Town For All, Gown For All: A Framework For Equitable University-Led Urban Development

By

Benjamin Turpin

BLA, Landscape Architecture
Virginia Polytechnic Institute and State University
Blacksburg, Virginia (2013)

Submitted to the Department of Urban Studies and Planning
in partial fulfillment of the requirements for the degree of

Master in City Planning

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2019

Author_____
Department of Urban Studies and Planning
May 23, 2019

Certified by _____
Professor Anne Whiston Spirn
Department of Urban Studies and Planning
Thesis Supervisor

Accepted by_____
Professor of the Practice, Ceasar McDowell
Co-Chair, MCP Committee
Department of Urban Studies and Planning

Town For All, Gown For All: A Framework For Equitable University-Led Urban Development

By

Benjamin Turpin

Submitted to the Department of Urban Studies and Planning
in partial fulfillment of the requirements for the degree of

Master in City Planning

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2019

Abstract:

Universities and the cities they are located in often have contentious relationships. As anchor institutions, urban universities provide significant employment and educational benefits, though their success and expansion often leads to rising housing costs and displacement in surrounding communities. In this project, I set out to understand how two urban universities, the University of Pennsylvania and Massachusetts Institute of Technology, balance development and expansion with community needs. Through studying these two universities and their successes and failures within the realms of development, housing, and community engagement, I developed a framework for equitable development that centers university development and investment around the goal of affordable housing and equitable communities. This framework aims to meet the needs of both the university and the community, providing affordable housing and public amenities alongside real estate assets and a return on investment for the university. This framework is then applied to a site in Cambridge, illustrating how the principles outlined in this thesis can drive physical and programmatic development in a way that expands housing affordability, provides public amenities, and meets the spatial and financial needs of the university.

Table of Contents:

CH. 01: INTRODUCTION:

As anchor institutions, universities exert a great deal of influence on the cities and communities they are located within. They are often a primary economic driver, spurring start-ups and bringing in outside business and talent to locate adjacent to their campuses. Through their occupation/ownership of real estate and their large body of students, faculty, and staff, alongside the private industry they attract, universities have a significant impact on surrounding real estate markets. (Democracy Collaborative 2012) While each university/city relationship is different, universities cause shifts in local real estate markets and development trends, which has the potential to create affordability issues for low and middle-income residents. (Florida 2018) I believe that universities should take greater responsibilities for these impacts and work towards promoting greater housing affordability and a more equitable urbanism, including access to public space.

As major players in the urban realm that have financial, real estate, and human resources, universities are uniquely positioned to address these issues. As of 2015, American universities managed endowment resources valued at $547 billion, with the twenty wealthiest universities controlling over $250 billion in endowment assets (NCES 2015). Given their significant resources, these universities have the capacity to invest to a greater degree in their community, potentially using funds and other university resources (such as faculty expertise and property) to invest in affordable housing and public space in a manner that provides both a social and financial return on investment.

Through this thesis, I studied the relationships between universities and the communities they are located in to better understand the influences they collectively have on one another and the built environment. My aim was to understand how partnerships can be crafted to leverage the human, real estate, and financial resources of universities towards the creation of equitable, resilient, and affordable urban development, particularly housing and open space. This work falls in an interdisciplinary zone, working in the realm of urban design/planning, institutional strategy, and real estate/financial investment. Through these multiple lenses, this thesis looked at how actors are operating in these spaces, both individually and collectively, and how university processes could be integrated, reworked, or adjusted to achieve the above goals.

The universities I look at – the Massachusetts Institute of Technology in Cambridge and University of Pennsylvania in Philadelphia – are both private urban institutions with significant real estate and endowment assets, making them ideal case studies for my purposes. As of 2015, MIT managed an endowment of nearly $13.5 billion, while the University of Pennsylvania had an endowment valued at $10.1 billion (NCES 2015). I looked at these two universities as parallel case studies and collected similar data from both cases.

In addition to resources from endowments, both universities also have robust real estate management and development arms, which undertake significant development projects within their respective cities. These projects both provide space for university needs (i.e. classroom or administrative space) and provide income-generating leasable space (i.e. lab and office space for private companies). Additionally, both have academic interests in the urban realm, including architecture and planning programs, action research and community outreach programs, and research centers focusing on housing, design, and real estate issues. Both also have urban campuses integrated with the surrounding communities, so development efforts often are city-facing with public space components and implications.

While there are many similarities between these two universities, they are located within very different urban contexts, and, as such, they have taken different approaches to university/city relationships, urban development, and investment. In the past fifty years, Penn has not faced the issues of spatial constraint that MIT has, and has been able to take advantage of land and structural vacancy throughout West Philadelphia to expand its campus. There has been less adjacent land for MIT to expand to. The rationale and reasons for their practices have also differed based upon their specific locations and contexts. Within the following case studies, I further explore some of those differences while also highlighting areas of similarity and overlap.

Despite their differences, my hypothesis is that the types of assets and operations at places such as MIT and Penn could be leveraged alongside their financial resources to inform their investing and community-building strategies, moving this type of work from being inward-focused and research-based to outward-focused and implementation-driven. Some level of community investment work exists at both universities, though not at a large scale. Should these efforts be thoughtfully integrated and strategically deployed, I believe universities could receive a return on investment while helping

to foster a more equitable, affordable, and livable city that builds social capital, bolsters educational opportunities, and creates stronger partnerships with residents and community groups.

Research Question: There is ample commentary on the individual components that make up this investigation, though there has not been a great deal of crossover work that touches on multiple components. For instance, there is a large body of work that investigates the economic impact of universities in the cities they are located in and the impact they have on housing and gentrification. Much of that work has focused specifically on the University of Pennsylvania, as Penn has taken a very active approach in acquiring and developing property surrounding its West Philadelphia campus. Less has been written about MIT, though there is some writing within the professional/journalistic realm. There is not a great deal of work published regarding the role of academic/research centers in urban development, nor on how university endowments are managed and invested; universities keep these specifics under wraps. In regard to the development of affordable housing, there is ample literature on methods of affordable housing development and impact investing, though these works do not come through the lens of universities or anchor institutions. There is some projective work on linking universities and endowments with impact investing in the realm of housing, though it is not scholarly in nature. Ultimately, much of this thesis involves linking disparate literature to work towards suggestions on how universities can become better community partners that are active in promoting equitable development.

This thesis seeks to identify means by which universities, cities, and other stakeholders can work together and leverage their collective resources towards the creation of a more equitable urbanism, specifically in regards to housing and open space. Given the depth of human and financial resources controlled by universities, I hypothesize that there is potential for universities to become more involved in real estate development and in the creation of affordable housing and open space, should they look for creative partnerships and re-evaluate the metrics by which they invest their financial resources. I also hypothesize that there are methods by which universities can invest that will still provide a financial return on investment that concurrently builds social capital, increases affordability, bolsters educational opportunities, and creates stronger partnerships with residents and community groups.

Review of Existing Literature: Surprisingly, there is not a great deal of literature existing on this topic. Much of what does exist focuses on the role of universities in urban revitalization. As institutions occupying space within cities, universities are interested in creating environments that are attractive to students, faculty, and donors. To create this attractive environment, they often work under the guise of revitalization to improve their surroundings. This has often been termed "enlightened self interest," where the university works to build connections to the surrounding community and "revitalize" the surrounding urban area in a way that ultimately is beneficial to both the community and the university (Etienne 2012). A great deal of this literature was written in a period different than the contemporary. Today, cities are increasingly popular places to live. After generations of middle class residents fled to the suburbs, cities are becoming popular places for young people to live. When much of this earlier literature was written, universities were dealing with conditions of urban blight where vacancy, crime, and disinvestment ran high. Revitalization was seen as a necessity to remain competitive with other universities and to attract the best and brightest (Etienne 2012). In their efforts to revitalize their surroundings, institutions like Penn have worked to rehabilitate and build new buildings, update streetscapes and lighting, and provide access to housing for students, faculty, and staff in their surrounding neighborhoods(Ehlenz 2016).

Within the revitalization literature, there has often been a focus on partnerships with outside organizations, businesses and development. Judith Rodin, the former president of Penn who spearheaded the West Philadelphia Initiatives during her tenure, discusses in *The University and Urban Revival* that partnerships with non-university entities are vital in undertaking large scale revitalization efforts, especially when trying to gain buy-in from surrounding communities. Rodin mentions three primary models that universities consider when taking on such projects:

> "First is vesting responsibility in the public sector, for example a city development agency… Such agencies may be willing to assume leadership and administrative responsibilities for revitalization of university-related neighborhoods. This does require, however, the agency's ability to administer multifaceted, multiyear revitalization efforts… A second option is leadership/administration by the private sector. It might be possible to recruit capable real-estate developers to handle property acquisition, development, and management responsibilities. However, while their expertise and partnership is crucial, it must be determined that the private developer has the capability or the mandate to lead and manage

the type of multifaceted program needed to improve neighborhood conditions and stimulate a reversal of decades-old patterns of disinvestment. Leadership/administration by an existing or newly created non-profit organization is a third alternative that is sometimes considered… [it] usually has a local community development corporation in the lead. These entities have neighborhood-oriented missions and are governed by community members. As a result, they frequently are willing to take on difficult, long-term projects in the interests of the communities they serve. Further, they often have ready access to government and foundation funding. Some CDCs, however, lack sufficient financial capacity (Rodin 2007)."

Penn and Rodin ultimately took responsibility for managing revitalization efforts themselves, though they drew from the three other options and built relationships and partnerships with the city, with private development organizations, and with surrounding nonprofits and community development corporations.

In *Pushing Back the Gates,* however, Harley Etienne, a professor of urban planning at the University of Michigan who wrote his dissertation on Penn/West Philadelphia relationships, argues that revitalization is often more complex than the narratives put forth by universities. Etienne questions the definitions of revitalization that are often not fully defined by the universities pushing these agendas and concludes that universities undertake revitalization for self-benefit. He argues that revitalization often does not account for larger systemic issues that are major contributors to disinvestment and blight, such as the "history of racial discrimination in labor and housing markets" and issues that are "connected to multiple scales… and broader trends" (Etienne 2012). Through this perspective, efforts at revitalization are more an effort at a superficial treatment at a highly localized scale. He also views university-led revitalization efforts as similar to other "community development" initiatives, where community development is often a rebranding of real estate development. He writes that revitalization, while expressing community-focused goals, is largely an effort to "stabilize the area for private investment" (Etienne 2012).

Partnerships with private investors have largely been a strategy when approaching housing development in areas surrounding universities. While Rodin pushes the need for universities to provide more on-campus housing for students to help lessen the burden on the surrounding housing market, universities will nonetheless have impacts. In dealing with issues of housing and real

estate development, there are several common strategies that universities have taken, which will be further discussed within the case studies of Penn and MIT. Those include:

- Loans/subsidies/grants for people affiliated with the university to subsidize home ownership
- Partnering with outside private developers to develop housing on university-owned land, where the university will draw income from the leasing of the land via a long term lease
- Acting as a developer (university takes on responsibility)
- Land banking with intention of future development
- Partnering with non-profits and community organizations to develop affordable housing

Much of the above work focuses on universities working through traditional, market-based, strategies and partnerships in their quest for revitalization. Other work, such as *Renewing People and Places* by Lamore et al, theorizes that universities could help negate some of the distressed areas adjacent to campuses through new investment models. They argue that a lack of capital found in many areas could be ameliorated by impact investing on the part of the university, where universities work towards building social and financial capital through socially minded investment strategies. This type of approach is echoed in the writings of The Democracy Project, an organization that researches and promotes development that grows community wealth, promotes a sustainable environment, and works towards a more democratic society. They have conducted case studies of different anchor institutions (not necessarily universities) that have adjusted investment practices to be socially and community minded, proving that there are opportunities to both make money through investments while building social capital.

Beyond the role of universities and their connections to development, I also investigated how universities tie in these development efforts with their larger missions and pedagogical approach. This idea of action research or academically based community service, where universities work with outside communities/organizations as a way to both revitalize communities/improve town gown relationships while also training students, has been a central element of Penn's approach to education and community engagement. Penn's efforts will be discussed further within the Penn case study.

To augment the published research, I conducted interviews at both universities. Through conversations with stakeholders, faculty, administrators, and employees, I was able to better understand the intricacies of both universities and how they operate within the realms of development, community engagement, real estate, and public space. These interviews, alongside the literature, was instrumental in working towards recommendations for the universities, which, in turn, informed the development of the site application shown in Chapter 05.

CHAPTER 02: UNIVERSITY OF PENNSYLVANIA CASE STUDY

Introduction: When thinking of university/city relationships or university-backed community investment, the University of Pennsylvania is often one of the first schools to be mentioned. Perhaps more than most urban universities, Penn has worked to develop connections to its home in West Philadelphia. As Penn has grown into a preeminent research university and the student population has grown, it has faced a growing need for space. In recent years, Penn has expanded its footprint by approximately half an acre per year (Sehnert 2019). This continual process of growth has raised a number of conflicts and concerns throughout Penn's history, some of which continue to today. Penn is often viewed in multiple lights; sometimes, its actions have helped build positive connections with the communities of West Philadelphia, while at other times these actions have caused controversy and division. Many of these issues revolve around real estate and development. Real estate, whether in the form of academic buildings, lab space, or residential buildings, is increasingly needed for Penn's continued growth and for Penn to maintain a competitive edge in its search for funding and top-tier faculty and students (Etienne 2012). The university, largely through its Facilities and Real Estate Services Department, has become an active agent in Philadelphia's development, moving beyond merely academically-focused buildings to become one of the most prolific developers in West Philadelphia.

A Brief History of Penn and West Philadelphia: The University of Pennsylvania was established in 1749 by Benjamin Franklin in an effort to place Philadelphia on the map as a world class city with world class institutions (Etienne 2012). While it was founded as a teaching college, Penn lays claim to being the first true research university in the United States, a point it prides itself on as it continues to seek dominance in the sphere of global research universities. The school has not always been in its present West Philadephia position, however. It was originally founded southeast of Center City, in one of the oldest neighborhoods in Philadelphia. After over 150 years that area, the campus moved to Ninth and Chestnut Streets in search of additional space. However, this new location likewise became too constricting, and the university moved to its present location in West Philadelphia. At the time of the move, its new location west of the Schuylkill River was largely suburban farmland; here, Penn could expand without the constraints of the old city (Etienne 2012).

However, this bucolic setting would not last. Much like Penn, the city too shifted westward, and urban development soon surrounded Penn's West Philadelphia campus (Etienne 2012). As Philadelphia became further industrialized, African Americans from the south began moving to the city, often settling in West Philadelphia in the areas surrounding Penn's campus. In the decades following World War II, the process of industrialization slowed, causing job loss, poverty, and population loss within West Philadelphia. This increase in poverty and the associated deterioration of buildings and neighborhoods (considered blight by Penn) caused Penn to consider moving yet again in to a more rural setting in Valley Forge, though ultimately Penn decided to stay in its present location (Etienne 2012).

Despite West Philadelphia's population decline, Penn continued to expand, often in contentious ways. For instance, under the guise of Urban Renewal, Penn displaced over 600 families, most of them African American, as it expanded to create an urban research park. These families were forced to leave what was then known as the Black Bottom, a previously vibrant neighborhood and community. Outside of its physical and official expansion westward, Penn unofficially expanded through its student population. While the university does provide some on-campus housing, many students opt to live off campus, renting through the private market (Sehnert 2019). With a growing population of students, in addition to faculty and staff, additional pressure was placed on the West Philadelphia housing market, and, over time, students moved westward. At times this caused strained relationships between Penn and local communities (Etienne 2012)." Despite physically co-existing in the same geographical area, there has often been a sense of contention and mistrust between the two. It is in this environment that the West Philadelphia Initiatives came to be.

The West Philadelphia Initiatives: While Penn has been involved for many decades in various forms of community engagement and relationship building in West Philadelphia, especially during Sheldon Hackney's presidency in the 1980s, it was not until Judith Rodin's presidency in the 1990s that a highly public and visibly substantive effort began to bridge the divide between Penn and West Philadelphia (Hack 2019; Spirn 2019). This effort came about in large part due to Penn facing difficulties in attracting students and faculty because of the perceived danger of West Philadelphia. Like many cities in the 1990s, Philadelphia faced high crime rates; this was especially true in West Philadelphia. This all came to a head in 1996, when a researcher at Penn was robbed and murdered.

This event ushered in a sea change. During a public meeting after the event, "Penn president Judith Rodin and then Philadelphia mayor Edward G. Rendell were booed off the stage as they tried to assuage the crowd's fears about crime in the area… they were given marching orders to clean up the crime or lose students (Etienne 2012)." This event led to the founding of what would eventually become the West Philadelphia Initiatives, or WPI. WPI was "an ambitious policy designed to stimulate neighborhood reinvestment in West Philadelphia… (it) sought to fundamentally improve the West Philadelphia neighborhood economy through a major commitment of University leadership, administrative support, funding, and academic resources, sustained over a period of years" (Kromer and Kerman, n.d.).

Rodin saw WPI as "an agent of change and investor" in the local community that could have "a regenerating effect both on the neighborhood and on the University (Rodin 2007)." These initiatives set out to address myriad issues around West Philadelphia – Penn realized a single comprehensive plan would not be effective and would be reminiscent of their disastrous efforts through Urban Renewal (Etienne 2012). Over time, Penn developed the following goals (Rodin 2007):

- Improve neighborhood safety, services, and capacities
- Provide high-quality, diverse housing choices
- Revive commercial activity
- Accelerate economic development
- Enhance local public school options

Some of this work has fallen to Ira Harkavy, a presence at Penn since his days there as a student and activist (Rodin 2007). Harkavy was the founding director of Penn's Center for Community Partnerships in the 1980s, which is now known as the Netter Center for Community Partnerships. Harkavy was a central actor in Penn's development of the WPI and in the changing relationship between the university and the surrounding communities. He continues to serve as director of the Netter Center and is internationally known for his work in developing relationships between anchor institutions and surrounding cities, promoting community engagement and democratic processes, and developing models that align community service with academic learning.

The Netter Center for Community Partnerships: The Netter Center for Community Partnerships at the University of Pennsylvania acts largely as the community-facing arm of the university. The Center seeks to link West Philadelphia and the university, building connections that benefit both. Their mission is threefold:

> "The first is academically based community service (ABCS), service rooted in and intrinsically connected to research, teaching, and learning. The second is university-assisted community schools (UACS), which educate, engage, empower, and serve not only students, but also all other members of the community, providing an organizing framework for bringing our programs, including ABCS courses, to West Philadelphia schools. Third, we view ABCS and UACS as core to a comprehensive anchor institution strategy in which universities engage in sustained, mutually beneficial partnerships with their communities. These strategies are shared with others across the country and around the world, serving as a model for democratic university-community engagement (Netter Center 2017)."

In all three of these areas, the Netter Center has been a foundational actor; little work had been widely published or publicized prior to Penn's endeavors. Their work in academically based community service and anchor institution strategy are most central to what this thesis is investigating.

These ABCS efforts largely focus on crafting community relationships between Penn and West Philadelphia that link "service with research, teaching, and learning" (Netter Center 2017). These partnerships engage with departments throughout the university, linking faculty and students from Penn with schools and community-based organizations throughout West Philadelphia. This model of service helps train students and faculty about the value of community engagement in a democratic society, moving the work of the university out of the classroom or lab and out into the surrounding neighborhoods. Penn's model has been replicated widely by other universities wishing to be more active in their engagement with their surrounding community.

Beyond ABCS, The Netter Center is world renowned for developing strategies for universities, and more broadly for anchor institutions, to engage with surrounding communities. In the early days of Penn's efforts in West Philadelphia, many of their strategies were considered experimental. Through

their work they developed a number of strategies for other institutions to replicate in their own cities that could have positive impacts on institution/community relations, economic development, democratic engagement, community building, and promoting equity (Netter Center 2017).

This work has grown substantially over time. In 2008, the Center published the *Anchor Institutions Toolkit: A Guide for Neighborhood Revitalization*. This document reviews strategies that Penn developed through their initiatives within West Philadelphia, and is formatted to help other universities and anchor institutions to engage communities, work with partners, and invest in their surrounding communities (Netter Center 2017). In the years since, the Netter Center has been very active in publishing and outreach, spreading the lessons learned from their own work in Philadelphia to other organizations looking to do similar work. While the Netter Center now has a global footprint, they still work locally in West Philadelphia.

No housing-focused projects are currently within the Netter Center's portfolio, though in the past they have been involved in housing related work. In the 1980s, prior to their transformation into the Netter Center, they worked with unions and local trades groups to provide construction training and apprenticeships to young people in West Philadelphia through the construction of housing in West Philadelphia. Today, however, the Center largely works in an advisory role and will advise university administrators (such as the Executive Vice President) on issues like housing. Throughout the last several administrations, the Netter Center has had strong relationships with the President's Office and the Executive Vice President, so they are often called upon to provide their expertise in housing and community relations, though in an advisory rather than program management or implementation role (Harkavy 2019).

Netter Center - Lessons: Partnerships are the most vital aspect of the Netter Center's work. While the types of projects they undertake are varied and have shifted over time as West Philadelphia has changed, all of their work is rooted in the act of building connections. The Netter Center, as well as the efforts and organizations that preceded it, has taken a long-term approach, leveraging community and administrative relationships to establish deep and personal connections with people and organizations throughout the surrounding neighborhoods. They act as a resource for the University that can look at relationships and development in a larger and longer context, understanding how projects fit into Penn's history in West Philadelphia. They take an

interdisciplinary approach, knowing that projects are most successful when there is strong buy-in from surrounding communities and base-level support and participation from those communities when plans are being developed. Had Penn continued with a top-down approach, as it had used during the era of urban renewal, the University and the city would be drastically different places. While the Penn/West Philadelphia relationship can still often be considered fractious, the efforts they've put into relationship building have paid off as they have further expanded into West Philadelphia. There are no doubt still serious issues as Penn continues developing, neighborhoods continue changing, and rents and the cost of living increases. Such issues cannot be solved by the Netter Center alone, though their process of outreach, engagement, and relationship building ensures that if Penn and the University's administration chooses to take on such a problem it will be done in a way that leverages long term community relationships and prioritizes community conversation.

The Netter Center is able to take on such work due to a strong relationship with the University administration. Penn initially decided to undertake the WPI due to the vision and leadership of President Rodin. In the administration that has followed, President Amy Gutman as well as her staff (especially at the executive vice president level) have prioritized university/community relations and the work of the Netter Center. The West Philadelphia Initiatives were initially funded through an 80 million dollar appropriation by the administration, showing that major initiatives, even within cautious and bureaucratic organizations such as universities, can move forward quickly with the right leadership (Hack 2019). If universities are to take on a role of promoting more equitable and affordable development, it is clear that a strong leadership that believes in such a mission is needed to move these goals forward. In talking of the Netter Center's successes, Harkavy noted that much was due to the president, provost, and executive vice president all understanding the value and utility of working with the Netter Center, as recent administrations have valued openness and democratic methods of leadership and outreach. While the administration has largely supported and promoted this method of work, the story is often crafted and sold by the University, which leads to a one-sided narrative. There is a greater depth to their efforts, and these efforts are by no means done through solely a benevolent lens. Many, such as Harley Etienne, have pointed out that Penn's actions often push self-beneficial efforts masked as community benefit. This is common and well documented throughout Penn's tenure in West Philadelphia.

Alongside the Netter Center, there have been other organizations at Penn that have had ties to West Philadelphia and to community engagement and improvement. One of those is PennPraxis, the "clinical arm" of Penn's Design School (Hack 2019). Founded by former Penn Design Dean Gary Hack, PennPraxis aims to provide a vehicle for faculty and students to use their expertise for real-world planning work. The foundation of this organization grew out of Hack's experience as Chair of the Department of Urban Studies and Planning at MIT, and his attempts to integrate the practice of planning into MIT's educational environment. As PennPraxis grew directly out of frustrations with the system at MIT, PennPraxis is covered further within the MIT Case Study chapter.

Netter Center - Critique: Despite the acclaim that the Netter Center, and more broadly the University of Pennsylvania, has received for its practices and its work with the West Philadelphia Initiatives, there are concerns with the ways in which Penn has functioned within its West Philadelphia home. Many local residents maintain a high level of skepticism of Penn's motives and actions and feel as though Penn has not been as benevolent a neighbor as it professes to be.

A main critique is that the work of the Netter Center has led to a feeling of "enlightened self interest," where Penn's community-focused work is only done when there is a direct benefit to the University. In conversations with residents of West Philadelphia, a frequent concern was that Penn undertakes projects that will get good PR and solve problems close to campus without being fully invested in the wider community. While residents recognized that improvements such as the Penn Alexander School were good in many ways for the neighborhood, there was concern that the improvements were largely intended for Penn and for Penn faculty and staff who were able to take advantage of the school.

Another critique is that Penn's efforts are superficial, and do not address issues on a system-wide scale. Harley Etienne sees many of Penn's programs as addressing concerns on a small/site scale that does not deal with larger contributing factors and practices. He views Penn's approaches as place-based and market-based, and questions "the abilities of these approaches to engage the structural causes of urban decline and poverty such as racial discrimination and global/metropolitan economics (Etienne 2012)." In their advocacy of these place and market-based solutions, institutions such as Penn "appear willing to bypass this debate [mentioned above] in the interest of expedient and achievable results in urban upgrading; however, critics have predicted and cited cases where

these redevelopment approaches are not beneficial to marginalized and disadvantaged populations (Etienne 2012)." Even though Penn undertakes work that visibly addresses problems within West Philadelphia, they are not going to the root of these problems. Larger economic and social systems continue to drive inequity – the scale and type of revitalization projects Penn takes on cannot address these larger problems. Some of their revitalization problems can even exacerbate problems.

One of those exacerbated problems is displacement. When a place/market-based revitalization approach is successful, as many of Penn's have been, property values and rents tend to rise, attracting wealthier individuals and families (such as Penn faculty) and pushing out lower income residents (Etienne 2012). As the demographics of neighborhoods shift and neighborhood wealth increases, outside development often comes in. Etienne quotes a Penn administrator that declared the intention of their improvements through the West Philadelphia Initiatives was to "stabilize the area for private investment" (Etienne 2012). The framework for these stabilization efforts to attract outside development "came directly from Ira Harkavy's research and community engagement and directives from the Netter Center" (Etienne 2012). Even in their use of community-focused outreach, the university seemed to be using it to work towards more self-focused goals. They wanted to create "a safer urban environment for this prestigious university community… (where) the children of scared suburbanites who think they can come to school here and be as safe at three in the morning as they are in the afternoon (Etienne 2012)." Many residents see Penn through this lens. There is a view that Penn was shaping the city in its own image, using organizations like the Netter Center as cover for more self-serving purposes, such as real estate investment.

Real Estate Investment and Revitalization Strategies: Penn's approach to real estate has shifted over the years as West Philadelphia has evolved. This work has been done through multiple bodies at the University, operating at varying scales. Much of their focus has been on partnerships with outside developers and organizations, largely to decrease the amount of risk taken on by the University (Sehnert 2019).

The earliest program sponsored by Penn to shift the West Philadelphia real estate market was the Penn Home Ownership Program, which dates back to the 1960s (Penn Home Ownership Services 2019). This program was set up to promote real estate investment by Penn faculty and staff within nearby neighborhoods. In its early days, this allowed for investment across the river in Center City,

though eventually the geographic areas were redrawn to focus strictly on West Philadelphia. This refocusing was an attempt to promote reinvestment and renovation within the areas directly surrounding the campus. In its current form, this program offers the Forgiveable Loan Program (with loans up to $7,500) and the Closing Cost Reduction Program, which offers a direct credit towards closing costs. Since its founding in the 1960s, over 1,400 individuals/families have utilized these programs. (Penn Home Ownership Services 2019) Overall, this program has been typically viewed as a success by the University. Penn, at minimal cost to the institution, was able to directly invest in the surrounding neighborhoods through incentivizing employees to live close by. Employees were often able to purchase homes in West Philadelphia at much lower costs than in other neighborhoods, allowing them to invest in renovations, which over time drove up surrounding property values and attracted further development and more homebuyers of greater means.

However, this program had consequences that were not always seen as positive by existing residents of West Philadelphia. As faculty and staff moved into West Philadelphia, the increased property values had the potential of pushing residents of lower means out of the neighborhood or further west. The revitalization that was triggered in part by Penn's Home Ownership program increased home prices in these neighborhoods, and as houses were renovated, investors outside of the Penn sphere were also enticed to move into the neighborhood. While this program did vastly increase investment in West Philadelphia, and the quality of homes likewise increased, some residents of West Philadelphia were unable to stay in their homes and neighborhoods as the level of affluence rose in the areas surrounding Penn.

Another one of Penn's early efforts at neighborhood stabilization in West Philadelphia was an initiative to purchase and restore deteriorating homes adjacent to campus. The university felt that by selectively improving homes within surrounding neighborhoods, faculty and people of greater means could be attracted to purchase homes in West Philadelphia instead of other parts of the city or in the suburbs outside of Philadelphia. They eventually shifted to new housing construction.

Today, the majority of neighborhood revitalization and housing projects are managed by Penn's Facilities and Real Estate Services (FRES), which is a major force throughout West Philadelphia. Their goal is to:

"provides the expertise, business process, policies and standards required to plan, design, construct, operate, maintain and renew the physical assets of the University. In addition, (they are) responsible for the strategic planning, management and operation of non-academic University property, and (for) collaborating with the neighborhood to create a safe, diverse and economically vibrant destination. (They) maintain 218 buildings on a campus of 299 acres, excluding the Health System, New Bolton Center and Morris Arboretum."(Facilities & Real Estate Services 2012)

Much of the work FRES does involving housing falls within the sphere of non-academic property development, though they have in the past worked to increase on-campus student housing to lessen student renting pressures in off-campus areas of West Philadelphia (Sehnert 2019).

Many of the most recent housing projects FRES has undertaken involve partnerships with private developers and long-term ground leases. Penn owns a significant amount of property throughout West Philadelphia (as well as some parcels east of the Schuylkill River), and has been active in developing it for non-academic uses including housing, commercial, office, and mixed use. In a typical scenario, Penn will solicit the services of an outside developer to develop a project on land that is owned by Penn. The University will provide a long-term ground lease and will not be responsible for investing capital in the development, which places all development risks on the developer. These arrangements are often for 99 years, with the building/development going into the possession of the University once the lease is up. FRES is able to exercise some level of control over the development, its programming, its aesthetics, etc. To date, some projects undertaken through this process include:

- Circa Center South: This is a mixed use complex east of the main campus, containing two towers and a parking garage. This was developed through Brandywine Realty Trust.
  - Evo Tower: The first tower is 33 stories, with first floor retail and 32 stories of apartments geared towards students and young professionals. These are all market rate units.
  - FMC Tower: This is a 49 story structure with over 600,000 square feet of office space, 10,000 square feet of retail, and 268 luxury apartments, all market rate. Of the office space, Penn negotiated a 20 year lease for use of 100,000 square feet.

- o Cira Green: This above ground parking structure is located between the two towers, and has a one acre publically accessible green roof/park on the structure roof.
- 3901 Walnut Street: This six story office building was developed by The Hanken Group. Penn offices occupy the first level.
- 3939 Chestnut Street: This seven story mixed use complex was developed by JNA Capital, with the first two floors holding retail, office, and building/community amenity space and five floors of market rate apartments.
- The HUB: This mixed use development is adjacent to the 3939 Chestnut Street development above, and was developed with Teres Holdings.
- Domus: This apartment complex was developed in 2007 with Hanover Development Company, and contains 290 luxury market-rate apartments, over 20,000 sf of commercial space, and a parking garage.
- Radian: This mixed use development was developed on Walnut Street by Inland American Communities Group in 2008. It holds retail on the ground level, a mezzanine level of mixed use and retail, and 12 floors of student-focused market rate apartments. (Facilities & Real Estate Services 2012)

One of the more notable and most recent projects Penn has been involved with is a pre-fab multi-unit apartment complex, which they're connected with via a ground leasing. This project, Luna on Pine, was largely constructed in a factory off-site and shipped in segments to be assembled on site. Compared to conventional construction, this allowed a high quality of construction to be built in a much quicker timeframe than stick-built construction. The costs with this type of housing are approximately equivalent to conventional construction. However, there are savings in time, shaving off months from the process. This is attractive to developers (and the university) when time is an issue (Sehnert 2019). These apartments are largely marketed towards students, and prices are high for the area. Studios range from $1,295 to $1,610 per month, 1 bedrooms range from $1,850 to $1,870 per month, and 2 bedrooms range from $2,330 to $2,610 per month. (Equinox Leasing 2019)

The projects above represent a major investment by Penn in the areas surrounding the campus. FRES provides expertise and property while minimizing risk by placing the riskier aspects of development and financing on outside developers (Sehnert 2019). As seen with the FMC Tower and

3901 Walnut Street, Penn also is able to meet some of its spatial needs with these developments through agreements to rent/occupy space within these buildings. As the university grows, there will be an increasing need for additional space for university offices, facilities, administrative facilities, etc. This is a way for Penn to gain that space without developing the project on their own, while also drawing profit from the ground lease.

Noticeable in the above projects, though, is the residential development. It is 100% market rate – none is designated affordable, and the City of Philadelphia does not have an inclusionary zoning policy that would require a certain percentage of affordable housing to be included in the development. While Penn has the ability to set or negotiate the terms of the development as the land owner in the project, they did not require any units to be designated affordable. Rather, they pursued projects that would create the highest financial returns, which was market rate and luxury residential. This is a missed opportunity to incorporate some of the values of the West Philadelphia Initiatives and the Netter Center into development projects. However, FRES and the more socially focused elements of the university remained siloed, and no affordable units were built.

On other projects, Penn has been active beyond ground leases, entering into a true project partnership with an outside developer. One such project was located at 40th and Pine. FRES acquired a vacant, dilapidated 40 unit apartment building. The building was in deteriorating shape, with significant structural problems. Penn partnered with a campus apartment developer in a joint venture, contributing the building and property. According to Paul Sehnert of FRES, this project was particularly successful as a public private partnership because the developer was able to bring "energy, enthusiasm, the capacity to bring in equity, construction methodologies, and a development working style to build it out over six months and fill it within weeks (Sehnert 2019)." With this arrangement, Penn is a 50% owner, and receives monthly income from the apartment rentals.

Penn has used tools outside of the traditional realm of real estate to revitalize the neighborhoods surrounding its campus. One of the most successful strategies they've used for bringing investment into West Philadelphia is investment in public education. Many young faculty members at Penn were concerned to settle in West Philadelphia as they did not want to send their young children to public schools, which were often viewed as underperforming. Due to this concern, many of these faculty lived outside of West Philadelphia and commuted to Penn in order to live in an area with stronger

schools where they could send their children. As part of the WPI, Penn partnered with the School District of Philadelphia to construct the Penn Alexander School (Rodin 2007). According to former Penn President Judith Rodin:

> "Penn, with education as its core mission, has the potential to influence the quality of public education significantly. A substantial number of faculty and students have the expertise and/or the motivation to provide enriched educational opportunities for school-age children. It certainly can be a win-win situation when a university becomes engaged in the improvement of local public schools: the university supplements its academic curriculum by providing its own students with real world experience, and the schoolchildren reap the tangible benefits (Rodin 2007)."

This quote highlights the community service aspect that is central to Penn's mission. Through Penn Alexander, the University created a partnership that invested their financial, real estate, and human resources and talents to the West Philadelphia community. Such a partnership had significant benefit to Penn as well, though. It provided a vehicle for faculty to conduct research through. It gave students an opportunity to apply their new skills and knowledge in a real world setting outside of the classroom. It created a major incentive for young faculty with families to move into the neighborhood and raise their families in close proximity to Penn. Through attracting residents of higher incomes, home conditions improved and property values rose, further attracting more residents of means and further development. Much like the Home Ownership Program, this endeavor caused changes in neighborhood demographics, shifting some residents out who were unable to afford the rising rents and property costs. Overall, this approach highlights the importance of education in neighborhood revitalization. The school became highly desirable and quickly ushered in adjacent development and investment, though often to the detriment of long term residents who could not afford to stay as rents and prices rose.

Public Space: Beyond real estate and housing, Penn has also been involved in developing open space on its property, with its flagship being Penn Park. Alongside housing, public space is vital in creating a vibrant and healthy neighborhood and campus (Gies 2006). Penn Park was developed as part of a larger real estate deal on the eastern edge of Penn's campus. The land originally was part of a large complex owned by the US Postal Service. The USPS eventually moved its facilities to a larger

site outside of the city, leaving this parcel vacant. Beyond large swaths of surface parking, the parcel also contained approximately one million square feet of floor space, something that Penn was not interested in due to the costs associated with maintaining and improving the on-site structures. Over time, a deal with an outside developer was struck, with Brandywine Realty taking on responsibility for the structures and Penn taking on responsibility for the brownfield site that would eventually become the park. Given the location of the site between Penn's campus and Center City, it was seen as a potential bridge between the two, and given its size, it was imagined as a space that could have programming that would meet needs of the university that were not currently being met.

However, the former USPS site was highly complex and degraded, and transforming it into a park was a complicated process. As described by the *Pennsylvania Gazette* in December 2011:

> "Once the University had the land, the challenge shifted to implementing a design capable of accomplishing several goals that weren't all in mutual alignment. First of all, the Division of Recreation and Intercollegiate Athletics wanted more space—including some that could be adaptable for winter use. Second, Penn's leadership wanted the new park to dove- tail with the University's Climate Action Plan, with its goals for energy conservation and sustainable design. Third, the athletic fields and tennis courts would also need to coexist with un-programmed space intended to serve as a public amenity. Finally—and perhaps most trickily—the whole assemblage would need to fit into a space variously bordered or bisected by elevated freight-train tracks, a light-rail commuter line, the Schuylkill Expressway, Amtrak's Northeast corridor, and streets situated 30 feet above ground level."

To transform the vacant land into a new urban park, the university hired Michael Van Valkenburgh Associates (MVVA). MVVA is a noted landscape architecture and urban design firm that has completed a wide range of landscape architectural, public space, and campus planning projects. Ultimately, the final design was successful in creating both an amenity for the public as well as a space for students and employees of Penn. It feels open to the community and the surrounding built environment, a tricky accomplishment given the industrial, sunken, and infrastructure-surrounded nature of the pre-construction site.

Overall, this park was and continues to be a significant asset that the university opened up to the surrounding community. Purchasing a lot of this size in an urban area that is adjacent to the campus is a rare opportunity; much of the area surrounding Penn is built out and comprised of much smaller lots. After purchasing this property, Penn could have easily maximized profit by densely developing the space into commercial spaces and high-end residential uses – there is certainly a market for that type of development, as can be seen in the Schuylkill Yards development that Drexel is undertaking (Tanenbaum 2018). However, Penn chose to invest in landscape amenities and sustainable site development. While the return on investment on this project is much lower in the short term, these amenities are a significant draw for prospective students and faculty, and a beautiful public-facing park adds to the attractiveness of the campus at large. Assumedly, these were elements that Penn considered when pursuing these development decisions. Thankfully, they chose to create this park as a place open also to the public. This fits in with the brand they have developed as a community-facing institution, and since being built the park has been successful in attracting both community members and those affiliated with the university.

Ch. 03: MIT CASE STUDY

Introduction: The Massachusetts Institute of Technology (MIT), founded in 1861, is one of the preeminent research universities in the world, and one of many institutions of higher learning found within the Boston region. Originally founded in Boston, MIT now resides across the Charles River in Cambridge. Alongside Harvard, MIT has been a major force within Cambridge on many levels. It is a major employer, a major holder of real estate, and a major attractor that brings in students, faculty, visiting scholars, and companies into Cambridge. MIT has also served as a major developer within the area, facilitating investment and construction in areas surrounding the campus, especially in Kendall Square.

As MIT has grown, both spatially and in population, growing pains have been felt within Cambridge. Cambridge is a densely built and populated city, and there is limited space to further expand. This has presented challenges to MIT and to organizations and companies attempting to locate adjacent to the university, such as pharmaceutical and tech firms. Prices for office space are extremely high, as are housing costs (Lincoln Property Company 2019). The following case study will look at the relationship of MIT and Cambridge, and ways in which the university is impacting the built environment and the real estate and development market.

A Brief History of MIT: Founded just prior to the start of the Civil War, MIT was envisioned as an institution that would teach technical skills alongside a liberal education, a pedagogy that was not common at many institutions of higher learning. Historically, engineering has been a primary focus of the Institute, a focus that continues to this day. Upon its founding, MIT was chartered as a land grant institution, as defined within the Morrill Act. This act worked to "promote the liberal and practical education of the industrial classes" (MIT Institute Archives n.d.). Whereas many other institutions founded in this era focused on the liberal arts, land grand institutions aimed to teach practical and applied skills that could be put to use in industry and agriculture (Staley 2013). Land grant institutions also have a public service orientation – they are expected to contribute back to the public good.

Originally, MIT was sited in the Back Bay of Boston, though over time the site became spatially constraining, and little room was available to expand. In its infancy the university faced a number of financial woes, and, on multiple occasions, Harvard attempted to absorb it. Ultimately, after receiving significant donations, MIT was able to move across the river to Cambridge and stabilize from a financial perspective. Its new location was largely undeveloped, with some of the campus being built on fill that was expanded into wetlands along the Charles River. Over the years, the campus has expanded, as has the City of Cambridge (MIT Institute Archives n.d.).

Status as a Land Grant Institution: Land grant institutions ultimately have three missions: teaching, research, and extension.(National Research Council 1996) Extension is often thought of in a local context, with university resources going towards outreach and work within the community or the state the institution is located in. As many land grant universities contain agricultural programs, this is often in the form of an agricultural extension service, with extension agents (employees of the university) taking out the knowledge and resources of the university into local communities, ensuring that knowledge production can be applied in the field for the benefit of citizens and the state. According to the National Academies of Science, extension:

> "was designed to link the colleges' academic and research programs to societal needs through a public service function that includes extended education and technology transfer. Motivated by the desire to draw each state and territory into supporting science and education… land grant legislation created a federal-state partnership in agricultural research and technology transfer" (National Research Council 1996).

Looking at MIT, it is clear there is a great emphasis placed on teaching and research. As stated by the institute itself, "the soul of MIT is research. For more than 150 years, the Institute has married teaching with engineering and scientific studies – and produced an unending stream of advancements, many of them world-changing" (MIT 2018). On MIT's website, the highlights they chose to include are:

- 1930s—Pioneering high-speed photography
- 1940s—Engineering practical microwave radar
- 1950s—Building the magnetic core memory that made digital computers possible

- 1957—Achieving the first chemical synthesis of penicillin
- 1960s—Developing inertial guidance systems for the Apollo space program
- 1960s—Developing the world's first biomedical prosthetic device
- 1977—Inventing the first workable public key cryptographic system
- 1986—Creating the first free-standing hologram
- 1988—Discovering the smallest known, most abundant photosynthetic bacteria in the ocean
- 1994—Developing a robot that can "learn" exercises from a physical therapist, guide a patient through them and, for the first time, record biomedical data on the patient's condition and progress
- 1996—Using new genetic and multiple-cell monitoring technologies to demonstrate how animals form memory about new environments
- 2002—Creating the first acrobatic robotic bird—a small, highly agile helicopter for military use in mountain and urban combat
- 2007—Genetically reprogramming skin cells to cure a mouse model of sickle-cell anemia
- 2009—Finding a way to use RNA interference to silence multiple genes at once
- This stream of discovery continues. Here are just a few accomplishments from this decade:

- 2010—Designing computer techniques that automatically decipher ancient languages
- 2011—Building a new radar technology system that can see through walls up to 60 feet away
- 2012—Demonstrating experimentally the existence of a fundamentally new magnetic state called a quantum spin liquid
- 2013—Developing a new steelmaking process that produces no emissions other than pure oxygen
- 2014—Designing a new paper strip diagnostic test to rapidly diagnose Ebola and other viral hemorrhagic fevers
- 2015—Designing the bandage of the future: a sticky, stretchy, gel-like material that can incorporate temperature sensors, LED lights and other electronics, as well as tiny drug-delivering reservoirs and channels that can release medicine in response to changes in skin temperature and be designed to light up if medicine is running low

- 2016—Making the first direct detection of gravitational waves reaching the Earth (in collaboration with Caltech and others around the world), confirming Albert Einstein's prediction from 100 years ago
- 2017—Adapting a CRISPR protein that targets RNA, rather than DNA, for use as a rapid, inexpensive, highly sensitive diagnostic tool with the potential to transform research and global public health (MIT 2018)

The above achievements, taken directly from MIT's website, show that MIT focuses heavily on research. The scientific problems MIT researchers take on are of global scales and have global implications. This is not surprising given MIT's status as a global research institution. However, it is noteworthy that none of MIT's chosen highlights relate to Cambridge or the larger Boston region. Whereas Penn places a great deal of emphasis on its endeavors in West Philadelphia, MIT bills itself as a global institution. Cambridge does not seem to be central to its brand, or to its research and outreach.

These highlights do not align with a typical land grant university. While MIT's research has positive public impacts on a global scale, relatively little is focused on the Institute's direct surroundings. MIT, on an insititute-wide scale, is minimally involved in interfacing with surrounding communities and contributing to local knowledge building and extension. What outreach, research, and engagement that is done locally appears to be on a faculty by faculty basis (Spirn 2019). This is certainly an area in which MIT could improve.

Assessment of Land Grant Status: MIT, as it currently operates, does not live up to its status as a land grant institution. MIT is unique in its land grant status – most land grant schools are publically funded, with many focusing on agricultural topics. MIT is private and focused largely on STEM subjects. Despite this difference, MIT should still strive to meet the goals of land grant institutions, which include community-focused research and spreading the knowledge of the institute into the community and the commonwealth. While MIT undertakes significant research, much of it is global, and little efforts seems to be placed on spreading the knowledge created within its halls into the surrounding community. This is a failure of one of the main tenants of land grant institutions. MIT should refocus some of its work on giving back to the community and the commonwealth and utilizing its resources for community gain. Housing and public space endeavors would be a perfect

way to do just that. It would apply the values and mission of the land grant charter to MIT's specific urban context, utilizing the deep knowledge on housing and urban challenges found within the Institute to work towards building greater affordability and access to public space in the surrounding communities.

A Review of Recent and Current Planning Initiatives: To better understand MIT's approach toward the Cambridge community, toward development, and toward planning in general, it is important to understand the planning initiatives it undertakes. Like many universities, MIT engages in long range planning efforts to anticipate changes in the physical, economic, and social environment that surrounds the university. The most recent plans that the Institute has engaged in include MIT 2030, the East Campus Design Study, the West Campus Design Study, and the plan for Kendall Square (which draws from a number of different planning efforts).

MIT 2030: This is one of the guiding plans for MIT, currently focusing largely on the eastern portion of campus and Kendall Square. This plan is envisioned as:

> "a flexible framework that helps the Institute make thoughtful, well-informed choices about its physical development and renewal in support of its mission. MIT 2030 is a responsive tool that provides guidelines for envisioning—and inventing—key physical changes on campus and in the innovation district close by." ("MIT2030 Envisioning, Renewing and Building for the Future" n.d.)

The framework takes a very insular approach, and there is no overarching "master plan" that takes a comprehensive look at the campus and Cambridge. Rather, it seems that MIT 2030 is a loose collection of efforts tied together by their connection to MIT's long-range goals and vision for the campus. In the documents and webpages publically available, there is no specific mention of MIT's relation to Cambridge or adjacent neighborhoods. The planning focuses strictly on campus assets and not with surrounding urban context.

East Campus Urban Design Study: The East Campus Urban Design Study was released in 2014 as part of MIT 2030. This study provides development and landscape strategies for the eastern area of campus and Kendall Square. (MIT 2030 2013) The goal, as defined by the Institute, was to:

"help MIT create a long-range development framework that shapes future academic, residential, and commercial uses for its properties in the Kendall Square area. The initiative also seeks to create a vibrant gateway into MIT's east campus" (MIT 2030 2013).

Specific goals include:

- "creating a gateway that is emblematic of MIT in the 21st Century, and engages and enriches Kendall Square;
- enhancing the existing Kendall Square innovation cluster by providing space for new innovative academic initiatives and commercial enterprises;
- creating a lively and sustainable urban environment by developing a destination gathering and arrival place with amenities and services and active streetscapes for all;
- establishing a vibrant new gateway and connective links between MIT, the central business district, and the Cambridge community; and
- creating an overall development plan that is comprehensive, feasible, and economically viable" (MIT 2030 2013).

While these goals do identify housing as a topic to address, there are no actual specifics on housing or affordability within the plan. The majority of the planning effort focuses on spatial characteristics of the campus and ideas of how the campus could change physically. There is limited discussion involving programming, zoning, and circulation. The focus is all very high level, with few recommendations.

Although there is no direct focus on housing, there is a focus on open space. The consultant landscape architecture firm on the project was Michael Van Valkenburgh Associates. The firm has a long history of designing award-winning public spaces and campus landscapes. Within this study, they identified the goals of creating a "lively urban environment (and) a destination gathering and arrival place with amenities and services and active streetscapes" and "establish(ing) a vibrant new gateway and connective link between the Institute, the central business district, and the Cambridge community." (MIT 2030 2013) A principal goal of the plan was to create a connected network of

public spaces and an attractive public realm. It is good that this plan seeks to improve the public realm and connect Cambridge and the Institute via landscape, though the language and ideas are all very broad. The plan pushes MIT away from the idea of being a disconnected campus and towards one where campus and city weave together. As stated in the plan:

> "Universities have the potential to be great city builders. They form mutually beneficial symbiotic relationships with the city around them. There are many opportunities for joint planning around a shared vision to promote shared and overlapping use of resources like access to transit, retail, community facilities etc. The interweaving and overlap of the campus and the city produces an environment which is more like a university "quarter" as opposed to the traditional detached campus. This is inherently a more sustainable form of development as it uses scarce resources and land to greater advantage. It positions the campus as a valuable asset and catalyst, with economic spin-offs and entrepreneurship opportunities along with easier access to shared neighborhoods to meet the needs for housing and commercial nodes to provide daily life necessities of the academic community" (MIT 2030 2013).

These are all valid points, though they are largely superficial. This plan does not interrogate these concepts in depth, and it uses a primarily spatial lens to understand the issues surrounding the East Campus. While the plan references "needs for housing" there is no deeper understanding of what that means. Who needs the housing? Why is it needed? How does the expansion of the Institute impact housing needs? Where does affordability fit in? How is the Institute contributing towards housing needs or rising housing costs? How is the Institute working to solve these concerns? These are all questions that would be worth investigating within a campus plan. However, they are not.

While housing is left out, it is good that MIT takes the built environment and public realm seriously, as shown through its engagement with a well-known design firm. Should these concepts move towards specific built projects, hopefully they will again engage with firms that have a proven track record of creating contextual, well designed, sustainable, maintainable, and human-focused public spaces.

West Campus Study: Currently, a West Campus study is underway, though it has yet to be released. The goal of this study is:

> "In an effort to plan comprehensively for the future, the Institute is engaged in a study that will help establish a flexible, long-range framework to guide future activity in the campus area west of Massachusetts Avenue, including opportunities to incorporate new student housing. The resulting framework will consider ways to successfully integrate the west campus area with the surrounding Cambridgeport neighborhood." ("West Campus Study" n.d.)

As the plan has not yet been released, it is difficult to know whether it follows the path of the east campus study. Unlike the east campus, though, the west campus has much closer proximity and overlap with residential neighborhoods. In many ways, the east campus was starting from a fairly blank slate from a residential neighborhood context, as there was very limited residential use in that area. Much of it was on formerly industrial land and parking, while other parcels were vacant. Hopefully, as the planning efforts progress, a strong focus on preservation of housing and affordability will be present.

While campus plans like those discussed above have the potential to sit on a shelf and never be implemented, whether due to a change in administration or a shift in the economy, MIT's planning efforts in Kendall Square have moved forward at a rapid pace. I am often surprised at how Kendall is described by former students who were enrolled at MIT only ten years ago – it was a drastically different place, and their Kendall Square was different than the Kendall of generations prior. The planning and development of this area has moved quickly, with MIT at the helm.

Kendall Square: Kendall Square has been a significant undertaking for MIT. A large focus of the East Campus Urban Design Study, this area has been owned by MIT has since the 1960s and has been a focus of MIT development. The Institute purchased the industrial land in 1960, initially intending for NASA to locate a large facility there (Blanding 2015). However, that plan never came to fruition, and many technology firms located to the area directly adjacent to the campus, including such giants as IBM and Polaroid. This area came to be known as Technology Square. As the area was developing in an era characterized by suburban office parks and car-centric urbanism, the area

was developed in a similar pattern to attract technology firms from suburban environments (Blanding 2015). This led to patterns still visible in the landscape today: wide, multi-lane roads, wide sidewalks, large building setbacks, surface parking and parking garages.

Eventually, as MIT's research capacity grew and more MIT faculty and affiliates were interested in taking their research to the marketplace and growing their ideas into companies, Technology Square became a popular location for companies associated with MIT. Many of these companies were focused on life sciences and medical research. Many of the world's largest pharmaceutical companies moved to the Technology Square area, including Novartis, Pfizer, AstraZeneca, Amgen, and Baxter. (Blanding 2015) Even with these large companies, the area was often only populated during working hours, since there were very few amenities within the area. In many ways, it was a suburban office park transplanted into an urban context.

Susan Hockfield, the president of MIT from 2004 – 2012, set out to change that. Upon moving to Cambridge, she noticed how deserted and monofunctional the area was. She crafted a vision to turn this area into a more attractive, mixed use, and bustling area. Hockfield tasked MITIMCo, the MIT Investment Management Company (the corporation that manages MIT's real estate and endowment resources), to develop a plan to transform the Technology Square area. In response, MITIMCo developed a plan to develop university-owned land in a manner that would add significant commercial space for biotech/life science/technology companies, as well as commercial space for retail and food/beverage. A small amount of housing was also considered in this plan (about 60 units, out of 1.2 million square feet of development).

Such a development required changes to zoning, which required the Institute to receive permission from the City of Cambridge. While the City was generally supportive of the proposal, they (along with many residents and citizens' groups as well as MIT faculty and students) pushed to see additional housing within the development plan. This led to the development of a task force in 2011-2012 to study this area. This task force recommended a housing study, which led to the creation of the Graduate Student Housing Working Group. Ultimately, this group recommended that the Institute add 500-600 new graduate student units to the immediate development and 400 additional units over the next ten years. However, the plan for Kendall Square also called for the razing of the Eastgate complex, which had 201 units of graduate housing. While there was a net

addition to graduate student housing, the demolition of Eastgate meant it was a much smaller addition overall. This net addition was far less than what the Institute's working group had recommended.

Between graduate student housing and other housing, the final development plans in Kendall called for 240,000 square feet of new housing, including 50 affordable units and 240 market rate units. This is a minimal amount of housing, given the size of the development, which was originally planned at around 1.2 million square feet of building area. Since that initial plan, significantly more office and lab development has been planned and built (Acitelli 2018). Such growth brings with it a large influx of employees, which means a large influx of people in need of housing. The development in Kendall Square does not come close to providing the needed volume of housing to match the number of employees that the organizations in Kendall Square are bringing in. As these companies bring in an educated and well-compensated group of employees, they are often able to afford the ever increasing housing prices within Cambridge, increasing the likelihood of displacement of existing lower and middle income residents in the surrounding neighborhoods. These neighborhoods, Area Four and East Cambridge, have historically been home to some of the poorest residents within Cambridge. (Blanding 2015) With such an influx of development and wealth, these neighborhoods stand to face continuing and increased pressure from gentrification.

Pressure on housing in this area is compounded by the type of development. As much of it is biotech and lab space, many of the employees, post-docs, and students are scientists who spend a great deal of time in the lab. The nature of their work requires long and often late hours as is highlighted by Brian Spatocco, an MIT graduate student in the May/June 2012 MIT Faculty Newsletter:

> "living next to one's place of work is not simply a luxury, but critical to research productivity in many fields core to MITs portfolio, such as the life sciences. To the first point, we know from numerous studies that graduate students not only work late, but also return home by foot and most frequently alone (approximately > 80% travel alone). The reason for this is that approximately 50% of graduates will depart from the lab after 7:00 PM, a time at which a vast majority of MBTA transportation options (Bus Lines 64, 68, and 85) connecting the surrounding neighborhoods shut down. In addition, the nature of research is changing to

one in which research timelines are more fickle and demanding. If the NIH's expansion over the last decade is any indicator, we're likely conducting significantly more bio-related research at the Institute than we were several decades ago. With this fundamental shift in research focus has come a commensurate change in the way/times in which our population works. It is not unusual for graduates or young faculty to return to the lab after dinner repeatedly until sunrise in order to tend to some cell culture or growth. Thus we need to ask ourselves: Do we really expect these students and faculty to commute from Arlington or Watertown several times in a night or are we okay with the increasing number of futons we've begun to see in our labs and offices?" (Spatocco 2019)

As illustrated in that quote, it can be vital for students and professionals working in these environments to be located in close proximity to their workplaces – their very work depends on it. Issues of safety are also a primary concern, given that people are often going and coming at late or early hours. While services like Uber or Lyft provide transportation options when public transit has closed, which was not necessarily the case when this was written in 2012, they are an added cost burden and not a public service. This makes living in walking distance to work all the more important, especially when multiple trips between home and lab may be required in the course of a day.

Spatocco also describes:

> "…the effect that increasing housing prices and decreasing availabilities may have upon MIT's competitiveness in attracting the best and brightest graduate students. First, we have to recognize the evolving expectations for housing which students are now carrying into their graduate school selection. Residences like Simmons and Maseeh Hall are excellent examples of how our drive to provide elegant, convenient, and fully equipped residences to undergraduates has grown in recent years, particularly in reference to the rest of our undergraduate housing portfolio. Similarly, we have recognized this trend and our recent graduate housing stock (SP, Ashdown, Warehouse) reflects this changing sentiment. Thus, prior to entering, graduates are being increasingly courted and coddled by their undergraduate institutions and as a result are unsurprisingly looking for more than a run-down two-bedroom shack in Watertown.

On top of this, we also have to be conscious of the fact that the graduate population, like that of the faculty, is increasingly international. For these groups, the ability to acquire either on-campus housing or nearby off-campus housing is of extremely high priority, particularly for those with no experience in our country, let alone the skills to apartment hunt in the surrounding cities. As a result, both our incoming domestic as well as international communities place extremely high value on the ability to live comfortably and close to campus. A laissez-faire approach to off-campus housing will not help and may jeopardize our ability to attract and retain the great minds that have built our reputation and will hopefully advance our mission in the future." (Spatocco 2019)

The concern of attracting both students and faculty is highly important. The ability to afford a place to live in reasonable commuting distance to the Institute or place of employment is a major consideration, especially for those that are new to the area and are unfamiliar with the real estate market. Finding an apartment in a specific price bracket from hundreds or thousands of miles away can be difficult – that can be one of the harder aspects of moving to a new city. That burden is less when moving to a lower-price and less competitive housing market. As price and competition increase as the Institute expands and additional development in Kendall and other areas creates further jobs that require additional staff, that burden will only increase, and prospective students, faculty, and employees may choose to move to a cheaper and more accessible university/city.

"Churn": As large numbers of people from outside Cambridge/Boston continue to move to the area for either education or employment, a concept known as "churn" takes place. This happens when turnover in an area is particularly high. In the case of Cambridge, that is often because people are living in the area for a short period of time: two years for a masters degree; five or six years for a PhD; a year or two for a visiting scholar or a research fellow. As explained by Andrea Chegut, the director of the Real Estate Innovation Lab at MIT:

"[One of] the drivers of gentrification or neighborhood change is the speed at which people come in and out. People come in for a year, and [then they are] out. Then a year, and [they're] out. And then you [the landlord] can change the lease and reset the lease terms, you can increase it by 2% or more, and it's also an opportunity to do a capital expenditure…

every time they can do that they can drive up the rents [and] drive it up to what the market [pays], and so if everybody is sort of ratcheting up, that drives this continual process of churn... So if you look at these places where you have this influx of people, especially in our area, when it comes to schools, startups, fellowships, we've got all these things adding to this churn. It makes the density problem a little bit more complex. It's also because there are not enough people anchored in a place long enough to actually stand up and say, wait, [what about] affordability (Chegut 2019)?"

MIT Investment Management Company: MIT's endowment, which as of September 2018 stands at $16.4 billion, is managed by the MIT Investment Management Company (MITIMCo), the same organization behind the redevelopment of Kendall Square. This value improved over 13.5% from the previous year. (McDonald 2018) MITIMCo's goals in managing the Institute's endowment resources are:

"based on the primary goal of generating high real rates of return without exceptional volatility. To reduce volatility, the portfolio is broadly diversified. To generate high real rates of return, MIT's investment policy favors equity investments over fixed income instruments and is heavily weighted toward less efficient markets such as private equity, real estate, and real assets" (MIT Treasurer's Report 2019).

As one may expect in an investment banking environment, the mission of MITIMCo focuses solely on generating high rates of return. They focus on creating significant returns that will "support current and future generations of MIT scholars with the resources needed to advance knowledge, research, and innovation. As such, endowment funds are used for Institute activities including education, research, campus renewal, faculty work, and student financial aid." ("MIT Releases Financials and Endowment Figures for 2018" n.d.)

In order to better understand how investment decisions are made at MITIMCo, especially in regard to real estate, I reached out to multiple members of the organization. However, I received no responses and have been able to find little information published on how decision making happens at this level. It seems endowment managers are very tight lipped about their strategies and investments – the above statement is about as detailed as any published information gets, which

provides nothing more than a base-level overview of MITIMCO's mission and approach. This thesis initially set out, in part, to better understand how investment decisions are made within university endowments, and to see if there are ways in which universities can adjust strategies that provide both a financial return on investment (the central goal of endowments) and a social/community return on investment (through increased affordable housing and public space development). Unfortunately, I will be unable to pursue those initial goals at the depth I was hoping to, given the unwillingness of endowment employees (at both MIT and Penn) to meet with students/people outside of their organizations. This was not unexpected; financial organizations and endowments are known to be tight-lipped and insular organizations. Many interviewees and people I've discussed the research with have expressed that it would be an uphill battle to have discussions with people involved in endowment management. Those suppositions have turned out to be accurate. Had I had additional time to conduct research and interviews, I could have approached endowment representatives from comparable universities. Perhaps these individuals would have been more willing to talk about other universities than their own. Approaching from this tangential angle could have provided information that I was unable to receive from MIT and Penn.

This difficulty in even getting responses from employees of MITIMCo highlights that it will likely be a difficult path to attempt to get endowment managers to take a serious look at changing practices. The implication is that they are not open or willing to face outside scrutiny, or perhaps they do not want their thoughts known in order to maintain a competitive edge over other endowments. Given their insular nature and their general disconnection from the Institute, it would assumedly take a significant change in leadership, perhaps at the board or presidential level, for the endowment to adjust focus to incorporate a more equitable approach that would benefit both the university and the community with which it is located.

Academically Based Community Service: As shown previously in the review of the Institute's global focus, there is a lack of local or commonwealth focused endeavors that are common to land grant universities, and there is likewise not a strong culture at MIT of community based service (with community meaning the community directly surrounding the Institute). Whereas Penn has built initiatives in the communities surrounding the campus over many decades, much of MIT's work is focused globally, with very little engagement with its immediate surroundings. While the Institute is limited in its academically based community service endeavors, there is still such service to be found.

The Community Innovators Lab, or CoLab, is one of the best examples. This organization, housed within the Department of Urban Studies and Planning at MIT, is "a center for planning and development… (that) facilitates the interchange of knowledge and resources between MIT and community organizations. CoLab engages students to be practitioners of this approach to community change and sustainability" (CoLab 2019). This mission falls in line with the typical mission of a land grant university, with knowledge interchange being a central tenant. However, the majority of the on-the-ground work of CoLab happens far from the Institute and Cambridge. Their work is spread around the globe, ranging from Central and South America to the Bronx.

I interviewed the Executive Director of CoLab, Dayna Cunningham, to learn more about CoLab's work and how it aligns with the Institute. Beyond her role directing CoLab, Cunningham also teaches a course within DUSP on participatory action research. This course teaches applied methods of engagement, transferring the tools and skillsets used within CoLab's professional work to students. This course is one way that the Institute bridges service and learning; student groups often work with community groups as a way to both learn and to be involved in community engagement. While CoLab does not often work directly on community engagement and relations issues in Cambridge, Cunningham is familiar with the roles of universities in community building. When discussing ways in which universities could become better partners with their surrounding communities and increase equity, she offered these suggestions:

- Use university resources to help drive the local economy.
- Move beyond PILOT (Payment in Lieu of Taxes).
- Foster concepts of "Open Campus," where the university and it's buildings, grounds, and facilities are open to the community.
- Build affordable senior housing on campus (which SUNY Purchase has done) (Sudo 2019)
- Invest in maker spaces, innovation centers, and coworking spaces.
- Use campus real estate for community benefits (hosting community events, meetings, etc).
- Invest in local public education.
- Provide funding for local schools.

Beyond general ideas for how MIT or other universities could better engage their surrounding community, Cunningham also discussed her experience in trying to push MIT towards embracing some of those ideas. She was involved in a plan to redevelop the Margaret Fuller House, a community services center in one of the few working class neighborhoods left in Cambridge. The organization has been a pillar within the community, though over time it's building had deteriorated and the organization was in need of funds. As noted by Cunningham:

> "It [the Fuller House] was needing cash, and the building is ancient. It is owned by MIT, by MIT Real Estate. It's big, it needs to be bigger. Actually, it is surrounded by a very big parking lot, and it's got a science center across the street. It's a really interesting sort of green space. It's also bordered by green space… It could be a cultural district for the old community of Cambridge. And we were trying to get the MIT Real Estate Company to either sell the building to a responsible developer, who would keep the ownership of the building in Margaret Fuller House's name, in the organization's hands, and then develop it, build it up using all the air rights and development rights around it. Create affordable housing, crease some businesses that would drive revenue for Margaret Fuller, and then redo the physical plant for Margaret Fuller. They [MIT] weren't interested at all. The guy who they sent was just this 'I'm a real estate guy – I make deals – Is this a deal, because I don't see a deal'. It was such a shame… it could've been a win win… If MIT wanted to, it could do things like that" (Cunningham 2019).

This discussion with Cunningham highlights how MIT approaches real estate. It is deal and profit driven. Instead of understanding potential social returns on its investments, it focuses strictly on turning a profit. While both parties involved in this discussion were MIT affiliated (Cunningham at CoLab and the real estate representative from MITIMCo), MITIMCo had the final say. Needless to say, MIT did not financially support any equity driven development on the site of the Fuller House.

Cunningham also spoke a great deal about the power of education and the possibility of universities to better support local education:

> "It could build (a school). Columbia University did this actually – it built a school. But it ended up being mainly for its own faculty. But you could build a school and give students in

the community access to this amazing set of resources. You could do partnerships for education. If you had a school on the campus for the community and people, just imagine what that would be" (Cunningham 2019).

It is clear that there is great potential for investment in education to have positive impact on surrounding communities. As was the case with the Penn Alexander School, the University of Pennsylvania-sponsored elementary school located adjacent to Penn's campus, such endeavors can have alternative consequences such as decreasing affordability when housing prices surrounding the school drastically increase. However, if done thoughtfully, with community input, ample partnerships, and a long-term vision for building in a manner that is equitable towards existing communities and residents, it seems that universities could in fact take on such projects.

Academically Based Community Service Through an Historical Lens: To learn more about MIT's engagement with community-focused work through a more historic lens, I spoke with Gary Hack, Professor Emeritus and former Department Chair of DUSP and the former Dean of the University of Pennsylvania's School of Design. While at MIT, Hack had interests in building service learning opportunities and increasing exposure of professional planning opportunities to students. He maintained a private practice outside of his teaching, and was interested in bringing lessons of practice into the department. Hack stated that:

> "it was important for a planning program to have people who are engaged in doing things. That is, they are practitioners as well as scholars. My long term view of this is that you wouldn't run a medical school without a hospital, and you shouldn't run a planning school without a clinical practice" (Hack 2019).

With this is mind, Hack felt there were opportunities to tap the resources of the university in ways that could be "used as educational devices to give students direct engagement in practice" (Hack 2019). A couple years before leaving MIT to go to Penn, Hack was approached by Krisda Arunvongse na Ayudhya, a former Architecture graduate from MIT and the Governor of Bangkok, who was badly in need of planning assistance, and who asked if representatives of DUSP could come to Bangkok to study a range of planning-related issues he was hoping to address while governor. Hack, along with colleagues and students, traveled to Bangkok multiple times and began

to tackle some of this work. The governor eventually asked Hack and MIT to prepare a new Metropolitan Plan, in cooperation with city planning staff in Bangkok. Hack pulled together five MIT students and recent graduates to work on this plan as consultants. Hack approached the Institute about taking on this work, and set about creating a contract between the Institute and the City of Bangkok. MIT's Office of Sponsored Research drafted a contract that Bangkok ultimately could not agree to, since Institute asked for a large sum of money upfront, any potential disputes to be settled in US Courts, and the ability to publish results after six months, which did not align with Bangkok's public process. Hack expressed that a simpler contract was needed, but the Institute refused. Ultimately, he financed the project expenses on his own and moved forward with the work without any affiliation with MIT. The Institute would only allow work to be done under the strict rules and oversight of the Office of Sponsored Research. Otherwise, all work needed to be done privately. After this difficult process of dealing with the inner politics of MIT, Hack stated "it seemed clear to me that there was something [new] needed to really have this kind of engagement" (Hack 2019).

During this time, Hack was also inspired by models of practice he observed in China, where faculty practiced through design and planning institutes affiliated with universities. Here, professors could engage in professional work, and students learning the trades and professions could gain valuable experience at the start of their careers. "It was a way taking knowledge of the university, trying it out, and getting things done and built and planned and giving students experience in the course of their studies" (Hack 2019).

Around this time, Hack was approached by the University of Pennsylvania about leaving MIT to become Dean of Penn Design. As part of the negotiation, he explicitly asked to create a practice institute, inspired by his observations in China and his disappointment with MIT's intractability in allowing that type of work. Upon accepting the deanship and moving to Penn, Penn Praxis was formed, a 501c(3) non-profit with a board chaired by the Dean. The rest of the board was comprised of representatives from the central administration, Penn Design alumni, and faculty. PennPraxis has completed hundreds of projects over 15 years, and provided both students and faculty with opportunities to practice and bring the knowledge of the University's faculty and students directly to practice. By having a venue for faculty to practice, it allows them to use their professional skills without having the stress of setting up their own outside practice, which detracts

from their efforts at the University. The work of PennPraxis has been local, national, and international, at the discretion of the professors working on the project. Such an organization has the potential to work on projects in the local community, including on engagement and affordable housing, should those projects align with the interests of faculty and students. In many ways PennPraxis is a vehicle for the skills and talents of faculty to be applied to real world planning and design, with the additional benefit of engaging students in practice-based learning. This is a compelling model. Since Hack left MIT (he has since retired from Penn), MIT has relaxed some of its restrictions, and there are organizations within the School of Architecture and Planning such as the Leventhal Center for Advanced Urbanism and the Senseable City Lab that do engage in work outside the typical academic realm. However, these organizations are still strongly rooted in academia, with less of a focus on buildable products.

Ch. 04 - Synthesis and Lessons:

Introduction: In both the cases of University of Pennsylvania and Massachusetts Institute of Technology, the institution plays an outsized role in the surrounding communities and the cities they are located in. They are major landholders, employers, and drivers of the economy. They are located locally while acting globally. They bring in students and faculty from around the world while trying to convince those people to build professional and personal roots at their institution and in their city. While Penn and MIT differ in some of the nuances in how they operate and in some of the work they pursue, there are striking similarities between the two.

In conducting these two case studies, one of the primary similarities that came to light was a pervasive growth mindset. There seems to be a near constant quest for growth: growing the physical campus through acquiring new land; building new structures; expanding academic offerings and bringing in new faculty; growing the endowment and expanding financial assets. Alongside this growth mentality is a penchant for competition. As research funds are often limited, there is deep competition to bring in federal research grants and other outside funding. There is competition to attract the best and brightest students and faculty and to lure them away from other schools. There is competition to have the largest endowment or the endowment with the most significant growth. This drive towards growth and competition makes for difficult relationships with the surrounding communities, since it places great stress on those areas as campuses shift and grow. In trying to understand how these universities work within the realms of development, housing, and open space, many smaller yet still significant issues were identified. Below is a review of issues common between Penn and MIT.

Local vs. Global Perspective: This is an issue common to many universities, especially those like MIT and Penn that attract people from around the world and work on issues of global significance. Both of these schools have a strong global focus, which can ignore the concerns of their respective cities. Faculty and students may be applying their talents and resources to communities across the world when a neighborhood right down the street could benefit from the same type of work. This can figuratively wall off the university to from surrounding city. When a university focuses on cities other than its own, a disconnect takes place between those at the university and those residing around the university. While it is vital for universities to tackle global challenges and to pursue

scholarship across scales, disciplines, and geographies, it is likewise important for some of its efforts and resources to go towards its home city. This goes a long way in building a positive and fruitful relationship between the university and the surrounding communities.

Insular Nature of Endowments: As illustrated by my inability to get anybody from the endowments at either university to talk with me about their operations, it is safe to say that university endowments are a highly insular type of organization. Very little is published on their strategies, areas of investment, or guiding principals or goals, making it difficult for outsiders to understand them. When there is minimal understanding by people outside of the organization, it makes it difficult to pursue or promote change. It could be easier to tie in socially minded investments if those wishing to promote them knew how endowments operate. In order for that to happen, endowments must become more transparent and open about their mission and strategy.

Business Mindset: While this thesis was not successful in gaining a view into the inner workings of university endowments, from what I was able to discern, it seemed that endowments and the surrounding academic administrative structures are managed like a business. The growth mindset permeates these organizations, leading them to maximize financial returns without worrying whether their investments and their actions align with the university's academic and social missions. As highly influential entities, both locally and globally, universities have an ability to make a statement in how they invest their resources. All universities are founded upon some base of ideals or mission – it seems reasonable to expect that such a mission should permeate all aspects of the institution.

This business mindset extends to the organizational structures of the universities. MITIMCo at MIT and FRES at Penn act similarly to a private, for-profit development organization. If one stripped away the institutional connection, they essentially operate like any other urban real estate developer. This lens is certainly beneficial when attempting to maximize profit and see positive financial returns on development projects. However, other modes of thinking (equitable development, planning, etc) that are present elsewhere within the universities, such as CoLab or the Netter Center, do not appear to always have a seat at the table alongside these institutional development arms and the administration when vital campus development decisions are made.

Self-Benefit and Promotion: Even when universities undertake projects that outwardly are community focused, it is clear that often they are acting in their own interests. Much of the West Philadelphia Initiatives was undertaken to turn West Philadelphia into an environment that would benefit and enrich Penn, though outwardly it was marketed as an altruistic endeavor by Penn for the West Philadelphia community. This "enlightened self interest," where actions taken by the university are in their own interest while having a more enlightened and community focused face, is common to both schools.

"Churn": Given the populations that are drawn to research universities – students, visiting researchers and scholars, post-doctoral fellows, faculty – there is a constant stream of people coming and going. Many people are in Philadephia or Cambridge for a short time. Fellowships may be a couple years or as little as several months, while students may stay for a couple years up to six or eight. Faculty may be residents for the long term, or they may stay just long enough to be poached by a competitor university. This is all to say that many people associated with research universities are transient individuals who ultimately stay for a time. These types of people often have means that are greater than the typical resident of the neighborhoods adjacent to these campuses. Faculty and researchers, not to mention employees of the technology and biotech companies surrounding the universities, make incomes that allow for good access to housing, while students often have access to student loans that can allow them to rent housing that otherwise might be beyond their budget. Given the high turnover or "churn" found in these areas, landlords can raise rents whenever one transient resident leaves and another arrives, ultimately leading to significant increases in housing costs over time.

Siloed Nature of Administrative Entities: Different departments and administrative organizations within universities tend to be very insular, even when they deal with similar topics (for example, PennPraxis and FRES). This may be related to the competitive nature of universities mentioned earlier. However, these siloes hinder communication and collaboration that ultimately would be to the benefit of the university. Universities contain enormous amounts of talent, intellect, and resources. However, students, faculty, or employees may not be aware of others in outside departments that have complementary skillsets or resources. Especially when dealing with issues of community engagement and university/community relationships, these siloes stymy relationship building and progress. With better communication amongst departments and between the university

and community groups, much more could be done to take on vital issues such as housing affordability.

What Penn and MIT are Doing Well: While many of the discoveries described above can be viewed in a negative light, there were also positive elements within both institutions. On some level, both institutions seem very aware of the impacts they make on their surrounding communities, though responses have varied. In many cases, the positive aspects of each institution could be scaled and/or aligned with other aspects/systems to achieve a greater impact. Below are some of the positives that were highlighted during the two case studies:

Academically Based Community Service: Especially at Penn, academically based community service is a strong aspect of the university and in how it brands itself. Through the Netter Center and other initiatives throughout the university, a strong emphasis is placed on research and academic pursuits that have benefits within the surrounding community. In diverse academic departments, students are able to engage in community-focused work in West Philadelphia, bringing their developing skillsets to organizations and community groups that benefit from their engagement with the university and with the students. This model of learning also has great benefit to the university. From the perspective of public relations, the university is able to tout its community mindedness and connections, which differentiates it from many other universities. Also, this model exposes students to community work and public service, an exposure that does not necessarily come out of a typical academic setting. This exposure has the potential to inspire students towards service and empathy as they eventually leave the university and move into the professional world.

MIT likewise has a strong example of academically based community service through CoLab, though often the work undertaken by the organization is focused nationally or internationally and not within the Cambridge/Boston area. At CoLab, students work alongside faculty, professionals, and community groups to apply the skills they have learned within the Department of Urban Studies and Planning to real-world problems, oftentimes related to issues of economic democracy, coalition building, and community engagement.

Professional Learning Opportunities: There is also strength in providing professional opportunities to students within the university setting. Tying pedagogy and skill application together

is a major strength within an academic setting, and there is great potential to use such a program to work on issues relating to housing, affordability, and public space. At Penn, for instance, PennPraxis acts as a way for faculty and students to apply their skills and talents to real-world projects. The topics are tied to the interest of faculty and students, which could include affordable housing and equitable development. An organization like Penn Praxis gives students real-world experience in planning, engagement, and design instead of merely talking about it within a classroom setting. There are opportunities to gain valuable and marketable skillsets that students can use as they move beyond the university into professional careers. For faculty, PennPraxis allows them to maintain a foot in the world of practice without having the stress of starting, funding, and operating their own practice. Such a model is beneficial for both their professional and academic practice; each informs and strengthens the other.

Investing in Education: Public education is a vital service within cities, and improving access to quality education and resources is a powerful way to revitalize neighborhoods. Educational investment was a primary tenant of Penn's West Philadelphia Initiatives. Penn invested significant resources, including real estate, money, and staff, faculty, and student resources to Penn Alexander School, a partnership between Penn and the Philadelphia Public School System. This partnership created a public school that is high performing and highly competitive to enter. While Penn's involvement in this single school vastly improved the quality of education in this one neighborhood, it did not address inequity and lack of resources on a larger system-wide scale, and in many ways it transformed the neighborhood it is located in in a mixed way. While the school significantly improved education, it vastly drove up property values. Paul Sehnert of FRES compared houses across the street from one another, one zoned for Penn Alexander and one zoned for a different public school. The house zoned for Penn Alexander is valued at $50,000 - $80,000 higher than the adjacent home (Sehnert 2019).

This increase in property values caused through educational improvements had the effect of pushing out existing West Philadelphia residents who could not afford rising rents. As values increased, the neighborhood increasingly became comprised of higher income people, such as Penn faculty. This led to Penn Alexander largely being a neighborhood school for the children of Penn affiliates, which negated the community focus Penn touted when undertaking the project. Many local residents would argue that this was Penn's plan all along, and that their focus on community education was

merely a cover to make the area more attractive for employees and faculty. When Penn Alexander first opened, 57% of the students were African American. As of 2018, that number has dropped to 21%, while the number of students classified as "economically disadvantaged" has dropped from 51% to 42% from 2009 to 2018. (Melamid 2018) This shows how what is thought of as a universally positive investment (education) can ultimately further increase inequity. A 36% drop in African American students highlights how the addition of the Penn Alexander School quickly shifted demographics and who was able to live in this neighborhood; this neighborhood residency ultimately controls who is able to access this quality public education.

There is great power in educational investment, though it holds the potential to have unintended consequences and shift neighborhood dynamics. Even when attempting to invest in local communities, such efforts can in fact harm those communities. Therefore, it is important to examine second and third order impacts to ensure that these investments do in fact have benefit to the intended recipients. It is also important to look at the context of the entire system: public education is a city-wide endeavor, so there are limitations to merely investsing in one neighborhood school. If a university aims to truly invest in a community/city and their educational system, a single school will not suffice.

Student Housing: University students exert a significant force on urban housing markets. Between undergraduate and graduate programs, they are a sizable population, and they all require housing. Typically, both MIT and Penn provide a greater volume of housing for undergraduate populations, though undergrads have the option of living off campus. Both universities also provide some opportunity for graduate students to reside on campus, though those opportunities are limited. In recent years, both universities have made efforts to house more graduate students on campus. In many ways, this is a benefit to both the universities and their cities. By offering additional university-sponsored housing, pressure is taken off of the local, private housing market, allowing for greater availability of housing for residents unaffiliated with the university. This decreases housing competition, and can slow the rise of housing prices. Given that this lessens the level of "churn" and turnover amongst residents in the private housing market, this also helps to stabilize and slow rising costs.

It can also be a benefit for universities. Given the competitive nature of universities, especially premier research universities such as MIT and Penn, there is significant emphasis placed on attracting the best and brightest students. Beyond providing excellent academic programs, schools also wish to offer amenities that will attract students. By providing quality, close-to-campus housing in a way that is easy for students to enroll, universities can stand out. This may be especially attractive to new students who are unfamiliar with the local housing market. Being able to secure housing through the university would save students significant time and hassle in dealing with the highly competitive, fast moving housing ecosystem that defines both Cambridge and Philadelphia.

Community Engagement: Community engagement is imperative to furthering campus development and expansion projects. In the aftermath of urban renewal when universities were actively complicit with projects that caused mass displacement of existing residents, universities are now more often cautious when undertaking projects that would cause displacement. Penn, in particular, has been active through the Netter Center for Community Partnerships. They conduct community engagement and have invested heavily in building long-term relationships with community groups throughout West Philadelphia. This has led to successful partnerships in many instances and has produced benefit to both West Philadelphia and Penn. Community engagement often buys Penn greater credit in the community, making it easier for Penn to undertake development when the community (and especially community leaders) is involved. However, as is often the case with Penn's relationship with West Philadelphia, the University's intentions are often questioned. Many in the community feel that Penn undertakes community engagement to check off the engagement box, and that Penn is more interested in the positive perceptions rather than in actually undertaking deep and meaningful engagement that results in positive outcomes for the local community. In talking with people on both sides of the debate, it seems the reality might fall somewhere in the middle. Those at the Netter Center seem driven by a passion for earnest community improvement and democratic engagement, though the organization is often used by the higher administrative forces in ways that community members may feel uncomfortable with, such as using the Netter Center as a promoter of a project that is unpopular within the community. One such project was the redevelopment of commercial properties during the West Philadelphia Initiatives; neighborhood activists felt Penn and the Netter Center were pushing out local businesses to usher in new tenants, dubbing the efforts "McPenntrification," as Penn wished to remove a McDonalds that was popular among neighborhood residents (Ehlenz 2016).

University Subsidies for Faculty and Staff: Penn's investment in West Philadelphia through subsidizing loans and home improvement costs for faculty and staff was highly successful in many ways. This program began when West Philadelphia was a very different place than the West Philadephia of today. Faculty often lived in distant suburbs and commuted to campus, as the neighborhoods around the school were considered to be dangerous and undesirable to reside in. To try and attract them back to West Philadelphia, the university provided forgivable loans and funds to cover closing costs and home repairs if the faculty and staff lived within a certain geographic boundary. Over time, this program helped over a thousand faculty and staff and their families to settle in West Philadelphia. There were many benefits from this program. People could walk to work, lessening congestion from automobile commuting. When a house or two on a block became once again inhabited and/or renovated, more people would consider moving back, since the quality of housing was improving. More residents, especially those of higher incomes, meant more business for local businesses and restaurants. Alongside these improvements, though, there were also negative impacts. More Penn-affiliated residents meant more residents of higher incomes, which over time drove up rents and property values. This has led to displacement, as lower-income residents are not able to afford the increased costs. Like many endeavors, there are mixed results, though ultimately if done in a careful and well planned way, such a program could have positive neighborhood impacts and help bridge the divide between universities and the local community.

Power and Leadership: At both universities, it is clear that leadership plays a pivotal role in setting the direction of the institution. The president, executive vice presidents, board members, and leadership at the endowments have significant power to make decisions that have immense impact on the university, the campus, and surrounding city. The West Philadelphia Initiatives, an undertaking that transformed the campus and the urban landscape surrounding Penn, began as a concept by the newly inaugurated president, Judith Rodin. After calls for action following a highly publicized series of crimes near campus, Rodin drafted a vision, took university leaders on a multi-day retreat to further refine the vision, and secured $80 million to begin the projects that would eventually become WPI (Hack 2019). None of those projects and none of the funding would have come to fruition if it hadn't been for the decisive action of senior administrators. In talking with various academic employees, ranging from department chairs to professors to organization directors to facilities and real estate representatives, it is clear that leadership and authority is important to

moving work forward. Universities are often highly political, so it is necessary to have leaders who are adept at navigating the complex political environments that otherwise can stall or shut down projects. It is also vital to have leaders who can both effectively manage and effectively craft a vision. Ira Harkavy cites the last several Penn presidencies as being instrumental to the success of the Netter Center, as they have all valued and supported the work undertaken by Harkavy and his colleagues. Without support from the president's office, the community-focused work of the Netter Center could easily lose funding and administrative support.

Ultimately, leadership and power can drive the university in many directions, having positive or negative impacts on the school and the surrounding city. There is great potential in harnessing this power to work towards stronger university-community bonds and more affordable housing development in the communities surrounding the university. However, the president, or other senior officials, must be on board. At Penn, the Board of Trustees holds great power, while at MIT the Corporation is the central governing board. These two boards have the ability to change the direction of university practice and policy. If significant work is to be done in this realm, it will be imperative to have a leadership structure that will support and move forward work in the affordable housing and equitable development realm.

Harnessing the power of real estate and development: Both MIT and Penn are adept at using their property and real estate resources as a way to increase their income and their endowment. In many ways, they operate like a business and a property developer, brokering deals that will bring financial reward to the schools. However, they have gone about this in different ways. In short, it can be distilled down by each school's approach to risk management. MIT appears more willing to take high risk, high reward undertakings, while Penn is more cautious in the developments and transactions it pursues.

The risk MIT takes on is largely due to the fact that it acts as the primary developer of real estate projects instead of partnering with outside developers who would take on more risk. MITIMCo has led the redevelopment of Kendall Square, developing millions of square feet of office and lab space. As the owner and developer, MITIMCo (and the university at large) stand to reap significant profit from these investments, as biotechnology and pharmaceutical companies pay top dollar to locate in this area (Lincoln Property Company 2019). MITIMCo approached this development largely

through a lens of profit maximization, and is focused primarily on developing commercial lab and office space instead of housing or neighborhood amenities.

While Penn likewise has used real estate development as a means of increasing revenues, it has done so in a more cautious manner. It is still highly active in the realm of real estate in West Philadlephia, though largely through a partnership model. This allows Penn to rely on outside developers with expertise in the local real estate market to take on a greater portion of the risk associated with development. Penn receives a lower income than it would had it acted as the primary developer, but it is insulated from loss should something go wrong during the process and the development not turn a profit. Still, given the types of development Penn often pursues (luxury market rate residences, office space, tech space), the university earns well on its real estate investments and partnerships. Often these partnerships involve a long-term land lease from Penn to the outside developer, so at the expiration of that lease Penn will gain ownership and control of the asset. Penn stands to gain tremendously when these leases eventually expire, showing that Penn's Facilities and Real Estate branch is planning in the long term when brokering such deals.

While both universities are highly skilled within the urban development world, their practices and mindsets are often lacking a concern for community building and affordable housing. Both pursue profit and self-benefit first and foremost, often leaving out the surrounding community. This is an area where significant improvements could be made to integrate a more community-minded approach to university real estate investment.

Making Campus Spaces a Public Amenity: While the campuses of MIT and Penn are drastically different in their layout and aesthetic, both have created landscapes that integrate with the surrounding communities. Many historical universities have taken a walled approach, where a physical wall structure demarcates the boundary between city and campus. Penn and MIT have not taken that approach in recent years. Rather, they have porous boundaries with Philadelphia and Cambridge, respectively. Pedestrian, bicycle, and vehicular traffic pass from city to school and back, and both schools feel very integrated from an urban design perspective. Each has a campus core that is clearly separate from the city, though there is not a hard boundary, and traffic flows freely between the campus core and the city. In campus expansion and renovation projects, both universities have prioritized physical connections to the city, thinking of campus spaces as areas

both for the school and for the community (Popp 2011). Penn Park is a strong example of that mindset. In renovating a former Postal Service site into a campus amenity that would provide open space and athletic facilities to Penn students, the school decided to make this a park open to the public, where community members could freely travel to and utilize the facilities. This is a needed approach, especially as cities further densify and there is less public park space available. Universities can use their property to benefit not only themselves but the wider community in a way that can provide open space, amenities, recreation opportunities, natural habitat, and green infrastructure.

Recommendations:

MIT and the University of Pennsylvania have had both positive and negative impacts in their university/city relationships. Both schools, at their best, live up to the aspirations of being an anchor institution in their community and city. They lend a prestigious status to Cambridge and West Philadelphia while providing jobs, amenities, and resources. However, these universities also have contributed to strained community relationships, rising housing costs, and deeper inequality within their cities. Despite these negatives, there are ways to help amend the situation. Below are some actions and concepts that could help urban universities such as MIT and Penn build stronger bonds with the communities surrounding their campuses, create better access to affordable housing, and provide amenities that contribute to both the university and community.

Promote Affordable Housing: Housing and affordability should be a main focus of university-sponsored mixed use developments. It it is in the best interest of universities to promote and contribute to cities where its students, faculty, and staff can afford to live, and housing affordability is key. Both cities face rising housing costs, and both schools have the potential to contribute to greater affordability. They could utilize property they own for projects with an affordable housing component, or they could directly invest in affordable housing. In both Philadelphia and Cambridge, there are a range of capable non-profits and community development corporations that have deep expertise in affordable housing development. The universities could partner with those organizations, using the expertise of both to work towards projects that promote affordability and provide benefit to the university and the city. There are ample state and federal tax credits and subsidies that can be utilized for affordable housing. CDCs are well versed in securing these funds;

By partnering with CDCs, it would be much easier for universities to access those funding sources. With the benefit of such tax credits and subsidies, it is very possible for investments in affordable housing to provide a return on investment. I had hoped to prove that it is feasible to utilize endowment funds for this purpose. However, since I was unable to receive any information from either endowment, I am unable to do little more than speculate on how such an investment structure would function and perform. Despite this, I think there is great potential in this model of investment. Private investors have developed models that provide returns on affordable housing development (Pyati 2016). Universities could likewise invest in affordable housing in ways that provide a return on their investment.

Expand Student Housing: Much like the benefits of mixed use development, the need for constructing additional student housing is an obvious way to help promote affordability. Students exert significant pressure on local real estate markets and also occupy units in the private market that otherwise could be used for others, such as employees and city residents. Housing more students on campus would provide additional housing in the private housing market. By providing convenient, comfortable, and affordable housing options for students on campus (or in projects off campus that are developed by the university), more students could be convinced to live on campus. This is especially convenient for students searching for housing from hundreds or thousands of miles away. Ultimately, this is a conventional though effective way to increase the housing stock for students while decreasing pressure on the private market. Well designed, comfortable student housing could also be a major draw for students, as it can provide competitive amenities in a setting close to campus. Given the competitive nature of universities, this could be a major attraction for students deciding on where to pursue studies.

One area where this is particularly relevant is graduate student housing. Graduate students are typically more likely to live off campus and find housing through the private market. As demonstrated in the MIT case study, many graduate students who work in research labs also need to live in close proximity to campus in their labs, as the nature of the work demands variable hours and lots of time spent at the lab. Universities could build additional housing that is targeted towards graduate students, with amenities that would be attractive to couples and young families. MIT has agreed to produce more graduate student units, though this is largely to offset graduate housing they tore down in the development of Kendall Square.

Move Beyond Student Housing: While student housing, especially graduate student housing, is an effective way to increase housing access and promote affordability, universities should investigate the possibility of adding housing for other groups, such as faculty, staff, and visiting researchers. Some universities have even invested in senior housing, utilizing their resources towards housing a group that is often left out of the private housing marketplace (Sudo 2019). One possibility is to develop programs that mix housing types, for instance incorporating units for students, faculty, seniors, and low income residents. Federal and state funds are available for affordable and supportive housing development (such as senior housing or housing for special needs residents), which would help defray development costs. Beyond bringing in money, this model would help create diverse communities where people of varied means, backgrounds, professions, and ages could reside within the same residential community.

Promote Mixed Use Development: Mixing uses within development, such as affordable residential use alongside academic, commercial office, tech, or lab space, could help offset the smaller profit associated with affordable housing by subsidizing with income earned by more valuable building uses, such as commercial lab space. While this is a very simple strategy, it has great potential to create more mixed, vibrant areas. Projects currently developed by or in partnership with Penn and MIT often promote singular uses. Many of Penn's investments focused on strictly market rate residential, while MIT's development in Kendall Square initially focused on lab and office space, leaving minimal room for further housing development. Ultimately, Kendall Square did develop more housing, though only after backlash from surrounding neighborhoods and the MIT community. Both Penn and MIT seemed to be pursuing whatever development typology that will net them the greatest profit. While this helps the university financially, it does not foster more diverse and livable communities with greater housing. Mixed uses, where there are opportunities to live, work, shop, recreate, eat, and interact with others, go much further in creating pleasant and vibrant places. Future development by Penn and MIT should strive for this. Such a mix helps to better integrate the school and the city, as these developments may contain a mix of uses that are both academic and community focused. In this way, the development acts as a type of transition or threshold between the university and the city.

Promote Shared Public Spaces: When universities are embedded within cities, it is important for their physical campus and building stock to feel integrated with the surrounding urban environment. Both Penn and MIT are highly integrated as opposed to walled off, with public streets, transit, and pedestrian and bike paths crossing through campus. Since the campuses are publically integrated, campus development should allow for public use and enjoyment. Places such as Penn Park allow for active and passive uses by community members who live in nearby housing. Such usage provides a strong community benefit through the university – this is a great way to build relationships between the university and local communities.

Retain and Promote Existing Local Businesses: As universities expand, neighborhoods change, and prices rise, it is not uncommon for the types of retail, commercial spaces, and restaurants to change. Less common are the local corner stores and more common are the restaurants, theaters, and shops that are attractive to students and faculty. This has caused many places that were formerly neighborhood staples to close or move (Etienne 2012). This is highly detrimental to the communities that have long lived in these neighborhoods – these places were often anchors within the neighborhood, and of deep cultural importance. When universities undertake mixed use housing development projects, they should do their best to preserve, protect, and enhance these neighborhood staples instead of contributing to their demise. While there may not be financial gain in supporting a small corner store, such support goes a long way in maintaining a healthy relationship with the surrounding communities.

Further Develop Academically Based Community Service: Both MIT and Penn have a track record of academically based community service – Penn at the local level and MIT at the global. This is a record they should continue, and other universities should look to copy. It is a way in which students can learn about the importance of public service and community engagement, while the results can be highly beneficial for surrounding communities. As universities become further involved in housing work and urban development, service learning should be carefully integrated. This integration bridges the gap of the academic mission of the university with their development work, allowing the operations of the university to become an opportunity for teaching. This also builds bonds between the school and the community, as much of this service learning work in embedded within local community organizations and groups.

Build University/Community Partnerships: Partnerships are integral to creating stronger university/community bonds and to building university-sponsored affordable housing. There are tremendous knowledge sets and resources scattered throughout cities and universities, and making headway on constructing a more equitable and affordable city will require strategic partnerships between diverse organizations and people. Organizations such as FRES or MITIMCo could partner with community organizations and community development corporations to strategize on ways that working together could be mutually beneficial, and together they could develop implementable projects. Other organizations, like the Netter Center for Community Partnerships and CoLab, as well as individual faculty who are already engaged in community-focused work, could utilize existing relationships and facilitate new partnerships that work towards stronger university/community partnerships and ultimately towards greater access to affordable housing. Though difficult, linking disparate groups who have complementary interests or resources could have significant and positive impacts.

Utilize the Talent and Resources of Faculty and Students: Places like Penn and MIT employ world-renowned scholars who work, teach, and research within their various schools and departments. Both institutions hold renowned planning and design schools, and there is deep expertise in real estate, housing, education, engagement, policy, and many other fields that are central to urban challenges. Using that expertise for issues of housing, equitable design, and public space seems like a prime opportunity for universities to better engage their surrounding neighbors and communities. Penn's example of PennPraxis shows that there is a way in which faculty can become engaged with professional work that moves beyond academia into buildable, implementable projects. Such work could focus on affordable housing/public space projects in surrounding communities while also crafting long-term relationships with community leaders and organizations. Faculty could also use their time (or the university could include a service portion of their contract) to work with community organizations on equitable development/housing/public space projects. This would be a great way to further build a good working relationship between the school and the community.

Including students in this type of work would also be highly beneficial. As Penn has demonstrated through its approach to community service, there is great potential in aligning students with community-driven projects. It is a way to "hook" students at an often young and impressionable age

with community-driven work. In a strictly academic setting, students may have no idea how theories and practices impact the built and human environment. By exposing students to the people and places in the areas around the university, the students can learn about the realities of those practices, and how a neighborhood plan, for instance, is implemented on the ground. Students can learn the social, political, and economic realities of such work, which hopefully inspires them towards service and imparts them with a lens of equity as they move on towards their careers.

Create Partnerships with Other Universities: Housing affordability and access to public space are not university-specific issues, or even neighborhood or city issues. The scale is much larger. In both Philadelphia and Cambridge, these issues permeate out to surrounding neighborhoods, cities, and counties. It is important to look at these issues at a regional scale, and when crafting solutions such a scale should be considered.

Both of these cities (and regions) contain a high volume of universities that are also dealing with housing affordability concerns. To address these concerns at a larger scale and to lessen the burden on individual schools, a partnership between area schools could be launched. This could tap the human and financial resources of a broader range of institutions, ultimately leading to a wider base of talents, land resources, student and faculty resources, and financial resources. This wider consortium of schools, through their pooled resources, could invest in affordable housing at a larger scale that will have a wider impact throughout the region.

Utilize Strong Leadership: There is significant power found within the upper levels of university administration, especially with the president and with executive vice presidents. The West Philadelphia Initiatives would not have been launched without the leadership of Judith Rodin, and the Netter Center would have accomplished far fewer projects (or may have never even come to fruition) without the leadership and coalition-building of Ira Harkavy. At MIT, Kendall Square likewise would have developed in a different fashion had President Susan Hockfield not provided the vision and leadership. In university settings, leadership exerts great power in setting the direction of the university and deciding what projects move forward. If serious changes are to be made in how universities engage with the surrounding city and how they approach issues of development, housing, and public space, there will need to be supportive leadership that can craft a vision and move it towards implementation. The ideas explored within this thesis are both bold and expensive

– it would be a hard sell to the wider university to make such a drastic adjustment to how the university operates, develops, and invests. This is especially true regarding investment, and by extension the endowment. As I discovered through this research, university endowments are very insular and separated from the larger university. Since neither endowment would agree to an interview I cannot speak with certainty on the topic, though it seems likely that endowment investors would be averse to shifting from standard investment procedures. They likely would not be interested in investing in avenues that provide a lower return on investment, as affordable housing would. Since this would be a difficult change, bold leadership is especially needed. Vision and direction from the president or the board of visitors would likely be needed for an endowment to change their investment procedures. A clear set of guiding principles for such investments would help, tying the values of community building through investment to endowment operating procedures.

Make Transparent and Adjust the Endowment Investment Structure: Initially, much of this thesis was built around the idea that university endowment funds could be partially realigned to invest in socially-minded, local projects that would provide social benefits to the community while also providing a financial return on investment for the endowment. Unfortunately, I was unable to test that hypothesis, as I could not access any information about the endowments, aside from a couple of paragraphs outlining broad investment areas in annual reports.

A very small group of people in the endowment and administration administer and invest billions of dollars on behalf of the broader university, for the benefit of the university. The broader university should be able to have input as to what "benefit" is in this context. Historically, benefit has meant receiving as high a return as possible to provide funds for the university in the long term. People affiliated with universities deserve to know in greater depth how their university/employer manages its funds and investments. Perhaps a greater number of people within the university community would take the position that investments should do more than just provide high returns, but instead provide community benefit as well. This would be much more likely should the endowments be more transparent. Transparency would go a long way in moving the university community towards demanding new approaches to investing and community building, new approaches that should include affordable housing and equitable development as frameworks.

Zero or Low Interest Loans: Financing is a major hurdle that developers of affordable housing often face. While there are tax credits and federal and state funds available to help offset the costs of developing affordable housing, there is still a major funding gap that developers must fill through various finance mechanisms. Developers must take out loans to cover design, development, and construction costs. If universities were interested in assisting or partnering with local developers on affordable housing projects, they could be of great assistance if they served as a lender. Developers often receive loans from either banks or governmental lenders (MASS Housing, in the case of Massachusetts), though both entities charge moderate interest on these transactions. Over time, these loans can add a significant sum to the development, so low or zero interest loans would be a major boon to financing affordable housing development. There is precedent for such a program; Harvard created the 20/20/2000 program, which provided $20 million in loans over 20 years at 2% interest for the development and sustaining of affordable housing in Cambridge and Boston. (Leite 2019)

This type of undertaking would be a low risk for universities. With a low interest loan they would make a small profit and recoup the money invested. While there is risk in lending, this risk could be lowered by partnering with a developer who has a track record of success in affordable housing. Such a program could be funded through the endowment, using unrestricted funds or future donations earmarked for this type of investment. As was the case with Harvard's 20/20/2000 initiative, such a program would create affordable housing in addition to positive public relations for the university.

Create a Partnership Organization Between Universities and CDCs: To foster university-backed development work within the affordable housing sphere, there is great potential in creating an organization that bridges the gap between universities and community organizations/development groups. PennPraxis is a strong model of what this could look like. It is a 501c(3) nonprofit housed within the university that takes on projects that align with the interests of faculty and students. A similar organization, with a board comprised of university members, community members, and professionals within the affordable housing world, could focus specifically on developing projects that would increase access to affordable housing in university cities. This organization could undertake a wide range of projects and be involved in the full length of housing development. Faculty and students could lead community engagement efforts to ensure

that development is undertaken in a community-focused way. Planning and design studios associated with this organization and the university could be used to develop concepts and ideas, which both serve as an educational tool and push the boundaries of design beyond what one might find in a typical design firm. University administration and endowment officials could utilize and invest funds and resources of the university, which representatives of local Community Development Corporations could lead the effort in procuring tax credits and public subsidies that aid in the construction of affordable housing. Ultimately, such an organization would bring together disparate stakeholders to work together towards affordable, community-minded development that meets the needs of both the community and the university.

Ch. 05 – Framework and Application:

Introduction: The ideas presented in the previous chapter are largely implementation driven with a clear goal of providing additional built affordable housing in the neighborhoods surrounding Penn and MIT. However, these ideas are largely conceptual, and in order to be implemented significant strategizing and groundwork would need to be done to move these ideas from concept to reality. Within this chapter, I will outline how each university could go about implementing these ideas. The University of Pennsylvania and MIT are very different schools – geographically, programmatically, financially, politically, and contextually. Historically, they have interacted with their surrounding cities in different ways, and they have very different track records and approaches to development and community engagement. As such, it is important to chart out distinct paths for the two universities. These two frameworks will identify processes, departments, individuals, partnerships, and strategies that the universities can undertake in order to build stronger bonds with their surrounding communities and work towards greater access to affordable housing.

To illustrate what those processes and principles might look like in built form, they were applied to a site in Cambridgeport, a neighborhood adjacent to MIT in Cambridge. This site design proposal shows how MIT could use this thesis's recommendations in future development projects in a manner that benefits both the university and the surrounding community. This proposal incorporates the resources of MIT, builds commercial space that provides revenue for the university, provides flexible spaces for the university itself to utilize, creates neighborhood-focused streetscapes and park spaces, and adds a significant volume of affordable housing to the city. This site application follows the specific recommendations from Chapter 04, which will be discussed following the Site Overview and Site Design.

University of Pennsylvania Framework: Penn already contains significant infrastructure that could contribute toward building affordable housing and community amenities. The Netter Center has deep community relationships, PennPraxis has a platform to apply faculty and student expertise toward built work, and FRES has expertise in development and real estate management. These alone could go far in achieving the goal of affordable housing construction. However, with wider organizing and consensus building a more robust platform could take shape. This framework

proposes a timeline for achieving changes in affordable housing construction and university/community relationships.

Year 01:

- Convene a university working group bringing together representatives of various Penn entities: Penn Design, Penn Praxis, the Netter Center, The Wharton School, The School of Education, the Law School, central administration, FRES, etc. Representatives of each entity/department that are interested in housing and community issues would serve as their representative. Together, they could discuss what each department is doing/is interested in doing to address housing affordability and community engagement. Through this working group, they could see where interests align or overlap. Over the course of the year, they should work toward a draft of comprehensive goals for the University in relation to housing and community relations.

- Within Penn Design, a series of studios/courses/practica should be created that deal with housing, engagement, and planning within West Philadelphia. These courses could draw from planning, landscape architecture, and architecture, bringing the academic disciplines together to work on locally-relevant affordable housing development projects. At the conclusion of these courses, the results should be presented to Penn's Board of Visitors and to the working group described previously.

- Also within Penn Design, funds should be made available (from the wider university or from the Netter Center) to conduct research and hire student research assistants to research topics related to affordable housing in West Philadelphia. These projects should be under the direction of Penn Design Faculty with expertise in the area. This research could be done in conjunction with the Netter Center.

- Community organizing and student activism should begin at a grassroots level. Students should join alongside community groups to develop platforms to promote additional student housing and stronger community relationships.

Year 02:

- Continue coursework within Penn Design.

- Using the results of the working group and Penn Design/Netter Center efforts, begin process of creating a Penn/West Philadelphia comprehensive affordable housing development plan.
- To conduct further work for the above plan, FRES and the Netter Center should create two community focused positions (Community Liaisons) that serve as a bridge between Penn and the community. These people should organize meetings and activities around West Philadelphia and the campus to gain wider input on housing, development, and community relations issues.

Year 03:

- Penn Design students and faculty present to the Board of Visitors.
- The comprehensive affordable housing development plan is presented to the Board of Visitors.
- Community Liaisons continue engagement and outreach work, and also present to the Board of Visitors.
- The Board of Visitors, after seeing the increasing need for affordable housing, mandates to the central administration that affordable housing and student housing be central tenants of Penn's development work in West Philadelphia.
- The central administration tasks FRES with developing a student housing action plan alongside development guidelines for future real estate development that mandate affordable housing as a component of all new development

Year 04:

- FRES releases the student housing action plan, which highlights development opportunities that would work towards housing the majority of students in Penn-developed housing.
- FRES releases new real estate development guidelines.
- With these new guidelines, Penn Design and PennPraxis begin projects applying these concepts to West Philadelphia. FRES serves in an advisory capacity to these projects.

Year 05:

- With the results of the preceding studies, studios, and engagement, Penn/FRES engages with local developers to realize these projects.

MIT Framework: MIT has extensive experience in real estate development, as seen through MITIMCo's work in and around Kendall Square. However, the Institute has historically not engaged in local, community-driven work, so significant progress will need to be made to encourage a pivot from the Institute's global focus to a local one. MIT does have a significant portfolio of departments and entities that could aid in this pivot – the timeline below shows how they can work to guide MIT towards greater community engagement and a more significant contribution towards student and affordable housing.

Year 01:
- Convene a university working group bringing together representatives of various MIT entities: the School of Architecture and Planning/DUSP, Sloan, CoLab, the Center for Real Estate, the Real Estate Innovation Lab, Media Lab, MITIMCo, and the central administration. Representatives of each entity/department that are interested in housing and community issues would serve as their representative. Together, they could discuss what each department is doing/is interested in doing to address housing affordability and community engagement. Through this working group, they could see where interests align or overlap. Over the course of the year, they should work toward a draft of comprehensive goals for the Institute in relation to housing and community relations.
- Within DUSP, a series of studios/courses/practica should be created that deal with housing, engagement, and planning within the Cambridge/Boston area. These courses could draw from planning, real estate, and architecture, bringing the academic disciplines together to work on locally-relevant affordable housing development projects. At the conclusion of these courses, the results should be presented to the Corporation and to MITIMCo, as well as the working group described previously.
- Existing coursework within DUSP could be realigned to focus on housing. For instance, the Participatory Action Research class could use its final projects to address housing affordability in Cambridge, while the introductory Planning Economics course could use local housing as a lens to understand economics.

- Also within DUSP, funds should be made to conduct research and hire student research assistants to research topics related to housing affordability. These projects should be under the direction of faculty with expertise in housing. Many DUSP professors have community connections – these should be the foundation of the research efforts.

- Internship programs/partnerships should be established with local CDCs and housing organizations. These could be funded through the department or via federal work study dollars.

- Community organizing and student activism should begin at a grassroots level. Students should join alongside community groups to develop platforms to promote additional student housing and stronger community relationships. This could begin in the confines of a class, or a group within DUSP could utilize student group funding opportunities to launch their efforts.

Year 02:

- MIT should create a Boston-region housing round table with surrounding universities. Boston is home to a significant number of universities that are facing similar concerns of housing affordability and availability. Together, these schools could discover approaches that others are taking and potentially build partnerships that could collectively build affordability.

- Using the results of the working group and DUSP efforts, the university should begin process of creating a Cambridge/Boston region comprehensive affordable housing development plan.

- MIT launches a "Global to Local" campaign, which engages students, faculty, staff, and community members to think of ways that MIT can transition from solely focusing on global issues to tackling issues within the Cambridge and Boston region.

- To conduct further work for the above plan, MITIMCo should create a community focused position (Community Liaison) that serve as a bridge between MIT and the community. This person should organize meetings and activities around Cambridge/Boston and the campus to gain wider input on housing, development, and community relations issues.

- MITIMCo should begin a comprehensive inventory and analysis of property assets throughout their portfolio, and create a strategy to incorporate additional housing into their developments.

- Organizing should continue throughout Cambridge, especially around the topic of student housing. Student organizers should work to pressure the Institute to prioritize housing affordability, and use traditional and social media to draw attention to the topic.

Year 03:

- DUSP students and faculty present to the Corporation and MITIMCo.
- The comprehensive affordable housing development plan is presented to the Corporation and senior administration.
- Community Liaisons continue engagement and outreach work, and also present to the Board of Visitors.
- MITIMCo presents its inventory and analysis to the Corporation, and at the direction of the Corporation begins developing investment models that incorporate endowment investment into development programs.
- The Corporation, after seeing the increasing need for affordable housing, mandates to the central administration that affordable housing and student housing be central tenants of future development within Cambridge.
- The central administration tasks MITIMCo with developing a student housing action plan alongside development guidelines for future real estate development that mandate affordable housing as a component of all new development. This process includes collaborations with DUSP and CoLab to conduct engagement in the surrounding communities and develop concepts through studios.

Year 04:

- MITIMCo releases the above plans.
- MITIMCo engages professional design and engineering consulting firms to further develop the ideas produced by the Institute towards buildable projects, with MITIMCo serving as the prime developer.
- Development plans include student housing and affordable housing as central elements.
- MIT develops and releases a public relations campaign highlighting their efforts to engage communities, invest locally, and promote affordable housing.

Year 05:

- MIT continues coursework, community engagement, and development projects.
- Collaborations with surrounding universities continue, and MIT begins partnerships with universities to house students.

Cambridge Application:

Site in Cambridgeport

Site Overview: The site totals 4.8 acres in Cambridgeport. All three parcels are owned by either MIT or MITIMCo. One site is actively used for MIT Facilities and the MIT Furniture Exchange, another is empty, and the third is a surface parking lot for Sanofi-Genzyme, a pharmaceutical company occupying lab and office space in a building owned by MITIMCo. Broadly, there is significant space nearby that has the potential for redevelopment. There is ample surface parking as well as a commercial strip mall in walking distance. As Cambridge further densifies, this thesis takes the assumption that much of this will be redeveloped. As such, this proposal looks at this site as a new "square" or a neighborhood center that provides amenities and services to Cambridgeport and the new businesses and residents that are projected to move in in the future. The site is adjacent to other MITIMCo owned properties as well as a short walk from both MIT's Campus and Central Square. There is a bus stop at the site that connects directly to Central Square, as well as a bike lane

that runs along Brookline Street. This connectivity allows the site to be developed as a transit oriented development, minimizing parking and automobile dependence.
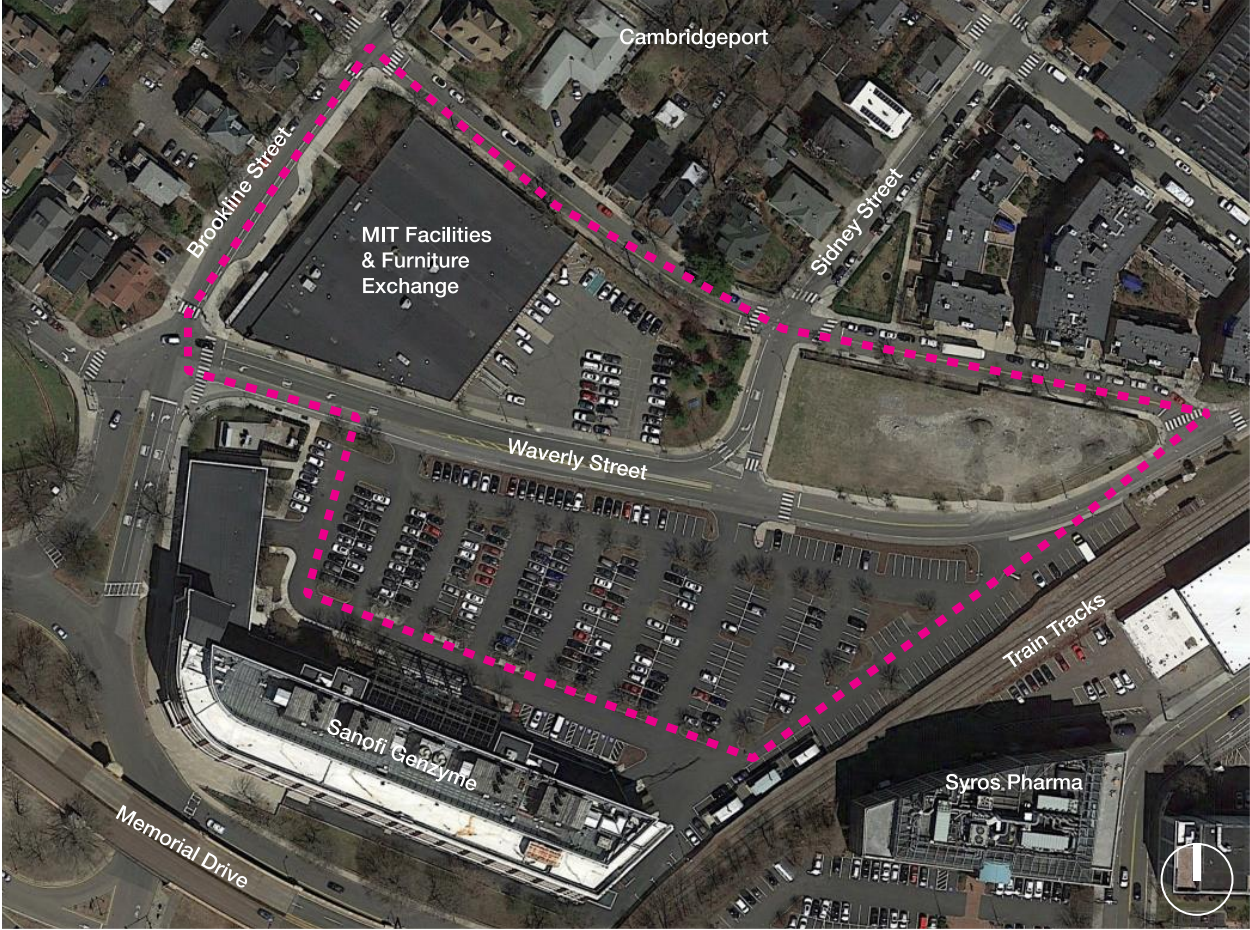
Zoom-In of Site

Site Overview, Continued: This site is a transition from the residential-scaled Cambridgeport neighborhood to larger commercial structures. As such, the development should respect the neighborhood and human scale while also increasing density and providing housing. While these are three separate parcels, they should be designed as a singular square that is a neighborhood node and provides a diverse range of services.

As can be seen in the image above, there are two large biotechnology labs adjacent to the site. These could be potential future tenants for the commercial lab and office space, which will be a major revenue-generator for the development.

Memorial Drive

Brookline Street

Waverly Street

Henry Street

Sidney Street

Chestnut Street

Waverly Street

01

02

03

04

0 50' 100'

Site Plan

Site Plan: This proposal includes four distinct building complexes that could be built in phases. These mixed use buildings work together to construct a new urban node within Cambridgeport that densifies and provides housing and commercial spaces while also creating a human-scale, walkable, and contextual urban environment. The building heights adjacent to the Cambridgeport neighborhood are lower in height in order to better blend in with the existing homes. As the buildings progress south, they grow in height.

Building 01: Mixed Use Commercial/Residential

- Floor 01:
    - 25,000 Square Feet of Storefront/Commercial/Food and Beverage/Flex Space
    - Parking – 50 spots
- Floor 02-03:
    - 80,000 Square Feet of Office/Tech/Academic Space
- Floor 04-07:
    - 84 Apartments (from studios to 3 bedrooms)

Building 02: Mixed Use Commercial/Lab

- Floor 01:
    - 7,360 Square Feet of Storefront/Commercial/Food and Beverage/Flex Space
    - 7,240 Square Feet of Office/Tech/Academic Space
- Floor 02-06:
    - 73,000 Square Feet of Lab Space

Building 03: Mixed Use Commercial/Residential

- Floor 01:
    - 5,400 Square Feet of Storefront/Commercial/Food and Beverage/Flex Space
    - 5,200 Square Feet of Office/Tech/Academic Space
    - 5 Live/Work Artist Apartments
- Floor 02-06:
    - 21,000 Square Feet of Office/Tech/Academic Space
    - 80 Studio Apartments (including student, supportive, affordable, and market rate)

Building 04: Mixed Use Commercial/Residential/Lab

- Floor 01:
    - 37,550 Square Feet of Storefront/Commercial/Food and Beverage/Flex Space
    - 24,000 Square Feet of Lab Space
    - Up To 250 Spaces of Underground Parking (optional – significant cost addition)
- Floor 02-06:
    - 187,750 Square Feet of Office/Tech/Academic Space
    - 120,500 Square Feet of Lab Space
- Floor 07-14:
   - 200 Apartments (from studios to 3 bedrooms)

Area Totals

- Residential (Rental - 80% Affordable, 20% Market Rate): **369 units**
- Storefront/Commercial/Food and Beverage/Flex Space: **75,310 Square Feet**
- Office/Tech/Academic Space: **301,190 Square Feet**
- Lab Space: **217,500 Square Feet**

The above building programs provide a significant increase in affordable housing while also providing over 500,000 square feet of commercial lab and office space. That mix of lab and office space could provide significant income to MIT. As of 2018, rental prices in Cambridge are at an all-time high. In Mid Cambridge (where this site is located), lab space rented for an average of $80.43/SF/Year on a triple net lease, where the tenant maintains responsibility for taxes, insurance, maintenance, and utilities on top of the rent. The average rent for office space in this area is $67.12/SF/Year (Lincoln Property Company 2019). At these rates, this development could hypothetically bring in nearly $17.5 million/year in rent on lab space and over $20 million/year on rent for commercial office space, assuming a full lease-up. These high rental incomes could help subsidize the portions of the development that generate less income, such as the affordable housing component and storefront space set aside for local businesses.

These programmatic uses can be seen in the following massing study, which shows how this development fits into the Cambridgeport neighborhood.

residential

office / tech

lab

ground floor
commercial / flex

outdoor amenity
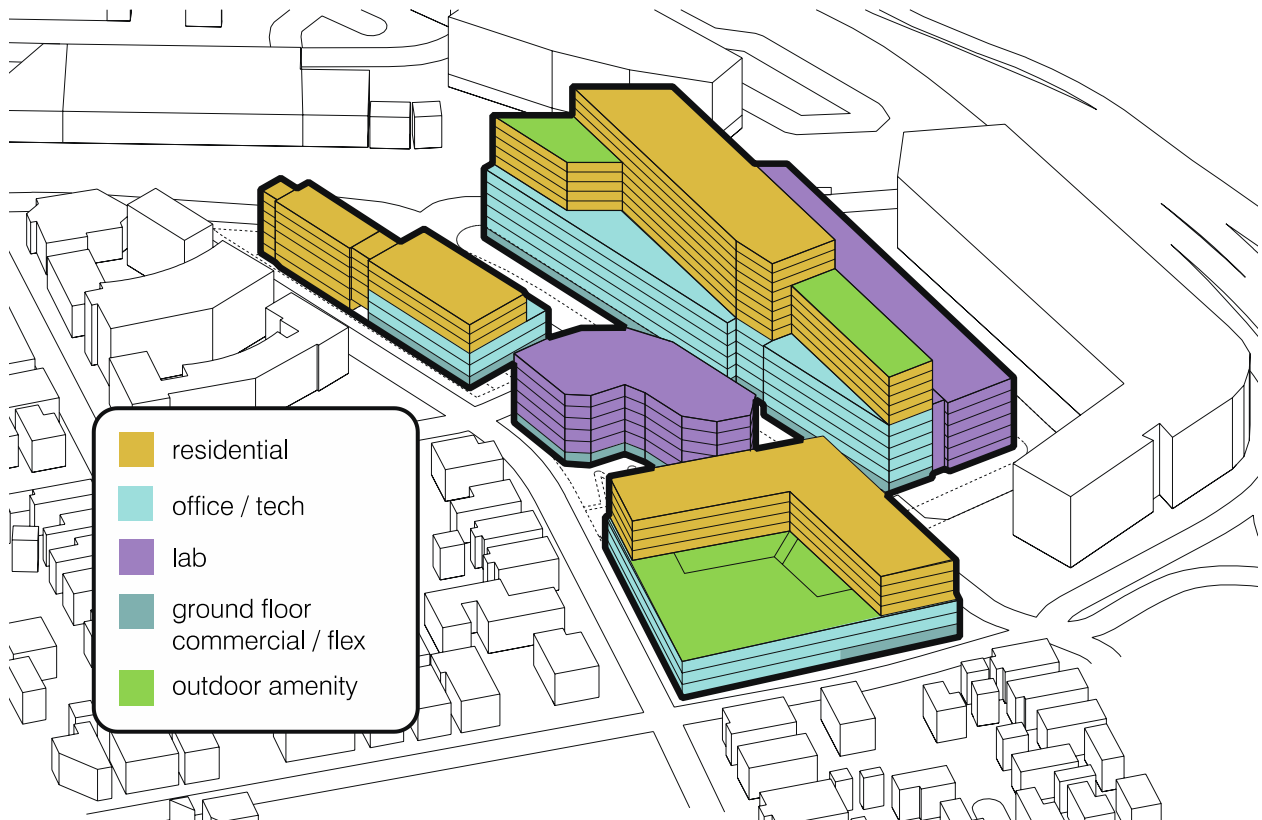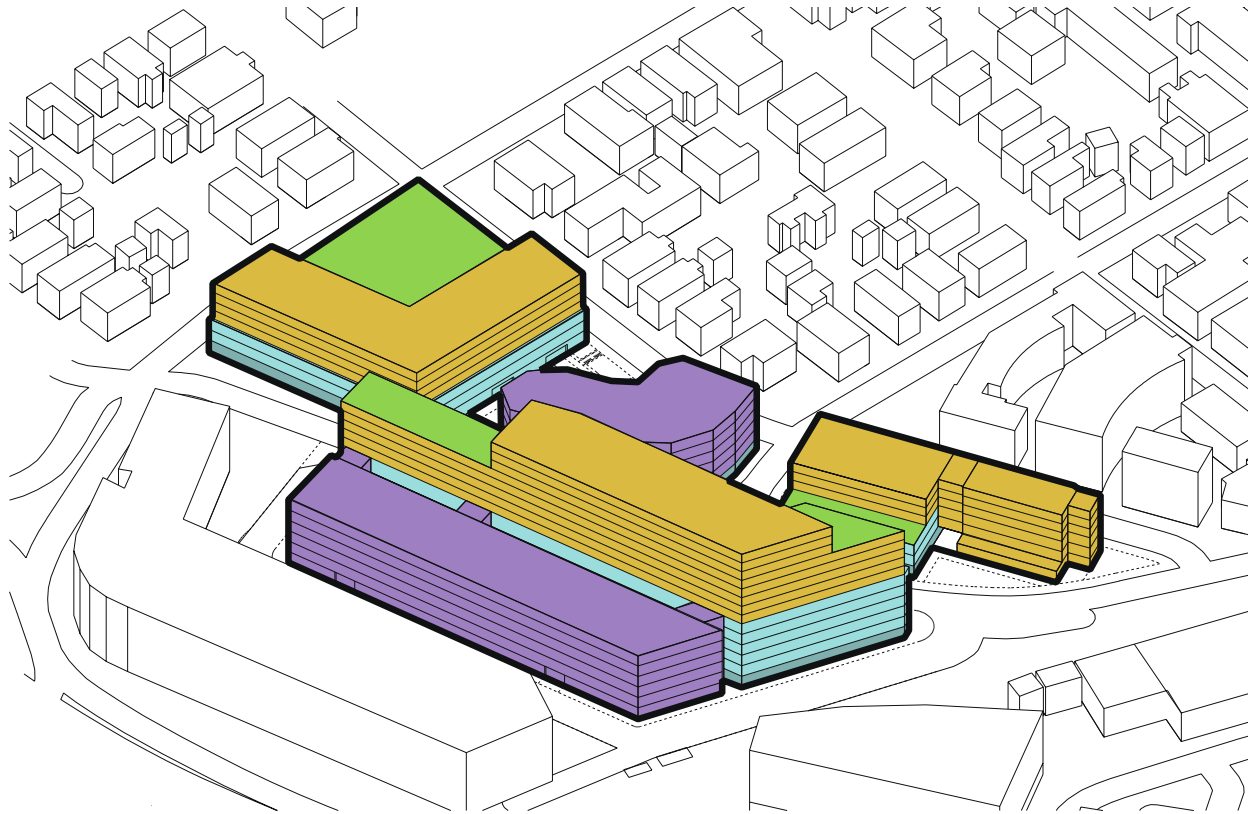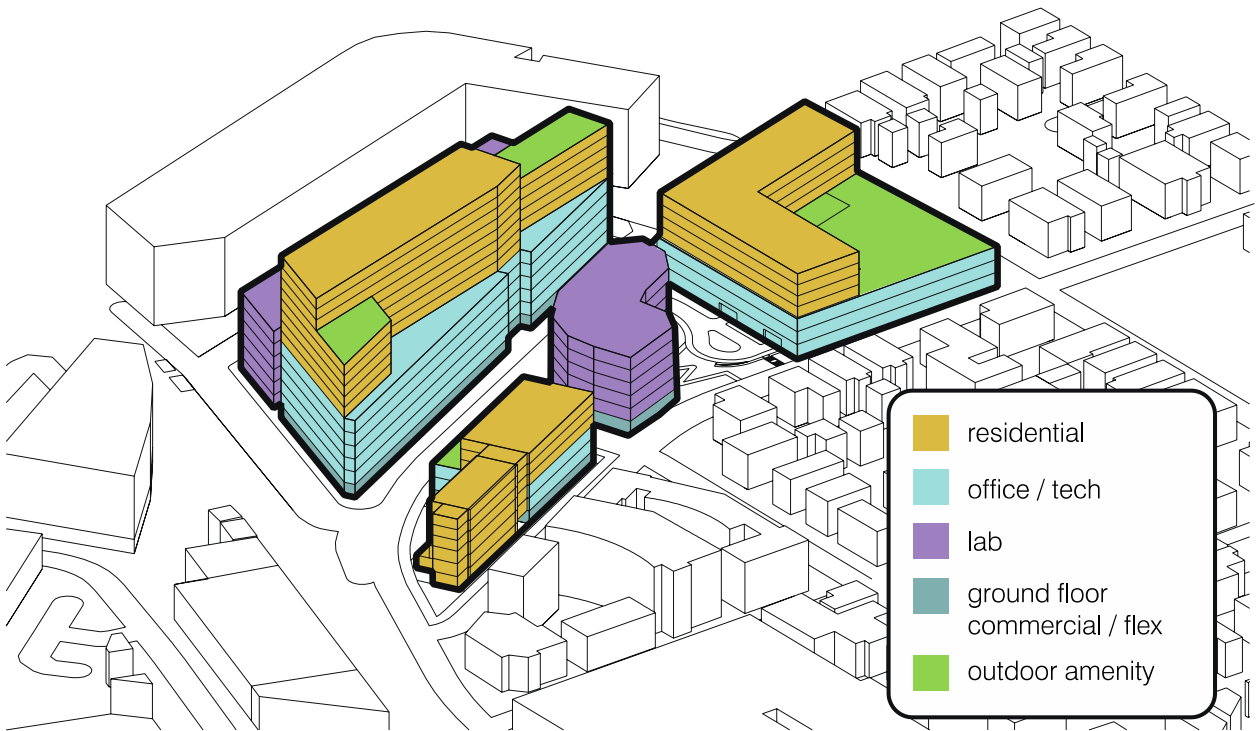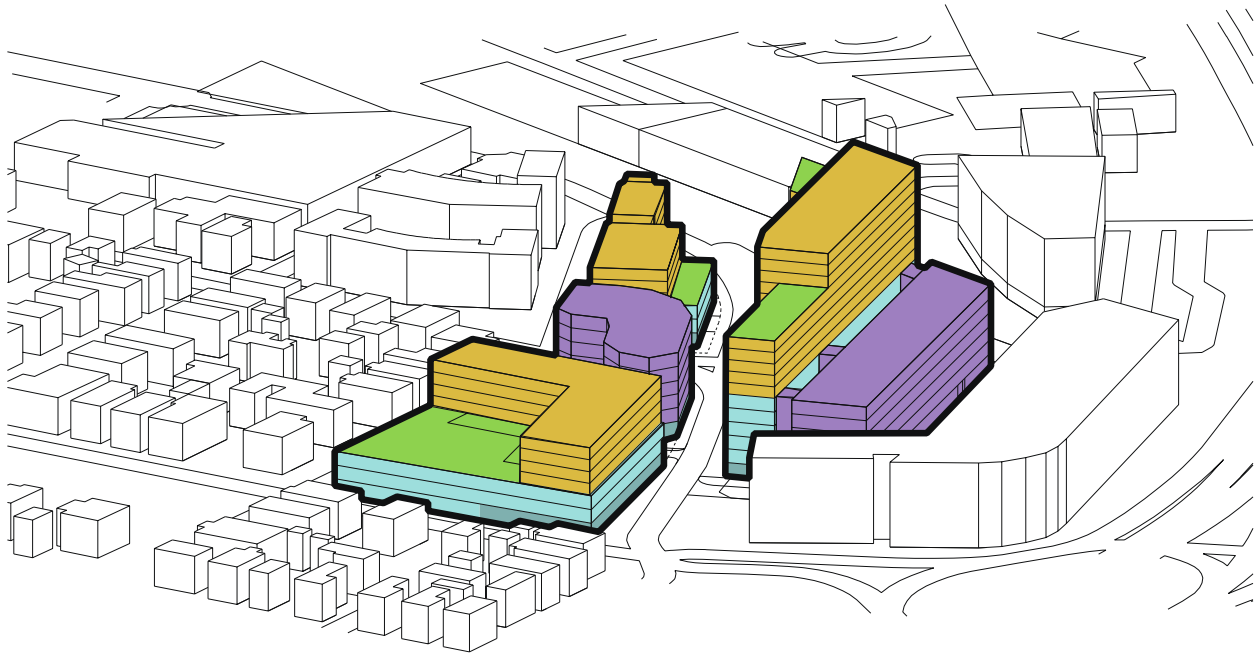
Massing Study With Programmatic Uses

residential
office / tech
lab
ground floor
commercial / flex
outdoor amenity

Relating to Recommendations: This development scheme is directly related to the recommendations found in Chapter 04. Below are descriptions of how those ideas helped shape this design proposal.

Promote Affordable Housing: This proposal is built around providing affordable housing. Between three of the mixed use buildings, 369 housing units are provided, ranging from studios to 3 bedroom apartments. 80% of those units (295) are affordable, with 20% being market rate. These market rate units help to subsidize the affordable units.

The affordable housing component would also be subsidized by the other uses within this development, including commercial lab space, office space, tech flex space, and retail. These are all uses that bring in significant revenue. They would earn MIT a profit while also minimizing the smaller return from the affordable units.   MIT would also be promoting affordability through providing the property. All three parcels (totaling 4.8 acres) are either owned by MIT or MITIMCo; as the developer, MITIMCo would not need to purchase property, potentially saving tens of millions of dollars in acquisition costs. This lessens the total development costs, leading to higher profits and the ability to further support affordable housing.

Expand Student Housing: Student units could be incorporated into this development. Building 03 contains 80 studio units – a portion of those could be set aside for graduate student housing, either for single graduate students or couples. MIT could also retain larger apartments (1 to 3 bedrooms) in other buildings for graduate students with families.

Move Beyond Student Housing: Other housing uses, such as senior housing or supportive housing (providing housing options for individuals with physical or developmental disabilities), could be included within the housing development mix. There are federal and state subsidies as well as tax credits for this type of housing, which could bring the development cost down while also providing affordable housing options for groups that are often not accounted for in the private market. The studio units in Building 03 would be ideal for senior and supportive housing uses. As these would be intermixed with graduate students, there would be a diverse group of community members within this building.

Promote Mixed Use Development: This development, in its entirety, is envisioned as a mixed use node and neighborhood center, or a "square" as they are typically called in Cambridge. Cambridgeport does not have a central node, largely due to its close proximity to Central Square. As this area continues to densify, more amenities and services will be needed in this area. More technology and pharmaceutical companies are moving to the neighborhood, bringing employees and residents. There is also a large volume of undeveloped space (largely surface parking lots) within a ten minute walk of the site. Assuming this is developed in the coming years, there will be an even greater need for further services. This development anticipates those needs, providing ground level retail/commercial/restaurant and café/public service spaces that broaden the area beyond its primarily residential use.

Mixed uses define all of the buildings on this site. Between the four structures, there is commercial lab space, office space, tech/flex space (which could also be utilized by MIT), outdoor amenity space, and ground floor commercial, all in addition to the housing. This mix ensures this is a lively neighborhood that meets the needs of the diverse residents and employees within this area.

Promote Shared Public Spaces: Public space is integrated throughout this plan. The street frontages of these buildings are designed with wide sidewalks that provide space for sizable street trees and seating spaces outside of ground-level establishments. There are also several small "parklets" – small park spaces that are neighborhood focused. These provide the neighborhood with additional green space on top of an already expansive greenspace portfolio – Magazine Beach Park, Morse School Playground, and Hastings Square Park are all within 500 feet of the site.

Green spaces are also integrated into the buildings themselves. Both the residential and commercial components have roof terraces, courtyards, and garden spaces as amenities. In addition to being a major marketing point and differentiator among other developments around Cambridge, these amenities make for a more pleasant and healthier place to live and work.

Retain and Promote Local Businesses: As most of this site is undeveloped and it is surrounded by primarily residential uses, there is not much in the way of local business in the immediate vicinity. However, one non-profit business, the MIT Furniture Exchange, occupies a structure that would be demolished for the construction of Building 01. The Furniture Exchange should be provided the

opportunity to relocate to a storefront space in one of the new buildings within the development at a comparable rate to what they were paying previously.

For new businesses moving into the development, MITIMCo could partner with the Cambridge Small Business Assistance Program to bring in small local businesses for a portion of the storefront space. This would ensure that this new "square" feels connected to Cambridge through its local businesses.

In Building 03, there are five ground-level units that are designed as live/work artist spaces. These subsidized units promote local artists and give them a space to live, work, and sell their art. These would have roll-up doors that open the showrooms and studios to the public realm, creating an engaging streetscape that blurs the line between the studio and the street.

Further Develop Service Learning: Integrating the pedagogical mission of MIT should be an important element of this project. As this is a sizable development in a largely residential neighborhood, community engagement would be key. This development would likely be contentious, and would involve bring a wide range of stakeholders together. This is a prime opportunity for student service learning. Students could be active facilitators in this process, working through an organization like CoLab in a way that both provides them training and builds consensus as the development progresses. This would provide real-world experience for students at MIT to engage with communities in a meaningful way that ultimately is working towards an implementable project that will expand housing opportunity and affordability within Cambridge.

Tap the Talent of Faculty and Students: Faculty and students at MIT have skillsets that would be relevant to this development. They have experience in community engagement, finance, real estate, housing, urban planning and design, architecture, economic development, and many other related disciplines. These people could be involved in the development process, providing advisory services and expertise.

Beyond community engagement, as mentioned in the Service Learning section, faculty could develop studios that focus on this site and on housing and mixed use development. Such a course could develop ideas on how to creatively think about this site in a way that benefits both the

university and the community. These ideas could then help guide MITIMCo and project consultants (such as architects and engineers) as they move the project from concept into construction drawings and ultimately towards implementation. In professional practice, there is often not budget or time to fully investigate new design and planning concepts. Studios would provide that deeper investigation in a way that does not drive up design and development costs, with the added benefit of providing educational opportunities to the students involved.

Create a More Transparent Endowment Investment Structure: As this project would largely be led by MITIMCo, it would be vital for them to be more transparent with their development and investment strategies. This thesis does not get into depth with financial strategies of how MITIMCo could receive a return on investment on this development while also developing affordable housing and public space, largely due to their unwillingness to discuss their operations and investment strategies. Despite this, I feel that with creative financing, design, and development strategies this would be possible. Cambridge is home to some of the highest rents for commercial lab and office space in the world. These uses are central to this development, and alongside governmental subsidies and tax credits I believe they would subsidize the affordable housing component in a way that still provides a return on investment for MITIMCo.

Create a Partnership Organization Between the University and CDCs: As affordable housing is not a main mission of MITIMCo or MIT, partnerships with complementary organizations would be key in building affordable housing. Cambridge (and more broadly the Boston region) is home to a number of highly successful community development corporations who collectively have built thousands of affordable units throughout the region. MITIMCo could partner with one or more of those organizations, such as Homeowners Rehab (HRI), to lead the development of the affordable housing component of the development. HRI is highly adept at securing tax credits and other governmental funding sources to use towards developing affordable housing. Instead of developing this capacity in-house, MIT could instead partner with HRI to undertake this development.

Utilize Strong Leadership: None of this would be possible without strong leadership at the highest levels of the Institute. The president, executive vice presidents, the Board of Visitors, and managers at the endowment would need to incorporate the ideals of this proposal into their long term vision for MIT. MITIMCo is unlikely to pursue such development, where financial returns are

lower than what they are currently pursuing, without strong pressure from above. Ultimately, the president of the Institute would need to be the guiding force.

Zero or Low Interest Loans: MITIMCo could provide a zero or low-interest loan from the endowment to the CDC(s) involved in this project, beyond their role as primary developer and land provider. If they are partnered with a reputable CDC such as Homeowners Rehab, MITIMCo would likely be assured that they would recoup their investment, as HRI has a substantial portfolio of successfully delivered projects. This loan would ensure HRI could effectively finance their affordable housing component in a way that minimizes the large amount of interest that typically accompanies a loan taken out from a private bank or state source (like MASS Housing). If this loan was low interest, it would provide both a small return on investment to MITIMCo and the endowment while benefiting HRI's efforts to build affordable housing.

Bibliography:

Acitelli, Tom. 2018. "M.I.T.'s Kendall Square Project—the Latest One—Gets Officially Underway."
    Curbed Boston. October 11, 2018. https://boston.curbed.com/boston-
    development/2018/10/11/17958092/mit-kendall-square-initiative-boeing.

Blanding, Michael. 2015. "Reimagining Kendall Square." MIT Technology Review. August 18, 2015.
    https://www.technologyreview.com/s/540206/the-past-and-future-of-kendall-square/.

Chegut, Andrea. 2019. Interview with Andrea Chegut.

CoLab. 2019. "About Us." MIT CoLab. 2019. https://www.colab.mit.edu/about.
Cunningham, Dayna. 2019. Interview with Dayna Cunningham.

Democracy Collaborative. 2012. "Anchor Institutions." Community-Wealth.Org. June 21, 2012.
    https://community-wealth.org/strategies/panel/anchors/index.html.

Ehlenz, Meagan. 2016. "Neighborhood Revitalization and the Anchor Institution: Assessing the
    Impact of the University of Pennsylvania's West Philadelphia Initiatives on University City -
    Meagan M. Ehlenz, 2016." 2016.
    http://journals.sagepub.com/doi/abs/10.1177/1078087415601220.

Equinox Leasing. 2019. "Luna on Pine." 2019. https://www.lunaonpine.com/.

Etienne, Harley. 2012. *Pushing Back the Gates: Neighborhood Perspectives on University-Driven Revitalization
    in West Philadelphia*. Philadelphia: Temple University Press.

Facilities & Real Estate Services. 2012. "About." University of Pennsylvania Facilities and Real
    Estate Services. November 27, 2012. https://www.facilities.upenn.edu/about.

Florida, Richard. 2018. "Research Universities Have a Double-Edged Impact on Cities." CityLab.
    2018. https://www.citylab.com/equity/2018/06/the-paradox-of-prosperity-at-americas-
    universities/562103/.

Gies, Erica. 2006. "The Health Benefits of Parks." 2006.
    https://www.tpl.org/sites/default/files/cloud.tpl.org/pubs/benefits_HealthBenefitsReport.
    pdf.

Hack, Gary. 2019. Interview with Gary Hack.

Harkavy, Ira. 2019. Interview with Ira Harkavy.

Kromer, John, and Lucy Kerman. n.d. "WEST PHILADELPHIA INITIATIVES:," 59.

Leite, Danillo. 2019. "Harvard's 20/20/2000 Affordable Housing." *Danillo Leite* (blog). April 5,
    2019. https://medium.com/@danilloleite82/harvards-20-20-2000-affordable-housing-
    1411e7dfcc74.

Lincoln Property Company. 2019. "Lincoln Property Company." 2019.
http://www.lpcboston.com/wp-
content/uploads/2013/02/MktReport_Cambridge_Q12019_web-1.pdf.

McDonald, Michael. 2018. "MIT's Endowment Gains 13.5% as Value Hits Record $16.4 Billion -
Bloomberg." September 14, 2018. https://www.bloomberg.com/news/articles/2018-09-
14/mit-s-endowment-gains-13-5-as-value-hits-record-16-4-billion.

Melamid, Samantha. 2018. "The Penn Alexander Effect: Is There Any Room Left for Low-Income
Residents in University City?" The Philadelphia Inquirer. November 1, 2018.
https://www.philly.com/philly/news/penn-alexander-university-city-west-philly-low-
income-affordable-housing-20181101.html.

MIT. 2018. "MIT Facts 2018: Research at MIT." 2018. https://web.mit.edu/facts/research.html.

MIT 2030. 2013. "MIT 2030 | East Campus Gateway Study." 2013.
http://web.mit.edu/mit2030/projects/eastcampusgateway/index.html.

MIT Institute Archives. n.d. "MIT History | MIT Facts." Accessed March 12, 2019.
https://libraries.mit.edu/mithistory/mit-facts/.

"MIT Releases Financials and Endowment Figures for 2018." n.d. MIT News. Accessed April 7,
2019. http://news.mit.edu/2018/mit-endowment-financials-0914.

MIT Treasurer's Report. 2019. "MIT Treasurer's Report, 2018." 2019.
https://vpf.mit.edu/sites/default/files/downloads/TreasurersReport/MITTreasurersRepor
t2018.pdf.

"MIT2030 Envisioning, Renewing and Building for the Future." n.d. Accessed March 25, 2019.
http://web.mit.edu/mit2030/.

National Research Council. 1996. *Colleges of Agriculture at the Land Grant Universities: Public Service and
Public Policy*. https://doi.org/10.17226/5133.

NCES. 2015. "National Center for Education Statistics Fast Facts Tool." 2015.
https://nces.ed.gov/fastfacts/display.asp?id=73.

Netter Center. 2017. "What We Do." Netter Center for Community Partnerships. June 4, 2017.
https://www.nettercenter.upenn.edu/what-we-do.

———. 2017. "Anchor Institution Strategy." Netter Center for Community Partnerships. August 8,
2017. https://www.nettercenter.upenn.edu/what-we-do/anchor-institution-strategy.

———. 2017. "About ABCS." Netter Center for Community Partnerships. October 22, 2017.
https://www.nettercenter.upenn.edu/what-we-do/abcs-courses/about-abcs.

Penn Home Ownership Services. 2019. "About PHOS." 2019. http://cms.business-
services.upenn.edu/homeownership/about-phos.html.

Popp, Trey. 2011. "With the Opening of Penn Park in September, the University's Eastward Expansion Is Now a Reality. A Brief History of What It Took to Transform This Long-Sought Dead Zone into an Oasis.," December, 10.

Pyati, Archana. 2016. "Impact Investing Platforms Create New Equity Streams for Affordable Housing." Urban Land Magazine. June 3, 2016. https://urbanland.uli.org/capital-markets/impact-investing-platforms-create-new-equity-streams-affordable-housing/.

Rodin, Judith. 2007. *The University and Urban Revival*.

Sehnert, Paul. 2019. Interview with Paul Sehnert.

Spatocco, Brian. 2019. "Concerns Over the Lack of Graduate Student Housing in the MIT 2030 Plan." June 2019. http://web.mit.edu/fnl/volume/245/spatocco.html.

Spirn, Anne. 2019. Interviews with Anne Spirn.

Staley, David. 2013. "Democratizing American Higher Education: The Legacy of the Morrill Land Grant Act | Origins: Current Events in Historical Perspective." 2013. https://origins.osu.edu/article/democratizing-american-higher-education-legacy-morrill-land-grant-act.

Sudo, Chuck. 2019. "LCS, Purchase College Building $320 Million, On-Campus Independent Living." Senior Housing News. March 7, 2019. https://seniorhousingnews.com/2019/03/07/lcs-purchase-college-building-320-million-on-campus-independent-living/.

Tanenbaum, Michael. 2018. "Video Shares Glimpses, Vision for West Philly's Schuylkill Yards." PhillyVoice. May 17, 2018. https://www.phillyvoice.com/drexel-university-schuylkill-yards-west-philly-brandywine-realty-trust/.

"West Campus Study." n.d. Accessed March 25, 2019. http://capitalprojects.mit.edu/projects/west-campus-study.