

Business Incubation in NYS: Recent changes, emerging models, and future directions

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Introduction

This chapter provides perspective on changes in business-incubation programs and mechanisms observed in New York State over a recent 10-year period (2005-2016). It concludes with discussion of the expected implications for the future of these programs.

New York State presents an excellent a case study of recent trends in incubation for several reasons. With a population approaching 20 million, New York State is now fourth-largest among all the United States, surpassed only by California, Texas, and Florida. New York City is now known as a global financial and cultural capital, and as the largest metropolitan region in the nation. Overall, however, the state is geographically much larger than the city, with nearly as many people living outside the city limits as within it, and the state is well diversified economically.

New York State industrialized rapidly in the 19th century after canals and then railroads connected the port of New York to the agricultural heartlands of the United States. When the national wave of de-industrialization began in the 1950s, New York State was hit very hard. As has been recounted many times in the literature on business incubation, one property that became surplus to industry's needs was an old Massey-Ferguson tractor factory in the small city of Batavia that in 1959 was reinvented as the world's first generally recognized business incubator (Lewis et al. 2011). The Mancuso family, which redeveloped the property, remains active in business incubation across the state's central, western, and northern counties (colloquially, "upstate") to this day.

During the era of the state's industrial success, substantial fortunes were made all across upstate, not just in New York City and the immediately adjacent counties. Wealthy families supported colleges, universities, and research hospitals that now resupply their respective regions with intellectual capital in the form of an educated workforce and also new knowledge stemming from

advanced scientific research. Indeed, many of these medium-sized metropolitan regions embraced the “technology business incubation” model that advanced starting in the 1980s (Mian et al. 2016). With new businesses being generated both in medium-sized regions and also in the state’s global megalopolis, New York State presents a wide range of conditions under which various models of incubation, acceleration, and investment have been developed and tested over the past decade by both a generally activist state government and an extremely vigorous financial private sector.

Background

At the start of this period, there were already many general-purpose and high-technology business incubators operating in New York State and recognized by the state’s economic-development agency (Empire State Development 2003). However, these facilities worked in isolation from each other. The Business Incubator Association of New York State (BIANYS) was founded to address these shortcomings by promoting coordination, networking, and knowledge sharing within the state borders. It began with 14 member organizations. By 2016, the association had approximately 35 dues-paying member organizations operating close to 60 distinct physical facilities or “branded” incubation programs across all 10 geographic regions recognized by Empire State Development, the state’s economic-development financing agency.

Status of incubation in 2005

At the time the BIANYS was organized, a significant number of “high tech” and biomedical incubators already operated at colleges and universities in New York State, promoting the benefits to tenant/clients of shared access to expensive equipment and services. However, these incubators’ entrepreneurial-support programs were weak.

University incubators often operated in isolation from the campus business school and also from the university “tech transfer” office responsible for the commercialization of federally funded research. Because no state funding was available to underwrite operations at an incubator after it was constructed and opened, incubator managers often came under pressure to maintain high occupancy rates. Too often, they accepted less-than-promising startups as long as they could pay the rent and would not embarrass the host university (Hochman 2005).

In non-university communities – usually in small towns or rural settings – the problem was even more severe. It was then relatively easy for economic development organizations in these regions to raise capital funding in the state Legislature to construct or fit out a generic office building and call it an incubator. But just as in the university sector, state support was for construction only, not for operations. Without a programmatic component, too many of these facilities remained underutilized or occupied by tenant/clients that were far from innovative or growth-oriented.

Changes in investor relations

During the “dot-com” boom of the late 1990s, venture capitalists (VCs) had begun to use the term “incubator” to refer to temporary cohousing for companies already in their investment portfolio. Even after the boom collapsed in 2000, VC investors expected others to mean the same thing by the word “incubator,” but their expectations collided with how the word “incubator” had long been used in the economic-development and higher-education not-for-profit sectors. This became a problem because not-for-profit incubator managers sought to position their facilities as “feeders” to the world of formal VC investment.

While business incubators in the not-for-profit sector *do* seek the most promising tenant/clients, they do so on the basis of criteria other than those used in the VC world. Not-for-profit incubators generally have no private money at risk, other than limited amounts of equity that some take in lieu of some rent. They are open to *all* businesses in their community with the potential to grow quickly, though not necessarily to the scale or in the time frame sought by VCs. By contrast, VCs seek to deliver to their limited partners internal rates of return of 20% or more over a relatively short fund life (Swildens, Hans and Yee 2017; Wilson, Fred 2009). Since all VC portfolios include a few investments that fail and many others that only break even, the need for high rates of return implies that any individual investment in a startup must have the *potential* to return at least 10 times the capital invested (Feld 2014). This “10x” rule (Why VC’s seek 10x returns 2018) fundamentally distinguishes venture investing from the selection criteria used in not-for-profit business incubation.

When venture investors of the early 2000s examined their own portfolios, they saw that very few investee companies had ever passed through not-for-profit business incubators (whether high tech, biotech, or general purpose). Moreover, in examining the tenant roster of a typical business

incubator of 2005, a VC might fairly conclude that there were very few “investable” prospects in that incubator, measured by traditional VC criteria for rates of return or the 10x shorthand. As a consequence, VCs developed a sense of disdain for incubation as it was being practiced in the higher-education, economic-development, and not-for-profit communities. They openly wondered if business incubators were really contributing anything to the overall ecosystem that supports high-growth startups.

The probable low point of this relationship came in 2010 with the publication of a doctoral dissertation, researched with support from the Ewing Marion Kauffman Foundation, challenging the efficacy of incubators at improving survival rates of startups, although results for sales and employment growth were mildly positive (Amezcuca 2010). Other researchers (Lewis et al. 2011) published a review the following year that was much more encouraging about results that can be achieved by following best practices in incubation. In retrospect, the controversial dissertation may now be regarded as inconclusive. However, because of the outsized role that the Kauffman Foundation has played in studying and promoting entrepreneurship in the U.S. and worldwide, the dissertation received wide publicity at the time and helped aggravate a fundamental miscommunication between the sectors that is only now being healed.

Disdain for the incubation model extended even to the not-for-profit and policy communities, as entities like the State Science and Technology Institute, under funding from the U.S. Economic Development Administration, began promoting the concept of Venture Development Organizations (Regional Innovation Acceleration Network, not dated) – not-for-profits equipped with investment capital as well as business mentors – as a model with potential superior to that of the conventional business incubator, and one that could work even *absent* existence of a physical incubator space.

Emergence of adjacent mechanisms and implications for incubation

Over the past decade there have emerged not just in New York but across the United States a series of new mechanisms *adjacent* to business incubators as originally understood. Here are some that have proved important to the emergence of new incubation models.

Coworking operations

Long before the emergence of global coworking giants like WeWork and its peers, coworking was being practiced by property owners who needed to repurpose a distressed building, called it an “incubator,” but provided no programming beyond collecting rent from multiple tenants that were too small to be well served by the conventional commercial real-estate market. These pseudo-incubators became the prototype for what we now define as coworking spaces (INBIA Glossary, Version 2.0 2017).

Eventually, some business incubators brought the coworking-space model in-house, either operating a cowork directly in their own space, or by outsourcing the function to a cowork operator who became an anchor tenant of the incubator. Either way, presence of a cowork inside an incubator provided a new tier of service for very early-stage ventures that would not justify or afford even a small, dedicated office and did not necessarily need programmatic support.

The presence of a cowork *inside* an incubator uses available space more efficiently and also raises the energy level of an incubator, by providing a constant flow of people in and out of common space and by providing built-in audiences for public events hosted by the incubator. Finally, coworking serves as an attractor for investors who have come to respect the coworking model as a cost-saving option for their seed-stage investees but who were not necessarily comfortable with business incubation as practiced in the not-for-profit sector.

With the emergence of many standalone operators of coworking space, both small and large, a business incubator hardly ever monopolizes all the coworking space in its own community. However, the model’s adoption by the incubator world has helped rehabilitate the reputation of incubators among angel and VC investors, who now see the incubator-housed or incubator-coordinated cowork as a center of entrepreneurial energy for the entire community.

Venture accelerators

Following the dot-com crash that began in 2000, the seed-venture accelerator concept (INBIA Glossary, Version 2.0 2017) was invented by groups of informal investors seeking to catch and ride the next wave in a fast-recovering VC sector. Venture accelerators operate more like angel investor groups than like business incubators or formal VC investors. They pool investors’ money to make small, seed-stage investments and then mentor investees through several short-

term cohorts a year rather than via long-term residencies. In contrast to formal VC investors, who buy preferred shares and seek effective control of their investees, accelerators make investments in common equity for a few tens of thousands of dollars each in exchange for 5% to 10% of the company ownership. The purpose is not for the accelerator to control the investee, or to fully finance it, but rather to sustain the founding team during a period of early exploration and then to ride along with the valuation increase that comes with a successful first investment of institutional capital (the so-called “A round” of VC).

As in the case of coworks, seed-venture accelerators have proved to be synergistic with business incubators. Since the accelerator model is often practiced in “pop-up” space that is open only two or three times a year for 12 weeks at a time, it became apparent that accelerators are not directly competitive with business incubators as fixed community assets. This has helped clarify in the investment and policy worlds the respective roles that physical incubators and seed-venture accelerator funds play in a vibrant ecosystem – even though it is still true that *both* stress mentoring as important aspects of programming.

The fact that seed-venture accelerators focus on startups that can get to A rounds *quickly* and without much capital invested means that they have generally emphasized the software and IT sectors, which are widely considered to be very capital-efficient. This focus actually helps not-for-profit (and especially university-affiliated) physical incubators by highlighting to sponsors and policymakers that there are many other “deeptech” sectors (e.g., biotech or engineering-based physical products) with longer runway and higher technical risks that *cannot* be helped in 12-week programs tuned to the needs of online or software ventures. Some business ventures simply require support through incubators that will be there year-round, often for years at a time, while the business develops and either attracts funding or bootstraps.

Finally, the existence of seed venture accelerators and VDOs has challenged business incubators to identify sources of funding – usually not the same one that financed capital construction or general operation – that they can leverage to operate an accelerator or accelerator like program inside their own space, so that they can act more like pre-seed investors.

Lean startup model

In the aftermath of the 2008 financial crisis, which again set back many incubators and accelerators, Eric Ries (Ries 2011) began developing and popularizing the theory that the “lean production” model – initially used in manufacturing and then in software development – also had applications in development of the entrepreneurial startup itself. Lean software development emphasizes the rapid iteration of inexpensive, early prototypes in response to continuous customer feedback, rather than full development of a polished product that has never before been exposed to the market. By analogy, lean *startup* development emphasizes release of a “minimum viable product” as early as possible, and then rapid iteration in response to customer feedback. If failure is more likely than not, Ries and others reasoned, it is better to fail fast.

At about the same time, Alex Osterwalder elaborated the Business Model Canvas (Osterwalder and Pigneur 2010) as a tool for thinking about the key hypotheses that the startup must test in the marketplace in order to develop a viable business model. Perhaps the most significant follow-on to these developments was the work of serial entrepreneur Steve Blank to emphasize how startups are different from large companies. Blank developed a curriculum through which lean startup methods could be taught to would-be entrepreneurs in all sectors including those “deeptech” sectors with high technical risk (Blank 2011, 2013; Blank and Dorf 2012).

Eventually, Blank’s work became the basis for the I-corps program adopted by the National Science Foundation (National Science Foundation - I-Corps, not dated) as a way to improve the commercialization of federally funded R&D by American research universities. Blank and the NSF are insistent that lean techniques are as applicable to physical-product and even biomedical startups as to software startups. Indeed, the I-Corps model has now also been used to accelerate commercialization of university research funded by NASA (NASA SBIR & STTR Program - I-Corps Program, not dated) and even by the National Institutes of Health (VentureWell - I-Corps™ NIH Course Information and Materials 2016).

The lean startup model and curriculum have enjoyed especially rapid and widespread adoption, by both for-profit seed-venture accelerators and not-for-profit business incubators in the economic-development or higher-education sectors. Lean startup now provides a common language for dialogue and mutual acceptance by these two communities – the incubation and investment worlds – that only recently were at risk of substantial alienation from each other.

Adoption of a commonly accepted model has also catalyzed the creation of university-based entrepreneurial programs that are campus wide, rather than confined to the business school alone. While business schools once ran “business-plan competitions,” these called for analytical skills that only business students had, while a boot camp modeled on lean startup principles is an exercise that students from any discipline can learn and apply in a weekend or two rather than focus on creation of a written document that takes all semester to complete.

The expansion of entrepreneurship programming from a single school to an entire research university – often including students and faculty from the engineering, law, and medical schools – has presented many opportunities for university-affiliated incubators to offer their space, their expertise at facilitation, and even the services of individual mentors and advisors originally affiliated with the incubator. Now, many campus entrepreneurship initiatives have come to include development of a physical “hub” or coworking-like space at the center of campus, where students may gather to work on new-business ideas. In many cases, this small, informal hub has served to position the most promising ideas emerging from lean-startup competitions as likely candidates to enter a formal, physical, university-affiliated business incubator (which might be located not as centrally, or even off-campus).

Finally, the perceived success and merits of the I-Corps program has encouraged other funders at the state level to create “proof of concept centers.” These can be thought of as pre-incubators that employ the same lean startup principles as I-Corps to help identify which academic or independent-inventor innovations have the potential to build scalable businesses around. In New York State, for example, the state energy agency created a series of proof-of-concept centers that are housed in or work closely with existing business incubators (NYSERDA Clean Energy Proof of Concept Centers | The New York Academy of Sciences, not dated). Such programming has provided a feeder network that improves the quality of admitted tenant/clients gives higher visibility and credibility to the incubation enterprise.

Changes in the policy environment affecting business incubation

Changes in federal programming

At the same time that these new agencies to incubation were developing, and as part of the Obama administration's efforts to promote recovery from the financial crisis of 2008, the national policy environment became extremely friendly to innovation and entrepreneurship. The U.S. Economic Development Administration, which has long supported the capital-construction costs of business incubators through its Public Works program (EDA Programs | U.S. Economic Development Administration, not dated), created a "Regional Innovation Strategies" program (since renamed "Build to Scale") that serves as an umbrella for two regular competitions that provide *operating* funding that can be levered by business incubators.

The two main components of the EDA's RIS program were: (1) the i6 Competition, since renamed the Venture Challenge (Build To Scale (B2S) Program Venture Challenge | U.S. Economic Development Administration, not dated), which paid for proof-of-concept and commercialization assistance to innovators and entrepreneurs; and (2) the Seed Fund support program, since renamed the Capital Challenge (Build To Scale (B2S) Program Capital Challenge | U.S. Economic Development Administration, not dated), which provided operational support for accelerator-like organizations that finance startups. Private-sector entities were not directly eligible for federal support, and so business incubators became natural applicants in many communities. Availability of this federal funding accelerated adoption of the lean startup model by business incubators nationwide, and it also tightened the ties between business incubators and the groups of private investors forming accelerator or other seed-stage investment groups, because federal funds were available to underwrite organizational costs.

In parallel fashion, the U.S. Small Business Administration – which formerly provided programs mainly of interest to local small businesses in non-traded sectors – expanded its repertoire to include for the first time two programs of direct relevance to many business incubators. The Growth Accelerator Fund (Office of Investment and Innovation | Resources | The U.S. Small Business Administration | [SBA.gov](https://www.sba.gov), not dated) was a direct analogue of EDA's Seed Fund Support Program. The SBA's Regional Innovation Clusters program (Get Local Assistance, not

dated) also provided support to industry-specific cluster initiatives in which incubators often play a key or organizing role.

Changes in state programming – New York State as an example

States have also been actively engaged in policy development. As an example, during the administration of New York State Governor Andrew Cuomo, several policy initiatives were taken to address the challenges of a policy environment overly focused on real estate and facilities, not keeping up with trends in incubation and investment. Without recapitulating the political negotiations and trades involved, New York State ended up with several new programs:

- Each of New York State’s 10 economic regions gained a state-designated “Innovation Hot Spot” (New York State Certified Business Incubators and Innovation Hot Spots | Empire State Development 2017), which uses a state grant of \$250,000/year to become the flagship incubator for its region. Each Hot Spot also works with the other incubators in its region (which are eligible for smaller grants) to identify the most promising startup clients and offer them entrepreneurial support and also exemption from state-level corporate income taxes and sales taxes.
- Public and private universities became eligible to designate underutilized space on or nearby campus as START-UP zones (START-UP NY Program | Empire State Development 2017), which offer the corporate tax exemptions of the Hot Spots *plus* exemption from personal income taxes for new jobs created and verified.
- The state energy agency designated and funded a set of incubators to take on the targeted task of serving startups in the clean-energy sector (Clean Energy Incubators - NYSERDA, not dated), and then complemented these with a set of “proof-of-concept centers (NYSERDA Clean Energy Proof of Concept Centers | The New York Academy of Sciences, not dated)” modeled on lean startup principles, in effect serving as “pre-incubators” or “pre-accelerators” (INBIA Glossary, Version 2.0 2017) following the I-Corps model.
- The state began requiring public/private councils in each economic region (Regional Economic Development Councils, not dated) to submit and update an overall strategic plan for economic development. Many of these plans identified ways in which the physical incubators

in-region could partner with the larger economic sectors that had been targeted for investment and growth and attraction. On occasion, these plans identify new physical incubator facilities as priority investments, but only as part of a comprehensive strategy.

- Both as part of projects selected from the proposals of the regional councils and through independent initiative of the governor, the state began supporting a series of initiatives that resemble cohort-based seed venture accelerators (43North – Welcome to 43North, not dated)(76West Clean Energy Competition - NYSERDA, not dated)(Genius NY Home, not dated)(Luminate Accelerator, not dated)(Grow-NY – Food and Agriculture Competition in New York State, not dated). These programs have been targeted to the same high-tech and life-science sectors as were identified in the regional plans. Typically, these accelerators feature a two-stage process: semifinalists receive modest initial funding to compete for a larger or grand prize, which may come in the form of equity, near equity, or a non-equity grant. Critically, three of these four most important publicly funded accelerators are operated by the Regional Innovation Hot Spot, that is to say the flagship incubator for its respective region.

Together, these initiatives of the last decade have put state funds in the hands of the regional flagship incubators or their close affiliates, making them more resemble private venture accelerators. At the same time, as these accelerators are often *operated* from the base of physical incubators and managed by the same staff who also manage long-runway incubation programs. These interrelated changes also point the way toward future evolution of the incubator concept itself. New York State is only an example. Other states in the U.S. have undertaken similar rethinking of their incubation programs.

Choices highlighted by recent analytical insights

New business vs. small business

For quite some time, incubation practitioners believed that their job was to incubate *small* business. This assumption was deeply embedded in the rationales for the initial generation of business incubators and was amplified by respected sources such as the Office of Advocacy of the U.S. Small Business Administration. As the SBA regularly observes in its small-business fact sheets, the American economy is dominated by small business: the roughly 30 million firms with fewer than 500 employees (the traditional definition under U.S. law) comprise 99.9 percent of

American businesses, vastly outnumbering just 20,000 large businesses. Larger firms employ only about half of Americans, with small companies taking up the balance. Moreover, some small firms, especially those in the manufacturing sectors, can excel at some of the same things generally associated with larger firms, such as exporting and innovating, as measured by patents granted or assigned.

However, the umbrella term “small” hides many important variations. For example, some businesses such as retailers generally start small and stay small. Some other kinds of service business may grow quite a bit larger, but they operate in so-called non-traded sectors that do not generate export opportunities for their own region and therefore do not serve economic-development objectives very efficiently. So exactly what kinds of small business should incubators be targeting?

Starting with the work of economist David Birch in the 1970s (Birch et al. 1979), policymakers have come to realize that their focus should be on identifying and cultivating the “gazelles” – the very fast-growing firms that tend to innovate, export, rapidly grow jobs, and generate economic multiplier effects. As updated by very important work done starting in 2010 by the Kauffman Foundation (Kane, Tim 2010; Stangler 2010), focus has recently shifted to *newly formed* small businesses, because it is in the *startup* phase that small businesses stand the greatest chance of becoming fast-growers. In fact, both Kauffman and the SBA now emphasize the role of the top-performing 1 percent of startups in accounting for between 10 and 40 percent of new job creation depending on the time period studied. More than size, *business dynamics* are the key: promoting regular flows of startup formation and reducing mortality. Incubators contribute directly to this mission.

VC investable startups vs. ‘indies’

Despite the importance of startups as a class of small business, it is becoming apparent that a focus on startups need not necessarily involve *only* VC-funded startups. For context, the SBA reports that of the top sources of capital for new startups *of all types*, the solid majority were funded from personal savings, with the balance distributed across sources of personal credit, and a 25 percent share bootstrapped completely (Frequently Asked Questions about Small Business 2017). According to *Inc.* magazine’s survey of the CEOs of the 500 fastest-growing private companies in the U.S., just 7 percent of respondents reported their company’s growth had been funded all or mostly externally (Inc. magazine 2014). Some 80 percent reported their growth had

been funded by internally generated cash, and the balance said they relied on external and internal growth about equally. Clearly, venture capital is not the only or maybe even the most important driver of the business dynamics that are of most interest to policymakers and incubation practitioners.

To emphasize: some startups that will never attract VC investment because the “economics” do not work for VC investment partnerships can still be taxpayers, employers, wealth-creators, innovators, and sources of second-generation spinoffs that rapidly accelerate a regional economy. Incubators, far more than seed venture accelerators, are learning this lesson and targeting these companies, even when VC investors spurn them.

Some enlightened VCs understand this. For example, the venture capitalist Fred Wilson of Union Square Ventures cautioned his blog followers not to condescend to such firms by calling them “lifestyle” businesses and not to ignore their economic contributions or attractiveness to certain kinds of investors. An example of a true lifestyle business might be a technical consultancy that never grows, but a company that can yield its owners 2x or 3x returns is a real economic contributor and should instead be called an “Indie” business, Wilson suggested (Lifestyle Businesses – AVC 2015). Many “indie” businesses can be grown over time to the scale where they operate consistently profitably and/or can be sold and generate local wealth without ever having received formal, institutional capital.

The presence of such fast-growing startups, even if they are not ever venture investable, indicates the dynamism of a regional economy. Most regions need them as much as they need VC “unicorns” – that is, those startups that achieve valuations of \$1 billion or more. The data vendor CB Insights (itself an incubator-spawned startup that spurned VC until late in its life cycle) has produced a map highlighting the hard reality that most unicorns cluster in the large coastal metropolitan areas (The United States Of Unicorns 2017). This is because the large coastal cities are where these startups’ potential strategic partners in the corporate sector are based and where large consumer markets are cheaply accessible.

Incubators operated under the aegis of economic-development programs may need to target “indie” gazelles – say, those that will achieve several years of 20 percent compound annual growth from a base of \$1 million in revenue. Such an emphasis would also be highly compatible with

the emerging field of “economic gardening,” under which economic development organizations underwrite specialized consulting services to local firms that have already reached \$1 million to \$50 million in annual revenue (or 10 to 99 employees) and have the potential to become “second-stage” companies and reach really significant scale as exporters and innovators (Companion Document Library | Edward Lowe Foundation, not dated).

Raising capital vs. finding customers in clusters

There is now emerging a better understanding of the connection between cluster-based economic development and finding customers for startups as emphasized in the lean startup movement. In a literature review for an empirical study of clusters and entrepreneurship (Delgado and Porter 2010) emphasize the importance of clusters in helping inexperienced startup firms overcome barriers to entry, thereby conveying a comparative advantage to their respective region even though they may lack an abundance of venture capital.

Porter’s work on regional competitiveness (Porter 2014) heavily influenced the Obama administration’s innovation strategy, as reflected in two key resources supported by EDA that came online during that period – the Cluster Mapping website (U.S. Cluster Mapping | Mapping a nation of regional clusters, not dated) that Prof. Porter himself advised, and the clusters component of the StatsAmerica website (Industry Cluster Definitions, not dated), which is intended to provide a technical resource for regional economic developers. In Europe, the European Commission supports directly parallel tools (Cluster mapping tool - European Commission, not dated).

Incubators are nearly always involved as one element of a cluster strategy, even though they may not be the primary driver. The availability of new data and analytical resources offers incubator directors clear alternatives to chasing unicorns or spending all their time teaching inexperienced university students how to “pitch” VCs. One of the lessons of the “lean startup” movement is that early customer traction is important to genuine entrepreneurship as capital. Placing incubated startups within the context of a cluster of potential buyers, customers, and corporate strategic partners maximizes the chances that there will emerge natural entrepreneurs who are able to bootstrap sales revenues without requiring enormous sums of venture capital.

To see how this philosophy might be applied outside the globalized megaregions, consider first what has made those larger regions succeed. New York City, which in the last 10 years has become known as a “tech” hub, did not succeed by action of its business incubators, as good as those incubators were. It got there because it houses a dense collection of customers not only for consumer businesses by virtue of its large population but also for business-to-business ventures thanks to the density of world-leading clusters. As the think tank the Center for an Urban Future observed in studying the phenomenon, New York City became a leader in information technology (or “tech”) because it was already densely supplied with competitors in those traditional industries such as advertising, media, finance, fashion and health to which tech was easily and powerfully applied (New Tech City 2012).

In other words, tech thrived in New York City because of its proximity to customers embedded in clusters of highly competitive businesses. Each individual player in these clusters knew that it would require innovation in order to survive and thrive in the current wave of technological change. For these global leaders in advertising, media, finance and fashion, it was either innovate or be disrupted and die. Partnering with startups was the quickest and cheapest way to acquire the innovation necessary to survive and thrive. Therefore, startups with truly innovative idea found it easy to sell large companies as beta-testers, early customers, and even strategic partners and investors.

Wherever clusters can be found in medium-sized and smaller regions, they are now being leveraged fiercely in the same way to regionally dominant clusters of competitive firms. Some publicly supported incubation programs are beginning to do this. For example, the Nashville Entrepreneur Center, supported by the State of Tennessee, offers acceleration services specifically tuned to entrepreneurs who want to serve the innovation needs of the country music sector, a cluster in which mid-sized Nashville hosts many competitive firms (Project Music, not dated). And in Charlotte, a national hub for commercial banking, that cluster of competitors is the target of an analogous fintech accelerator (Queen City Fintech, not dated). Of course, not every mid-sized city will have so clear or dominant a cluster to work with in order to position startup entrepreneurs with corporate partners and customers.

Questions implied by these changes

Why do an incubator at all?

In view of the explosion of adjacent mechanisms in the for-profit and not-for-profit sectors that are also promoting startup formation, incubator managers will now have to ask themselves whether improving the survival prospects of the tenants in their own building is the most important role they can play in the regional economy. In most economies, the incubator tenants themselves represent an immeasurably small component of regional GDP. Many managers are likely to conclude they have a broader responsibility to improve the region's entrepreneurial culture, amplify those investment transactions that occur outside the building in the for-profit sector, and to market the region as a good place to do a startup or invest in a startup.

Which incubators are best-practice models?

As these questions are addressed, incubator managers may need to re-assess the best-practice models they try to emulate. New candidates for emulation include: those that make themselves the focal point of all entrepreneurial activity in their region, whether publicly funded or supported by profit-motivated investors; those that keep investments in facilities very modest, and invest maximally in lean startup programming; those that understand they best serve the region by applying public subsidy to the task of performing due diligence and de-risking; those that acquire management authority for sources of quasi-public seed capital, at stages and in sectors where private investors rarely venture.

What strategies are appropriate to which settings?

Even though some mid-sized metropolitan regions in the heartland are now showing strong rates of growth in high-tech service jobs (Whiton 2018), venture capital remains heavily concentrated in Silicon Valley, New York, Boston, and Los Angeles (Florida, not dated; Florida, not dated) – reinforcing the “winner take most” dynamic of the last decades. It is possible that instead of chasing low-probability unicorns, successful, high-performing incubators may need to target “indies,” which are typically not started by the young people worshipped in the VC sector, but by the young-middle aged (Azoulay et al. 2018) who know how to find customers and bootstrap.

This may involve looking at non-traditional clusters. For example, New York City Economic Development Corporation operates a Digital Health Breakthrough Network (Digital Health

Breakthrough Network, not dated) that allows healthtech entrepreneurs access to the city's major hospitals as potential beta test sites. Even communities where no single hospital is as large as the largest academic medical center in a major metropolitan region often have a "medical district" where multiple hospitals compete with each other and can be organized as cluster partners in manner similar to what New York City has done.

In other cases, it may be necessary to look beyond physical proximity and knit together on a national basis a cluster of related and competitive firms that are interested in the same kind of innovation. This is a task to which university-affiliated incubators are well suited, because universities often host collaborative research centers that bring representatives of competitive firms from around the nation together to work on common research agendas. Models are already forming in the federally sponsored National Network for Manufacturing Innovation. For example, AmericaMakes – a collaborative in additive-manufacturing research – is based in Youngstown, Ohio, where it has made the Youngstown Business Incubator a key partner for outreach and infusion of results into the small-business and startup business sectors (America Makes, not dated). Incubator tenants at Youngstown are advantaged by ready access to representatives of the very largest American firms that support this research, and which may serve as customers or partners even though they are not located in Ohio.

Conclusion and implications for practice

This survey of New York State – a jurisdiction that is historically rich in assets relevant to business incubation – has revealed several broad developments over the past decade that suggest important implications for best practice in management of business incubators into the future.

This survey makes clear that business incubators no longer function nearly alone in the environment for entrepreneurial assistance and development. Adjacent mechanisms in the for-profit sector such as seed-venture accelerators have emerged that initially cast doubts on the efficacy of the traditional not-for-profit incubation model but now actually highlight what business incubators are especially good at, including development of types of startups in which private investors actually have very little initial interest. The implication for incubator managers is that they must establish a clear, *complementary* positioning of any not-for-profit and institutional incubator vis-à-vis for-profit seed venture accelerators. Emphasize those things that incubators can do – such

as nurturing long-runway, high-risk, deeptech ventures – that meet the economic-development expectations of government sponsors and also earn the respect and cooperation of the investment community by providing a pipeline of at least partly derisked deals.

Review of the period surveyed also highlights that state and federal policymakers are now explicitly and vigorously encouraging institutional and not-for-profit incubators to adopt a common language that is already very well accepted in the for-profit sector: namely, entrepreneurship curricula and training programs that are based on lean-startup principles. This commonality makes it easier for the public, private, and educational sectors to interact and support each other around the challenges of entrepreneurial development. Incubator managers should now leverage this mutuality by acquiring authority over public or quasipublic funding (as may be offered by any level of government, or by the philanthropic sector or both) that can be deployed in competitions that fill the gaps between traditional incubation and venture acceleration.

Finally, recent analytical insights about the role of various kinds of startups in job and wealth creation have spotlighted important cases where entrepreneurs are developing companies whose addressable markets will never meet VC-investable targets but nonetheless hold potential for creation of vibrant and profitable “indie” businesses. The lesson for incubator managers is that even startups that will never achieve VC backing can create jobs, regional wealth, and economic development. Incubator managers need to pay close attention to regional economic-development strategy and target services to those indie businesses that can supply and complement the traded clusters that are already targeted for development and recruitment. In so doing, they should give special attention to those sectors where customers are eager for innovation because competitive forces are at work. Incubators should focus on connecting entrepreneurs to customers and partners in those sectors, whether regional or distributed nationally.

Changes over the last decade have improved the status of business incubation in the investment community, but they also raise the bar for performance and relevance.

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