, keeping confidential information in and hackers out.[17] Walls, ceilings, and floors can utilize these coatings to shape the wireless environment to provide both accessibility and security. Finally, the miniaturization and portability of electronics means that communications, data, and server rooms will get smaller.

As a corollary, for buildings to retain their value they must be prepared to accommodate future as well as existing technology. Technology will adapt and evolve; that is a given. Building systems that are easily malleable hold their value as tenants and technology systems change. The cost of retrofitting can be ameliorated by keeping infrastructure easily adaptable and accessible. For example, wireless technology can make the renovation of older, obsolete buildings feasible by reducing the need to retrofit expensive data infrastructure. Flexible base systems with plug-and-play components are easy to upgrade.

Technology also allows for more dense, intensive use of space, which is inherently sustainable. In addition, a finer-grained, more sensitive use of controls leads to efficient energy usage. Systems that detect the number of people in a building through sensors, RFID tags, or behavioral pattern recognition can automatically adjust heating and cooling. In addition, electronics no longer need strict climate control, so workplaces can be designed that respond to the operating needs of humans, not machines. The result is increased natural light, ventilation, and flexibility. The lifting of these constraints also allows people to move outside to a working environment that Mitchell calls “the laptop in the garden”.[18] Balconies and patios can now serve a new purpose as digitally enhanced meeting and work spaces.

The initial cost of many of these technology and design considerations are substantial and their benefits often difficult to quantify. As in green building, the costs are recognized over the long-run and may also be qualitative. Genzyme, owner of the first commercial office building to achieve LEED platinum certification, described its philosophy behind undertaking its headquarters' expensive, environmentally-sensitive design in 2003:

> Genzyme is confident that in time, the premium associated with the environmental design will be more than compensated for by associated savings from reduced operating costs and expected increases in productivity, including reduced absenteeism, easier recruiting, and greater retention of talented employees. It is Genzyme's hope that Genzyme Center will stand as an example that it is possible to construct an exciting, beautiful, and employee-friendly building that makes both economic and environmental sense. [Genzyme, "Genzyme Center: An Innovative Building for an Innovative Company", <http://www.genzyme.com/genzctr/genzctr_background.pdf>]

Similar goals of increasing productivity are held by the users of new working environments. However, many forms of digital technology used in the workplace are so recent that their benefits are yet to be measured.

Individual Scale

5) Intensify the use of space and time.

New patterns of work contain a greater mix of activities and people than ever before, demanding a more intensive use of space. Intensity of space usage implies efficiency, flexibility, and versatility. Zones transition seamlessly to accommodate multiple functions. The idea of mobility also means that each worker need not have his or her own designated workstation, reducing the total amount of rented office space for the company. This intensification of space is less wasteful, minimizes unused areas throughout the course of a workday, and is more energy efficient. The indoor "student street" at MIT's Stata Center serves multiple functions. During class changes it is a thoroughfare, with its walls used as message boards. Students occupy the space's many seating areas to access

the Internet, chat over coffee, and eat lunch during their downtime. During conferences and special evening events, the space becomes a reception area.

Intensification is also applicable in the dimension of time. Technology affords greater flexibility in the temporal working environment as well as the physical. Asynchronous means of communication and distributed methods of working challenge the rigidity of traditional working hours. As the use of time within the walls of the office becomes more flexible, companies will also demand a shorter, more adaptable lease structure. Landflex's "blended leases" give companies room to shrink, expand, and relocate. Companies, such as those that already use serviced offices, are willing to pay for the extra flexibility that shorter leases offer. In 2001, Nokia signed a deal to transfer one-fifth of its office locations over to Regus business centers.[19]

Technology can be a tool for the management of space. With the right information, people have the power they need to self-manage their resource use. Place-based search engines, which operate in a similar manner to Google, can efficiently direct people to the spaces that suit their needs "just-in-time". An online, continuously updated reservation system requires little outside management. To further increase intensity, shared spaces such as meeting and presentation rooms can be offered to tenants for rent as-needed. A variable pricing structure manages demand, charging more for peak usage. People are given the choice to schedule their space needs according to convenience and cost.

6) Think of commercial real estate as a service that balances risk between the developer and the client.

According to Jerold Kayden, "Real estate is becoming much more of a full-service industry."[20] Even the most old-fashioned real estate firms are moving towards vertical integration to include consulting, development, construction,

management, acquisition, and investment services. By extension, elements of the serviced office package can be incorporated into other types of office products. Many developers are bundling the essential communications services that every business needs into their lease agreements. By providing these services as options, tenants are able to save money through economies of scale and reduced management time. As commercial real estate is increasingly defined as the provision of complete work environments rather than the lease of space, the industry will need to rethink its pricing structure. Services are better quantified in terms of usage per person or per hour than by square feet.

However, the potential for risk is still a factor holding real estate developers back. Untested markets, such as the provision of non-standard working environments, are inherently risky. William Gause of Boston-based Legatt McCall Properties notes four quadrants of local-market risk in the real estate industry: permitting, financing, design and construction, and marketing.[21] Most importantly, the overall economic risk that governs real estate cycles has an affect on the success or failure of development projects. However, in the specific context of alternative working environments, three options can allow developers to balance their localized risk:

- According to Gause, permitting is the greatest of the four types of localized risk.[22] However, a city agenda that promotes and possibly provides incentives for new and alternative working styles, reduces the permitting risk for the developer interested in building these projects. Public-private partnerships were an essential component of every project at the neighborhood scale discussed in Chapter 4.

- Rudin Management Company's Chief Technology Officer, John Gilbert, recognized the marketing risk that the New York Information Technology Center would face when he noted, "Bandwidth had never been a selling point in real estate before."[23] However, the services that

developers of alternative workplaces are providing are of great value, especially for companies with small space needs. For example, Regus has outlined a strategy to aggressively target the 20 percent of most corporate real estate portfolios that consist of properties under 10,000 square feet.[24] They claim that these smaller holdings are tedious and costly for companies to manage. However, a shared workplace provides economies of scale for the tenant including the provision of utilities, IT, and basic administrative services. Shorter leases (or month-by-month memberships) further reduce the commitment time and related risk for tenants, commanding a premium for developers.

- Finally, developers can mitigate their risk by diversifying the types of uses within their projects. Mixed-use developments are insulated against downturns by any one sector of the market. This strategy is consistent with the live/work neighborhood models previously discussed. Gayle Farris notes the success of Forest City's mixed-use approach in developing University Park: "by following the path less taken and really being in the city building business, and by taking projects that were perceived to have very high risk, we've found that, in fact, they've had much less risk and much longer-term value than investing in traditional real estate."[25]

A caveat: some workplaces will remain specialized where the work environment is specialized.

There are limits to the generality of these guidelines. The needs of certain clients may require different levels of security or specialization. Government or defense projects demand privacy and controlled access, while life sciences research requires a less flexible laboratory setting. Although the role of the developer is to provide for the demands of the market, building for future change adds lasting value.

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[6] Shirley Jaffe, “Panel 4: The Extraordinary Value Proposition”, transcript of New Century Cities: Real Estate Value in Digital World symposium, January 18 and 19, 2005, Massachusetts Institute of Technology: 149.
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[11] *Eciffo Magazine*, “Regus D-Office”, Autumn 2002, <http://www.eciffo.jp/en/project/project014_e.html>
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[14] Andrew Harrison and Shirley Dugdale, “The SANE Research Project: Its Implications for Higher Education”, *Planning for Higher Education*, December 2002-February 2003: 35.
[15] *Eciffo Magazine*, “aWarehouse”, Autumn 1996, <http://www.eciffo.jp/en/issue/29/eciffo29_e.html>
[16] William J. Mitchell, “Keynote”, transcript of New Century Cities: Real Estate Value in Digital World symposium, January 18 and 19, 2005, Massachusetts Institute of Technology: 50.
[17] Thomas Lane, “Roll Out the Beige Carpet”, *Building (UK)* (April 2, 2004): 56.
[18] “Technologies”, New Century Cities: Real Estate, Digital Technology, and Design seminar lecture notes, October 13, 2004.
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[20] Jerold Kayden, “Public-Private Development”, course notes, February 7, 2005.
[21] “Real Estate Value”, New Century Cities: Real Estate, Digital Technology, and Design seminar lecture notes, November 10, 2004.
[22] Ibid.
[23] Institute for Technology and Enterprise, Transforming 55 Broad Street, “Marketing”, <http://www.ite.poly.edu/55case/s4c.htm>
[24] Bob Gaudreau, Regus, “The case for the office outsourcing”, <http://esvc000072.wic007u.server-web.com/regus/chon0002/whitepaper.pdf>
[25] Gayle Farris, “Panel 4: The Extraordinary Value Proposition”, transcript of New Century Cities: Real Estate Value in Digital World symposium, January 18 and 19, 2005, Massachusetts Institute of Technology: 127.

Epilogue

In writing this dual-degree thesis, I've attempted to straddle the fence between planner and developer, advocating a more holistic approach to real estate development that is neither completely commodity-based nor driven by expectations that are fiscally unreasonable. Instead, I've tried to look at one aspect of real estate development, the provision of working environments that suit the needs of the 21st century, as a complete business product that supplies the proponent with a return on value, and meets the demands of new working patterns. Still, I have only scratched the surface of what it takes to define and build an environment that suits new ways of working.

Naturally, I've created more questions with this thesis than I've been able to answer. A future investigation of this topic would certainly include interviews with developers who have succeeded in creating speculative office projects the old way, for old patterns of working. I would have liked to further understand the reservations and doubts behind developing for new technologies. Having made my case that there is money to be made in developing the new work environment, I still can't produce a quantifiable amount that would allow developers to calculate their risk premium for these projects. Without this specific value proposition, I doubt many traditional development firms will buy in.

The introduction to this thesis suggested that the term "real estate developer" may have a narrow focus. Instead, I proposed that the term has evolved to include any individual or group who adapts and adds value to the built environment to meet the needs of their intended users. I believe the digitally-enhanced new working environments discussed in this thesis are better thought of as comprehensive business and economic development concepts instead of simply real estate products.

So where does this thesis leave me as I prepare to leave MIT with both an MCP and an MSRED? Fortunately, it points to a need for leaders who can play the role of both city planner and real estate developer, and perhaps technophile. Framed in the context of my own six implications for developers, I believe that transit-accessible, livable neighborhoods will become the future working environments of innovation for a mix of companies and entrepreneurs. Partnerships with adjacent universities will provide further opportunities for interaction. Universities are already mixed-use places where knowledge is invented, making their campuses interesting models for this type of development. Buildings will be designed as hybrids that offer elements of both the home and the workplace, designed to be more sustainable and suitable for the use of wireless technology. Workplaces themselves will become increasingly flexible, adaptable for a greater range of uses that allow a more intense use of space and time. Finally, the role of the real estate developer managing these properties will become more service-oriented, focused on the provision of complete environments for working. Beyond builders of cash flow, I see a role in the real estate industry for builders of places.

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