INNOVATING THE CITY
Challenges and Opportunities in Establishing Incubators and Districts in Paris and Boston

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

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Abstract

All over the world, local leaders are leveraging high-tech industry in their economic development strategies. Cities are encouraging the clustering of industries in specific sectors such as manufacturing, innovation, technology, and advanced services. In this effort to leverage distinctive strengths there has been a movement in cities to seed entrepreneurship as part of broader innovation and industrial strategies. This thesis takes a qualitative approach to investigating the opportunities and challenges in creating and establishing innovation clusters in two cities: Paris and Boston. Key insights are drawn from interviews and site visits to startups, co-working spaces, incubators, accelerators and innovation districts. These cases offer insights on the unique political, economic and cultural systems that shape innovation strategies in two cities at drastically different stages of cluster development. The results highlight key institutional, policy and social barriers that have influenced how innovation places form. These insights are meant to provide policy makers and organizations a better understanding of the challenges and opportunities that face entrepreneurs and startup organizations. In conclusion, a proposal for improving innovation strategy in both cities is explored.

Thesis Advisor: Professor Eran Ben-Joseph, Professor and head of the Department of Urban Studies and Planning

Thesis Reader: Dennis Frenchman, Leventhal Professor of Urban Design and Planning
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Chapter 1

INTRODUCTION

A CAUSE FOR INQUIRY

Innovation in the city, around the world

All over the world, local leaders are leveraging high-tech industry in their economic development strategies. The clustering of companies in specific sectors such as manufacturing, technology, and advanced services increasingly offers cities a "starting point in the real economy" (Katz and Bradley 2013). In this effort to leverage distinctive industrial strengths there has also been a movement in cities to seed entrepreneurship as part of broader innovation and industrial strategies (Chatterji, Glaeser, and Kerr 2013).

In The Metropolitan Revolution, Katz and Bradley argue that municipalities driving innovation are focusing less on speculative models geared toward finding the "next Silicon Valley" in favor of a pragmatic approaches aimed at fostering production and innovation. Examples of projects that reflect this ethos abound: Green tech and clean tech research is creating jobs and changing the urban landscape of cities in the Northwest and Northeast (Nelson 2013; Katz and Bradley 2013); the historic manufacturing community of Youngstown, Ohio is enjoying a boost from the recently opened National Additive Manufacturing Institute, part of a broader federal initiative to promote American manufacturing (Landler 2014); in Detroit, a cohort of social- and environmental-minded startups at Green Garage are focused on creating a new generation of "triple bottom-line" companies (Bruder 2012).

What do these seemingly scattered efforts have in common? They are generating startup and research initiatives that leverage distinct advantages of local industries, resources and talent. To implement these strategies cities are increasingly using business planning techniques "honed in the private sector" to create modern forms of industrial districts which provides both a physical and social platform for entrepreneurial growth (Katz and Bradley 2013). Unlike "smokestack" chasing of the past where regional and city officials bid against each other for large plants, efforts are being made to seed local entrepreneurship through the promotion of startup activity (Chatterji, Glaeser, and Kerr 2013), sometimes targeting specific industries.
America is not alone in bringing innovation and entrepreneurship together in cities. Across the pond, Barcelona and London are home to districts of high-tech and entrepreneurial companies within close proximity to one another. How these clusters form varies. London's Silicon Roundabout grew around a few startups seeking cheap rents in what was then called east London's "Old Roundabout" neighborhood (Kingsley 2011). Barcelona's 22@ developed under the heavier hand of "European level funding" and planning (Katz and Bradley 2013) – a transformation that turned 494 acres of industrial land into a high-density mix of uses targeting media, ICT, technology and energy sectors (Brooking Institute 2011).

As cities attempt to grab a piece of the innovation economy, policies and strategies are being devised to meet this end. While cases and statistical analyses provide us with valuable lessons on how innovation clusters form, ultimately, cities must look toward approaches that leverage their unique political, economic and cultural systems. This research investigates the role of these systems in shaping the innovation clusters of two cities: Paris and Boston.

FOCUSING THE FUZZY LANGUAGE OF INNOVATION

This research focuses on two forms of development that are become commonly deployed in innovation development strategies: incubators and innovation districts.

Example: Incubator
Green Garage, Detroit
(Image source: modelmedia.com)

Example: Innovation District
South Lake Union Neighborhood, Seattle
(Image source: cpexecutive.com)
Definitions of incubators & districts

In assessing the programs and developments of innovation clusters, it is easy to get lost in fuzzy language. This project focuses on two types of innovation organizations that exist in cities 1) innovation incubator and 2) innovation cluster. Collectively, these organizations are referred to as “innovation places.” For the purpose of this project, set definitions establish common units of analysis:

**Incubator** – encompasses a wide range of programs and physical locations. Often nothing more than a warehouse or lab, what makes this type of innovation place unique is the program that exists within the walls of the physical structure. These spaces may include: startup incubators and accelerators, high-tech and creative co-working and cultural and event places.

More generally, incubators aim to spur innovation or encourage the creation of new companies or enterprises. Incubators and accelerators bring together a specific mix of individual (scientific, creative or business) and startup talent, funding, resources and business mentorship that might otherwise be dispersed or located in separate facilities. Innovation incubators can exist within a district or a region.

Ex. Mass Challenge, Boston (startup accelerator); WeWork, Boston (co-working); District Hall (cultural and event place)

**Innovation district** – occurs in many forms around the world, in general, it can be viewed as a neighborhood usually in an urban setting that has a high concentration of entrepreneurial, startup and high-tech firms. This new model clusters “leading-edge anchor institutions and cutting-edge innovative firms, connecting them with supporting and spin-off companies, business incubators, mixed-use housing, office, retail and 21st century urban amenities” (Katz and Bradley 2013). These amenities can include access to restaurants, coffee shops, bars, transportation and cultural resources. Although districts may develop initially without formal organization, to scale up to the neighborhood size, some formal intervention through city initiative or via a private developer is often necessary.

Ex. Kendall Square, Cambridge; South Lake Union, Seattle; Silicon Roundabout, London
RESEARCH QUESTION

As these descriptions suggest, innovation incubators and districts are just one part of the diverse mix of stakeholders that makeup innovation places. It's from this small corner of the vast "innovation" landscape, that a primary question is explored: "What are the challenges and opportunities in creating/establishing innovation places?"

ORGANIZATION

A variety of research techniques were used for this project including photography, ethnographic observations, archival research and on-site analysis. The majority of data was gathered using two approaches: in-depth open-ended qualitative interviews and process tracing. Chapter two elaborates on the cases of Paris and Boston, provides definitions of some common terms referred to in this research and introduces techniques used to procure and analyze the data. The prevailing theories on how innovation clusters form in cities is introduced in chapter three, as well as historic examples of planning efforts in both cities. Chapter four sheds light on the qualitative methods used to analyze the interview and site visit data. Key findings—organized around political, economic and cultural systems—are presented in chapter five, which offers lessons from innovation places in Paris and Boston. Finally the challenges and opportunities of innovation places in Paris and Boston are addressed in chapter six.
Chapter 2

CASES

THE CASES OF PARIS & BOSTON

“When you look at the ranking of the most popular people in France, you have actors, you have engineers,” she said. “But you never have entrepreneurs. We have to change that.”
-Fleur Pellerin, French small business minister

“We have eight research universities and 15 teaching hospitals, and there’s nothing else like it in the world. The innovation economy gathers around institutions like these.”
-Thomas Menino, former Boston mayor

Comparing innovation places cross-culturally provides an opportunity to shed light on how cities shape innovation development. In recent years both Paris and Boston have unveiled strategies aimed at fostering high-tech industries. Though they share similar goals of fostering growth in an increasingly knowledge-based economy, their approaches to fostering innovation reflect drastically different political, economic and cultural norms.

Paris: Creating a New “International Digital Hub”

Last year marked the launch of a several projects in the City of Paris aimed at fostering high-tech and entrepreneurial ecosystem. NUMA, an established non-profit, opened a new, 1,500 square-meter non-profit incubator and co-working space with financial support from Google, the city of Paris and a handful of corporate donors. In the city’s 13th arrondissement, an anxiously anticipated and much debated innovation incubator is under construction and slated to be the largest incubator in the world when it opens in 2016. State policy is such activities with an eye toward positioning Paris as an “international digital hub” where the city’s “regional digital ecosystem” is leveraged and consolidated, specifically at the neighborhood-level (Pfanner 2013). Regionally, the Paris-Saclay Development Authority began construction on several small projects part of a $3.25 billion dollar academic, research and business super campus located in the southwest corner of Île-de-France. At the federal level, a financial report from the government-run financial consulting group, Caisse des Dépôts et Consignations

2 (Pfanner 2013)
3 (Seelye 2014)
4 Île-de-France is the regional administrative authority that includes the greater Paris Metropolitan area.
illustrates the urgency for policies that support the move toward developing high-tech clusters:

"The French digital brain-drain is hard to quantify and qualify: focusing on the potential of French firms in the digital sector, on the quality of its academic and applied research and the standard of its engineers highlights key competitive advantages that warrant additional international promotional efforts.... How do we hold onto this talent and concentrate it within a geographical area sufficiently dense to facilitate the pooling of knowledge and skills as well as the emergence of start-ups able to take advantage of flexible environments adapted to the unpredictability of their exponential growth phase? What services do these entrepreneurs and enterprises expect and on what scale do we need to think?"

Boston: A “Gathering Place” for Innovation

Like Paris, Boston has also focused its attention toward concentrating innovation and entrepreneurship. This past spring marked the opening of District Hall, a 12,000 square-foot “gathering place” for the growing community of office and startup workers in the recently established Innovation District. Initially created as a platform for “aggressively promoting” the area for startup offices, today the area is home to high-tech startups Artaic and Sample6, as well as larger companies such as Zipcar and LogMeln. And the district continues to expand. Since 2010, than 100 new companies have moved to the neighborhood, including the new $900 million global headquarters for Vertex Pharmaceuticals. Last year, MassChallenge, one of the Innovation District’s first anchor tenants announced it would relocate to the eastern edge of the district to the Innovation and Design Building. As an early tenant of the Innovation District, the incubator has been described as a “catalyst” and “magnet for growth.” In its new Boston’s Marine Industrial Park location, MassChallenge will join a new enclave of startups and innovation incubators.

Former Mayor Thomas Menino, who established the Innovation District in 2010, is described as being one of the “first to admit that much of the city’s current economic vitality stems from its plethora of colleges and universities and from its position as one of the world’s major biotechnology hubs” (Patton 2012). His role as mayor was to “stoke” the growth and encourage development of high-tech firms, small startups, as well as restaurants and housing. The Innovation District’s approach toward clustering entrepreneurship in Boston as explained in a paper written by Chatterji, Glaeser and Kerr:

*Cluster policies for entrepreneurship and innovation occupy a very distinct place in this scheme. They are narrowly place-specific, favoring a very specific locale, such as Boston’s Inno-

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5 John Harthorne, founder of the entrepreneurship competition MassChallenge told the Boston Globe last year: “We’re basically like a marketing amenity for the building,” adding that tenants such as Enernoc, Goodwin Procter, and Battery Ventures have signed leases at One Marina Park since MassChallenge moved in. http://www.boston.com/business/technology/innoeco/2013/08/
vation District. This geographic concentration is justified both as a tool for generating positive externalities and as a means of getting the most out of scarce infrastructure dollars. They are also oriented towards either specific industrial sectors (life science, computers) or more generally towards start-ups. They are not usually firm-specific, largely because start-ups are too small to address on a firm-by-firm basis, but also because the proponents of these policies often share economists' skepticism about the ability to pick winning firms, even though they believe in the ability to pick winning sectors.

These snapshot of the innovation policy approaches of Paris and Boston reveal the unique contexts in which innovation strategies are being implemented. In Paris, officials are working to promote a regional and local innovation in a city where the entrepreneurial environment has been characterized as challenging by many, economic growth is low and unemployment is high. In Boston, a narrower approach is being used to concentrate the region's existing startups and high-tech ecosystem into a specific geographic area.

Limitations of cases

Comparing these unique places is complex. It must be noted that the selected cities differ in terms of their scales and population, their contexts of governance, modes of city planning, and histories. In doing this comparison it is hoped that insights will be gained about challenges and opportunities of innovation places in both cities. As such, like-for-like comparisons were not feasible and the cases examined should be viewed in light of their own contexts.

SUMMARY OF SITES: ORGANIZATIONS INTERVIEWED & VISITED

Paris

1) NUMA
   (Incubator/accelerator, co-working space)
   Located in Paris' second arrondissement, this non-profit is well-known in the city's startup community. Its street-facing ground floor provides a lively gathering place for members and the public who congregate for free events and to dine and meet at a reasonably priced, casual café. Its upper floors house co-working spaces, a startup incubator and conference rooms.

Images sources: 1) numa.org; orange.com 2) venturevillage.com 3) artscienceworkshop.com; slash-paris.com/ 5) digitallyyours.fr
2) The Family (Incubator)
In operation for roughly a year, The Family is a privately run incubator that brings resources and connections to its member startups using “unfair advantages”. It offers a special “entrepreneurial MBA” for those interested in starting their own company. They are currently looking to expand their offerings to cater to international startups and corporate clients.

3) Le Laboratoire (Startup, art gallery)
Opened since 2007, Le Laboratoire is a contemporary art and design center in central Paris, near the Louvre. Artists and designers experiment at the “frontiers of science” in a space that looks and operates like a museum.

4) INSERM (CRI) (Research lab)
INSERM’s Center for Research and Interdisciplinarity (CRI) was founded in 2005 in Paris. It currently occupies three locations where researchers from the life sciences, natural, cognitive, and social sciences work together on experimental projects.

5) Cap Digital (pole de compétitivité)
Cap Digital helps innovative small- and medium-size companies to speed-up their international growth, by participating in international trade shows, facilitating business relationships with local key players, and providing soft-landing services.
6) 1,000 Startups
(Startup incubator and co-working space)
A large incubator currently under construction in Paris’ 13th arrondissement, this is a public-private partnership funded primarily by Xavier Niel. It is slated to be the world's largest incubator when it is completed.

7) Paris-Saclay
(Research campus)
Located outside of Paris in the Saclay plateau, Paris-Saclay is part of a $3.25 billion super project that aims to link together research institutions, two universities, 10 “grandes écoles” and various clusters that exist in the region.

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**Boston**

8) Sample6
(Startup)
A biotech startup located in Boston’s Innovation District. Its current location in Boston’s Marine Industrial Business Park includes a wet lab and office space. The company manufactures simple kits that test for food-borne pathogens.

9) Greentown Labs
(Incubator)
A green tech incubator and manufacturing space that is located just outside of Boston in Somerville, Greentown Labs is located on the site of former Ames Envelope Factory next to Artisan's Asylum and Brooklyn Boulders—informally, this cluster of startups is known as “Innovation Row.

Images sources: 6) 1000startupsparis.fr 7) epps.fr 9) bostonglobe.com
9) BOLT
(Incubator)
Bolt is a hardware startup that is located in Boston's Downtown Crossing. Its office includes machine and fabrication shops, as well as office.

Cambridge Innovation Center
(Co-working, event space)
The CIC, is shared office space for startups and venture capital firms. It is currently occupied by 400 small startup businesses.

10) Mass Challenge
(Incubator, accelerator)
Mass Challenge is a startup incubator located in the Innovation District. It was an anchor tenant when the Innovation District first launched in 2010; it has recently relocated from Seaport Square to Marine Industrial Park.

11) Artisan's Asylum
(Co-making space)
This 40,000 sq. ft. makers' workshop and co-working space is located in a warehouse within the former Ames envelope factory in Somerville. For a monthly fee, members can use wood, metal and electrical workshops.

12) District Hall
(Event place)
Located in Boston's Innovation District, this newly opened space is leased by the City of Boston and managed by the non-profit Venture Café. The space includes a restaurant and café open to the public as well as meeting rooms where public events and social networking activities are hosted regularly.

Image sources: 9) makezine.com 10) analoguestudio.com 12) districthall-boston.org
Chapter 3

CONTEXT

LITERATURE REVIEW

Much has been written in the academic literature that relates to the topic of innovation places. This chapter provides offers several theoretical frameworks that provide a context for understanding the urbanization of high-tech industry and the growth of entrepreneurship in America.

Shifting R&D and Production Models in U.S and France

U.S.

Following World War II and into the 1960s, American corporations often incorporated research, development and manufacturing within a single, vertically integrated business model. Companies such as Motorola, IBM and Texas Instruments all operated facilities that encompassed everything from invention of an idea to manufacturing and delivery of a product (Berger 2013). The prevailing corporate business model shifted in the U.S. beginning in the 1970s when business began moving toward horizontal organizational structures.

Silicon Valley offers a extreme example of horizontal integration of business research and production: “Without fully recognizing the consequences, Silicon Valley’s pioneers were creating the foundations of a decentralized industrial system that blurred the boundaries between social life and work, between firms, between firms and local institutions, and between managers and workers” (Saxenian 1994).

France

This switch also occurred in France in the 1980s and 1990s as the country moved away from strong state involvement in business toward growing “Europeanization” and regionalism. The country moved away from “grand projects” such as the massive undertaking of building La Defense from scratch and moved toward projects that reflected a “paradigm shift” towards a liberal economy, progressively regulated by the market (Heidenreich, Martin 2012). The decentralization of the French business development

6 This was in contrast to strong state involvement in the period after World War II in which the French government created “Capitalism a la Francaise” which emphasized a system where state enterprises were established in strategic sectors, often with the help of select companies known as “national champions.” (Heidenreich, Martin 2012).
strategy was further established with the creation of “pôles de compétitive,” a series of 67 geographically clustered research and business clusters focused on building networks of innovation in specific sectors.

While both American and French companies have shifted from vertical integration to become more horizontal, in the U.S. it was the companies themselves that drove this change with the state operation in more a regulatory role in the United States (Heidenreich, Martin 2012).7

**Clustering: Proximity to Complementary and Similar Industries**

The idea of locating like industries, institutions and organizations speaks to the core strategy of many innovation places. That clusters lead to positive spillovers is a central tenant of the economic geographer's contribution (Marshall, A. 1920; Porter 1990) to our understanding of innovation places. Alfred Marshall first wrote about the advantages of industrial clustering in his influential book, Principals of Economics which characterized clusters as a “concentration of specialized industries in particular localities.” At the core of Marshall's work lies the concept that three advantages exist when agglomeration economies occur: knowledge spillover, skilled labor pool, development of support industries and shared resource input (Marshall, A. 1920; Kazuo). These economies are generally known to be external in nature and independent of a single firm but, rather, accrue to all firms located in the same area (Kazuo).

Michael Porter revisited Marshall’s clustering theory building on the argument that firms do not operate autonomously but as entities that mutually exist within a network. In his work, Porter uses empirical evidence to investigate how the localized benefits that Marshall introduced actually drive firms to agglomerate. (Porter 1990; Kazuo; Marshall, A. 1920). As Porter writes in his own words:

"Clusters are a striking feature of virtually every national, regional, state and even metropolitan economy, especially in more economically advanced nations...clusters are not unique however; they are highly typical - and therein lies a paradox: the enduring competitive advantages in a global economy lie increasingly in local things - knowledge, relationships, motivation - that distant rivals cannot match." (Porter, 1990)

7 From a spatial perspective, the period after World War II also marked the rise of the non-urban corporate campus which coaxed major companies such as Bell Labs from offices in the heart of Lower Manhattan to a 213-acre office park outside of Summit, New Jersey in the 1940s. The trend of creating suburban campuses extended into the following decades with corporations, office and research locating outside of urban centers along car-dependent suburban highways in the 1950s and 60s in such places as Silicon Valley in California and Route 128 in Massachusetts, as well as in the south with the Research Triangle Park in North Carolina (Saxenian 1994; Mozingo, Louise A. 2011).
Clusters fall somewhere in between vertical integration of a single industry or firm and “arm’s length markets” in which a firm could rely partnerships or transactions with “dispersed and random buyers and sellers.” This in-between status offers a new, more efficient way for companies and institutions to benefit in two ways: by allowing individual firms to achieve greater scale or allow firms access to other companies. In participating in a cluster, companies operate with greater productivity on several fronts including improving access to suppliers, specialized information, improving motivation and measurement of companies and creating mutual benefits for companies and improving companies’ overall access to public goods and institutions. (Porter 1998)

Additionally, clusters spur innovation and new innovation for a variety of reasons including lowered cost for experimentation due to localized expertise and supply chains. (Porter 1998) From Porter the obvious and hidden benefits that come when similarly focused companies are concentrated within a geographic location are understood.8

“Breakaways” & Knowledge Spillovers

The exchange of ideas between workers from complementary and similar fields appeared throughout the clustering literature. The case studies of successful innovation places confirmed this theory in practice through countless examples of cities, incubators and companies seeking to bring skilled workers into proximity with one another.

Jane Jacobs describes a phenomenon that is similar to Marshall’s knowledge “spillovers” in her 1969 book, The Economy of Cities. In her description of “How New Work Begins” Jacobs discusses the concept of “breakaways,” a practice formalized in medieval guilds when apprentices learned a craft or a trade form an existing expert or organization, eventually breaking away from his master to establish an independent shop.

“Once goods or services have been created or first imitated in a given place, still more shortcuts can often be employed by subsequent imitators. People who learn the work—or a fragment of it—in an existing organization can leave that organization and reproduce the work on their own... In Britain this kind of event in industry or commerce is sometimes called a “breakaway.”

Knowledge spillovers can also benefit companies can also occur in more tacit ways through improving companies’ access to specialized information that accumulates within clusters including market, technical and competitive information. Access this information represents a different kind

8 See Appendix VIII for a detailed analysis using Porter’s framework on increasing productivity in clusters.
of knowledge spillover that can occur in the cluster since proximity more easily facilitates personal relationships and trust (Porter, 1998).

**The rise of the “world city”**

Patrick Geddes introduced the concept of the “world city” in 1915, leading to a growing interest within the realm of economic and urban geography in studying the places where business, finance and trade seem to intersect. Others, like Peter Hall, have used various criteria to rank cities based on such things as trade, communications and financial influence. John Friedman picks up this subject again in the 1980s in his influential and often criticized article the “World Cities Hypothesis” in which the author explores how cities exist within a global context. His work emerged as one of the early examples of understanding the city within a global hierarchy of economic forces. (Friedman 1986; Beaverstock, Smith, and Taylor 2000)

In his 1996 book “The Rise of the Networked Society” Manuel Castells argues that a “networking logic” sets the information technology revolution apart from the industrial revolution. In the industrial, Castells argues, the old Fordist model of mass production permitted serial relationships that were much more linear in nature. In today’s high-tech inundated world, information technology such as the internet have permitted the creation of a much more flexible “architecture and geometry” of social, economic and cultural networks. In short, Castells argues that global cities are located within a “space of flows” rather than specific places. In this, a neo-Marxist perspective, cities are perceived not as places within a specific geographic boundary but more as places that are important because of the things that flow through them (Beaverstock, Smith, and Taylor 2000) such as ideas, people, financial flows and culture.

From the networked theorists it is possible to speculate that some cities in the world exist at the intersection of complex economic, cultural and political forces. In Paris, this concept of the world city is particularly interesting helpful in making sense of the economic links the local economy has to the national and regional economies but also the systems in which the city operates at a global scale.

**Entrepreneurship & Innovation**

While earlier analyses of knowledge spillovers predicted that large companies attained a competitive advantage in accessing, producing and commercializing knowledge, a growing body of research suggests that a different organization – the entrepreneurial firm – has the competitive knowledge in today’s economy (Audretsch and Aldredge 2008). Entrepren-
neurs, with their ability to recognize new opportunities that emerge from knowledge and new ideas and their ability to commercialize those ideas, serve as a “conduit for knowledge spillovers” in their writings on “knowledge spillover theory of entrepreneurship” Audretsch and Aldridge argue that entrepreneurship emerging from knowledge spillovers will “tend to be spatially located within close geographic proximity to the source of knowledge actually producing it. In short, new firms and startups will tend to locate close to sources of knowledge such as universities and research labs.

In their 2010 paper titled “Clusters and Entrepreneurship,” Mercedes Delgado, Michael Porter and Scott Stern refer to entrepreneurs as “essential agents of innovation.” This is partially due to the nature of startups which have greater exit rates that established companies. As a result, new companies that survive have greater potential than established firms. Delgado, Porter and Stern argue that strong clusters support entrepreneurial activity by lower barriers to entry and growth (Delgado, Porter, and Stern 2012). Saxenian further elaborates on the connection between entrepreneurship and decentralized production and organization as contributing a great deal to the success of Silicon Valley where a regional structure and relatively entrepreneurial ecosystem positioned it to remove Boston from its post as a leading producer of semiconductors after World War II (Saxenian 1994; Delgado, Porter, and Stern 2012).

An additional body of research has also begun to look at the role small and young firms have in spurring new business within clusters (Henderson, Kuncoro, and Turner, M. 1995; Rosenthal and Strange 2004; Glaeser, Kerr, and Ponzetto 2009; Agrawal and Cockburn 2003). In their investigation of large firms located in so-called “company towns,” Agrawal and Cockburn found that large companies often become less inclined to conduct exploratory R&D and more insular in their pursuit of innovation. Instead, mixing of a large innovative firm and smaller complementary firms provided a better base for patenting growth (Chatterji, Glaeser, and Kerr 2013; Agrawal and Cockburn 2003). Such a mix captures both the innovation coming from large companies while also fostering a fertile mix of new companies which are often founded by former employees of larger firms (Gompers, Lerner, and Scharfstein 2005; Chatterji, Glaeser, and Kerr 2013).

Access to venture funding can also have a role in fostering entrepreneurship. Well developed VC help to lower a startup’s barrier of entry into an industry and link startups to networks of experienced mentors (Florida 1988). According to Florida, the importance of investor contact networks and investment monitoring go “a long-way toward explaining why venture capitalists cluster tightly together.” The importance of being close to investors was reflected in the interviews with Boston innovation places, a city with
perhaps the long history of investing in technology-driven projects (Florida 1988).

Finally, in their empirical analysis of the data from the Longitudinal Business Database of the Census Bureau and the U.S. Cluster Mapping Project, Delgado, Porter and Stern found significant evidence of the positive impact of clusters on entrepreneurship, arguing that clusters can increase the amount of young startups which suggests that clusters and complementary industries can enhance the performance of startups and entrepreneurship. To put it another way, young companies are more likely to be born in places where they have access to similar companies and resources.

Conclusions from the Literature Review

Worldwide, there is a growing interest in concentrating high-tech clusters in cities and using entrepreneurship as a tool for development. Boston and Paris are working on plans to cluster innovation through projects ranging from singular buildings to the development of entire districts with the goal of bringing together industry and workers. With growing interest, investment and policy needed to create these places, it is therefore no surprise that the topic is being addressed by academics across multiple disciplines. Most notably this research has occurred within the realm of economic geographers who are concerned with examining the positive externalities that occur when firms are located in proximity to each other (Castells 1998; Markuson, Anne). Others, like Michael Porter, study under the umbrella of competitive strategy in which cluster around production and support services are able to take advantage of unique value chains in everything from research and development to training and management. Proximity also propagates “knowledge spillovers” which are another area of ample research on (Saxenian 1994; Florida 1988) high-tech clusters. Despite these efforts to categorize and describe why and where high-tech clusters are forming, little research has been done in understanding how innovation clusters form.

**HISTORY: LESSONS FROM PLANNING & POLICY**

The histories of business and technology development in Paris and Boston provide insights on approaches to development and policy in both cities. Historic attitudes toward urban development, innovation and the government’s role in planning became apparent in the process of analyzing past precedent from both cities. As a result, comparison brings an understanding of the process and decision-making across cultures.
Paris: Examples from central planning & policy

Despite being one of the most economically successful European countries, France has lagged behind its counterparts in the United States, Great Britain and Germany. What explains this schism? Current popular media argues it’s a cultural problem inherent in a country where failure is shunned or considered to be unacceptable (Alderman 2014). Attempting to explain why some startups might choose to locate in London over Paris is not within the scope of this thesis. But through examining some of the major industry-focused developments (La Defense) and more dispersed policy-oriented systems (“poles of competitiveness”), it becomes possible to understand the processes and institutions that are a result of the country’s uniquely centralized approach to city planning.

The Rise of Big Industry & Business Districts

In the first half of the 20th Century the French economic system was regionalized which resulted in a “mosaic of local production systems related to historical traditions in a country.” This changed after World War II when the state encouraged the development of large-scale public companies that edged out small and medium firms (Benko and Pecqueur 2009). This rise of large-scale companies was reflected in La Defense, Europe’s largest purpose-built business district. Development of the 14 km² site fell under the purview of Establissement Public d’Amernagement de La Defense (EPAD), public development organization which acquired land, constructed infrastructure, public amenities and the promoted of La Defense as place for international businesses. The project has several starts and stops including a near end to construction in the 1970s. Development of the site peaked again in the 1980s with a competition led by EPAD to create a monument that would complete the axe historique.

Today, La Defense is home to France’s largest companies including 15 of the world’s largest (Kantchev 2013). The site is not without problems. Considered a project of national, regional and local interest, EPAD linked a wide range of stakeholders including local municipalities, the state and business. The state-run development is still practiced today on large-scale infrastructure projects such as Paris-Saclay.  

9 France operates under a centralized government system that covers many of the public sector costs normally assumed by state and cities in the U.S. The sub-national government system falls into three categories: regions, departments and communes (which include cities, towns and villages). In recent years, the government has moved toward decentralizing its system, giving more authority to regions and communes. While small-scale projects such as a startup or a private incubator may receive little to no government funding, in the case of larger projects state’s involvement is typically still key.

10 EPAD is considered to be an "Operation of National Interest," (OIN) the same designation given to the development authority in-charge of...
Technopoles and pôles de compétitivité: Regionalizing development and industry

Clustering is not a new concept in France. The “technopole” emerged in France following a movement in the national government to localize administrative operations following the 1970s. This formalized in economic development policy into the creation of the Delegation a l’Amenagement du Territoire et a l’Action Regionale (DIACT) which implement regional projects at varying degrees of success (Benko and Pecqueur 2009). This commitment for regional coordination of economic development further formalized with the creation of the pôles de compétitivité, a series of competitive clusters that bring together large and small firms, research laboratories and educational establishments. Local and national public authorities may be brought into the mix, as well as firms that provide business services. In France, there are 71 poles, each focusing on sectors unique to the geographic location of the pole. Paris alone has six poles which focus on a range of topics including media, finance and aerospace. Though much has been written about France’s pole of competitiveness model, recent studies have shown (Duranthon et al. 2008) that being located in a pole has practically no effect on the productivity of a firm.

Though it is not within the scope of this project to examine pôles de compétitivité within themselves, the creation of this cluster-centric approach to economic development highlights a historic interest within France to localize industry at the local level, around specific industries.

Conclusions

The previous section illustrates the role of the government in organizing large-scale development projects while also demonstrating a movement in France toward the localization of these policies. The historic legacy of these approaches will inevitably shape how and what the future of innovation places in Paris and Île-de-France.

Boston: Real estate and economic “renewal”

In 1957 the City of Boston’s Redevelopment Authority (BRA) was established by the Massachusetts state legislature to oversee development previously conducted by the Boston Housing Authority and extended the agency’s oversight to go beyond public housing. Boston, like much of the country
region was suffering from population loss and the decline in the manufacturing and textile industries that had been the backbone of the region's economic development portfolio (Eisenmenger 1968). At the same time, highway-driven development\textsuperscript{11} was also changing the trajectory of housing and corporate headquarters locating outside of downtown Boston. Over the 30-year period from 1950 to 1980, Boston's population declined from approximately 800,000 to 560,000. ("Boston's People and Economy" 2014) This bleak economic backdrop also marked the introduction of urban renewal efforts by the City of Boston\textsuperscript{12}. At its peak, one-quarter of the city was designated an urban renewal zone with Boston receiving more federal funds for such projects than any other city in America. (Krieger, Cobb, and Turner 1999) In the 1950s Boston embarked on two major projects aimed at spurring economic development: the creation of a central business district plan aimed at improving conditions in the city's deteriorating downtown (BRA 1967) and the creation of the Marine Industrial Water Park.

**Urban Renewal and the rise of the Boston Redevelopment Authority**

"During the 1950s Boston looked very much like the Lower East Side," writes Rachel Slade of Boston Magazine. This changed in the 1960s with the realization of the creation of the Boston Redevelopment Authority and its Central Business District plan. During this time, the BRA embarked on a suite of federally funded, locally sponsored projects aimed at revitalizing downtowns and upgrading residential neighborhoods. Major projects included the Prudential Tower, the clearing of the West End for high-rise condos and the clearing of "New York Streets" in the South End to make way for a daily newspaper (Rubin 1999; Riesman 1990). During this time, the agency forged strong partnerships with local businesses who, at the time, faced the decision of helping to revitalize downtown Boston or "sit by the wayside and write off their investments" (Ehrlich). It also required the city to transform its economic base into one focused on service and finance while making use of its concentration of colleges in the area. While other redevelopment authorities of this era began to disband by the 1970s, the BRA continues to operate today (Slade 2013).

The urban renewal era marked a turning point in the history of Boston with

\textsuperscript{11}In 1956, Congress and President Eisenhower approved the nation's largest public works program ever undertaken by the United States government or any other country for that matter. Although the president never intended to use federal funds to fund inner belt, urban highways, he learned too late in the process to turn back plans to construct a freeway network. Not only was the president shocked by the notion of building roads through the middle of congested urban cores, so too were the residents of cities, including Boston. The 1948 Highway Masterplan was adopted as a solution to the highway crowding of the 1930s, and done to emphasize uniform traffic solutions across the country. As a result, a single federal standard was applied to the highways in rural and urban areas: the high-speed expressway. The juicy funding measure was too much for cities and regions to resist, immediately trumping more modest proposals that had emerged earlier in the century to develop access radial highways. (Haglund 2003)

\textsuperscript{12}"New York Streets" project in South Boston which led to "urban renewal" of a residential buildings housing mostly poor, working class Irish-Bostonians. Housing was removed and replaced with what was hoped to be an industrial park that eventually became home to the Boston Herald and a tech company. Soon after the New York Streets project, Boston embarked on yet more contentious urban renewal project in the city's West End which led to the demolition of an entire neighborhood of 2,800 homes housing roughly 7,000 people. (O'Connor 1993)
the creation of its own development authority. This move brought the city of Boston directly into the mix of facilitating economic development through urban renewal projects.

**Acquiring the Marine Industrial Park, improving accessibility**

If the BRA at this time was focused on developing Boston's downtown, the Economic Development and Industrial Corporation was focused on looking at ways to keep the city's port-based industry relevant and preserve industrial jobs for residents. Similar to the BRA, the EDIC had the authority to lease and manage property through eminent domain and also issue bonds to raise funds for improvements. The EDIC's most significant project to date was the creation of South Boston's Marine Industrial Park, which was created through the acquisition of more than 150 acres from retired naval and military bases. Owned by the BRA since 1978, the park industrial park houses mostly heavy industry including a dry and is accessible by rail, water and highway. The Marine Industrial Park also houses the Boston Design Center, a massive early-20th-century warehouse in the center of the industrial park, currently houses Mass Challenge.

In owning the Marine Industrial Park, the BRA and EDIC have actively promoted use of the area for industrial purposes including interior design, seafood processing, intermodal freight handling. The previous examples illustrate the close involvement of the BRA in facilitating private investment in Boston and South Boston.
Qualitative methods were used in acquiring and analyzing data that has been structured with the goal of producing results that could be affirmed (or falsified) should another researcher embark on asking this same question. As a result, an effort is made to provide an account of how conclusions were reached.

Coding interviews helped to sharpen the focus of this paper. Sociologist Susan Silbey refers to this “particular openness to serendipitous intervention” as one of the merits of qualitative research. The original intent of this research was to understand the policy processes by which innovation places are created. Upon conducting early interviews in Paris and Boston it became apparent the data was not revealing a clear process by which innovation districts occur. Many of the interview subjects lacked insights on the early planning stages of the innovation places where they worked. Others described their organization as having little or no engagement with policies or programs meant to incentivize the creation of innovation places. What did emerge from the interviews emphasized the involvement of a wider
range of economic, political and cultural forces that shaped the development of the innovation in question. To accommodate the resulting data, the focus of this project was broadened to capture the broader challenges and opportunities of innovation places.

Process tracing

Process tracing is primarily used to help the reader understand the history of innovation places in the Boston Area and Paris. Going back roughly two decades, this method sheds light on two distinctly different approaches to planning for entrepreneurship. A variety of techniques including content analysis of planning documents, media articles and planning literature help stitch together an understanding of the processes that led to the development of innovation places as they exist in both cites.

Selecting Interviewees

In identifying interview subjects, a wide net of stakeholders were identified as part of creating and maintaining innovation places. These people included: city officials, entrepreneurs, makers, program directors and startup founders. Interviews were conducted in-person and via Skype in Paris and Boston. The interviews ranged in length from 30 to 90 minutes with the average interview lasting roughly an hour. From January through April of 2014, data was collected using in-depth interviews and site visits to co-working spaces, incubators, accelerators and large-scale innovation places. These interviews followed a protocol that was iteratively fine tuned during the course of conducting several interviews in Paris. This process was based on techniques used in the field of ethnography.

Creating a protocol, conducting interviews & transcription

The research protocol was crafted to illicit answers that would answer the initial research question ("Do city policies and strategies ease the formation of innovation places?"). Separate scripts were written for each of the stakeholder groups that I anticipated interviewing: city planners, startups and developments. These questions were written to establish a deeper understanding of the processes through which innovation places are created. Drawing upon my literature review and research of international case studies, I framed my questions around a series of processes that I hypothesized could hinder or promote the creation of innovation places.

13 See Appendix IV
Hypothesis & Protocol

<table>
<thead>
<tr>
<th>Initial Hypothesis</th>
<th>Interview Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clustering of complementary industries</td>
<td>&quot;How would you describe the mix of businesses and organizations in the Innovation District as they exist today?&quot;</td>
</tr>
<tr>
<td>Real Estate and rents</td>
<td>&quot;Have you seen a growth in the demand for property in [NAME OF SITE]?&quot;</td>
</tr>
<tr>
<td>Long-range &quot;vision&quot; / planning</td>
<td>&quot;Could you explain to me the city's long-range vision for the Innovation District?&quot;</td>
</tr>
<tr>
<td>Collaboration / stakeholder engagement</td>
<td>&quot;Collaboration has to play a role in getting a project like this off the ground. Tell me about the main stakeholders involved in this project.&quot;</td>
</tr>
<tr>
<td>Regulation / Zoning</td>
<td>&quot;Could you describe the zoning and land use regulations in this area?&quot;</td>
</tr>
<tr>
<td>Incentives</td>
<td>&quot;Are there any city incentives aimed at keeping growing startups/companies in the district? Could you elaborate?&quot;</td>
</tr>
</tbody>
</table>

Interviews were conducted both in-person and via Skype and typically lasted anywhere from a half-hour to an hour and a half. Where sites were visited, detailed field notes were taken. All interviews were transcribed before being coded.

Limitations of interviews

Though this thesis attempts to be as comprehensive as possible, there were limitations to the extent of the research. Data saturation—the proverbial sweet spot in qualitative interviewing where the researcher ceases to cull any new information from the interviewing process—was not attained in the course of conducting fourteen interviews, suggesting that more could be learned if this topic were to be further examined.

A method for analyzing transcriptions and field notes

The literature and historical review provided a foundation for understanding and interpreting the data. Once interviews were transcribed, coding was used to understand and analyze the data. This chapter illustrates the analysis used to derive findings.

Codebook

The interviews themselves were in-depth, structured and conducted in person wherever possible. These conversations were accompanied by field notes which were transcribed along with the interviews themselves and
coded using selective coding\textsuperscript{14}. The codebook drew heavily from Porter, Saxenian and Berger. Data that fit the description of the code was matched together for both cities.

This method involved going through notes several times to analyze and hone-in on the key, revealing incidents specific to themes and categories related to this thesis. The goal of this process was built from an attempt to build grounded theory, driven by a set of theories of how clusters and new business and industrial districts form. In this process unique insights were presented. Below, an example of the initial coding used to identify references to "incentives" in the development innovation places in both cities is below:

\begin{center}
\textbf{Incentive}

\textit{Any reference to financial incentives such as taxes, low-interest or no interest loans, or grants that aided in the establishment of a company or institution}

\begin{tabular}{|l|l|}
\hline
Paris & Boston \\
\hline \texttt{"A large part of the entrepreneurs in France are on unemployment... you get 70 to 90 percent of your pay for a year or six months... A lot of entrepreneurs have worked for a while and have access to this unofficial financing - this is how they fund their startup in the beginning."} & \texttt{"And then a third big reason that we ended up in Somerville was the support here. The mayor of Somerville and the City of Somerville offered us a working capital loan so they were kind of enticing us to come here because they are working on redeveloping this area."} \\
\hline & \texttt{"We used them very selectively and only for very large tenants. So, Vertex, they got a big incentive."} \\
\hline
\end{tabular}
\end{center}

These quotes reflect a broad spectrum of ways in which incentives are being used in both cities to spur the development of innovation incubators and districts. The coding process depicting above was repeated across roughly two-dozen codes\textsuperscript{15}, which then coupled into categories and themes (see Appendix V).

\textsuperscript{14} See Appendix X
\textsuperscript{15} See Appendix IV for codebook
By coding the transcribed interviews (example below), key insights were identified which included such occurrences as the significance of state policies and public incentives in Paris and an emphasis on "agile" leadership and the significance of real estate markets in Boston.

<table>
<thead>
<tr>
<th>INSIGHTS</th>
<th>Paris</th>
<th>Boston</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Incentives in the form of real estate cash</td>
<td>-Incentives from state for specific industries</td>
<td></td>
</tr>
<tr>
<td>-Vision-focused leadership</td>
<td>-Mayoral Leadership</td>
<td></td>
</tr>
<tr>
<td>-Institutionalized Collaboration</td>
<td>-Loose academic partnerships</td>
<td></td>
</tr>
<tr>
<td>-State policies aimed at encouraging innovation</td>
<td>-Agile Collaboration</td>
<td></td>
</tr>
<tr>
<td>-City policies aimed at encouraging innovation</td>
<td>-Policies aimed at ensuring public space</td>
<td></td>
</tr>
<tr>
<td>-Trying to develop ecosystem</td>
<td>-Existing Ecosystem</td>
<td></td>
</tr>
<tr>
<td>-Academic Institutions</td>
<td>-Real Estate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Zoning led to pre-existing conditions;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Integrate startups into new development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Strong self-organizing startup/entrepreneurial activity</td>
<td></td>
</tr>
</tbody>
</table>

Upon further analysis of the data, a system of processes and actors was identified which emerged from the common categories (below). Taken as a whole, the data was still difficult to categorize at this point and it was difficult to draw relationships between the actors and processes that had emerged.
This led to further bundling the categories into three broad systems, a process which is visualized below.
These three systems (economic, political and cultural) were combined with the processes and actors involved in the previous analysis. The above chart is a high-level representation of the data, bringing coding and categorical analysis into a framework for understanding how the data fits together. This process provided a systematic way in which to reflect on and understand the data. Below, a series of diagrams how the data was related to each category.

**Political**

<table>
<thead>
<tr>
<th>Process</th>
<th>Actors</th>
</tr>
</thead>
<tbody>
<tr>
<td>State and central</td>
<td>State, municipality with engagement of industry as investors</td>
</tr>
<tr>
<td>government involved in</td>
<td></td>
</tr>
<tr>
<td>planning</td>
<td></td>
</tr>
</tbody>
</table>

**Interview Excerpt:**

"To make a scientific campus in this part of the region has been an idea for a long time. It really became a project under Sarkozy. In 2008, there was a big push to accelerate this and that's when there was a big push to make the agencies that exist now was made. And there was a decision to make the University Paris Saclay out of all these schools was made – and at the same time, the decision to make the Paris metro all the way there."

**Interview Excerpt:**

"I mean it's a leadership challenge. I mean, when you say this at the outset everyone either thought it wasn't possible or wanted a lot more structure. You know, where's the committee and the budget and the hierarchy and the org chart? Within government they were very uncomfortable with just, like, kind of an ad hoc [approach]... I thought it was important that it be nimble, more entrepreneurial just like the people we're trying to address. *"
### Economic

<table>
<thead>
<tr>
<th>Paris</th>
<th>Boston</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process</strong></td>
<td><strong>Actors</strong></td>
</tr>
<tr>
<td>Large amounts “accidental subsidies”</td>
<td>State, Industry</td>
</tr>
<tr>
<td>Visionary projects led private sector</td>
<td></td>
</tr>
</tbody>
</table>

**Interview Excerpt:***

"...a large part of the entrepreneurs in France are on unemployment" // "You pay a lot of taxes here and when you quit your job, when you’re fired - or there's actually the case where you can leave your job for the purpose of starting a company - you get 70 percent of your pay or you can get up to 90% of your pay for a year or six months or however long." // "A lot of entrepreneurs have worked for a while and they have access to this unofficial financing [to] fund their startup in the beginning."

### Cultural

<table>
<thead>
<tr>
<th>Paris</th>
<th>Boston</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process</strong></td>
<td><strong>Actors</strong></td>
</tr>
</tbody>
</table>
| Interest in entrepreneurship 
"education," especially collaborative spaces | Business schools, incubators/accelerators, pé de compétitivité | Strong academic presence 
Social networking organizations | Universities, startups, accelerators |

**Interview Excerpt:***

"We thought there was a need in the ecosystem, business schools have a lot of entrepreneurship programs which have not actually reflected the reality of entrepreneurs today so we decided to say, let's make one for real entrepreneurs based on our experience with startups so we launched it."

"We need a space for people to interact and collaborate - something like a Meida Lab in Paris."

**Interview Excerpt:***

"Mass Challenge has a lot of institutional support, although it is not working in a really strong partnership with any one school. It has relationships with Babson, Northeastern, BU and Harvard 'all support us and sends us startups... Casting a wide net is an integral part of the Mass Challenge strategy... We want to be available to all institutions, corporations and hospitals."
Conclusions from the analysis

This table provided the framework for the narrative stories that is detailed in chapter five. The stories are categorized into the key insights that were drawn within from the political, economic and cultural systems that were revealed in the analysis. The data combines with additional research to understand the broader historic context of innovation and business development initiatives in Paris and Boston.

### Broader Processes, Actors, Systems

<table>
<thead>
<tr>
<th>Process</th>
<th>Actors</th>
<th>Process</th>
<th>Actors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political</td>
<td>State and central government involved in planning</td>
<td>Agile, &quot;bottom-up&quot; ad hoc processes crafted with stakeholder interests in mind</td>
<td>Municipal leaders, developers</td>
</tr>
<tr>
<td>Economic</td>
<td>State, municipality with engagement of industry as investors</td>
<td>Real estate availability drives development</td>
<td>Developers, startups</td>
</tr>
<tr>
<td>Cultural</td>
<td>Visionary projects led private sector</td>
<td>Strong academic presence</td>
<td>Universities, startups, accelerators</td>
</tr>
<tr>
<td></td>
<td>Interest in entrepreneurship &quot;education,&quot; especially collaborative spaces</td>
<td>Social networking organizations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Business schools, incubators/accelerators, pole de compétitivité</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16 See Appendix VI for insights on data was linked to the three systems.
Chapter 5

FINDINGS: TALES FROM TWO CITIES

BOSTON

An aerial rendering of the Innovation District (image source: gibsonsothebysrealty.com

Political Insight: The Innovation District’s agile, bottom-up approach

The Innovation District, which sits on the northern edge of the South Boston waterfront, was launched in 2010 as part of former mayor Tom Menino’s vision to transform the South Boston waterfront into a “hub for knowledge workers and creative jobs.” With minimal investment in infrastructure and very few incentives put in place by the city, the Innovation District has become a desirable location for business with new companies and organization moving to the district, some abandoning suburban offices in the process. The district currently encompasses four neighborhoods Fort Point,  

17 (Scicolone 2012)
the Seaport District, the Marine Industrial Park and the Boston Convention and Exhibition Center. Mitchell Weiss, former chief of staff for Menino offers his account of the process of establishing the district, a few key insights:

Strong vision, agile leadership

Weiss, now a senior lecturer at Harvard Business School, emphasized of the former mayor's "vision" for the area. "He had for a very, very long time, a very deep sense that he wanted the waterfront to be something special," said Weiss when asked if any mayor could have moved forward on such a project. "Essentially the mayor and some of us had this realization in 2010, the very beginning as he's starting his fifth term, that the kinds of innovation that was happening, you know, a generation ago on Route 128 is increasingly going to be happening in cities....the young engineers, coders, scientists – they want to live in cities, they want to bike to work, they want to walk, you know, go out. They don't want to be driving forty-five minutes to some office park in suburbia." From here, the mayor worked with a small leadership team within the city to develop what Weiss described as a "strategy" in a "loose sense." The strategy, he explained, was not the result of an official position or a technical consulting study. Instead, it was just a "handful of people kind of like going off."

Having a "sense" of what needed to be done played a pivotal role in the build out of the innovation district, but Weiss also emphasized the significance of several key approaches to implementing this agile approach including:

Pilot projects

Weiss stressed the importance of convincing early developers to build in the area. "Persuading them that this was the way of the future and that this was in their best interest was difficult." He described a process in which they city would press developers to try things such as building micro-units in the neighborhood. "When they leased it out in 10 minutes they realized it was actually a good business thing to do." This represented a significant shift in they types of living spaces that developers were used to building, according to Weiss. "[Innovation District residents], they're coding all night long or doing research they don't need a big apartment but maybe what they want is a smaller apartment.
that's fully wired and fully this and fully that and then common space if they want to meet with people or so on.

Leveraging personal relationships

A variety of stakeholders were engaged in the process of building out the Innovation District. When asked about the role collaboration played in building out the Innovation District, Weiss described what occurred as less about organizational collaboration and more about relationships. In his own words: "Our work [relationships] with MassChallenge was really important; our work getting Babson was important; our relationships with technology firms was important; our relationships with the real estate developers was important....I remember this moment when I was speaking at a law firm and one of the lawyers raised his hand and said, 'Why isn’t there a community group down here?’ You know, of [inaudible] people. And I said, 'Why don’t you start one.' So, he did. It was all very much on a relationship-based level but I wouldn’t think of it as institutional collaboration. You know, there weren’t teams of people in one place or the other gathering ev-

Former Boston Mayor Thomas Menino in 1977 with an eye toward South Boston (image source: Boston Globe)
ery month for a planning meeting."

Planless planning

"Other mayors would have demanded some sort of plan and he didn’t. You know, a plan might have killed this thing at the beginning." The "loose" strategy created by Menino’s team circled around three concepts, according to Weiss: jobs, housing and social infrastructure. This approach went against the grain of the more typical top-down approach to creating innovation places that use industry-specific approaches to developing clusters. "We intentionally [didn’t] take a very concerted cluster approach… like [focusing on] solar or robotics or cancer. We eschewed that. We wanted to say, 'Look, companies big, small, different sectors, you know broadly, the innovation space, come down here.'" In the realm of housing this was reflected the form of housing pilot projects aimed to meet the needs of the growing knowledge worker base in the city.

Existing infrastructure

Despite being designated in 2010, Weiss describes the Innovation District as not being “built over night”. Previous investment in cleaning the harbor, removing the highway and building the Rose Kennedy Greenway, the Silver Line all helped to open up the waterfront and pour investment.
Regional cooperation

Understanding that Boston is part of a regional innovation system is significant, says Weiss. Rather than considering Cambridge as competition, he sees the two cities working along with Somerville in an ecosystem: “It’s good for everybody to be aggressive and on their game, I think. You just see spillover - you see Greentown moving from here to there to there as they grow. You see companies now who can’t go to the waterfront because it’s too expensive moving into the leather district. Hopefully, what we’ll see over time is you have more of it and they move to Dudley Square and Roxbury or they move here across the street where we want to build. You know, so, hopefully we’ll see it in a lot more places. And it is an ecosystem; I mean, it’s connected, essentially right now by the Red Line. I mean, these people spill out of a handful of the same universities and, you know, it should be an ecosystem with multiple nodes.”

Economic Insight: Startups responding to rising rents, specialized needs

The steady buzz of machine tools fills the room as Briana Jackucewicz starts her tour of the machine shop at the new location of Greentown Labs. Outside, a sign that reads “No Photos” hangs in next to the doublewide swinging doors.

“This is half of our pro-tenant space here,” says Jackucewicz walking and talking through the 10,000 square-foot single-story workshop. “We rent to companies the physical space so everything you see in here just about, companies brought in themselves.”

Rising rents

Founded in 2011, the hardware-focused clean-tech and energy incubator rents office and workshop space to startups. Like many startups in the Innovation District, Greentown faced rising rents in the neighborhood where Class A office space is not comparable to the Back Bay. Greentown’s new location replaces its former Innovation District office, a 11,000-square-foot site described by the incubator’s [director] as an “unimproved, 100-year old basement in South Boston.” 19

19 (Ross 2014; Alsipach 2012)
In an open letter to its members and supporters, Greentown Labs executive director and founder described the move as one based partially on “following innovation” to Somerville as well as its members who tended to live in Cambridge:

“Somerville is emerging as another innovation cluster, home to many entrepreneurs as well. Mayor Curtatone of Somerville strongly supports our move to his City. We fit his vision to build an affordable, accessible innovation economy with a focus on sustainable businesses. Located at 28 Dane Street, we’ll be next door to other entrepreneurs and creative people working, playing and hanging out at Artisan’s Asylum, Brooklyn Boulders, and Cambridge Innovation Center satellite office, all in a neighborhood filled with good food, diversity, culture and entertainment.”

Complementarities: Branding innovation clusters
The innovation cluster formed by Greentown, Artisan’s Asylum, Brooklyn Boulders and Cambridge Innovation Center adds a strong community dynamic to the area, says Jackucewicz. “Some people have started to dub this area ‘Innovation Row’ so they’re trying to really brand this area as an innovation district on its own. And I think that there will be a lot of development coming in with the T station coming in.”

Shared resources
Even when the Greentown was located in South Boston, members often made the trip to Somerville to use the machine shop at the maker and fabrication co-working space. “Artisan’s Asylum being next door was huge... the main synergy is the fact that they have a really, pretty robust machine shop there. And so we signed an institutional membership with Artisan’s Asylum just last month and now we have a card that allows any of our members to grab that card, go over there, and use the machine shop for free. So, we pay a little bit for that benefit but that’s really huge to have all of our members to be able to share access like that.”

Hardware startups: The search for functional, cost-effective spaces
Unlike their software- or service-oriented counterparts, manufacturing startups have specific physical requirements that can make finding affordable workspace a challenge. When hardware accelerator BOLT canvassed the Boston area for a permanent home, high rents caused the accelerator to avoid the Innovation District altogether, says Chris Quintero, program manager for the company. “We weren’t saying like oh we have to be in the Innovation District. We would really love to be in Kendall Square but the rent is so expensive there, like three times what we’re paying here. The company also needed room for a workshop. “We have these big, multi-thousand pound machines that needed to be dropped in here so bottom floor is a must, otherwise, we’d have to spend a ton of money to reinforce the floors.” Quintero continues: “So our space as you see, is ground-level and then there’s a basement which is perfect
for us for a workshop but it wasn’t that nice for anyone else who might want to come down here and put cubicles or retail space, it would have been kind of dreary. We really lucked out and got this for a deal.”

Proximity to investors

Being close to the Red Line was another criteria for BOLT. Part startup accelerator and part venture capitol fund, the organization wanted to be accessible to its employees, its investors and the overall hardware ecosystem: “It’s so much about speed and get big really, really fast and to do that you need to set yourself up to have an ecosystem around you - that’s everything from your funders and advisors to your future employees, anything that can reduce friction. Employees are huge - hiring is something that all of these tech startups face. They are doing very specialized work and finding those people and convincing them to work for you when you are in a downtown, walkable, centrally located downtown area is much more easier than if you’re located farther out.

Putting investors close to entrepreneurs was also key to Innovation District strategy. Weiss describes locating venture firms in the Innovation District as playing a key role in establishing the promise of the neighborhood: “We really wanted some venture folks down there to signal so the Mayor held an important meeting with about, I don’t know, sixteen or eighteen venture firms at some point and now a couple, a handful of major ones have moved down - Battery Ventures and Polaris. Those were key.”

Incentivizing startups

Reshuffling is not only happening into and out of the Innovation District. This year Mass Challenge moved into the Boston Design Center’s (now the Innovation and Design Building) massive early-20th-century warehouse at the center of the 200-acre Marine Industrial Park – for free. Its five-year lease that the Design Center’s developer hopes “will pay dividends by attracting other technology companies to the complex.” (cite: Farrell)

Joanna Meiseiles, operations manager at Mass Challenge described the accelerator described the decision as being based
on finding a location that was a “little more scrappy.” “If you visit the 11th floor, you’ll see that it’s all decked out. Ours is very raw, which suits us.” The new location is further toward South in a space that’s a little further to get to and also “less convenient. People will have to make [the new space] a destination.” In exchange for free rent, Mass Challenge is likely to bring new eyes to the less-developed corner of the Innovation District. “We’re basically like a marketing amenity for the building,” Mass Challenge founder John Harthorne told the Boston Globe in 2014.

For Greentown Labs, incentives came in two forms. The first was a $300,000 working capital loan from the City of Somerville. “They offered us a working capital loan so they were kind of enticing us to come here because they are working on redeveloping this area,” says Jackucewicz. The second incentive came in the form of a $190,000 grant from the Massachusetts Clean Energy Center.

**Cultural Insight: Innovation Events and Productive Socializing**

The lobby of Boston’s newly opened District Hall is empty except for a café employee and a man and woman who sit behind a small registration table. The woman gives a brief overview of the days events, which include several lectures and a hand’s on-workshop with other attendees. “Would you like to sign up for the afternoon yoga class?” she asks handing over a white sheep of paper. “It’s a liability form.”

Inside the nearby conference 80 people sit in neatly lined rows of chairs. A few laptops are out but most attentively watch the speaker who is discussing the data set that attendees will be introduced to do during the course of the daylong datathon. Hosted by Code for Boston, the data includes statewide anonymized information on estimated mileage, fuel, efficiency and car-related stats. “This is a unparalleled data set and no other state has access to this,” announces the speaker. The goal of the datathon is to leverage volunteer “hackers” who will work in teams to analyze the data set provided by MassDOT and the Metropolitan Area Planning Council. The goal is to help find answers to important questions about how geography influences car ownership and mileage, the speaker says.

The audience is mostly men in their late 20s to early 40s who are listening intently to the speaker. A handful of users are on their laptops while he speaks but for the most part people seem attentive. In the back row, an attendee nods his head looking down occasionally to check the recorder tucked into his bicycle helmet. He, like several of the attendees today, biked to the event rather than parking in the two hour or $20 high-rise of-
Events that spread ideas

District Hall is a newly opened space that is leased by the City of Boston and managed by the non-profit Venture Café. It includes a restaurant and café open to the public as well as meeting rooms where public events and social networking activities are hosted regularly. The datathon is one of many engineered social events that aim to bring together workers in the area and also bring visitors from other parts of the city to the Innovation District.

Productive socializing

It's the sort of space that reminds Chris Quintero of the "coffee-shop style" places that are so popular in San Francisco. Unlike co-working spaces where you might pay a day pass to work sit, work and use internet for the day, district hall—and its free Wi-Fi—are open to the public seven days a week. It's a type of space that Downtown Crossing could use more of adds Quintero: “Boston for whatever reason doesn’t have a huge coffee shop culture like you know a lot of other west coast cities. So that kind of ecosystem definitely is less here and I’m not sure why that is because it plays a central role in how Silicon Valley operates but Boston, well Boston is you know, all about Dunkin.”

Having access to productive places that are social and social places that can be productive was a recurring theme in the interviews. Brooklyn Boulders, a climbing gym and co-working space in Somerville provides such a use for Greentown Labs and its startup enclave in and around the site of the former Ames Envelope Factory: “I both climb so it’s a nice thing to basically have a gym right next door and the kind of gym that you can only be at for like an hour or two before you’re so tired that you’re done anyway. So, like, we’ll go there and then come back and like finish working which is nice.”

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20 A datathon is an extended workshop where coders, developers and people familiar with statistical analysis attempt to solve a problem using data analysis
PARIS

Political Insight: Innovation planned from the top-down

Paris-Saclay is a two-square kilometer super campus\(^2\) merging together six engineering schools and research institutions in the Saclay plateau. Located about 15 miles southwest of Paris, the project aims to link "higher education and research institutions, economic development with firms of all size, transports improvements, creation of housing and facilities, to benefit residents, students, researchers and workers alike." This ambitious masterplan has $3.25 billion in state funding, 23 partners and a government-run development authority working to engage international business to the site. Last year marked build out of several projects to in Paris-Saclay including a biology lab and student housing. Guillaume Pasquier, deputy CEO of the Paris-Saclay Development authority offered his insights on the project:

An old idea turned new

"To make a scientific campus in this part of the region has been an idea for a long time," says Pasquier in a phone interview. He continues:

"Very often in this kind of thing it depends on a very few, leading

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\(^2\) University Paris-Saclay will join together two universities, 10 "grandes écoles" and 10 research organizations located within the Saclay plateau
group of people, in our case, there is really one name, it's a guy who is dead now who is named Frederick Jolio Curie. He won the Nobel Prize, a very famous scientist and a leader in the 1950s and 60s. He made three big decisions. At some point he was in charge of the University of Science in the Sorbonne and he decided at some point it was stupid to make a big science lab in Paris so he moved it to a big space where we work right now three years later he was in charge of a nuclear research project that was mostly military but also civilian and the same thing he said we need a space to do secretive research and he bought a big piece of land in this area and at the end of his career he went back to some other kind of research and he created another big research space in the area for biology stuff. The three of these decisions it wooed something like 10,000 scientists and 15,000 students—just by one man. These institutions were very isolated and they did not work together because they had their own dynamic. And it turned this piece of Paris into a science hub. After that, little by little, it created an attraction and then we arrived at the point that it was spectacular and something needed to be done in order to get to the next point and that's what we're doing now.

Curie’s vision resurfaced in 2008 when then president Sarkozy announced his ambition to make Paris-Saclay “one of the world's top universities and science parks by 2020 — a Massachusetts Institute of Technology à la Française” . Following the official endorsement of the project, several official organizing bodies were created and official funding channels were linked to the campus.

Engaging many actors via a centralized plan

Building such a campus requires engaging with many stakeholders, a task Pasquier says can be challenging. “The biggest challenge is absolutely the number of stakeholders. It's extremely complicated. We have so many institutions of all kinds that it slows everything down. That’s exhausting, absolutely exhaust-

22 The earliest vision for the academic campus began in 1946 when the French National Centre for Scientific Research settled in in the Saclay plateau. The following year, the French aerospace research center, Office national d'études et de recherches aérospatiales moved to Saclay, followed by the University of Paris, the business school HEC and several grand écoles. Today, Saclay is home to a wealth of academic and research institutions and a more recent wave of private companies that moved to Saclay beginning in the 2000s.

23 The campus won an endowment of €850 million in February 2009 as part of the science ministry’s Operation Campus, a €5-billion plan to refurbish 10 select campuses. Research agencies, universities and other ministries have contributed a further €1 billion, some of which will come from the sale of valuable real estate in Paris once the labs have moved to Saclay. Sarkozy announced a further €1 billion in his speech to help finance the first wave of moves, and the campus has set aside a further €900 million for student housing. The campus also got €1 billion from the French economic stimulus package – the Grand Emprunt (big loan) – announced last December, and expects further support for infrastructure and grants from the €22-billion research part of the package.” (Butler 2010)
ing.” The major stakeholder groups of the campus extend beyond universities to mayors, business and small and medium-size companies. “I don’t think it’s very specific to Paris-Saclay or high-tech clusters - maybe it’s a problem of democracy but doing a big project in our democracy is not easy.”

Central planning, local zoning

Within the government itself, the Paris-Saclay Development Authority actively intersects with the regional government authority and 27 municipalities. Though these municipalities are small for historic reason, they hold onto of the most important levers in masterplan development: zoning. “Though it’s a very centralized system in France, zoning is in the hand of the mayors. If they say no you can’t develop this area for business development then too bad. I have to look somewhere else. And in zoning, they also control the density that you can use and all kinds of things.” Working with so many mayors has proved challenging for Paris-Saclay, says Pasquier. A single project can require approval from several governing bodies: “…for historic reasons, the cities are very small, we have a lot of mayors. And so that makes it complicated, so every time we want to develop something on their city, we have to get consensus from them, so we have to get the agreement of more than one and it gets very complicated…it is not easy because very often they have the mentality of “not in my backyard”. He adds: “There are many, many rules. My personal opinion is that in zoning, we have way too many rules we should make much less, I think we go to far and there should be more creativity. When I say we this are the local officials who try to control everything but they can and I think it’s the politicians who try to control everything.”

Local incentives

Working with local communities requires negotiation and incentives, says Pasquier. In exchange for permission to develop in communes, the Paris-Saclay Development Authority uses the revenue generated from land sales to pay for services that benefit the local community. “We get permission to do some pretty intense development and in exchange the money we make [is used] to pay for services that are good for the [community] like a

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24 Ten of the municipalities have mayors that actively engage in the planning process.
25 The commune is the lowest tier of the French administrative authority. Eighty percent of communes have as little as 1,000 people.
new swimming pool or a new university that will be open to the high schoolers of the area."

“Catching” business: small firms versus large firms

Large corporations have been part of the vast Paris-Saclay network since the early 2000s. This group of stakeholders, which includes companies like Danone and Kraft Foods, has been easy to engage with, says Pasquier. “They are easy to work with because they are used to big projects and they have engineers with a lot of money to invest.” It’s the small companies. The “real people” “doing the exciting stuff that is attracting innovation” that Paris-Saclay wants to attract. But it’s this group that has been hardest to engage, says Pasquier. “They’re not as involved as a big company that is ripe with a 1,000 engineers.” This is, perhaps, the paradox of cultivating a truly innovative ecosystem on the Saclay campus: “It is very pleasant to work with [startups] because they are doing the exciting stuff that is attracting innovation but when it comes to building and renting and developing a city that they are good to work in.... they are not easy to catch I would say.”

Changing mindsets: transportation and mixed use

Saclay is a plateau rich with farmland and trees. The existing institution campuses and universities are poorly connected and heavily secured in some cases, says Pasquier: “You have these big research institutions and they have five-to-seven thousand people with huge campus doors where you have to show a paper at the door. Inside it’s their place and outside it’s something else. And basically the two don’t interact at all.” Paris-Saclay hopes transform the closed-campus concept by requiring companies and universities in Saclay to build mixed-use developments and “open ground floors” which encourage public-friendly uses such as restaurants or retail. Of course, before restaurants and coffee shops line the streets of Paris-Saclay, the

Yes, there is one thing. So far, it is public transportation and there is a lot of regulation with buildings that impose a lot of space for parking. It’s not what we want. Assume that the metro is not there? It’s very difficult to change that. So we need to make the transformation from a city that is 100 percent car to a city that is fifty percent car and fifty percent public transportation. It’s very difficult because everything that you’ve built before and everything the metro had to be made for cars so we waste all this
space and all this money to build underground parking and then we're going to bring in the metro. It's a traditional process here that is not easy. When you build the city for the car, turning it into a city where the car is not important is hard. That's something that we're going to figure out.

Economic Insight: Venture Funding and “accidental” subsidies

Oriental rugs and carved wooden chairs adorn the downstairs living room of the century old Parisian house. Two men and a woman wearing a white beanie conduct a meeting at a large dining room table next to a bay of floor-to-ceiling mirrors; another sits with headphones next to a small, stone fireplace adorned with family framed photos. A curly haired woman sits at a small side table. She presses into her ear bud and talks into a laptop for what is presumably a video conference call. It's a Thursday evening around 7:30 p.m. in Paris and members of The Family, a new startup incubator located in the city's Sentier neighborhood, have flown past the hours of a typical French workday.

Co-founded last year by Alice Zagury, who previously ran a French accelerator that used public funds to finance promising startups, The Family hopes to achieve a simple mission: “To design a strong educational system and develop more unfair advantages for startups that do not exist in France.”

26 le Camping
27 (Butcher 2013)
Venture funding

At The Family, these "unfair advantages" come partially from its founders' strong connections within the startup and venture community in Paris and Silicon Valley. The incubator received an undisclosed amount of funding from Index Ventures, a multi-stage venture capital firm with roots in Europe and Silicon Valley. In exchange for a one percent stake in its member startups, members also gain access to mentorship, events and contact. "We try to get the best deals for the startups and on the other side, we also try to do the same for education. We also try to identify the needs startups have that the ecosystem has not yet identified."

Fundraising loopholes: Establishing convertible notes

One of these services includes providing a technique for startups to legally use convertible notes while fundraising. 28 Erika Batista, coordinator of education programming and events at The Family explains this process in her own words: "We [created] the equivalent of convertible notes in France 29 which did not exist because it's a different legal system in France. We developed [it] with a law firm here in France. Basically what's important to [understand] is that a convertible note allows startups to raise funding without setting an evaluation beforehand. One of the biggest problems is that when you try to raise funds it's very difficult to get many people to agree on an evaluation for a startup, or the price, so a convertible note allows you to receive money and investments and turns those into obligations that will be fulfilled later without setting a value for the company."

Work-arounds and freelancers

Working closely with entrepreneurs has made The Family intimately aware of the challenges of growing a business in France, says Batista. One perceived hurdle is hiring employees. It costs substantially more than it would to use contract labor. "Just in general when you hire someone, it's really expensive. When you hire your first employee it costs double what you pay to have a contract. That's why a lot of startups they go and use other alternatives." This leads startups to hire freelancers and avoid hiring

28 Convertible note is short-term debt that converts into equity. This allows startup investors to loan money to a startup in its first phase and rather than get money back with interest, they investor receives shares of preferred stock or equity in the company.
29 French "super angels" Xavier Niel, Marc Simoncini & Jacques-Antoine Granjon have also announced a similar type of loan for "101 projects" (Boogar 2014)
Despite challenges, Batista sees the benefits of working within the French system—especially for the unemployed. “Well you pay a lot of taxes here and when you quit your job or when you’re fired—or there’s actually the case where you can leave your job for the purpose of starting a company—you get 70 percent of your pay or you can get up to 90 percent of your pay for a year or six months—so a lot of entrepreneurs have worked for a while and they have access to this unofficial financing. This is how they fund their startup in the beginning.”

**Cultural Insight: Breaking disciplinary boundaries, collaborative spaces, startup culture**

When Francois Taddei’s research lab was given a 600,000 square meter space in the Marais, the head of two the Center for Research Interdisciplinarity began to dream big. He imagined a place where students could learn, researchers could experiment makers and fabricators could build—all in a location that was accessible to investors. “We want a space that is open to citizens, teachers, students, kids that want to create things on one side and then we want a more expensive side that has more advanced students and scientists can use,” says Taddei who is still looking for funding to finance his project. “We want to do the latest advance research and open source possibilities. What we’re trying to do is think of ways to get these open source technologies and scale them up and offer them to ever more people. Our idea is to be as open as possible.”

**A Media Lab for industry**

The idea of creating an interdisciplinary, public space is not unique to CRI. Others see the need for bringing together stakeholders from across various disciplines. At Cap Digital, a media pôle de compétitivité in Paris, a similar project is being considered. The organization’s director Patrick Cocquet described the vision: “We need somewhere in Paris where we can organize the sort of place where you can have companies working together sharing technologies. Even if we are in the digital economy, we need a concrete place where we work on technology and show the results of projects. We need a permanent place to demo projects to ease the move form R&D project results to products.” In theory, Cap Digital’s vision for demo space is modeled after
MIT’s Media Lab but in reality, the space will have some key difference, explained Coquet. “We have in mind the media lab... but perhaps not at the scale of Media Lab.... Of course, the companies will not be located around the place but all over Paris and France.”

Bringing ideas from labs to industry

Cap Digital’s broad member base includes a range of large, medium and small companies. In recent years companies have made strides in connecting to incubators and startups in Paris, says Cocquet but the real challenge he sees is trying to get companies and research organizations to spin-off new ventures. “Do we see creation of companies coming from research labs? It’s not enough I would say.” From his experience, Taddei says he has observed that successful startups come mainly when you have experience. Another challenge of large companies is integrating new ideas into their R&D processes: “There are many large companies or groups that are thinking of opening innovative labs or incubators. But they have to develop new ways of integrating innovation into large companies.”

Fears of failure

The biggest hurdle in spurring innovation in Paris has nothing to do with startups, says Taddei. “I think that Paris has created lots of incubators and stuff like this. Some of them are dedicated to biotech and high tech or whatever other types of tech like press tech and game tech so I think that’s not limiting anymore, it might have been 10 years ago.” Instead, he sees cultural perceptions of failure as the biggest hurdle in spurring innovation in France “I think that what’s limiting is the ability to be more daring and to be more entrepreneurial and to give more freedom.” A strong test-taking culture is part of this is hypothesizes. “France is a culture where failure is not allowed. Errors are not allowed in France.” To get into a top school France students must receive near-perfect scores, something that stifles creativity, says Taddei. “You cannot be creative if you do not accept errors. What you have to do to be creative is to take a risk, learn from your errors and bounce back and work with others. So you know, the French system is too competitive not enough cooperative and too much leading to this fear of errors and mistakes – so we have to change this.
COMPARING PARIS & BOSTON

These stories represent snapshots in time of the innovation ecosystem in Paris and Boston. In Paris, a nascent entrepreneurial community is shunning the long commute to corporate campuses in favor of city center startups. In the suburbs government officials are slowly working toward an ambitious vision for a research and industry super campus that will bring together the country’s best schools, corporations and startups. In Boston, a mature network of entrepreneurs and high-tech companies are moving to the region’s latest innovation hotspot, the Innovation District. But startups are also locating elsewhere. Somerville, the Leather District and Allston—these new enclaves of innovation activity are perhaps offering early-stage companies cheaper rents and, greater access to complementary firms.

Similarities and differences

The interviews in this chapter reflect the different stages of maturity of the ecosystems in both cities. Paris has a relatively young entrepreneurial community. These young workers are hacking into the traditional way of doing business and inventing new ways of collaborating, financing and employing workers. In contrast, Boston is a mecca of entrepreneurship. As part of broader innovation ecosystem it has evolved from the successes and failures of Route 128, Kendall Square and also feeds off the region’s active venture community and its abundance of strong research institutions such as MIT and Harvard.

When viewed through the framework of political, economic and cultural systems, other examples of similarities and differences emerge:

Political: Top-down vs. bottom-up

Similarities – Both cities share similar goals of fostering entrepreneurship and innovation

Differences - Noticeable differences emerged in Paris and Boston’s approaches to realizing innovation visions. In Paris, strategic policies are created at the state level and link to the regional and local innovation goals. In Boston, Menino took a flexible, “bottom-up” approach toward creating the Innovation District.
Economic: State funding vs. private finance

Similarities - Available funding for innovation projects

Differences - The “accidental” financing of startups is in part due to the French government’s generous unemployment policy which allow laid off employees to receive benefits from four months to three years. Despite such benefits, some interviewees spoke of the perceived barriers of taxes and labor regulations that limit how much contract employees can be paid. In the case of Boston, the state has awarded funding to high-tech Boston companies in industries such as life sciences and green tech but, for the most part, the City of Boston itself provides few incentives for companies.

Cultural: Closed-in vs. spin-off

Similarities: Strong presence of academic institutions

Differences: Parisian interviewees perceived a lack of involvement of involvement from French academic institutions while incubators in Boston reported having strong connections to local academic institutions.

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| Overall goal of fostering innovation | Paris: Top-down planning and policy  
Boston: Bottom-up, agile approach |
| Subsidies for industries/companies | Paris: Government funds a wide range of projects; “accidental” subsidies; perceived tax barriers  
Boston: Limited government subsidies; active venture and finance community |
| Strong presence of academic institutions | Paris: Few spin-offs from universities; little involvement in current startup ecosystem; “fear of failure”  
Boston: Many spin-offs from Harvard/ MIT; strong entrepreneurship programs at area business schools |

30 http://tech.co/startups-french-government-2013-09
CONCLUSION: CHALLENGES & OPPORTUNITIES

STAYING ON TOP OF INNOVATION

Given the ambitious goals of leaders in both cities to become (or maintain a position as) as leader in the innovation economy, opportunities exist to fine-tune innovation strategies. While it is not within the scope of this project to provide policy recommendations, this research does identify key challenges and opportunities that can be addressed by cities and industry.

Paris Challenges and Opportunities

Political: Choosing & Managing Innovation Clusters

In 2012, the French government announced the unveiling of a neighborhood-centered policy aimed at developing innovation clusters in Paris: Quartier Numerique or “Digital Neighborhoods.” Under this project, the government would identify digital neighborhood candidates in Paris, incentivize office rental space to digital startups, improve Wi-Fi infrastructure in the neighborhood, recruit local and international companies, reduce administrative burdens and create a system to engage key stakeholders with government.

Challenge: Choosing the right locations for Paris’ future Digital Neighborhood hubs

Opportunity: As Cooke and Morgan write: “clusters cannot be created by political injection or through mere physical proximity” (Cooke, P. and K. Morgan) The Associated Economy, Oxford: Oxford University Press. 1998. To prevent from selecting the wrong type of industries, Digital Neighborhoods should choose existing clusters rather than building locations from scratch. This can be aided by working closely with existing industry to identify key opportunities. Providing resources to an already operating enclave of startups and companies could help accelerate growth while ensuring that companies are likely to complement each other. Since the major benefits of clusters arise when firms
collaborate, programming that encourages this end would be useful. Members could be incentivized to conduct collaborative research and to share capital-intensive resources such as fabrication, laboratory or event facilities.

**Economic: Improving entrepreneur labor rights**

Several barriers to self-employment in France have been publicized in recent years including access to benefits, tax barriers such as capital gains and limits on the maximum amount self-employed freelancers ("auto-temp") can earn.

**Challenge – Lowering barriers to self-employment**

Opportunity – The French government has a long tradition of providing progressive benefits to its citizens. A new employment status that specifically caters to entrepreneur benefits, taxes and employment specifics could provide the country with a uniquely French competitive advantage. Such reforms could also include startup work visas for skilled workers in high-tech industries that are also being targeted under the current innovation initiatives.

**Cultural: Linking universities (Paris-Saclay) and entrepreneurs**

While France is known for its high quality education system, these programs were perceived by interview subjects to have limited spillover to startups. Given the distance between top universities (many are located outside of Paris) and the city's core entrepreneurial activity, knowledge spillover can be challenging.

**Challenge – Improve access to R&D from colleges and universities**

Opportunity – Create a Media Lab-like urban center where university projects can be researched, fabricated, demonstrated and visible to investors in Paris Digital Neighborhoods. Research facilities could also be provided for faculty and post-docs working on collaborative projects. To further the connection with schools, Digital Neighborhoods could collaborate with engineering schools to create hardware- and high-tech based “ideas challenge” similar to MIT’s “100k Challenge”, a competition for student-created startups which has awarded hundreds and thou-
sands of dollars. Projects of this nature could even be partially funded through corporate sponsors.  

Cultural: Changing perceptions toward risk-taking

François Taddei, the director of the Center for Research and Interdisciplinarity, described France as having “a culture where failure is not allowed.” The stigmatization of entrepreneurship was viewed by interviews a barrier to fostering a vibrant innovation cluster.

Challenge – De-stigmatizing entrepreneurship in France

Opportunity – The government should create a competitive program to recruit top students for civic startup initiatives. Modeled after the American non-profit, Code for America, a project like this could establish credibility of entrepreneurial work and have the added benefit of innovating government.

Boston Challenges and Opportunities

Political: Startups priced out of downtown

In Boston, startups are being priced out of the Innovation District. Though the greater Boston area has been able to accommodate this movement, the city should look toward policy that ensures startups have the opportunity to operate downtown.

Challenge: Ensuring the presence of startups

Opportunity: As several of the Boston interview subjects suggested, it is vital for startups to have access to complementary firms and investors. The City of Boston should consider options that ensure innovative, young companies remain apart of the Innovation District. Mandating the inclusion of startup office space in new development would be one option (similar to inclusionary zoning requirements of developers with affordable housing). Special requirements could also be explored for hardware-based startups. In Boston, these companies play a unique role in the innovation ecosystem and have additional building requirements and needs for additional square footage.

32 The 100k Challenge awards funding to student entrepreneurs who submit business plans for new ventures showing significant business potential. The refinement process of the Competition, its network of mentors, investors and potential partners, and the cash prizes awarded have helped some of teams to build their own companies.

33 http://online.wsj.com/news/articles/SB10001424127887324010704578415020004781496
Economic: Incentives in R&D-heavy industries

Incubators such as Greentown Labs encourage the development of companies that are working in industries that require long-term investment such as green tech. These companies are less likely to get venture funding to because of lengthier R&D requirements.

Challenge: Ensure growth of hardware startups in key industries

Opportunity: working in R&D intensive industries innovation fund that could be paid into by larger corporations; these funds could also go toward housing or other burgeoning needs of the entrepreneurial community.

Cultural: Providing Amenities & Opportunities for Spillover

In Boston, interviewees voiced a need for greater access to amenities that cater to a new way of working. Coffee shops where impromptu meetings can be held, the social exchange at Brooklyn Boulders rock climbing gym and public events at District are just a few examples of existing spaces that filling this need.

Challenge: Need for “third places” in new startup enclaves

Opportunity: Develop more District Hall-like spaces that leverage private resources but offer programming with a public and community interest. These places are best developed along natural lines of movement, in areas where there is already a density of restaurants, coffee shops and amenities. Although it could not be explored in the scope of this project, it would be worth researching potential sites along these dimensions. These spaces could be encouraged through zoning measures and also funded through a mandatory fee paid by developers. Sites in underdeveloped, or relatively new innovation places could follow the district hall model of being leased by the city but managed by a private entity that is closely aligned with the needs of the startups community.
LEARNING FROM PARIS & BOSTON

Throughout the interview process, subjects suggested a range of interventions for problems identified as roadblocks in the development of innovation places. In some cases these solutions were framed as policy matters, in other cases these were viewed as cultural challenges, and in other cases, physical interventions were called upon to resolve perceived challenges in the creation of innovation clusters.

The following section summarizes some of the generalizable needs presented by the subjects interviewed for this project. These considerations should be taken into account by cities and developers hoping to develop innovation clusters.

**Complementary firms**
Companies should locate near companies that they are likely to cooperate with or learn from. Incubators and districts should consider this when selecting and recruiting companies.

**Districts with small firms**
Startups benefit from sharing resources and knowledge with other companies. Larger companies benefit from startups, too. This research suggests that districts with many innovative small firms may also be more resilient. This suggests policies that encourage innovation in small firms could have larger regional benefits.

**Social networks or facilitators**
"Knowledge spillovers" require individual interactions and close relationships among knowledge workers. This type of interaction can occur naturally in locations with appropriate amenities; they can also occur in social-learning places such as District Hall in the Innovation District.

**Collaborative Research**
High-tech innovation often requires the involvement of researchers and entrepreneurs. One venue for facilitating this type of interaction is a Media Lab – type space which combines research, demonstration and corporate sponsorships.
Funding & Mentorship
Startups and entrepreneurs require access to venture firms in order to pitch and secure funding. Firms often check-in with companies and close proximity would facilitate that exchange. New companies also require to align themselves quickly on a specific industries or business techniques. Accelerators, incubators, venture firms and clusters of specialized firms can help fill this need. Ensuring that policies are in place to facilitate fundraising is also important.

Skilled workers
Startups and high-tech firms require access to workers. Proximity and partnerships with universities and corporations can foster the spillover for these organizations. Young companies must also have the ability to hire skilled workers. Tax and regulatory barriers should not limit companies’ to hire contract or short-terms employees.
WORKS CITED


Butcher, Mike. 2013. "Paris-Based Accelerator The Family Takes Index Cash To Re-Shape French Ecosystem." Tech Crunch, August 12.


APPENDIX I

Three theory-based frameworks were used to guide the analysis of qualitative data including Saxenian, Porter and Berger.

From Saxenian, I looked at an analysis framework introduced in her book in which she recommends evaluating regional industrial systems along three dimensions: Local institutions and culture, industrial structure and corporate organization.

These three dimensions are gathered from a growing literature across disciplines and offered an interesting way to evaluate the results of my qualitative research.

- Local institutions and culture: Public and private institutions, local government, culture
- Industrial structure: the degrees of vertical integration, nature of the links to customers, suppliers, etc.
- Corporate organization: organizational hierarchy; central or decentralized; outsourced, etc.

From Porter I considered how clusters allow companies to operate with greater productivity through:
- Improved access to employees and suppliers
- Access to specialized information
- Complementarities
- Access to Institutions and Public Goods
- Better Motivation and Measurement

In a similar approach to Porter, in her 2013 book, Making in America, Suzanne Berger writes about the key items that firms from the ecosystems in which they are located, especially in terms of financing their first years of scaling up. The items include:

- Talent and skills and access to workers with diverse skills that overlap into material science, engineering and other disciplines
- "Network nodes" processes which allow startups to connect to capital as well as networks that allow young companies to "network" to other resources
- Depth and breadth of suppliers are important for companies
- Financing and capabilities in later-stage development (often funded by national investment funds or corporate investors) are important for companies to grow past the venture stage.

It was from these theoretical readings that I derived many of the codes for the analysis of my work. Although not all of these items were identified within the interview data, I was able to
APPENDIX II

Further “Innovation Place” Cases

Incubator/Accelerators:

Y Combinator, Mountain View
Since being founded in 2005, this seed accelerator has funded over 630 startups including Reddit, SribD and Airbnb. Twice a year, Y Combinator accepts a cohort of promising startups for a “boot camp” training on entrepreneurship. In exchange for an equity stake in the company Y Combinator links promising, early-stage companies to resources such as mentors and angel investors. Until 2009, Y Combinator hosted its cohorts in a Mountain View and Cambridge but the organization now hosts companies year-round in its 12,000 square foot Mountain View office. The organization’s cohort size growing from a handful of startups to its most recent cohort of 68 companies, with many participants opting to locate and state in the San Francisco area. As a result, Y Combinatory opened a San Francisco location in Union Square to house Y combinatory alum in need of temporary spaces to work from.

R/GA Accelerator, New York
Founded by an ad agency and startup accelerator, this recently formed hardware accelerator focused on spurring the creation of connected device startups. 10 startups from around the world were chosen this year to join the organization which hosts teams in R/GA in its Midtown Manhattan office. Tech Stars, an established accelerator, provides entrepreneurial mentorship and training while RGA provides teams guidance on design, branding and engineering.

1871, Chicago
Located on the 12th floor of Chicago’s historic Merchandise Mart, 1871 is a co-working space and home to more than 240 individual entrepreneurs and startup companies. Dubbed the city’s “calling card for tech,” 1871 is home to startup accelerator TechStars also makes its Midwest home base here as does crowdsourcing platform Indiegogo. The project is headed by former entrepreneur, Howard Tullman who also runs The Chicagoland Entrepreneurial Center (CEC), a non-profit organization that supports entrepreneurs on their path to building high-growth, sustainable businesses that serve as platforms for economic development and civic leadership. Sponsorships help cover operating costs of the organization.

Districts:

Kendall Square
Located adjacent to the MIT campus, Kendall Square can be defined as the area within walking distance from the Kendall/MIT T station, or more broadly put, the business district that lies east of Portland Street, northwest of the Charles River, south of Binney Street and north of MIT. Today Kendall Square is a self-proclaimed “innovation district” know for clustering high-tech industry, especially bio-pharmaceuticals in a dense urban environment that is located close to academic resources, public transportation and ecosystem of startups and entrepreneurs. Built upon former marshland, the area’s proximity to rail via the Grand Junction branch of the Boston & Albany Railroad and the 1912 opening of the first subway line made it ideal for an industrial activity at the turn of the 20th Century. Beginning in the mid-1950s Kendall was transformed yet again as part of the urban renewal movement, which led to the build out of office parks such as Cambridge Center. It wasn’t until the 1990s when One Kendall Square, a series of factory buildings redeveloped into a mixed use space for office, hotel, amenities and restaurant. This
became a model for future development in the area with other developers following the lead of renovating historic factory buildings and offering mixed uses within projects. Recent efforts to improve the overall character and design of Kendall Square through a Technology Square expansion to break apart super blocks and permit of two small pavilions, as well as citywide zoning efforts to encourage street front retail. This development responded to and fed-off of Boston's growing entrepreneurial economy which was booming in the 1980s following the passing of the Bayh-Dole Act which gave researchers more ownership of inventions found under Federal funding. Startups, in turn, became increasingly commonplace in Kendall Square setting the stage for what we see today as a thriving Innovation District. Since the

South Lake Union
Located in the heart of Seattle, just south of Lake Union, this high-tech neighborhood transformed what was once an area of aging light industry --mostly focused on auto body and providing support goods for the downtown business district--into a hub for a range of high-tech offices ranging from Amazon's headquarters to small startups and co-working spaces. In addition to software and technology startups, South Lake Union is known for its specialization in life science and biotech research and development with labs such as Fred Hutchinson Cancer Research Center, Batelle, Seattle Biomedical Research Institute, the South Lake Union campus of the University of Washington, Rosetta and Amgen to name a few. The dramatic transformation of South Lake Union is due largely in part to the development strategy of Vulcan Real Estate, the real estate development arm of Vulcan Inc. owned by Microsoft co-founder Paul Allen. In the late 90s Vulcan began acquiring land in the South Lake Union neighborhood totaling at its peak, 60 acres. Backed by a "well-capitalized" development, Vulcan was able to develop South Lake Union as a "life science, technology center and residential community that would serve as an economic driver for the city and region," according to Public and Private Investments in South Lake Union, a 2012 report by Seattle's Office of Economic Development. Today South Lake Union has its own dedicated streetcar line, a growing number of restaurants, coffee shops, retail and amenities.
APPENDIX III

Interview Protocol

[NOTE: Written generically, will modify just slightly for each person I interview, depending on which group (e.g. city planner, developer, startup or nonprofit) they are in. The version below was written for a City Planner. I will create subsequent variations for startups and developers. I am worried this interview will run over an hour... Also, please note that there is very little written on innovation districts in the planning literature which why I am so excited to delve into this topic!]

City Planner Script

Thanks for taking the time to meet with me today.

Well, to start, what is it like working at [NAME OF ORG] as a [OCCUPATION]? How big is your staff? How many [name of profession i.e., planners, developers, employees, etc.] are working on the innovation project? Is your team multidisciplinary? How long has your department existed?

Great. Thanks for telling me more about your work at [NAME OF ORG].

I’d like to start by asking you to share the story of the creation of the Innovation District. Was there a visionary? Who were the key stakeholders?

Tell me a story about the biggest failure that happened while building this project.

Tell me about some of the incentives that helped contribute to the creation of the district.

There had to have been hurdles, tell me about some or one of those.

Please, walk me through the steps that brought you/the city to the location of the current innovation district, rather than another location? I’ve read several articles on this topic (explain my understanding) is this the way you interpret it?

How has the site changed since you started your project? Can you give a general description of the companies that are locating in (name of place)? What industries do you think are driving this growth/decline (if any)? Where are they locating?

How would you describe the mix of businesses and organizations in the Innovation District as they exist today? What types of industries are moving to [NAME OF PLACE]? Are they located in a specific area of the Innovation District? How would you characterize the various areas of the ID? How is this different from the original vision?

Tell me about your favorite places in the innovation district. Can you provide an example of a site that isn’t doing as well or one that has been slower to develop?
Have you seen a growth in the demand for property in [NAME OF SITE]?
What kinds of spaces are new people/companies looking for?
How is that different from the spaces that people looked for previously?

Collaboration has to play a role in getting a project like this off the ground. Tell me about the main stakeholders involved in this project.

Companies don’t find out about places like the Innovation District by opening a phone book. Tell me about any policies or programmatic incentives being put in place to encourage companies to settle here?
Are these happening at the state level? Country level?
What about tax incentives?

In your day-to-day work, you must get a lot of feedback from industry and companies. What are they talking to you about?

Could you describe the average commute to the [NAME OF PLACE]?

Startups seem to be a big topic within the [NAME OF INNOVATION PLACE]. What roles do startups and startup incubators play at [NAME OF PLACE]?
What types of industries do the startups canvas?
How long are companies staying in the innovation place?
Are there any city incentives aimed at keeping growing startups/companies in the district? Could you elaborate?
How do you anticipate the tenant base changing as the district matures?

With so many uses, I’m imagining the innovation district is zoned differently from other places in Boston. Could you describe the zoning and land use regulations in this area?
What is the typical building type of startups?
Are they multi-story?
Do they have certain building requirements?
Are they occupying full buildings or sharing? What’s the character of these buildings?
What is zoning of the districts and areas the startups inhabit?
What’s the typical parcel size of startups?
Are they occupying entire buildings or co-working spaces?
What’s character of these spaces?

Could you describe access to amenities?
How many restaurants and cafes are in walking distance?
Do residents tend to live nearby? If not, where?

Could you describe access to transportation? (Also check through GIS/map)
What amenities/resources is (name of place) lacking?

Tech-centric development of the past has been closely linked to institutions such as universities. Are there any such partnerships at [NAME OF SITE]?
If so, could you describe the nature of this relationship?
Does the school occupy physical property in [NAME OF SITE]?

What about other types of collaboration? Could you tell me the city’s role in operating the innovation district? What about industry and educational institutions?

Could you explain to me the city’s long-range vision for the Innovation District?
How do startup spaces fit into this?
What industries do you think are likely to fit well here? Are you seeing any other trends?

What are some of the emerging needs of the Innovation District? What will be the new needs for startups and future tenants in the innovation district? What do you think is the city’s role in meeting these needs? What about the private sector and non-profits?

There have been a lot of tech-centric business districts in cities at different points (Business Districts, Business Parks, Enterprise Zones) in time. How is the innovation district from other business districts?

As you look back on what the innovation district has become, how have the uses/motivations for the neighborhood changed?

Finally, could you explain to me how the city is measuring whether or not the Innovation District is successful or not? Is there funding in place to monitor this? Who are the stakeholders engaged in monitoring this process? What happens if goals/milestones are not met? What if they are met?

Are there any issues I haven’t asked about that would seem relevant given my topic of inquiry?

**Startup Script**

Thanks for taking the time to meet with me today.

Well, to start, what is it like working at [NAME OF Startup] as a [OCCUPATION]? How big is your staff? How many employees are at your firm? When were you founded?

Great. Thanks for telling me more about your work at [NAME OF ORG].

I’d like to start by asking you to share how your company came to be located in the Innovation District? Was this a self-motivated move or did another group such as the city or a developer recruit you?

How has the site changed since you moved to your current location?

How would you describe the mix of businesses and organizations in the Innovation District as they exist today? What types of industries are moving here? Are they located in a specific area of the Innovation District? How would you characterize the various areas of the ID? How is this different from the original vision?

Tell me about your favorite places in the innovation district. Can you provide an example of a site that isn’t doing as well or one that has been slower to develop?

Have you seen a growth in the demand for property in [NAME OF SITE]? What kinds of spaces are new people/companies looking for? How is that different from the spaces that people looked for previously?
Collaboration has to play a role in getting a project like this off the ground. Tell me about the main stakeholders involved in this project. How has your startup engaged with these organizations?

What's the ideal location for a company like yours? How does your current location deviate from this vision?

Have any difficulties arisen because of your location in the ID. (If they struggle, say, some people have mentioned transportation can be a challenge in the ID—could you give me your take on this?)

Companies don't find out about places like the Innovation District by opening a phone book. Were there any incentives that helped contribute to your decision to locate in the ID? Are these happening at the state level? Country level? What about tax incentives?

In your day-to-day work, you must get a lot of feedback from industry and clients. What do you clients think of your location? What about your colleagues in other cities or, say in, Cambridge?

Startups seem to be a big topic within the [NAME OF INNOVATION PLACE]. What roles do startups and startup incubators play at [NAME OF PLACE]? What types of industries do the startups canvas? Are these companies creating businesses and roots within the ID? Are there any city incentives aimed at keeping growing startups/companies in the district? Could you elaborate?

How do you anticipate the tenant base changing as the district matures?

The innovation district has a wide variety of companies and tenants. This must be reflected through a variety of building types and characteristics. What type of facility are you located in? Is this typical of startups in the ID? What's the character of the space? Are there any zoning or land use rules that have been restrictive to your company?

In Kendall Square many startups have complained about the lack of amenities in the neighborhood. Is access to amenities a problem in the ID? Could you describe the amenities you use in the ID? How many restaurants and cafes are in walking distance? Do residents tend to live nearby? If not, where?

Could you describe access to transportation? (Also check through GIS/map) What amenities/resources is (name of place) lacking?

Could you describe your daily commute to work? Is this a common story?

Tech-centric development of the past has been closely linked to institutions such as universities. Are there any such partnerships at [NAME OF SITE]? If so, could you describe the nature of this relationship? Does the school occupy physical property in [NAME OF SITE]?

What about other types of collaboration? Could you tell me the city's role in operating the innovation district? What about industry and educational institutions?
Could you explain to me the city’s long-range vision for the Innovation District?
How do startup spaces fit into this?
What industries do you think are likely to fit well here?
Are you seeing any other trends?

What are some of the emerging needs of the Innovation District?
What will be the new needs for startups and future tenants in the innovation district?
What do you think is the city’s role in meeting these needs?
What about the private sector and non-profits?

You could have located anywhere in the state, even in places where rents might be cheaper outside of the city or in other location within Boston or Cambridge. Why did you choose the Innovation District?

As you look back on what the innovation district has become, how have the uses/motivations for the neighborhood changed?

How would you measure the success of the Innovation District?
Who are the stakeholders engaged in monitoring this process?

Are there any issues I haven’t asked about that would seem relevant given my topic of inquiry?
APPENDIX IV

Codebook Example (earliest iteration)

<p>| INCENTIVE: | Any reference to financial incentives such as taxes, low-interest/no interest loans or grants that aided in the establishment of a company or institution. Ex. “We have money from foundations, from companies and from the public. The public can be the state, Europe or the city.” |
| TRANSPORT: | Reference to transportation challenges in going to/from the innovation place. Ex. “So far, it is public transportation and there is a lot of regulation with buildings that impose a lot of space for parking. It’s not what we want. Assume that the metro is not there? It’s very difficult to change that.” |
| AMENITIES: | Reference to amenities near the innovation place such as restaurants, bars, coffee shops, dry cleaners, etc. Ex. It think within a 15 meter radius we must have tens of restaurants. [Laughs]. This is Paris. |
| GOV: | Mention of government in playing a role in establishing the creation of the innovation place. Ex. It’s a community-minded effort...Mayor Menino was super supportive as was the stat government.” Mayor Menino was the one who took charge on the actual creation of the neighborhood, but it was Mass Challenge’s presence that greatly influenced the direction the city ultimately took in promoting innovation in this neighborhood: “Mayor Menino named it in large part because of us.” |
| STARTUP: | Reference to small, early stage companies or entrepreneurship in the establishment of the innovation place. |
| RENT: | Reference to the cost of real estate, rental market or actual rents (ex. “rents have increased 4 fold in this neighborhood since 2010”) |
| BRANDING: | Reference to branding in the description of a neighborhood or measure implemented at an institution. |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| **COLLAB:** | Mention of collaboration, engagement or working with multiple stakeholders to create an innovation place.  
*Ex. “We collaborate with all types—makers, startups to make sure they have the resources they need.”* |
| **ZONING:** | Reference to zoning or land use regulation in establishing innovation place  
*Ex. “So at the moment we are not equipped to do biological research in the 4th, we have to do a lot of work to be able to do that.”* |
| **POLICY:** | Reference to policies or rules that served as a barrier or incentive in the establishment of the innovation place.  
*Ex. “There is basically all kinds of regulations that to impose is a very long process. We have to do all kinds of environmental impact studies.”* |
| **REAL ESTATE:** | Reference to the real estate market as playing a role in establishing where the company/firm located (ex. “the Innovation District was cheaper than anywhere else when we moved here and it was centrally located”) |
| **LOCATION:** | Reference to location, geography or particular neighborhood (i.e. “we wanted to be located near like-minded companies”) |
| **EDU:** | Reference to institutions of higher education in establishing the innovation place or reference to such institution in terms of influence or “spillover”  
*Ex. “Parts of the city are becoming too expensive for startups. None of our startups could be here if they had to pay rent.” They would have to find other co-working spaces in South Boston.”* |
<p>| <strong>SHIFT:</strong> | Mention of areas of new growth in/near the innovation place (ex. “people are moving to the leather district; I consider to be part of the innovation district” or “small startups are being pushed out.”) |
| <strong>GROWTH:</strong> | Reference to growth in the number of startups, employees or institutions in the innovation place |
| <strong>LOYALTY:</strong> | Reference to loyalty to neighborhood or innovation place (ex. “we wanted to stay in the innovation district because we played such a big role in helping to establish it.”) |</p>
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEADERSHIP</td>
<td>Mention of key leaders in the creation or establishment of the innovation place</td>
</tr>
<tr>
<td></td>
<td><em>Ex. “Menino was the one who took charge on the actual creation of the neighborhood”</em></td>
</tr>
<tr>
<td>SPECIALIZATION</td>
<td>Reference to a desire to be located amongst “like-minded” entrepreneurs, companies or institutions</td>
</tr>
<tr>
<td>CRITICAL</td>
<td>Sense of the skepticism of the creation of the innovation place (i.e., “we like working here but really, a lot of this feels like marketing”)</td>
</tr>
<tr>
<td>LIMITS</td>
<td>Reference to limits of the innovation places (ex. “this place is great but we’re growing out of the space” or “you can only do so much in this neighborhood”)</td>
</tr>
<tr>
<td>ACCIDENT</td>
<td>Reference to the “accidental” nature of the creation of the innovation place (ex. “startups just began moving here out of no where.”)</td>
</tr>
<tr>
<td>SUCCESS</td>
<td>Reference to success of the neighborhood or innovation place</td>
</tr>
<tr>
<td>FLEXIBILITY</td>
<td>Reference to flexibility of rules and regulations in the creation of the innovation place.</td>
</tr>
<tr>
<td>INDUSTRY</td>
<td>Used whenever there is a reference to a particular industry type in the interview</td>
</tr>
<tr>
<td>MARKETING</td>
<td>Was there a reference to marketing or branding strategy?</td>
</tr>
<tr>
<td>PEO-STUDENT</td>
<td>Reference to students, youth or education</td>
</tr>
<tr>
<td>PEO-WORKER</td>
<td>Reference to employees and workers</td>
</tr>
<tr>
<td>PROCESS-BREAKING</td>
<td>Reference to work that is crossing boundaries</td>
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<td></td>
<td><em>Ex. “We wanted to make a place for ugly little ducklings”</em></td>
</tr>
<tr>
<td>FUNDING</td>
<td>Reference to raising money or funds for projects</td>
</tr>
<tr>
<td>HACK</td>
<td>Reference to “hacking” the system or taking and idea and breaking it to make something new</td>
</tr>
</tbody>
</table>
DATA: Reference to data, big data or using data for analysis/understanding a topic

GROUPING: Reference to how startups are grouped and where they are grouping.

NETWORK: Reference to personal relationships and social/work networks

TRANSFORMATION: Reference to changing a system, place or procedure

VOLUNTEERS: People volunteering to help advance a cause or organization

PARTNERSHIP: Organizations working together to create an innovation place or advance an innovation cause

REG BARRIER: Measures that deter development of entrepreneurial/startup activity

GLOBAL CITY Reference to existing within a global network of cities

REG INCENTIVE Reference to regulatory measures that encourage the development of startups

REGIONAL CITY Reference to existing within a regional network of startups
## APPENDIX V

### Further Systems Analysis

<table>
<thead>
<tr>
<th>PARIS</th>
<th>BOSTON</th>
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</thead>
<tbody>
<tr>
<td><strong>Political</strong></td>
<td><strong>Process</strong></td>
</tr>
<tr>
<td>Zoning/regulation</td>
<td>Long-term protection of industrial and historic manufacturing</td>
</tr>
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<td></td>
<td></td>
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<tr>
<td>Strategy</td>
<td>Agile, flexible and reactive innovation &quot;leadership&quot;</td>
</tr>
<tr>
<td></td>
<td>The innovation strategy of Boston seems to be one driven by agility and advocating for removal of barriers for startups and technology companies (ex. &quot;agile&quot; Innovation District created by Mayor Menino)</td>
</tr>
<tr>
<td>policy/programs</td>
<td>Small 'catalyst' type projects</td>
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<tr>
<td>The city is less likely to have heavy-handed involvement but rather create programs that feed off of existing innovation projects</td>
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<tr>
<td>(Ex. Mayor's Office of New Urban Mechanics; Mass Life Sciences Initiative; Innovation District)</td>
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</tr>
</tbody>
</table>

**Economic**

<table>
<thead>
<tr>
<th>Incentives</th>
<th>Focus on long-range, research intensive industry</th>
<th>State, industry sponsors, Somerville's $30,000 to Greentown Labs</th>
<th>State incentives indirectly related to innovation places</th>
<th>City of Paris, industry, non-profits, research institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massachusetts Life Sciences Initiative, which represented a 10-year, $1 billion investment to enhance and strengthen the state's leadership in the life sciences.</td>
<td></td>
<td>Several French policies around unemployment for workers have benefitted startups. Several direct incentives have helped fund development of innovation places in Paris.</td>
<td></td>
<td><a href="http://www.latribune.fr/technos-medias/inter-net/20131104trib000793838/la-halle-freyssinet-le-nouvel-etendard-de-xavier-niel-pour-les-start-up-parisiennes.html">http://www.latribune.fr/technos-medias/inter-net/20131104trib000793838/la-halle-freyssinet-le-nouvel-etendard-de-xavier-niel-pour-les-start-up-parisiennes.html</a></td>
</tr>
<tr>
<td>(Ex. Vertex $61 million dollars for Innovation District Building)</td>
<td></td>
<td>(Ex. City of Paris use right of first refusal for SNCF site of 1,000 startups; INSERM building; funding for NUMA; funding for various programs; total 1 billion in aid to startups since 2008)</td>
<td></td>
<td><a href="http://www.rudebaguette.com/2013/07/30/the-french-governments-feasible-8-step-plan-to-turn-paris-into-an-international-startup-hub/">http://www.rudebaguette.com/2013/07/30/the-french-governments-feasible-8-step-plan-to-turn-paris-into-an-international-startup-hub/</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Real estate</th>
<th>Developer-driven projects with public benefit</th>
<th>Developer, Industry</th>
<th>City-driven allocation of spaces</th>
<th>City, Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most projects were created by developers who saw potential in the site, allowing market forces to dictate mix and type of industries innovation place.</td>
<td></td>
<td>Many projects were located in spaces that were subsidized or provided by the city.</td>
<td></td>
<td>(Ex. INSERM, 1,000 Startups, Paris-Saclay)</td>
</tr>
<tr>
<td>Cultural</td>
<td>Academic</td>
<td>Universities and research labs</td>
<td>Experiments</td>
<td></td>
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<tr>
<td><strong>Academic</strong></td>
<td>Strong connection to local academic institutions</td>
<td>Academic institutions have connection to entrepreneurial community though entrepreneurs often have advanced degrees</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Companies both spin-off from academic research labs and they also produce skilled labor and talent for &quot;innovation&quot; companies. Schools also have independent entrepreneurship curriculum.</td>
<td>Fewer spin-offs or organizations linked closely to universities; though some exceptions do exist in experimental settings (INSERM, Le Laboratoire)</td>
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<td>(Ex. Sampled founded by Boston University and MIT alum; Greentown Labs staffed almost entirely by MIT engineering grads.)</td>
<td>(Ex. Few research lab startups)</td>
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<td><strong>Startup events and collaboration</strong></td>
<td>Presence of networking and industry events coming from a range of actors</td>
<td>Networking and industry events organized by incubators and city</td>
<td>City, State, incubators</td>
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<td>In Boston, a strong presence of incubators, meetups and organizations exist to promote interaction amongst startups and entrepreneurs.</td>
<td>In Paris, conferences and events also exist, though it seemed these events might be more general.</td>
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<td>(Ex. Venture Cafe, hardware and manufacturing meetups, conferences, etc.)</td>
<td>(Ex. Connected Conference, NUMA workshops)</td>
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<td><strong>Entrepreneurship &quot;teaching&quot;</strong></td>
<td>Established network of startup-focused organizations in industry, academia and city</td>
<td>Accelerators, VC and angel investors, academics, non-profits</td>
<td>Non-profit, city, state</td>
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<td>Boston has benefitted from startup-focused organizations in Cambridge and specialty incubators that promote the development of companies within a specific industry. Strong venture and angel investing networks also contribute to this dynamic.</td>
<td>Growing network of incubators</td>
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<td>(Ex. Bolt, CIC, Mass Challenge, etc.)</td>
<td>A handful of incubators exist on Paris though the city has only begun to see incubators that tend to specialize within specialized industries</td>
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<td>(Ex. Numa, Le Camping have had a long presence; newer initiatives have been created by a large-scale technology incubator. <a href="http://www.investinparis.com/innovation/incubateurs">http://www.investinparis.com/innovation/incubateurs</a>)</td>
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APPENDIX VI

Comparison Diagrams

Findings: Public v. Private

Findings: Incentives

Findings: Academic Presence
Key Insights from Coding & Analysis

Greater Boston:

Stakeholders - In Boston, in all three categories, there was a dramatic difference in the range of stakeholders involved in the creation and maintenance of startups, incubators and districts. This wealth of collaboration seems to benefit the city in several ways that would help to promote innovation. A few key insights:

Academic institutions - In Boston, Academic institutions were mentioned in all of the interviews that occurred. From Harvard to MIT, research labs play a role in the generation of technologies and ideas used to form startups.

Access to expertise and knowledge - Boston interviewees referenced access to information (and an ease of accessing this info) as playing a role in helping to develop the startup and also locate startups within specific neighborhoods in the city.

Complementarities - A wealth of Porter's "complementarities" exist in Boston with many innovation places seemingly forming in locations with various collaborators at just the right time, in a way that benefitted multiple stakeholders. For example, Mass Challenge was given free rent for its first few years in the Innovation District. There were also clear complementarities when Greentown Labs left its Innovation District location for Somerville.

Favorable zoning - The historic zoning that occurred in South Boston left an area of the city ripe with parcels and building stock that was conducive to startups; lower rents in the neighborhood also made the area favorable for real estate investment by developers and technology companies such as Vertex.

Startups as a "seed" - In the Innovation District, Downtown Crossing and Somerville, reference was repeatedly made to the role that early startups played in establishing an innovation place, and in turn developing otherwise underdeveloped parts of the city.

Available real estate - With little guarantee of low rents, startups and incubators interviewed referred to a sense of fluidity in the real estate market for innovation places. There seemed to be an understanding that startups and incubators in Boston move, often chasing lower rents.

Agile leadership - Menino's ad hoc vision for the city played a key role in building out the Innovation District. This too seems to be the case for incubators and startups in Boston who voiced a philosophy quick, fast adaptation in the planning process of building out innovation places.

Access to capital and venture funding - In Boston, proximity to venture funding was mentioned throughout the interview process by city officials, incubators and startups. Demands from venture funders require face-to-face meetings, requiring some startups to be desire to located in an urban setting as opposed to a rural or suburban location.

Access to talent - Having access to talent was mentioned at city planners, incubators and startups. Access to skilled workers seemed to played a role in their decision to locate in the Boston area.

Greater Paris:
Paris seemed to be developing its innovation ecosystem using a much more top-down approach. While this has led to an impressive growth in the number of accelerators and incubators in the country, there are also challenges that have emerged. A few key insights:

State partnerships with academic institutions and big industry – In Paris-Saclay the state through its development agency is working to execute a long-term master plan that will bring together universities from throughout the greater Paris region, as well as industry.

Municipal partnerships with private, non-profit and industry – On the municipal scale, there was more mention of working outside of legacy institutions. In an interview with a high-ranking official in the City of Paris, partnerships and collaborations with companies from small to large were mentioned. The city has also helped to fund several high profile incubators that range from non-profit to large industries.

Industry-specific innovation strategies – Pôles de compétitivité in Paris cultivate and bring together businesses in many industries ranging from media to biotech. These are located throughout France within 67 industries.

State and municipal policies geared toward spurring innovation – Several national policies have emerged in recent years to help spur innovation in Paris including La Paris Tech, a multi-level national policy that creates opportunities for funding and entrepreneurship nationwide.

State and municipal funding of projects – The city of Paris and the state have invested large amounts of money into projects the past five years ranging from providing funds to launch the city’s most established startup incubator to incentivizing R&D through tax incentives.
APPENDIX VIII

Comparison of Mass Challenge and The Family Using Michael Porter Productivity Framework

1. Improved access to employees and suppliers - Clusters tap into pools of specialized workers, lowering transaction costs and making it easier to attract potential employees who might see the existence of the cluster as an advantage; developed clusters can have an advantage in sourcing locally, lowers transaction costs related to inventory, delays, etc.

Mass Challenge
Wealth of mentors & startups; shortage of affordable real estate
In the case of Mass Challenge, the accelerator/incubator’s location in the Innovation District and Boston at large helps the organization to gain access to interns from various academic institutions. For example, the organization brings in 10-25 interns a year from local universities and colleges. Similarly, access to major corporations and are in the area and actively drawn upon. “We collaborate with all types—makers, startups to make sure they have the resources they need,” said one Mass Challenge employee who works to recruit industry leaders to serve as mentors to its startups. In general Mass Challenged has taken an industry agnostic approach to how it chooses its startups that seemingly serves as an asset in terms of the organization’s ability to reach a large circle of experts to mentor its startup teams. Rising rents in the neighborhood are also a challenge for Mass Challenge startups whose startups are no longer located in the areas closest to the incubator. “Parts of the city are becoming too expensive for startups. None of our startups could be here if they had to pay rent.” The challenge of paying high rents introduces a conundrum for a city planner who on the one hand knows that startups play a vital role in creating an innovation ecosystem on the one hand. On the other hand, many early stage companies cannot afford rents, leaving office spaces to later stage startups and established firms.

The Family
Strategic collaborations & challenges in hiring
The Family, a privately run incubator that brings resources and connections to its startups, said its startups benefited tremendously from its connection to entrepreneurs and industry leaders. This network was not openly promoted but instead the organizers appeared to be very particular about who they worked with. For example, when I asked my contact at The Family if they collaborated at with other organizations, she said described a partnership that she has with a coding school in Paris called Le Wagon. “We have a partnership with them because they are actually hosted here....The people who are renting out space are not just anyone, we are actually selecting the people that we want to be part of the club as we call it.”

The startups themselves seem to have other challenges with accessing talent due to hiring restrictions in terms of hiring employees. “Just in general when you hire someone, it’s really expensive. When you hire your first employee it costs double what you pay to have a contract. That’s why a lot of startups they go and use other alternatives like there’s a status in France called [inaudible], it’s a way for you to work with someone without being an actual employee and then you can send them an invoice so you can work for a friend; it’s like you are a company that’s why they call it auto-temp.”

Analysis: It seems both startup incubators are taking advantage of a stream of talent resources (startup founders and employees). In Boston, startups at Mass Challenge are often founded by recent grads from nearby universities and interns from around the area staff the organization.
In Paris it seems that while accessing talent isn’t necessarily a challenge; perceived barriers to hiring (such as higher taxes or benefits requirements) individuals could be a problem for some companies.

2. Access to specialized information
In his second point, Porter argues that technical and specialized information accumulates within clusters which members have access to information.

Mass Challenge
Ample expert advice
Of the thousands of startups who apply for one of the 128 mass challenge slots, the winners join Mass Challenge’s accelerator which gives them access to free office space, mentorship and up to 30 curriculum sessions a week taught by experts. Other expert advice can range from feedback from lawyers to access to people who are specializing in everything from PR and healthcare to customer service. These mentors “come from all walks of life,” said Joanna who adds that this in turn “allows people to have an ecosystem of choices” and connections while working at Mass Challenge to build their companies. In addition to providing specialized information to its startups, Mass Challenge also shares its model, said my Mass Challenge source that described talking to someone in Europe. Of this person she says he’s trying to create a similar model. “I hope he copies it,” she said.

The Family
Product testing & navigating regulations
The Family used its access to the startup community to perform a test launch of a product; this helped inform their decision of whether or not to pursue the expansion of a new venture: “We did a sort of startup thing where we launched a website with a picture of the [product] as if it already existed. We had so many people signing up. So we tested the idea and got some great feedback.”

Access to specialized understanding of the local startup community also helped fuel a service that would allow The Family to improve a policy within France that makes it difficult for startups to receive venture funding: “We try to get the best deals for the startups and on the other side we also try to do the same for education and we also try to identify the needs startups have that they ecosystem has not identified yet. To give you an example, we did the equivalent of convertible notes in France, which did not exist because it’s a different legal system in France. We developed that with a law firm in France. Basically what’s important to retain is that a convertible note allows startups to raise funding without setting an evaluation before-hand.”

3. Complementarities
Next, Porter argues that members can find mutually beneficial linkages in which “good performance by one can boost the success of the others”; this can come in a range of benefits including marketing because clusters can increase the reputation of an industry or attracting buyers and clients who can visit more than one vendor on a given trip

Mass Challenge
Mass Challenge benefitted tremendously early on from donated space and resources from area businesses who saw the potential value that could come from bringing startups to the Innovation District. “The owner of the building John Fundard (sp?) donated the entire 14th floor to us in 2010. He located the Mass Challenge founders, Akil and John, and felt strongly enough about the project that he wanted to bring them to the site as a way to increase startup activity.... The entire building and neighborhood has grown up around Mass Challenge “like crazy.”
The Family
The Family mentioned several mutually beneficial linkages, especially regarding organizations that are hosted and operate within its office space which has room for only 10 businesses: “We do have a partnership with a coding school, it’s called Le Wagon, I’m going to write it down. We have a partnership with them because they are actually hosted here.” Another example that was mentioned during my visit in the spring was a video company that was located in its office also shot footage for The Family.

4. Access to Institutions and Public Goods – Porter argues that public spending such as infrastructure or education can enhance productivity of firms (allowing companies to recruit from local training programs).

Mass Challenge
Institutional championing played a large role in Mass Challenge’s decision to locate in the Innovation District and to stay there; other interviews with city government officials confirms this (see Mitch Weiss interview). “The building was just a shell,” Joanna said. Over $2 million in furniture, phone, Internet and other goods were donated to Mass Challenge before launching in its current space. “It’s a community-minded effort... Mayor Menino was super supportive as was the state government.” Mayor Menino was the one who took charge on the actual creation of the neighborhood. All told, the Mass Challenge site was offered for free for 5 years, meaning that the lease will be up beginning in 2015. “It was very important for us to stay in the innovation district,” Joanna said. “He [Menino] started the innovation district in part because of us. We wanted to continue to stay in Boston fostering innovation.” [Add link to the rising rents here.]

The Family
At The Family, I learned late in my interview that particular state subsidies inadvertently benefited startups in Paris. “I don’t know if you know this but a large part of the entrepreneurs in France are on unemployment,” said my contact at The Family. “Because you know the French government, well you pay a lot of taxes here and when you quite your job, when you’re fired or there’s actually the case where you can leave your job for the purpose of starting a company, you get 70% of your pay or you can get up to 90% of your pay for a year or six months or however long you... so a lot of entrepreneurs have worked for a while and they have access to this unofficial financing, this is how they fund their startup in the beginning.” This informal funding mechanism was viewed as a commonly used technique to start a new company. It seems that unemployed professionals make up a portion of The Family’s startup pool.

Analysis: Despite their unique conditions, both incubators seem to be benefitting from proximity to a highly skilled workforce. Both organizations are also benefitting from proximity to “supplies” in the form of talent for workshops, mentorship and resources for startups.

5. Better Motivation and Measurement – Porter states that local rivalry can spur productive competition; clusters also make it easier to compare costs, performance and products against competitors

Mass Challenge
Proximity has played out in giving Mass Challenge a clear sense of the real estate market by literally seeing what is going in various offices. The incubator was able to assess, make comparisons and relocate. Comparisons of where certain startups and businesses within the innovation district were locating informed Mass Challenge’s decision to move space: “If you visit the 11th floor, you’ll see that it’s all decked out. Ours is very raw, which suits us.” The new location is fur-
ther toward South in a space that’s a little further to get to and also “less convenient. “People will have to make [the new space] a destination.” This year Mass Challenge moves to a new space near the Marine Industrial area in the Innovation and Design Building: “They don’t want to put in hedge funds and law offices. You’re not going to see Morgan Stanley and Chase,” Joanna said. “The idea is for it to be more different and more innovative.”

The Family
The Family was able to assess its competition and define business goals thanks to observations and information that was gained through proximity (real estate, need for entrepreneurial education, etc.): “We thought there was a need in the ecosystem, business schools have a lot of entrepreneurship programs which have not actually reflected the reality of entrepreneurs today so we decided to say, let’s make one for real entrepreneurs based on our experience with startups so we launched it.” In general, proximity to startups and its competition gave The Family a strong sense of overall trends within the industry, like when the topic of real estate came up: “You know it’s kind of vicious cycle here, you know as you get more people here, more people want to set up here but then you also get people moving outside of Paris to save costs, they just come to Paris for meetings.” Or when we discussed the types of startups that are located in Paris: “I wouldn’t say they are in a particular industry but I would say they are in a particular stage—I would say these startups are a little more mature. They’re not just somebody who is just starting out, they are startup who are making money one way or another but they are not just beginning, they are startups who are more than just beginning and probably more mature.”

In my analysis of Boston and Paris, I saw a wealth of factors that stood out as playing a key role in the creation of its innovation ecosystem. In the early coding process, the codes seemed to go in many different directions, but as I started to filter these items into categories and broader areas of political, economic and cultural systems, I noted strong differences and commonalities in the policies and mechanisms put in place to promote the creation of innovation places in both places. By applying the Porter framework, key insights about how startups benefit from clusters became apparent.