Retrofitting business suburbia: competition, transformation, and challenges in metropolitan Boston's suburban office parks

Retrofitting Business Suburbia: Competition, Transformation, and challenges in Metropolitan Boston's Suburban Office Parks

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Abstract:

This paper examines the retrofitting and redevelopment of suburban office parks, and in particular, the planning, design, and policy issues and challenges associated with this redevelopment. Recent literature indicates a shift of suburban business development in favor of increasingly competitive central cities, a dilemma for planners charged with revitalizing aging suburban business parks. To understand the nature and causality of suburban office park retrofitting and redevelopment, we conducted thirteen qualitative, semi-structured interviews with planners, developers, and officials in the inner Boston metropolitan region. Interviews indicated increasing obsolescence, with widespread redevelopment as a coping strategy. Strategies included densification, mixed uses, enhanced public spaces, and attempts to enhance transit. We examine two case studies: Northwest Park in Burlington, MA, and Needham Crossing, in Needham, MA: both are former office parks redeveloped as mixed-use developments. Our research clarifies the nature and types of physical redevelopment, as well as the specific motivations behind redevelopment as a planning strategy for enhancing the viability of aging suburban office developments.

1. INTRODUCTION

Metropolitan growth is increasing the significance of regions as opposed to central cities (Brenner 2004) and that of global, as opposed to local, cities (Sassen 2001). Metropolitan growth is also generating new regional spatial patterns that contain significant suburban areas. Other technological and economic shifts are also influencing suburban growth. New information and communication technologies in the 1990s radically transformed production, distribution and exchange, causing in some cases further decentralization (Harvey 2007). Digitalisation and a service-based economy has added importance to suburban business locations at the urban fringes while flexible working time models (part-time, home office, multiple employment) are leading to new understandings of accessibility and to the decoupling of workplaces from downtowns (Bergmann 2012).

With many economic and technological trends working in their favor, suburban areas have geographical advantages as well. Polycentric metropolitan spatial structures have led to international business centres, "new downtowns" (Helbrecht and Dirksmeier 2009), and edge cities and business parks (Burdack and Hesse 2006, 384f.) evolving outside of central locations (Trip 2007, Kloosterman and Musterd 2001, Hall and Pain 2009). In the United States, this trend toward "new downtowns" has been going on since at least the 1980s.Terms such as 'technoburbs' (Fishman 1987), 'edge cities' (Garreau 1991) or 'exurbia' (Soja 2000) describe "location[s] that [have] five million square feet or more of leasable office space […], more jobs than bedrooms … [and are] perceived by the population as one place" (Garreau 1991, 6f.). Whether called business centres, office parks, new downtowns, or edge cities, the growth of polycentric regions and of new clusters of economic activity in formerly suburban areas is clear and seemingly steady.

This study examines the transformation of office parks in one polycentric region of the United States. Boston, Massachusetts, USA represents an established polycentric region with a

dominant core, together with suburban office areas that are over sixty years old today (2018).[1] The Boston region concentrates business activities, trade and housing both in Boston and in Cambridge, an adjoining city with major universities, research facilities and high technology companies.Boston's region is structured by concentric major highways or motorways (Interstates 90, 93, 95, and 495), that define an inner core inside Interstate 95 and an outer core area inside Interstate 495. We focus on office parks, or 'new downtowns', located at the fringe of the Boston region's inner core, bounded by Interstate 95. While residential suburbanization in Boston dates to the late nineteenth century, office suburbanization is also longstanding (O'Connell 2013). A variety of suburban "office parks" have been built in the Boston region since 1950.[2] Today, these decades-old suburban office parks are faced not only with their own obsolescence but with renewed competition from Boston and Cambridge.

Redevelopment is an urgent issue for all office park environments faced with changing business demands (Mozingo 2011). The early suburbanization of Metropolitan Boston, combined with the typically short lifespans of suburban office parks and Boston's distinctly urban culture (e.g. public transportation, walkable neighborhoods, and public space are highly valued) make this region an interesting case study for office parks in physical transformation. Whether and how the inner Boston region's office parks are rebuilding and attempting to adapt to competition is a subject with substantial relevance both to the Boston region's local planning officials, and to officials in older, suburbanized city regions with aging peripheral business areas (or office parks) in the United States and in other developed nations.

Our aim was to identify whether or not Boston's inner regional office parks were facing redevelopment challenges; if so, what were those challenges; to identify whether or not physical redevelopment was being pursued as a strategy; and if so, what were those physical

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[1] Beside the dominance of the central city of Boston, the Boston region has historically been characterized by many small villages, some of which developed in the nineteenth century as small industrial cities independent of the central city. Boston's polycentrism thus has a long history.

[2] Between the 1960's and 1980's suburban Boston had a cluster of technology companies located along I95/Route 128 with small tech firms, world class universities and venture capital that was competitive to California's Silicon Valley. Ultimately Boston's Route 128 did not remain competitive with California. Saxenian (1996) suggests that Silicon Valley developed a decentralized but cooperative system while I95/Route 128 was dominated by independent and self-sufficient corporations.

redevelopment strategies. Our study concentrated on qualitative findings from interviews with planning and development officials, not on morphological or other quantitative measures of the built environment: the latter data, while potentially of interest, was beyond the scope of our research.

To conduct our research, we posed the following study questions. First, we asked whether there was an increasing site competition for businesses between suburban and urban office locations, and if so, whether there was increasing obsolescence of suburban office buildings. Recent research claims an increasing shift of companies within metropolitan areas to urban locations (Malizia 2014, Malizia and Song 2016, Smart Growth America 2015). We therefore hypothesized that suburban office parks face increasing competition from center cities and need to change or adapt in order to stay competitive. Challenges also include obsolescence due to suburban facilities dating from several decades ago, akin to obsolescent retail (Sobel et al 2002). Such competition, we hypothesize, would incentivize office park owners or regulators to upgrade these older office parks.

Second, we asked whether competition was incentivizing upgrading, and if so, which strategies were used by different office park stakeholders (real estate developers, cities, regional institutions). We also inquired about which urban planning instruments or policies were being used for this upgrading, and why these strategies had been selected. Scholarship from new urbanists (Talen 2005, Steuteville 2009, Dunham-Jones & Williamson 2009) encouraged our hypothesis that such upgrading strategies, if they existed, would be accountable to different stakeholders (e.g. developers, urban planners), and would aim to make suburban office parks competitive by upgrading public spaces, improving access and walkability, and increasing density. However, we also hypothesized that this potential would be limited due to the suburban locations, near-total auto dependency, and low densities of existing suburban office parks.

Lastly, we inquired what were the greatest challenges to suburban office park redevelopment. This question was driven by an interest in the potential of planners, designers, and policymakers to confront exogenous factors like suburban locations and to overcome them in order to change the competitiveness of office parks. The well-known resistance of citizens to

large- scale development, particularly in the Boston region, encouraged us to hypothesize that numerous challenges to redevelopment would exist, including citizen resistance, and that additional barriers might include market resistance to new, untested physical configurations and novel design strategies; regulatory (e.g. zoning) resistance to new land use concepts; and developer resistance to untested development models. We also expected that such challenges might be partially resolved, and that they would constitute continuing challenges for the future.

2.   Study Methods and Limits

This study's methodology is based on a mixed-use method. The central method consisted of qualitative semi-structured interviews (13) with city officials and real estate developers from different municipalities in the Boston region adjacent to Interstate 95 (previously noted as Boston's inner-ring limited-access highway), together with additional interviews with officials in regional institutions concerned with the spatial development of the Boston Metropolitan Region. All interviewed individuals were active in different professional dimensions of office park planning and development. Interviews were limited in quantity by the comparatively small number of actors (often 1-2 individuals per municipality) within the study municipalities and regional institutions. Some municipalities possessed only a single planning official. Additional constraints included resource and time limitations. In order to make the interviews more comparable, some of the research questions were formulated as closed questions. The Interviews had a duration of approximately 1 hour and were recorded, transcribed and analyzed with regard to the research questions. We compared the amount and nature of each interviewee's mention of key aspects of our study.

Municipalities examined in the study were selected by systematic screening and research of best practices in redevelopment within the Boston metropolitan area, as defined by the Metropolitan Area Planning Council (MAPC) (Figure 1). This research was conducted both through literature review (e.g. Dunham-Jones & Williamson 2009b, Mozingo 2011, O'Connell 2013) and through desktop research including keyword screening (suburban retrofitting, suburban office park, redevelopment, redesign). As a first step, we analyzed existing data

within the MAPC's area of focus[3] on the number and size of mixed-use developments, business activities and tax generation from businesses. This data enabled us to identify a range of potential redevelopment sites and office parks.[4] We then confirmed these selections with assessments by interviewees of the regional institutions (ULI and MAPC). As a third step we confirmed these assessments by Internet desktop research.

All of the selected municipalities developed comparatively early (beginning in the 1940s and 1950s) in Boston's history of suburbanization, and these were therefore considered to be among those municipalities that would be likely to be facing obsolescence and therefore be in need of redevelopment.

The two municipalities examined in detail were selected from the broader universe of study municipalities in order to illustrate redevelopment scenarios with different ownership structures. In Burlington's Northwest Park, ownership is one-dimensional, as the development area was owned by a single company (Nordblom Real Estate). In Needham's Needham Crossing, there are multiple office park complexes owned by different owners, and the town of Needham is accordingly a key actor in the redevelopment process.

Table 1 shows selected demographic data of the selected municipalities, indicating relatively low building densities and high median household incomes. The distribution of tax revenues shows differential dependencies on commercial and industrial tax: the highest dependency was in the Town of Burlington with almost 60 % of total tax revenue, and the lowest dependency was only 9% in the City of Newton.

We conducted six interviews with municipal officials from the towns and/or cities of Needham, Newton, Waltham, Lexington, Westwood and Burlington. We conducted five interviews with real estate developers at the following companies: National Development, Cabot, Cabot and

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[3] Focus Area: towns and cities in suburban locations of Boston along major traffic infrastructure
[4] The analyzed documents included the MetroFuture Regional Plan, Newton-Needham Innovation District and several data maps for the Boston region, generated and analyzed via the Metro Boston Data Common (www.metroboston.datacommon.org)

Forbes, Nordblom Real Estate, Eden Development and Boston Properties. We additionally conducted two interviews with officials at institutions representing the real estate industry and regional planning and economic development group, namely the Urban Land Institute (ULI) New England and the Metropolitan Area Planning Council (MAPC). Table 1 provides additional details of interviewed actors. Interviewees were chosen based on their direct involvement in the specific municipality or project.

We also analyzed planning and zoning documents for the six study municipalities for their content relating to suburban office park sites. This included local zoning plans for the towns and cities of Burlington, Needham, Newton, Westwood, Waltham and Lexington, as well as specific local masterplans for University Station (Westwood), Northwest Park (Burlington), The District (Burlington) Needham Crossing (Needham) and N2-Corridor (Needham/Newton).

Interviews were designed to identify patterns and critical variables in the redevelopment process of suburban office parks. All interviews were organized as five principal questions. Interviews were designed to identify patterns and critical variables in the redevelopment process of suburban office parks. All interviews were structured along the following five questions:

1. What are the reasons for companies to choose urban areas over suburban areas?
2. What are the reasons for companies to choose suburban areas over urban areas?
3. Which planning instruments, tools, and methods were used for the redevelopment of suburban office parks?
4. What were the biggest challenges in the redevelopment of suburban office parks?
5. What are the most important elements of design in the redevelopment of suburban office parks?

Subsequent to completing interviews, we undertook their qualitative content analysis. Questions 1 and 2 generated more quantitative outcomes, while the other questions generated qualitative outcomes. In almost all cases interviewees,while consenting to the study, preferred to remain anonymous. Therefore, the term 'interviewee' is used in the study instead of individual names.

The case studies are both descriptive and analytical, reflecting our research interest in the nature of the physical and economic transformation of these sites and the causality for these transformations as understood by stakeholders.

The study does not purport to be fully generalizable either within the Boston region or within North American metropolitan regions as a whole. The study municipalities are atypical of the Boston region, as they are 'close-in' municipalities, not 'exurban' sites located on highways further from Boston such as Interstate 495 (Figure 1). The Boston region is itself atypical as central Boston is much more vibrant than many other North American cities and much smaller than many others. At the same time the authors believe that conditions in Boston's close-in municipalities and office parks do represent conditions likely to be found in many mature North American cities that experienced early suburbanization, particularly in the Northeast and Midwest of the United States.

3. Literature Review: Suburbanization and the development of suburban office parks in the US

The location of workplaces is a fundamental factor in the spatial structure of cities (Scott 1988; Castells 1991), and the formation of suburban employment centers within large urbanized regions has been of academic and professional planning interest since at least the 1940s (Freestone & Murphy 1998). In recent years, research into the revitalization of these locations – especially in the North American context - has grown considerably. Built environment scholarship has been particularly directed to the design and performance of mixed-use development, to the orientation and legibility of the urban structure as well as to the quality of public spaces (Dunham-Jones and Williamson 2009a, Talen 2011, De Jong 2014). The development of the built environment post-suburbanization, and the transformation of edge cities, is no longer a phenomenon unique to the United States. An emerging discourse on this topic examines Europe (Bontje et al. 2005, Phelps et al. 2015), Asia, and the Pacific (Phelps & Wu 2011, Hudalah & Firman 2012)

Given that North America suburbanized early and extensively, suburban business parks have been an element of the urban fabric for at least seventy years (Mozingo 2011, O'Connell 2013). The evolution of office parks began in the 1920s, when industrial and partly rural land areas were subdivided by developers and offered as industrial parks with ready lots for sale or lease. In the San Francisco Bay area many technology companies moved to these first office parks, calling them "industrial parks". These districts possessed strong similarities to modern office parks in terms of their location in the metropolitan area, parcel size and types of uses (Foley 1957).

In 1951 the first formally designated "office park" was established by The Jackson Company in Mountain Brook, Alabama. Tenants occupied the first office units in 1952 and by 1969 this early office park was 85% occupied (McKeever 1973). With the growth of federally funded airports and highways in the 1950s & 1960s, suburban office parks grew rapidly in number across the United States. In the Boston region, the city of Waltham was the site for one of the first: the Hobbs Brook Office Park, developed by the Middlesex Mutual Trust Company.

Historians of built environment and planning have explained the popularity of office parks in the United States as being due to both "pull" (attraction) and "push" (repulsion) factors. There are many potential "pull" factors. One interpretation of pull factors is that office parks popularized prestigious suburban campuses of major companies like General Motors and General Foods, both of whom constructed suburban campuses in the 1950s (Rowe 1991, 149, 155, Mozingo 2011). A second interpretation explains suburban office park expansion through economic logic: there was a great need for back offices with large storage for paper records, and suburban branch offices served suburban customers much better, and less expensively, than central cities (Saxenian 1996). Other "pull" factors driving office park construction include the suburbanization of housing for management and back office employees, and access to a clerical workforce of educated, non-unionized women. Leinberger 1986 points out the fact, that during the 1950's and 1960's the office location was always based no more than 20 minutes' drive from the CEO's home in the "favored quarter" of the city.

Also contributing to the competitiveness of suburban office parks was the regulatory ease of

suburban municipalities, which permitted office buildings with less red tape and higher security than central cities. Tax structures and zoning were favorable in suburban areas, and transportation by automobile was also easy. Technology helped in minimizing distance: first telephone, then fax, then computers made access to cheaper suburbs easy for companies looking to spin- off back office activities. The resulting experience was perceived as superior to that of downtown offices (Mozingo 2011).

On the "push" factor side, all of the factors that made suburbs attractive can be seen as being absent in cities and therefore as factors that discouraged office tenants from locating in cities. These factors included the expense and crowding of downtown office space, the congestion involved in driving into cities, and the fear of integration (racism) that led to self-segregation (white flight) of wealthy, predominantly white office workers in suburban areas.

Leinberger's (1986) studies also show how the initial logic of CEO proximity to office parks has since flipped in response to a shortage of highly trained employees, and the need to base locational decisions on the preferences of "creative class" employees (Florida 2002), more than those of CEO's (Leinberger 1986). The demands on office locations have changed in the past two decades, with the urban quality of a professional environment becoming increasingly important to knowledge workers. This development leads to a possible mismatch between supply and demand in the office real estate market and particularly in existing (suburban) business parks, which frequently exhibit a monofunctional structure and architecture.

It can be noted that there is an increasing demand for the redevelopment and retrofitting of office parks in the suburban hinterland (Dunham-Jones and Williamson 2009b Trip 2007). The revitalization of suburban office parks is illustrated with examples like Irvine, California, Tyson's Corner near Washington, DC and New Jerseys former Colgate office park. Both are considered pioneers in office park redevelopment (Dunham-Jones and Williamson 2009b, Hughes 2014). Another area of the revitalization literature deals more closely with strategic approaches (Booth, Leonard, and Pawlukiewicz 2002).

Many of these analyzed challenges or barriers are corresponding with former studies of Farris

2001. His analysis identifies similar practical barriers to urban infill, including land assembly, infrastructure costs, […] regulatory policies, […] complexities of public‑private partnerships, […] resistance from local residents, stakeholder conflicts and political constraints. (Farris 2001).

4. Redeveloping suburban office parks: competition, planning instruments, and challenges

4.1. *Site Competition? Urban vs. suburban, suburban vs. suburban*

Our interviews showed a clear opinion of stakeholders regarding the existence of 'site competition' between urban and suburban locations. 12 of 13 interviewees expressed an ongoing trend of companies moving from suburban areas to resurgent central city office areas. In the Boston metropolitan area, the examples of General Electric, Reebok and New Balance, all nationally visible, high-profile corporations with new headquarters in Boston, were frequently mentioned as representative of this trend.

Real estate developer interviewees (according to interviewees numbers 7 through 11, see *Interview-table*) particularly noted that the demand for office and work environments had changed in the past decade (i.e. since 2006), and that companies wanted more "integrated" locations for their offices, particularly if such companies were in the technology/ research/ development sectors. This trend was described by some with the slogan "Work, Live, Play", in other words, a single location with employment, residences, and leisure.

While interviewees broadly agreed that site competition was occurring, they provided different reasons for this trend, shown in Figure 2. These included better access to talent, particularly in knowledge-intensive clusters, and the additional amenities of urban locations, like sporting facilities, restaurants, shops and cafés. All interviewees agreed that work patterns and the desires of millenial[5] workers had changed in recent years. Interviewees stated that for many companies with suburban locations, it was becoming increasingly difficult to find skilled workers.

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[5] **Millennials** are the demographic cohort following Generation X. Demographers and researchers typically use the early 1980s as starting birth years and ending birth years ranging from the mid-1990s to early 2000s.

However, a majority of the municipal official interviewees (4 out of 6) stated that site competition between urban and suburban locations was less of an issue than was site competition *between different suburban locations*. Interviewees stated that companies sometimes negotiated with multiple municipalities in suburban areas, using economic leverage to achieve the best fiscal (e.g. tax and regulatory) arrangements for the company. Municipal interviewees stated that they consequently competed with each other to attract office tenants, with differing levels of motivation to attract business depending on each different municipality's reliance on business tax revenues. Our data confirmed inequities: Burlington and Newton were proportionally more dependent on business tax (e.g., a larger share of municipal budget came from tax) than Lexington or Needham.

While center city locations were perceived as competing with suburban office parks, interviewees explained various reasons for companies continuing to prefer suburban locations. The most mentioned reasons for this decision are shown in Figure 3. Economic reasons included lower rental cost for office spaces compared to central-city locations, free parking for employees, and tax incentives that lowered operating costs in participating suburban locations. Another frequently mentioned reason for suburban location choice was the proximity between the residence of a firm's decision-maker, e.g. its CEO, and the company's office location. Although the importance of this proximity could not be statistically verified, we note that this argument was mentioned in 7 out of 13 of our interviews.

Origins of a corporation played an important role in a company's decision to remain in a suburban location: In four interviews the connection of a company's "traditional roots" to a certain location was mentioned. This was the case, for example, for travel company TripAdvisor, founded in the town of Needham in 2000 and still there despite growth to 2,000 employees by 2015. The company has recently decided (late 2016) to build a new headquarters in the Needham Crossing office park.

When asked whether certain types of companies preferred suburban locations, some interviewees (according to interviewees numbers 2,3,5, 7-11, see *Interview-table*) mentioned

that technology companies in the start-up or early- year stage were often unable to afford high rents in central city Boston. Interviewees also stated that suburban locations were preferred by back offices or by branches of larger corporations that did not depend on highly-skilled workforces.

4.2. *The Transformation process: planning instruments, the role of design, and challenges*

Each of the six municipal officials interviewed for the study had supervised or otherwise been involved with the redevelopment and transformation process of a suburban office location in his/her municipality. While all municipalities examined for the study were or had previously been involved in office park redevelopment, political support for such redevelopment varied significantly between municipalities. Interviewees (according to interviewees numbers 1-6, see *Interview-table*) stated that all six municipalities faced one or more challenges in the development of suburban office parks. These challenges ranged from vacancy to changing preferences of real estate developers caused by lessee (corporate) demands.

Interestingly, the financial crisis of 2008 did not seem to affect significantly the six municipalities examined in this study. Officials in Burlington, Lexington and Westwood mentioned higher vacancy post-2008, but according to interviewees (1,3,4), such vacancy did not require active municipal involvement to be resolved. Instead, excessive vacancy was resolved by the Boston region's overall economic recovery. At the same time, the post-2008 real-estate market did impact design and planning of office park redevelopment in the six municipalities, including University Station in Westwood and Northwest Park in Burlington. Prior to 2008 these projects had been planned with much higher densities and larger amounts of floor area. Interviewees (2-5) stated that the 2008 recession made many financial resources unavailable to project developers, thereby causing significant downsizing of these two projects.

Urban Planning Instruments

Urban planning officials interviewed for the study stated that a variety of urban planning

instruments (e.g. policies or strategies) were available to influence, incentivize or otherwise assist or control suburban office park development (Figure 4). These strategies were both formal or informal and had different degrees of power. Interviewees (1-6) described a variety of different instruments, of which three- rezoning, TIF, and infrastructure improvements- were used by all six municipalities examined.

1. Rezoning and/or adjustments in zoning bylaws

Zoning was considered the most effective and most frequently used planning tool. It was mentioned by all municipal interviewees (1-6). In almost all cases interviewees emphasized zoning needing to possess flexibility to be sensitive to different situations, particularly in allowing sufficient adjustments for potential investors. Rezoning was used to permit mixed-use developments, increase building density, and alter parking requirements.

2. Tax Increment Financing (TIF)

Tax Increment Financing, a common redevelopment and planning instrument in the United States, was mentioned in 5 out of 6 interviews with municipal officials as an effective tool to negotiate locational decisions with companies. TIF is a public financing method that effectively subsidizes redevelopment and infrastructure, and it is commonly applied by municipalities to compete economically with other municipalities. Given that towns along Interstate 95 have relatively similar accessibility, TIF were perceived by interviewees as providing a meaningful incentive for company to select a certain location.

3. Improvement of infrastructure

Improving roadway and access infrastructure was important for 10 out of 13 of interviewees. Since suburban office locations are typically car-dependent and the majority of workers commute by car, such infrastructure is a strong location factor for many companies. Interviewees stated that improving public transport in suburban areas is challenging, as densities are low and Boston's metropolitan transportation agency is fiscally constrained. Interviewees in Needham

and Lexington (Interviewees 2 and 3) indicated that in some cases the lack of public transport was compensated by private initiatives and companies that established shuttle services.

Beside the formal instruments available to city administrations, three municipal officials (in Lexington, Burlington, and Needham) mentioned informal instruments used in the redevelopment process, such as public private partnerships (PPP), the personal leadership of executive officials like mayors, and the use of marketing materials such as flyers and brochures with visualizations. In each 'informal' instrument, communication and leadership seemed to influence a municipality's success in encouraging reuse and upgrading of office parks.

The Role of Design

The redevelopment of suburban office parks offers opportunities to improve urban design, building design, street design and integration with landscape. Early office parks of the 1940s, 1950s and 1960s were designed as monofunctional islands with little interconnection with the rest of the city (Mozingo 2011). This trend is clearly changing today: when asked about the role of design, all interviewees emphasized the rising importance of design elements in redevelopment, and all mentioned the opportunities design offered for better connecting these office parks with their built surroundings.

Figure 5 shows those elements that were considered "most important". All interviewees mentioned "Walkability and Connectivity" as a basic condition to make office parks less car-dependent and to allow mixed-use structures and higher densities. Interviewees also mentioned the increasing importance of building orientations that "opened up to" (faced) public spaces in place of the former introverted designs. Real estate developer interviewees emphasized that design elements were crucial for successful marketing of office parks.

7 out of 13 interviewees mentioned "placemaking" (Fleming 2007; Schneekloth and Shibley 1995) as a significant element of design. All interviewees confirmed that design improvements were promoted more strongly by the real estate industry than by municipal officials. Improved design was perceived by real estate interviewees (7-11) as a long-term stabilizer of value and as

a factor for "rebranding" dated or obsolete places: "The classical office park is dead!" said the Vice President of Boston Properties, referring to the obsolescence of self- contained, auto-oriented buildings.

Many of the design elements in Figure 5 are characteristic of new urbanism, a planning and design movement that has been established in the U.S. since the 1990s (Talen 2006). New urbanism promotes pedestrian-friendly, transit- accessible, "place"-oriented built environments, and recommends the implementation of these principles through zoning reform, enhanced public transportation, and "neotraditional" design patterns (Congress for New Urbanism 2013).

Major Planning Challenges

While municipalities examined in the study were diverse, all interviewees mentioned similar planning challenges in the redevelopment of suburban office parks (Figure 6).

1. *Establishment of multi-family housing*

Housing is a popular component of office park redevelopment in Boston because of a tight regional housing market, which incentivizes housing construction in previously nonresidential areas. This redevelopment, however, is not always easy. 12 out of 13 interviewees mentioned multi family housing projects in formerly single-use office parks as the most challenging aspect of redevelopment. This difficulty was attributed primarily to non-acceptance of new housing by existing residents, who protested or blocked new housing construction in town meetings. Although many municipal officials and all interviewed real estate developers (1-9) considered housing as crucial for the long term success of redeveloped office parks, housing was often either a failed component of such redevelopment or was implemented with a much lower number of units than initially planned.

As explained by interviewees (2-5), local residents provided multiple reasons to oppose housing as a component of redeveloped office parks. These included concerns about residents of lower social classes moving into the new housing, and the effect of these residents on school

systems and housing prices. Office park redevelopments that implemented housing, such as Northwest Park, Burlington, Needham Crossing, Needham, and University Station, Westwood, made specific provisions to either override resident resistance, or to enhance resident acceptance of new housing. These provisions included the establishment of social housing ("Chapter 40b projects"[6]), which can sometimes override local zoning. A second strategy keyed economic development, like new office space, to the construction of new housing via the argument that 'workforce' multifamily housing provided an economic development boost.

More housing construction in Boston's redeveloped office parks is likely. Interviewees emphasized continuing demand in regional housing markets, especially for multifamily housing, an uncommon housing type in most of the study municipalities. Interviewees (2,5) stated consistently that the lack of multifamily housing made it difficult for new companies to offer housing opportunities for new, typically younger, employees.

   2. Establishment of public transport connections

Boston has limited public transportation access in its suburbs. Since most of suburban Boston's office parks were initially developed as standalone areas far from transit, they are today poorly or not at all connected to a public transport system. In many cases, regional buses run with low frequency either through or adjacent to an office park. Unsurprisingly, 8 out 13 interviewees (1-6, 12,13) mentioned establishment of additional public transport connections in as a major challenge for redeveloping office parks. Many interviewees (1-6) stated that poor public transit was a major problem for young employees living outside the area. These employees had often just graduated from university and were either not willing or not able to pay for a car. With poor mass transit connections, employees of office parks, whether redeveloped or not, were obliged to rely on automobiles, reinforcing growing congestion on highways.

In some redevelopment cases (e.g. Northwest Park in Burlington, Lexington Technology Park

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[6] The Comprehensive Permit Act is a Massachusetts law, which allows developers of affordable housing to override certain aspects of municipal zoning bylaws and other requirements. It consists of Massachusetts General Laws Chapter 40B. Chapter 40B was enacted in 1969 to address the shortage of affordable housing statewide by reducing barriers created by local municipal building permit approval processes, local zoning, and other restrictions.

in Lexington and Needham Crossing in Needham), additional transit had been provided. Transit enhancement reflected strong efforts from the real-estate industry and city officials to improve transit access, either by funding privately financed shuttle services or by establishing shared mobility options like bike sharing docks. Interviewees (2,3,9,11) stated that they had sometimes pursued efforts to improve bus frequencies, but that such efforts required long negotiation.

Ultimately, poor public transport for Boston's redeveloped office parks meant that parking remained a major topic of discussion, and that both municipalities and developers had to compromise between low-density, inexpensive and space-consuming surface parking and high-density, expensive, and spatially efficient structured parking.

3. *Acquisition of infrastructure grants*

As strong roadway infrastructure was perceived as crucial by most interview partners (1-5,12,13), such improvements were high priority. Since municipalities in Massachusetts are either not responsible for, and/or not able to afford improvements to road infrastructure, towns heavily rely on infrastructure support from other levels of government. In Massachusetts the "MassWorks Infrastructure Program"[7] was stated to be a helpful, state-funded program to support towns in the improvement of roadway infrastructure. Acquiring financial resources from this program was stated by interviewees (1-5) to be essential for redevelopment. In successful cases, public investment in infrastructure was stated by interviewees in three municipalities (2-5) as an incentive facilitating private investment in building stock. Other challenges mentioned by interviewees (1-4) were a lack of political support for rezoning of office park sites, a situation often influenced by the previously stated negative public perceptions of rezoning. Fewer interviewees (5,6) mentioned profitability and parking as an issue, including the two case studies examined.

5. Retrofitting of office parks in the Boston region – two case studies

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[7] The MassWorks Infrastructure Program provides a opportunity for municipalities and other eligible entities in the state of Massachussets seeking public infrastructure funding to support economic development and job creation. (http://www.mass.gov/hed/economic/eohed/pro/infrastructure/massworks/faq/)

5.1. *Northwest Park, Burlington*[8]

Northwest Park (NWP) is a suburban office park that underwent redevelopment following a 2007 rezoning. It is located in the town of Burlington, approximately 18 miles from downtown Boston, between Interstate 95 and Burlington's small town centre (Figure 8). The NWP site has a size of approximately 285 acres. NWP is part of a large business area along I-95, including the Burlington Mall, the Lahey Clinic (a medical centre), and a second redeveloped business park called "The District". NWP is owned by the privately held real estate company Nordblom and the site has been used as an office park since it was first developed in the 1960s.

Like many parks developed in the early post-war era, NWP was still economically successful in the early 2000s, but its owners felt that the site was not prepared for a future work and residential demands. In 2006 Nordblom decided to redevelop NWP in stages in order to offer more modern office space, increase retail and trade, as well as to add restaurants and housing. In the case of Northwest Park, different variables came together to facilitate the redevelopment. On the one hand the financial crisis in 2008 affected some parts of Burlington's office park market with growing vacancies. And the demand for working space began to shift in favor of more flexible and modern designs. Interviewee Fremont- Smith of Nordblom stated that "We did not have a strong economic need to redevelop the place, but we felt if did not change the structure, it would be too late at some point, and we wanted to be prepared for changing demands."

Following rezoning in 2007, Nordblom developed 600,000 square feet of retail space, 300 apartment units, a 225-room hotel, and 3.5 million square feet of new or refurbished office space. The design of NWP follows new urbanist planning and design principles, described by Nordblom as a "live-work-play approach". This approach involved retrofitting the office park with a mixture of uses, adding a 300-unit residential complex (requiring a rezoning from the town of Burlington), creating higher densities, and enhancing sustainable traffic solutions like a bike sharing service and an enhanced bus connection to the T (Boston's rail transit system).

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[8] *Information in this case study was provided by interviewees from the town of Burlington and the Nordblom Company.*

Northwest Park's redevelopment was challenged by residents of Burlington, who were concerned about the scale of the redevelopment and NWP's proposed provision of multifamily housing, which residents feared would overcrowd schools and increase traffic congestion. Todd Fremont-Smith, Project Leader at Nordblom Real Estate, described the challenges the company faced: "These redevelopment projects take a lot of time and acceptance. We put a lot of effort in educating the community about the benefits of mixed-use projects, which finally convinced them."

Northwest Park's redevelopment was palatable to Burlington for another reason: the town is strongly dependent on tax revenue from office uses. The office park's generation of tax revenue was affected by the financial crisis of 2008. As planning director Kristin Kassner described, "Burlington relies on tax incomes from companies. After the crash in 2008 vacancies went high and tax incomes were breaking down. When residents saw the property taxes going up, they were more understanding of the redevelopment we were proposing."

5.2. Needham Crossing, Needham[9]

Needham Crossing (NC) is a suburban office park that has undergone redevelopment since 2006. NC is located in the town of Needham, 16 miles from downtown Boston between I-95 and the Charles River (Figure 10). NC's site is approximately 185 acres in size.

The real estate firm Cabot, Cabot & Forbes (CCF) developed what was known as the New England Business Center in the 1950s. Initially the park contained 500,000 square feet of office space in primarily one-story brick buildings. This park survived intact into the early 2000s, but by the time of the 2008 financial crisis and even before, the park faced challenges of vacancy and loss in value. Post- 2008, NC's owners believed that its future was vulnerable.

In 2011, the town of Needham hired a branding consultant to rename the district, and its owners

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[9] *Information in this case study was provided by interviewees from the town of Needham and from the Cabot, Cabot, and Forbes Company.*

commissioned a feasibility study to create a vision and test the economic feasibility of redevelopment. A 2011 rezoning reflected Needham's and CCF's vision of an "urban, flexible and accessible" (Sullivan 2016) modern suburban environment. The rezoning permitted residential, commercial, and mixed uses (retail, restaurant, and consumer services) within multistory buildings.

According to interviewees (2,7), NC's addition of a residential component resulted from the town and CCF's need for housing for the growing technology workforce of nearby business parks. Another motive was to balance the new retailing components of the development. As Devra Bailin, Economic Development Director for Needham, said, "Sometimes housing is a necessary element to redevelop those places and bring in the amenities, so that there is a community that supports restaurants and retail."

The largest housing built at NC since rezoning is the 350-unit Charles River Landing, one of the largest multifamily developments in the study municipalities. The town of Needham approved this project via the state's "Local Initiative Program", in which the town negotiated with developers to permit greater height and density than permitted under conventional zoning. CCF collaborated with the state of Massachusetts to create a public walkway along the Charles River for recreation. This walkway was supported by developer CCF because it improved attractiveness of the residential development and allowed tenants access to the Charles River for recreation. CCF provided the land, while the path and grounds were financed by the Department of Conservation and Recreation's Charles River Reservation. This entity maintains the walkway as well.

In another instance of housing being constructed at NC, the so called *2nd Ave Residences* developed by Normandy Real Estate Company, rezoning permitted up to 250 apartments to be built on a site near Interstate 95 with a requirement by the city of Needham that 12 percent of apartments be affordable. This housing was under construction at the time of writing (June 2017). Like Charles River Landing, the 2nd Avenue Residences were made permissible by the NC rezoning.

Another significant step in NC's redevelopment was global travel corporation TripAdvisor's

decision to establish its new headquarters there. These buildings were completed in 2015 and contain 290,000 square feet. According to Needham's Devra Bailin, TripAdvisor's decision was a significant step in incentivizing further redevelopment of the office park. Needham also managed to acquire significant funding for infrastructure improvement that connected the office park to Interstate 95. State approval of those funds also facilitated CCF's decision to redevelop the site. And while regional planning and development is limited in the Boston region, Needham Crossing is within a larger, intermunicipal "innovation district" called the N2 Innovation Corridor. This corridor, a collaboration between institutional and private actors in the two towns, promotes a larger, 500-acre area in Needham and Newton.

According to Economic Development Director Bailin, three factors account for NC's overall success: infrastructure improvement funding, multi-family housing that contributes to economic development, and cooperation with the city of Newton that improved the site's marketing and perception as a "high tech" area. These factors reinforced companies', residents' and city officials' confidence that NC's redevelopment process would improve the overall image, economy, and quality of life in the town of Needham.

6. Discussion: elements contributing to success

The study's analysis of office park redevelopment identified several elements that contributed to success, or whose absence contributed to challenges or even to the failure of redevelopment. These elements were not all common to all of the six municipalities examined, but many were found in more than one instance. These elements were the following.

Leadership can come from either the public or private sectors. In the case of Needham Crossing, the town of Needham took a leading role in the preparation of a feasibility study and the development of a long-term vision. They also developed the idea of the so-called N2-corridor between Needham and Newton as a new high tech corridor. According to the town of Needham (Balin 2016), these actions stressed the necessity for retrofitting NC. These actions also facilitated acquisition of infrastructure funding from the MassWorks Investment Program.

Contrary to the positive evidence of public sector leadership in Needham, the second case study of North West Park in Burlington shows an alternative case in which a real estate developer took initiative, proposing a concept to a supportive but rather passive city administration. In both cases the leading actor remained so throughout the process, whether it was a private real estate firm, or the city administration. Sustained leadership was stated by interviewees (9,11) as especially important since communication with multiple actors was critical and because developments took a long time to come to fruition.

Fewer property owners generally contributed to a more efficient redevelopment process for Boston's office parks. This is one element of redevelopment that planning authorities could not influence, but which played a major role in influencing consensus and negotiations. A single owner can more easily develop a singular vision for a property than can a group of small property owners with different motivations. While the successful cases of Needham and Burlington had one owner for the majority of the redevelopment area, many other office parks in the Boston region have a diverse ownership structure. Redevelopment of these more diverse office parks may prove challenging.

Given that efforts to enhance alternative transportation access were only partially successful, *roadway infrastructure investment* was crucial for successful redevelopment. All of the cities and office parks examined in the study have a direct connection to Interstate 95. Any improvement of the road infrastructure was perceived as a positive development signal for potential investors. While accessibility, not road infrastructure quality, might ultimately be a more sustainable aspect of transportation to Boston's office parks, the short-term advantage of roadway improvements proved more implementable than transportation diversification in the cases examined.

Communication with the public was also crucial. In Boston's suburban towns, the public has a strong voice in development decisions. Much community energy was focused on the addition of residential units to office parks, particularly if developments contained affordable housing or consisted of multi-family buildings. Our study agrees with Innes 1995 and Schively 2007, both

of whom described the challenges of "not in my backyard (NIMBY)" and „locally unwanted land uses (LULUs)" as a major challange of redevelopment and infill planning (Innes 1995, Schively 2007). Informants (7-9,11) emphasized the necessity of convincing and educating communities, and of the utility of best practices and compelling visual presentations to create better understanding and support among residents.

Housing was considered highly desirable by both developers and consumers, but was also a challenging development component. Housing was present in most redevelopments studied. Interviewees emphasized the combination of a strong housing market in the region and the underrepresentation of affordable housing and multiunit housing as motivations for adding housing to redevelopment projects. Adding housing to redevelopments also contributed to somewhat more abstract ideals of mixed-use neighborhoods and even "smart growth". Larco (2010) described this latter ideal as "suburban multifamily housing [that] contributes to smart-growth goals, as it places density near commercial areas and houses a population that makes a significant percentage of non-auto- oriented trips" This abstract ideal was compelling to a younger generation of housing consumers, who developers found to be demanding other housing types and higher flexibility than the typical single family housing stock of suburban towns. This future community, however, did not influence existing residents who demonstrated skepticism regarding the social and physical form of multifamily housing. We saw that sssertive efforts on the part of municipal officials were critical for acceptance of new housing.

Urban design, particularly pedestrian and walkable public space, played an important and increasing role in redeveloped office parks. The combination of denser buildings, diversified (albeit only slightly) transportation, additional land uses, and improved public spaces confirmed urban design as a signal aspect of office park development. As office parks densify and as consumer preferences shift, the quality of "public" space, as opposed to simply the quality of office space, gains in importance. All informants agreed that "placemaking", formerly unimportant, was becoming a principal component of marketing and site planning for redevelopment. All of the urban design qualities of Boston's redeveloped office parks were consisted with the new urbanism movement, which since the 1980s has emphasized mixed uses, density, walkability, and connectivity (Talen 2006, Dutton 2000, Grant 2005, Rodríguez et al

2007).

7.Conclusions

Suburban office parks are an important component of suburban landscapes, and their retrofitting is one of the principal means by which suburbia itself is retrofitted. Despite the significance of office parks, these sites are sometimes underrepresented in the retrofitting suburbia debate. Office parks present important redevelopment opportunities both because they have *shorter* economic lifespans than residential areas, and *longer* lifespans than 1-storey retail properties. Thus, the office park becomes a good opportunity to change the physical, economic, and social landscape of suburbia. Their variably diverse ownership structures make office park retrofitting a matter of infill as much as one of demolition and reconstruction. As a result of economic demand, medium- length lifespan, and favorable ownership structure, redeveloped office parks are becoming one of the first sites for what one informant called the "urbanization of suburbia".[10]

While the urban planning of old was often motivated by government funding and policy mandates, Boston's suburban office parks are experiencing redevelopment due to market pressure alone. Demand for new types of space, and the perceived or real obsolescence of older types of space, led in the cases examines to property owners creating new types of land uses and new buildings (e.g. residential, retail), and new built environments (e.g. new "public" spaces and more walkable areas). These changes were enabled by shifts in regulation, permitted by relatively pliant municipalities desirous of retaining or enhancing tax revenue. Private and public sectors worked harmoniously in the cases examined; the most independent voice seemed to be that of citizens, who typically expressed a desire to keep things "as they were".

New urbanism has long argued for many of the principles realized in Boston's redeveloped office parks, including mixed uses, higher densities, support of walkability, mobility modes like bike sharing, and a focus on "public" space. The shift away from the mono-functional, "placeless" office park model of the 1950s is clear, and the postwar office park design model would appear

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[10] Beside office parks, also dead Mall sites as another type of non-residential Suburbia, have gained growing attention in US Cities during the last years (Dunham-Jones & Williamson 2017).

by contrast to be heading toward extinction, driven by the demands of market, developer, and municipal regulator. None of the interviewees mourned the demolished postwar office park environments: New Urbanism, or the office-park version of it, was merely common sense for both city planner and real estate developer. This is not to say that Boston's redeveloped office parks are true transit-oriented developments, nor that they are sustainable, merely to say that many of the physical qualities of their redevelopment conform with new urbanist ideals.

Demand from a new generation of consumers is playing a substantial role in the redevelopment of office parks. All informants emphasized the imbalance between housing demand (unmet) and office demand (partially met) in the Boston suburbs. Multifamily buildings and mixed uses reflect changed housing demands among a younger work force, the increasing unaffordability of single-family houses in an expensive region, and a desire for more visually and experientially stimulating neighborhoods than postwar suburbia is able to offer. State regulatory mandates for affordable housing are working in tandem with a market that demands smaller units in multifamily buildings, and more housing in general.

This study's examination of the perceptions of involved actors indicated that there is clear site competition between suburbs and cities in the Boston region, and that suburban office locations are becoming at least a little more urban in order to compete. This transformation remains incomplete: automobile dependency remains heavy, public transportation access remains poor, and homeowner resistance to mixed uses will likely remain substantial. Many challenges remain, and substantial investment will be required from both public and private sector actors to meet these challenges. The Boston region's continuing market shift toward highly skilled jobs is likely to continue, and office parks will very likely to continue to be redeveloped in order to meet the demands of highly-skilled workers, continuing what is now a ten-plus year trend.

This study provides many avenues for future research. The respective power roles and motivations of different actors in the redevelopment process could be examined in more detail, as might the particular role of planning and public policy in motivating, as opposed to merely reacting to, redevelopment. Another avenue of research could extend this study to include

office park in other American metropolitan areas in order to compare and contrast the role of external conditions like regional economies, political structures, or planning traditions in affecting redevelopment outcomes. Additionally, transnational comparisons of suburban office park redevelopment between US cities and European cities would likely bring new insights towards better understanding the respective influence of private and public actors and the power of their specific planning instruments, in the promoting, permitting, and policymaking of redevelopment.

Other future research might pursue a more detailed examination of urban morphology and building structure (parcel size, building size, density, distribution of uses). Answering the question of whether office parks in fact show a different layout before and after the redevelopment could be investigated in depth by analyzing their existing and planned built environment.

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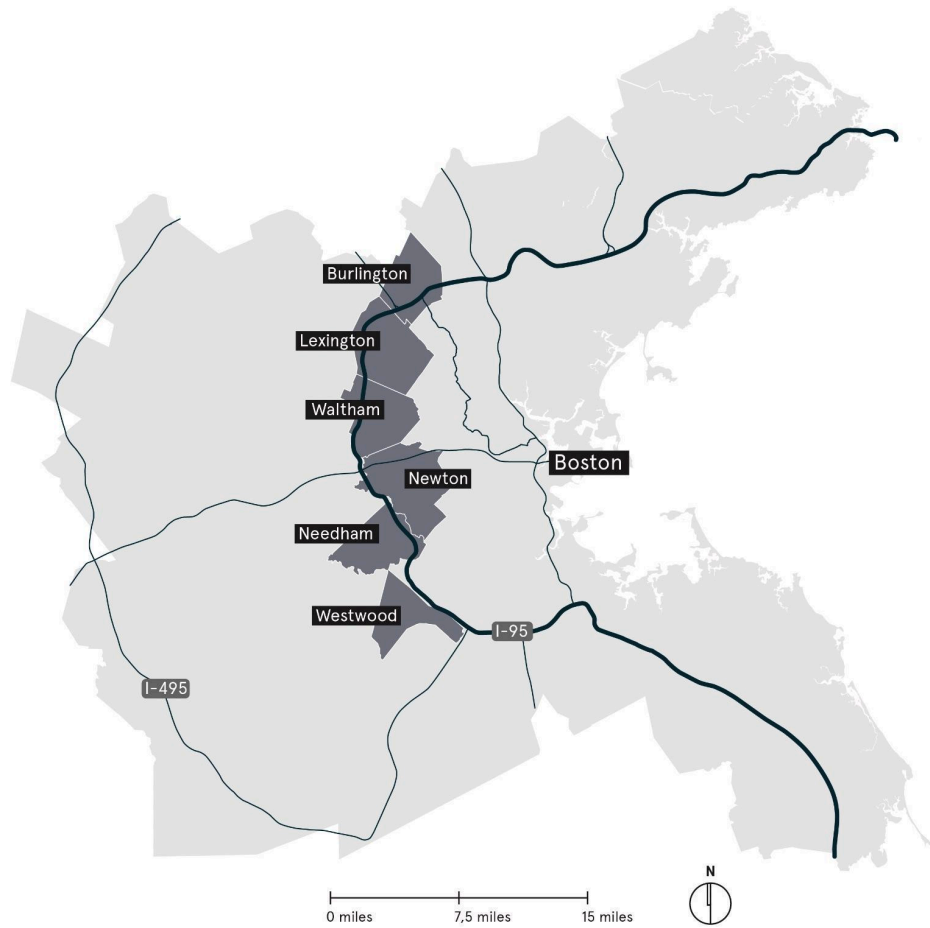
[Placeholder for Table 1]
Table 1: Demographic and tax-revenue data for the six selected municipalities

[Placeholder for Table 2]
Table 2: List of conducted Interviews with city officials, real estate developers and
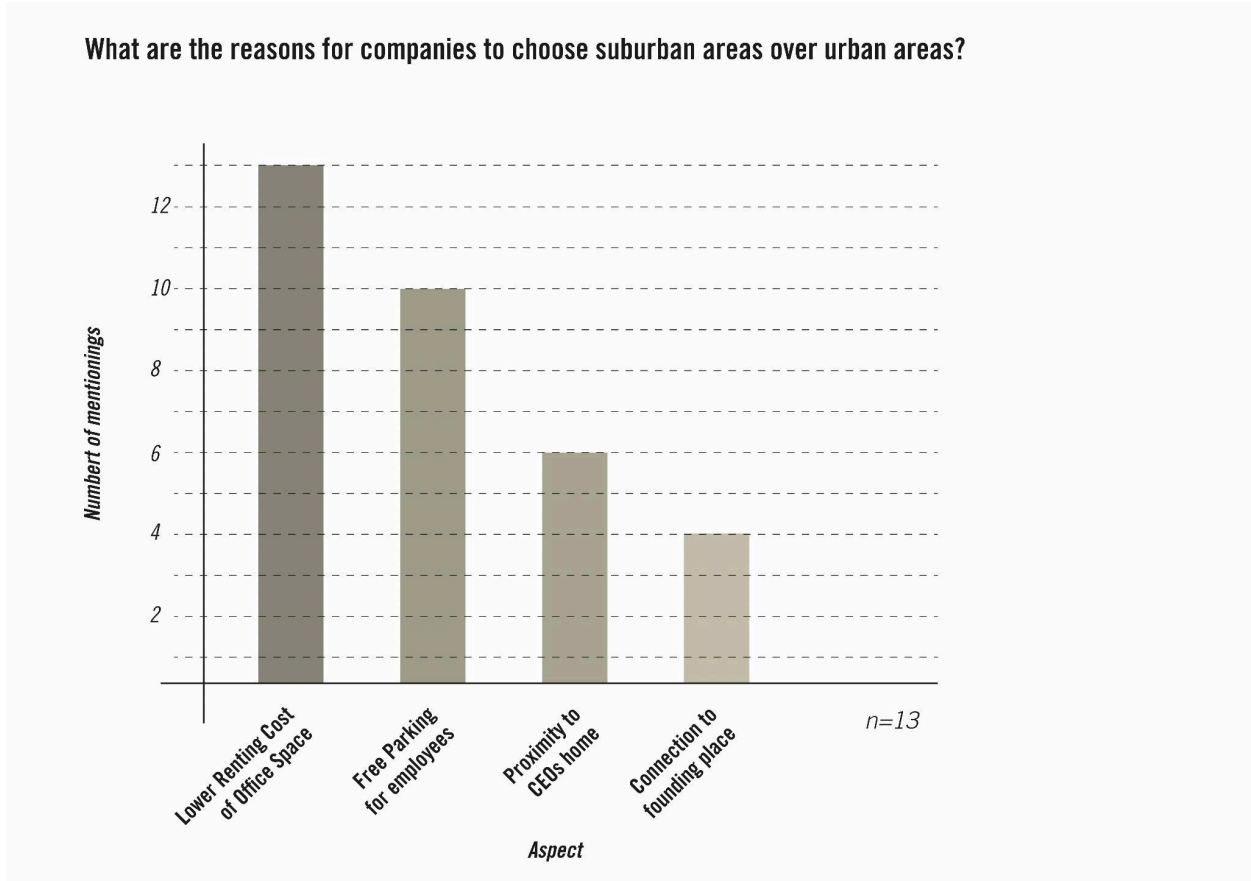
institutions.

Figure 1: Overview of Suburban Office Parks in transformation in the Boston Metropolitan Area

TOWN OF BURLINGTON

BUR

DEMOGRAPHICS:
Population (2010):   24,498

Median HH Income (2014): $ 95,465

TAX REVENUES (2016)°: $ 94,846,125

Residential°: $ 38,920,977 (39 %)

Commercial°: $ 51,068,751 (51 %)
Industrial°: $ 4,856,397 (5 %)

Sources:
US Census Bureau: http://www.census.gov/quickfacts/table/LFE041214/2545560,2509875,2544140
Burlington Annual report 2016: http://www.burlington.org/town_government/docs/2015%20BURLINGTON%20MA%20ANNUAL%20REPORT.pdf

TOWN OF NEEDHAM

NED

DEMOGRAPHICS*:
Population (2010)*:   28,886

Median HH Income (2014)*: $ 129,154

TAX REVENUES (2014)°: $ 106,008,113

Residential°: $ 81,523,132 (76 %)

Commercial°: $ 17,047,458 (16 %)
Industrial°: $ 3,252,512 (3 %)

Sources:
*US Census Bureau-http://www.census.gov/quickfacts/table/LFE041214/2545560,2509875,2544140
°Needham Annual report 2014: http://www.needhamma.gov/DocumentCenter/View/11588

CITY OF NEWTON

NEW

DEMOGRAPHICS:
Population (2010)*:   85,146

Median HH Income (2014)*: $118,639

TAX REVENUES (2015)°: $ 304,217,591

Residential°:   XXXX (XXX%)

Commercial°:   XXXX (XXX %)
Industrial°:   XXXX (X%)

Sources:
*US Census Bureau:http://www.census.gov/quickfacts/table/LFE041214/2545560,2509875,2544140
°Newton Annual report 2015: http://www.needhamma.gov/DocumentCenter/View/11588

CITY OF WALTHAM

WAL

DEMOGRAPHICS:
Population (2010)*:   60,632

Median HH Income (2014)*: $ 73,162

TAX REVENUES (2015)°: $ 160,422,604

Residential°: $ 105,878,919 (66 %)

Commercial°: $ 40,105,651 (25 %)
Industrial°: $ 8,021,130 (5 %)

Sources:
US Census Bureau http://www.census.gov/quickfacts/table/LFE041214/2545560,2509875,2544140
Lexington Annual report 2015: http://records.lexingtonma.gov/weblink8/0/doc/249714/Electronic.aspx

Figure 2: reasons for companies to choose urban area locations

Figure 3: Reasons for companies to choose suburban area locations

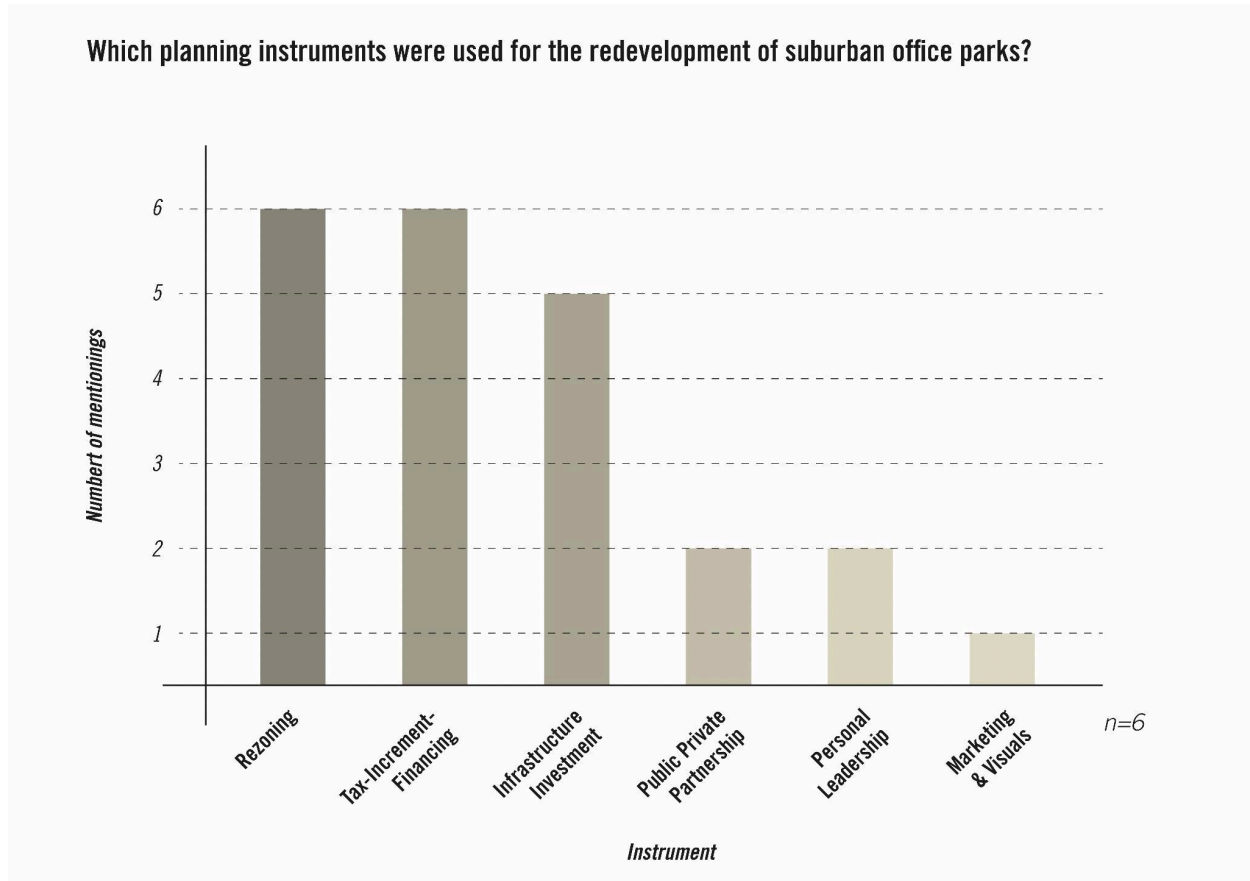**Which planning instruments were used for the redevelopment of suburban office parks?**

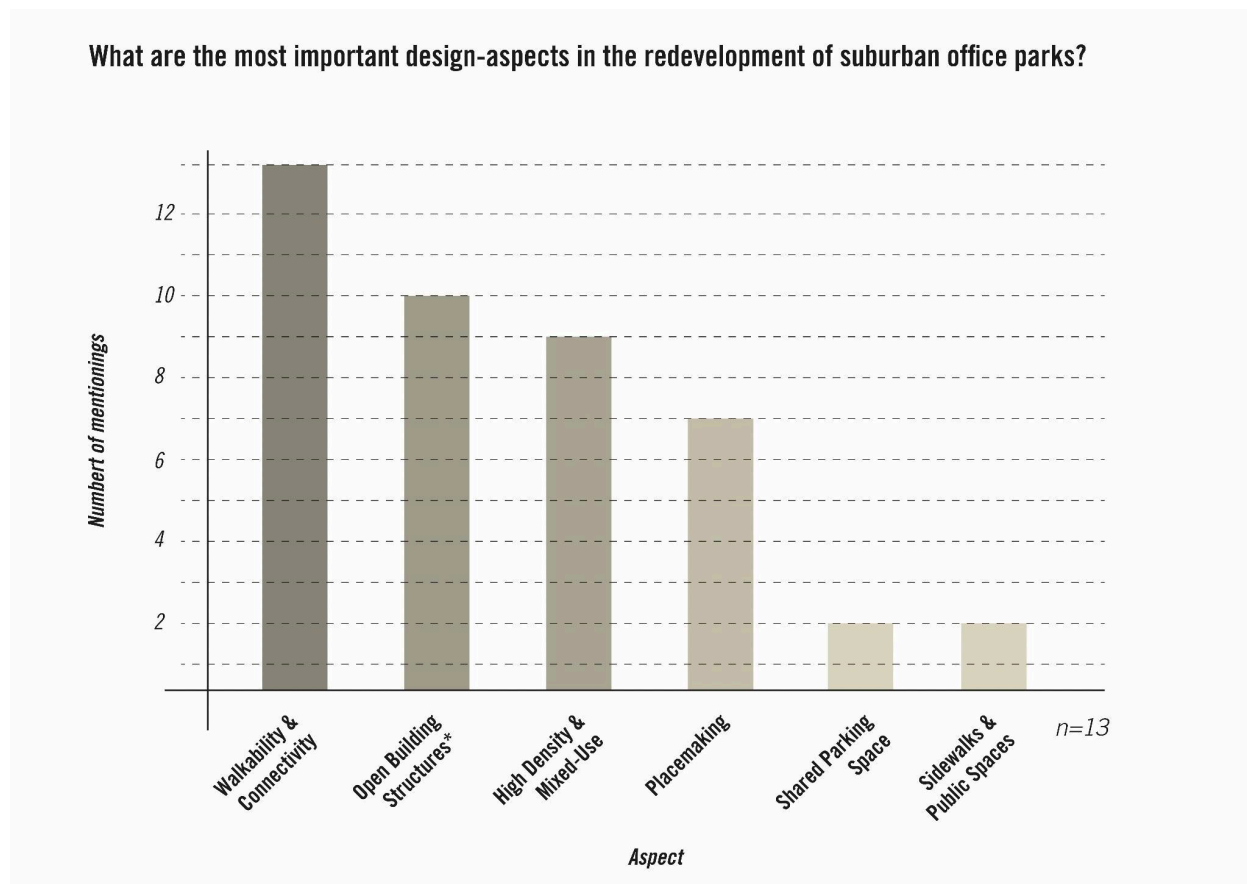*Figure 4: Planning instruments and management strategies that were used in the redevelopment process.*

Figure 5: Most important design elements in the redevelopment of suburban office parks.

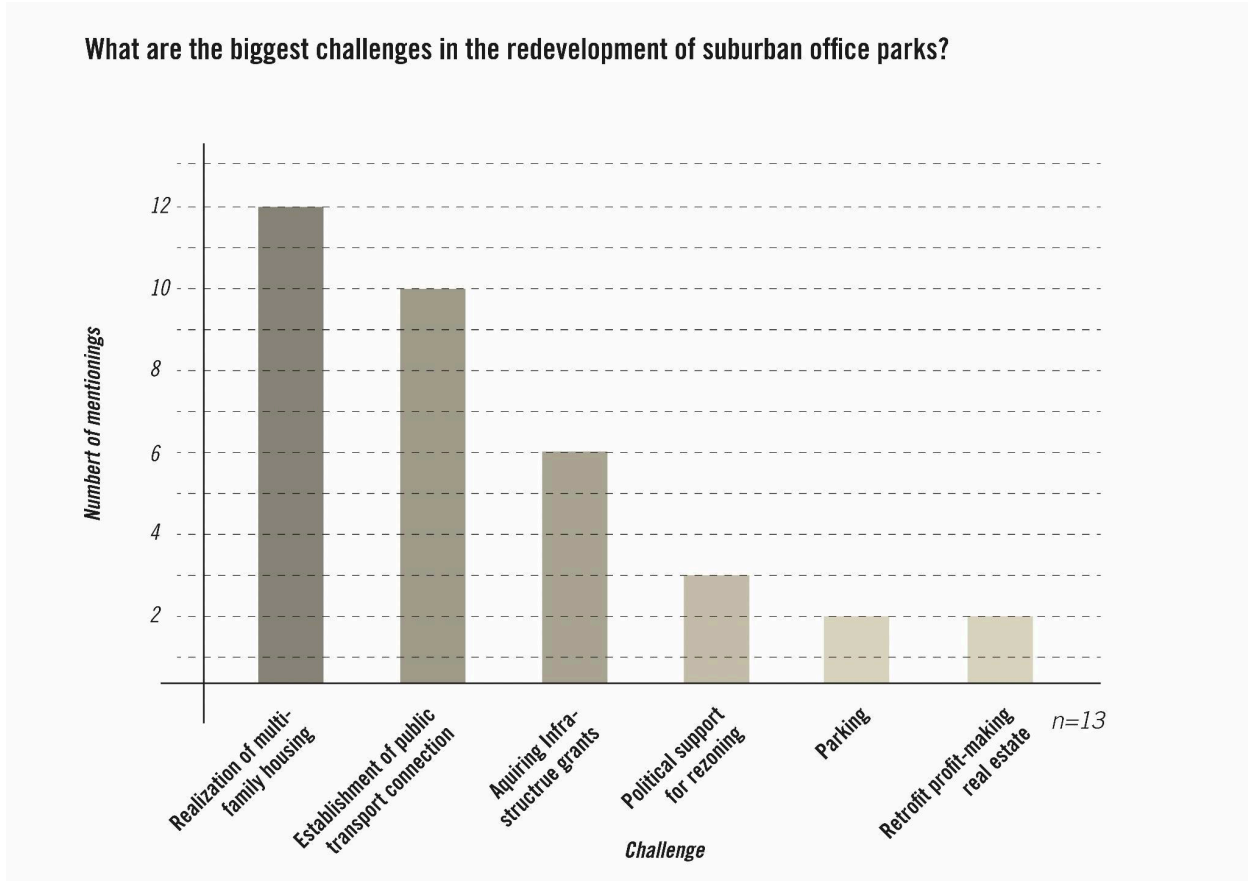**What are the biggest challenges in the redevelopment of suburban office parks?**

Figure 6: Biggest planning challenges in the redevelopment of suburban office parks.

Figure 7: Image of Northwest Park in Burlington. (Source: Authors)

Figure 8: Overview of Northwest Park in Burlington. (Source: Authors)

Figure 9: Visualization of „North West Park" by Real Estate Company Nordblom, showing the future development. (Source:

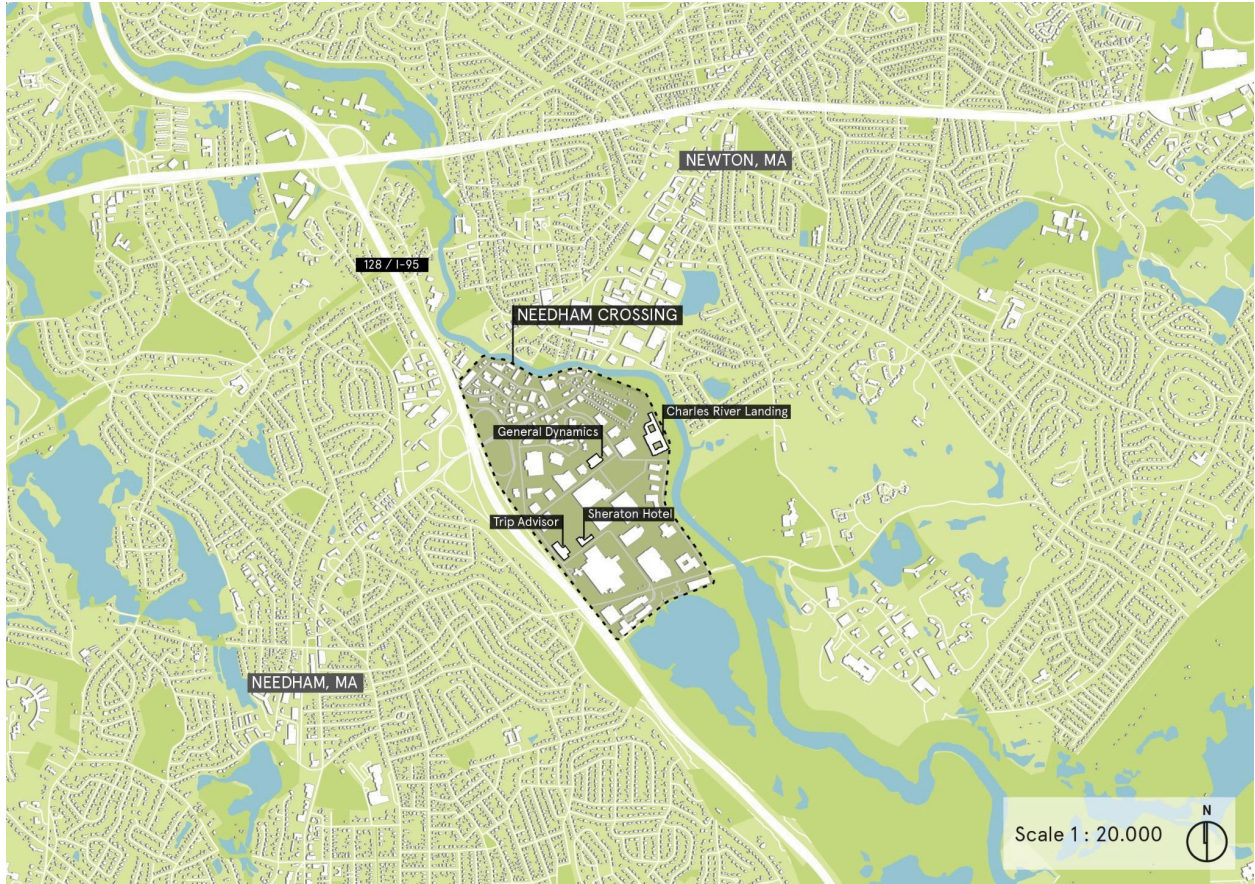http://northwestparkburlington.com/about-the-park/neighborhood/*)*

Figure 10: Image of Needham Crossing in Needham. (Source: Authors)