

A Developmental Network City? Innovation Communities, Districts and Policies in New York City
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"We don't just want companies to dream up the best ideas in New York—we want them to manufacture here too. The City's partnership with New Lab on this Urban Tech Hub will help solve critical urban problems, like improving transportation, fighting climate change and modernizing our buildings. By investing in these hardware companies, we're investing in a tech ecosystem not just of programmers, but of machinists, seamstresses, and engineers." Deputy Mayor for Economic Development (2017)

What sort of industrial development is innovation bringing to cities like New York? The lit on the developmental network state (DNS) (Block and Keller, 2011) in the US propose that the a decentralized system of federal agencies labs reaches into regional and local support systems for startups, but it leaves the city innovation system a black box. In fact, what Mazzacuta calls a "new landscape of innovation-based growth" is increasingly an urban landscape according to economic geographers (Hutton, 2008, Storper, 2013). However, the analysis of emerging urban innovation ensembles usually underplays national policy. To help bridge this gap my study uses the NYC case of innovation-based industrial policy to explore, 1) how the DNS influenced development of industrial policy within cities in the wake of the financial crisis and 2) the sort of urban apparatus for industrial policy that results.

The case of NYC suggests several answers. 1) Obama's 2009 Innovation Strategy greatly influenced NYC's turn to innovation policy in 2010. But, Obama's strategy and federal funding initiatives had a very uneven and often indirect impact. This was partly by design as federal initiatives often take the form of competitive grants and challenges which intend to elicit local mobilization to respond with a local definition of the problem and possible solutions. 2) The city created a developmental apparatus that performs the sort of developmental roles usually attributed to Federal agencies: bringing sectoral reps together to devise strategies for change, leading the way in addressing obstacles (space, capital, training, academic-industry cooperation) and brokering collaborative ties. The configuration of local developmental networks that resulted varied by sectors (e.g. media, manufacturing, urban technology). 3) What is deemed "discovery" in the new industrial policy lit (e.g., Rodrick, 2004) is just as much a process of socio-political construction. This can be seen in sectoral initiatives where particular views of tech or economic "convergence" are enacted, in part, reflecting the power relations in play. 4) Despite the optimism of President Obama and NYC Mayor deBlasio for comprehensive Smart City frameworks, the innovation turn in industrial policy creates big challenges for reducing inequality, given ability of powerful firms and real estate to position themselves at the center of this landscape.

FEDERAL STRATEGIC AND FINANCIAL IMPACT ON NYC INNOVATION STRATEGY

Obama's innovation strategy strongly influenced NYC's strategy. Both include: **R&D, STEM education/workforce development, entrepreneurship, use of prizes and challenges, inclusive innovation, and clean tech, biotech, advanced manufacturing and smart cities**. However, federal policy had an uneven and partial influence on NYC sectoral initiatives, which reflected sector-specific factors and the city's general framework.

[] Green Energy/Clean Tech

--\$123.5 million (**DOE**) to city agencies (building retrofits, smart grids, solar).

*Reinforced existing green policies and spurred a 2009 **NYC Green Economy Plan**.

[] Life Science

--\$45 million (**NIH**) for 3 health research labs and 1 data center; \$40 million (**NIH**) for New York Genome Center.

*Reinforces pre-existing efforts to build biotech around research institutes and likely factor in city's \$500 million **Life Sci NYC** initiative in 2016.

[] Media

--No direct federal support of **NYC Media 2020** initiative in 2009.

[] Manufacturing

--\$260 million in **EB-5** funds for innovation projects in the Brooklyn Navy Yard (the EB-5 program to award green cards to investors is usually for real estate projects); \$2.5 million for wearable tech (**DOD**) through Advanced Mfg Program.

*Influences NYC **FutureWorks** programs for advanced manufacturing and makers.

[] Smart Cities

--\$42 million (**DOC**) for NYC agencies for broadband; \$20 million (**DOT**) for a connected mobility pilot project; \$12.5 million (**NSF**) for an advanced wireless pilot project.

*Reinforces the broad **Urban Tech NYC** initiative in 2016.

Table 1. Selected Media Initiatives in New York City

<i>Initiatives</i>	<i>Partners</i>	<i>Other Participants</i>	<i>Activities</i>
New York Media Lab	Consortium led by NYCEDC NYU and Columbia Univ. Includes New School, IESE (Univ of Navarra), Pratt Institute and School of School of Visual Arts.	20 fee-paying corporate members (e.g., A&E, ESPN, Hearst, News Corp, Publicis Groupe, NBCUniversal, Viacom and Universal Music Group).	Roundtables on tech issues, prototyping projects for members, a yearly summit to demonstrate prototypes and a combine to spin off startups from the projects.
Made in New York Media Center By IFP	NYCEDC, Made in NY, Verizon and the Independent Film Makers Project (operator)		Collaborative workspace for media and tech entrepreneurs that has equipment, mentors and events.
Carnegie Mellon Interactive Media Program	NYCEDC, Brooklyn Navy Yard (BNY), Steiner Studios, Carnegie Mellon Univ.		Research and teaching in film, gaming, social media, interactive computing, performance/visual arts.
Virtual Reality And Augmented Reality Lab	NYCEDC, Mayor’s Office of Media & Entertainment, NYU, New York Media Lab, Columbia Univ, and three CUNY Schools.		Provides workspace, equipment and capital to start-ups, links to training while building a VR/AR community of firms, researchers and investors.

Table 2. Selected Manufacturing Initiatives in New York City

<i>Initiative</i>	<i>Partners</i>	<i>Activities</i>
Brooklyn Navy Yard New Lab	NYCEDC, Brooklyn Navy Yard (BNY), Macro Sea (operator, real estate firm).	Provides workspace and shared equipment (e.g., laser printers, CNC milling) to help firms create prototypes of products that can be produced elsewhere in the BNY.
Manufacturing New York (*closed)	NYCEDC, Manufacturing New York (operator), MIT, Dept of Defense, Fashion Institute of Technology.	NYC outpost of Revolutionary Fibers and Textiles Manufacturing Innovation Institute in Cambridge, MA that offered training and apprenticeships and access to equipment (e.g., digital patternmaking) for wearable tech.
Advanced Mfg Center (FutureWorks)	NYCEDC, TechShop (*operator, maker space that went bankrupt).	Workplace and fabrication space providing tools, software, events and classes for tech and design-intensive mfgers.
Advanced Mfg Spaces Network (FutureWorks)	NYCEDC, SecondMuse (coordinator), nine creative hardware workspaces and 45 mentors.	Provides advanced mfg firms (n=about 85) with access to network of prototyping/making facilities, education on new tech, design, prototyping and community events.
OPS 21 (FutureWorks)	NYCEDC, ITAC (NIST/MEP Center), Cornell Univ, NYU, Rochester Institute of Technology .	Workshops for traditional mfgers on advanced materials, digital mfg, and robotics/mechatronics, and assistance with tech assessments and implementation projects.

Table 3 Urban Tech Innovation Initiatives in New York City

<i>Initiatives</i>	<i>Partners</i>	<i>Activities</i>
NYCx	NYCEDC, Mayor’s Office of Technology and Innovation, CUSP, and Tech Leadership Advisory Council--23 reps of tech nonprofits and corporations (e.g., Google, Viacom, IBM, Microsoft, Ford and GE).	Help firms create and test solutions for NYC infrastructural challenges (e.g., energy, food, mobility, digital) defined by city agencies and neighborhoods through supporting R&D, prototyping and commercialization.
Center for Urban Science and Progress (CUSP)	NYCEDC, NYU (lead partner), Columbia Univ, Carnegie Mellon, Indian Institute of Technology, Univ of Toronto Univ of Warwick, IBM, Cisco, Siemens, Con Edison, ARUP Edison, Arup, IDEO, National Grid; original plans to work with over a dozen NYC departments and 4 national labs.	Use techniques of urban science to develop and analyze large data sets to address urban challenges (e.g., energy use, pollution, traffic congestion, connected communities).
Hub@New Lab	NYCEDC, BNY, New Lab, NYC Partnership Fund, NYC City Council, Carnegie Mellon, CUNY City Tech, ARUP	Prototyping and testing lab for growth-hardware firms addressing urban problems.
Brownsville (Brooklyn) Neighborhood Innovation Lab	NYCEDC, Mayor’s Office of Technology & Innovation, CUSP, and Community Advisors—15 community reps (CBOs, local entrepreneurs and social service agencies (lead by Brownsville Community Justice Center).	Tech equity initiative to link residents, tech firms and public agencies to address neighborhood concerns while boosting tech firms, jobs and economic growth.