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ANCHORS AWAY: POWER AND UNEVEN GROWTH IN UPSTATE NEW YORK[1]

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Introduction

In 1970, Rochester, New York[2] was thriving. Its leading companies -- Eastman Kodak, Xerox, and Bausch & Lomb -- were high-technology manufacturers that each employed thousands locally. Kodak had invented the digital camera. Xerox was among the first inventors of the personal computer and the graphical user interface (GUI). Bausch & Lomb commercialized the first soft contact lenses. Rochester's personal income per capita in 1970 was 16th of the 104 largest U.S. cities -- just in front of Philadelphia (18th), not too far behind Boston (11th). Its rate of college graduation (13.3%) was among the highest for large industrial cities, ahead of New York City (12.4%) and Chicago (11.2%) – just behind Boston (14.2%). Even as manufacturing employment began declining throughout the Rust Belt during the 1970s,

[1] Sections of this paper draw on the data and analysis from unpublished chapters of my dissertation, entitled "Brass Cities: Political Coalitions and Local Economic Transformation." Draft chapters are available upon request. An earlier draft of this paper was presented at the Research Network on Industrial Resilience Conference in August 2018. I am particularly thankful to Darius Ornston and Danny Breznitz for their feedback.

[2] When I refer to city names like "Rochester" or "Seattle," I am referring to the Metropolitan Statistical Area (MSA) that encompasses the central city as well as "adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties." (U.S. Census Bureau n.d.)

Rochester's economy seemed resilient. In the past, as waves of new innovations shook the national economy, Rochester's main companies had innovated and adapted, updating the region's exports from telescopes and binoculars to photographic film and electrophotography. With a skilled population and more advanced manufacturing capabilities, the Rochester economy did not appear subject to the same pressures as places populated with steel producers and automakers. In the early 1980s, as deindustrialization swept the industrial Midwest, income and employment in the Rochester metro area grew compared to national averages. It was not until the late 1980s and after that Rochester's leading firms began shrinking and moving their production elsewhere. Despite the city's history of innovation over the previous century, neither the city's big corporations nor its small startups generated enough innovations and high-wage jobs to compensate for the decline of the region's legacy industries. Local manufacturing declined; incomes declined; and employment stagnated. By 2014, Rochester's income was below the median for large cities; it ranked 54th of 104 cities. Xerox had moved its headquarters. Eastman Kodak had filed for bankruptcy protection.

The decline of Rochester underscores the economic risks for "company towns" that depend heavily on a small number of companies or industries for investment and employment. Challenges for one company or industry inevitably translate into major shocks for the local economy. Corporate downsizing or offshoring can spike local unemployment and devastate the local real estate market. There are two ways that company towns can recover from the decline of their major firms or industries. The first is economic diversification. For Jane Jacobs, diversification is an attractive alternative and the key to innovation in cities. "It is not the success of large economic organizations that makes possible vigorous adding of new work to older work," which we might now call "innovation" (Jacobs 1970). "When this process operates

vigorously, it depends on large numbers and great diversity of economic organizations" (ibid.). Evidence from U.S. cities in the late 20th century appears to support her claims. Industries in cities with more diverse economies are more likely to experience employment growth and innovation than cities with more "specialized" economies (Glaeser et al. 1992; Feldman and Audretsch 1999). The theory – drawing on Jacobs's work – is that the knowledge spillovers critical for innovation and local productivity growth tend to happen between related industries rather than within industries.

The second alternative is a version of what Schumpeter called "creative destruction." Recovering cities replace dominant firms in decline with growing entrepreneurial firms. In this process of "[revolutionizing] the economic structure from within," the local economy remains specialized, but the specialties change (Schumpeter 2010, 83). Despite the apparent advantages of diversification over specialization and the vulnerabilities that come with economic concentration, industry specialization has long been a path to growth for cities. Firms in the same or related industries tend to cluster near one another so they can reap benefits from a common pool of talent, shared infrastructure, and knowledge spillovers from their competitors (Marshall 1961). The industrial districts or clusters where economic activity concentrates in one industry – or several related industries – often emerge "naturally" from entrepreneurs who launch successful companies and attract suppliers or partners that perform related functions (Porter 1990, 655). "Company towns" represent one model of economic specialization that most resembles Markusen's "hub-and-spoke district." These places are characterized by "one or several large, vertically integrated firms surrounded by suppliers." The large firms are the "anchors" of the local economy (Markusen 1996, 298). The dilemma is that company towns struggle to transform their economic base once the firms or industries on which they have

historically depended begin to decline. Company towns like Rochester are less likely than other cities to draw on outside knowledge to inform the innovations that they produce: large, specialized companies are prone to base their future inventions on their own past work (Agrawal, Cockburn, and Rosell 2010). Company towns "lock in" their competencies around a select few industries over time (Grabher 1993). The concentration of networks and resources in a declining industry erects barriers in company towns both to diversification and to switching from a declining anchor to a growing one.

And yet, there are instructive examples of company towns that have experienced successful economic transitions from dependence on a small set of companies to economic transformation and high-wage job growth. The Seattle, WA, Pittsburgh, PA, and Albany, NY metro areas represent three potential ways for company towns to recover as their former anchor institutions falter. The Seattle model is focused on entrepreneurship: talented individuals associated with the legacy anchor firm spin-off companies that grow and thrive as their former employer declines. The Pittsburgh model is focused on universities, which can attract and retain talent in a city when the legacy firm no longer can. The university not only becomes an employer and cultivator of high-skilled labor, but it also attracts firms that seek to recruit employees with the skills that the university is producing. The Albany approach to recovery begins with government investment. When a region experiences decline, government focuses investment in new industries that stimulates growth, attracts follow-on capital, and helps compensate for the disinvestment and decline of the anchor firms.

Rochester was well-positioned before the decline of its anchor firms to follow any of these three paths. Its large firms had plenty of high-skilled workers with opportunities to spin off companies from their old employers. The local universities specialized in the types of research

and training that had long been attractive to industry partners. And the State of New York's economic development initiatives had allocated funding to advanced technology initiatives in the Rochester region at multiple points during the 1980s and 1990s as part of a broader strategy to help the state economy transition away from declining manufacturing industries. The human capital, research institutions, and government support in Rochester all made it a "most likely" case of economic recovery (George and Bennett 2005). But the city followed none of these avenues to diversification as its three largest companies declined over more than two decades. The puzzle from Rochester is how a city with such a wealth of talent and local institutions was unable to adapt to the decline of its economic anchors. Why did Albany, Pittsburgh, and Seattle recover, but not Rochester?

I focus on the role of corporate power in raising obstacles to Rochester's economic transformation. For much of the 20th Century, the city's largest employers exercised political power over local institutions that prevented an alternative economic agenda from emerging. The power that Eastman Kodak exercised over Rochester was different than, for example, the power of Boeing over the Seattle metro area, or of General Electric over the Albany metro area. Whereas Boeing or GE might have had veto power that prevented the city or state from raising their taxes or introducing unfavorable legislation, Eastman Kodak exercised a power that shaped political, intellectual, and social life of the Rochester region. Kodak's power in Rochester resembles what Gaventa has referred to as the "third dimension" of power – the type of power that coal companies have exercised in Appalachia (Gaventa 1980). Rochester's large anchor firms helped shape the motivations of local leaders in a way that stifled risk-taking and delayed investment in growing industries. Instead of pursuing opportunities to diversify the economy – as

entrepreneurs, non-profit leaders, and politicians had in other cities – many in Rochester stuck to the norms that the city's struggling anchor firms had developed.

I develop this argument qualitatively, drawing on archival, secondary source and interview evidence related to the evolution of the Rochester economy. Investigating the challenges of diversification in the Rochester case begins to address a question that has been mostly missing from the specialization versus diversification debate in regional economics: how can cities with declining legacy industries begin to transform their economies? Amy Goldstein captures the dilemma in her study of Janesville, Wisconsin as it reeled from the loss of its main economic engine, a General Motors factory: "How do you forge a future – how do you even comprehend that you need to let go of the past – when the carcass of a 4.8-million-square-foot cathedral of industry still sits in silence on the river's edge?" (Goldstein 2017). By focusing the challenge of diversification on the power structure of a city, this research invites political scientists to investigate how policies and institutions are able to support diverse enterprises in the face of influential legacy industries and interests.

The remainder of the paper is divided into three parts. The first outlines the concept of a "company town" and illustrates with case study examples the potential paths to recovery for these regional economies. The second part identifies the puzzle in Rochester. Although the city had many of the characteristics that have been linked to economy recovery in other cities, the Rochester economy struggled mightily as its major corporations experienced waves of decline in the 1980s and 2000s. The third part argues that the source of Rochester's decline – and its failure to diversify – was the way its anchor corporations exercised power over political, intellectual, and social institutions in the region. Of course, corporate power in U.S. cities is not unique to

Rochester. In this section, I explore how Rochester's firms developed a different type of power than firms in other cities.

I. THREE HYPOTHESES FROM FORMER COMPANY TOWNS

Historically, manufacturing employment in the United States has clustered in cities and towns that constitute a "manufacturing belt" across the northeast and midwestern regions of the country (Krugman 1991). While some cities became host to a diverse mix of small and large enterprises across manufacturing sectors, other places specialized in particular industries, often due to a natural resource advantage or the rapid growth of a few dominant companies. What I refer to as "company towns" are a subset of manufacturing cities where economic activity – employment, investment, and innovation – originates from one or several firms or industries. My definition is a broader version of Agrawal, Cockburn, and Rosell's, who define "company towns" as "cities within which innovative activity is highly concentrated in a few firms" (Agrawal, Cockburn, and Rosell 2010). As U.S. manufacturing employment has declined from its peak in 1979, the economic prospects for manufacturing cities have often appeared uniformly bleak. Ed Glaeser has written that "as recently as the 1970s, pretty much every older industrial city seemed similarly doomed" (2011). Enrico Moretti goes further in questioning the prospects of the former manufacturing belt:

> "The big manufacturing centers of America, once proud and wealthy, have been humbled and are now struggling with a shrinking population and difficult economic prospects. They are pale ghosts of what they used to be, and many are at risk of disappearing from the economic map entirely" (Moretti 2012, 23).

This pessimism about U.S. cities with a legacy of manufacturing is misleading.

The economic trajectories of manufacturing cities in the United States is diverse. Indeed, cities that continue to derive a high percentage of local employment from declining

manufacturing industries have struggled. However, there is a group of large U.S. cities with a strong legacy of manufacturing that have experienced rapid income and employment growth, even as local and national manufacturing employment has declined. Cities with above average manufacturing employment in 1970 – what I refer to as "Rust Belt cities" – experienced on average slightly more income growth and slightly less employment growth between 1980 and 2014 than cities without a significant manufacturing legacy. Several company towns are among the American cities that experienced comparatively rapid income and employment growth as manufacturing declined (Armstrong n.d.). As the economic anchors in these cities declined, the local economies attracted investment and generated employment in other sectors.

TABLE 1. INCOME AND EMPLOYMENT GROWTH, COMPARED

City		**Income (2014 dollars)**				**Employment Rate**		
		1980	2014	% change		1980	2014	% change
All Cities (median)		$27,630	$44,140	61%		51.8%	63.1%	11%
Seattle		$33,204	$58,205	75%		55.1%	64.4%	9.3%
Pittsburgh		$28,519	$49,349	73%		45.9%	61.4%	15.5%
Albany		$27,225	$49,879	83%		49.9%	62.9%	13.0%
Rochester		$29,299	$43,838	50%		50.3%	58.9%	8.6%

Source: Bureau of Economic Analysis, Regional Accounts

I focus on three models of economic transformation in company towns, each illustrated by a U.S. city. The first is Seattle, WA. In the late 1960s, aerospace manufacturer Boeing Co. was the dominant employer in the Seattle metro area. In 1968, the company employed more than 100,000 people in the State of Washington. Over the course of 1969 and 1970, Boeing cut more than 50,000 workers in Washington, which generated "shock waves" through the Seattle economy (O'Lone 1970). Unemployment in the 1970s reached 14%, and the economic tumult in

the region led to a famous billboard reading, "Will the last person leaving SEATTLE – Turn out the lights" (Lacitis 2009; Pollack 1985). Today, while Boeing is still a substantial manufacturing presence in the Seattle region, high-technology and services firms abound in diverse industries. The city has been in the upper quartile of income and employment growth among large U.S. cities between 1980 and 2014.

The model of growth and recovery in Seattle centers on entrepreneurship. A number of high-growth ventures were founded in Seattle and grew there. Enrico Moretti focuses on the role of Microsoft. In the 1980s, Bill Gates and Paul Allen moved Microsoft from Albuquerque, NM to Seattle – where its founders grew up – to expand. The growth of Microsoft in Seattle "triggered the creation of an entire high-tech cluster in the region" complete with a concentration of talent, investment, and start-up companies (Moretti 2012). Moretti's account of Seattle suggests that Gates and Allen imported a high-tech industry to Seattle. If Seattle did not have the luck of being the birthplace of these entrepreneurs, its lights might have indeed turned off. However, other scholars have suggested that Seattle's success in the software industry was homegrown. Even before Microsoft began expanding in the region, Boeing had a software company of its own (Boeing Computer Services) which grew to employ thousands during the 1980s. There were more than 100 other software firms in the region when Microsoft moved there (Gray, Golob, and Markusen 1996). Although Microsoft was extremely influential in the growth of the local industry, the suggestion is that Microsoft's growth depended on drawing from pre-existing talent and resources that had already been developed in the region (ibid.). In this way, Seattle's response to economic turmoil resembles Boston's many economic "reinventions" (Glaeser 2005). Glaeser suggests that it was Boston's supply of talented labor that enabled it to thrive in different sectors as the prevailing national industries changed over time. In 1970, as it

grappled with Boeing's decline, Seattle was indeed a highly educated city with a higher share of college graduates than even Boston, MA. The Seattle path to recovery thus relied on entrepreneurs in growing industries that made use of talent and infrastructure from the struggling firms and industries that preceded them.

Pittsburgh, PA followed a path to recovery that was quite different from Seattle's. In the early 20th Century, Pittsburgh was the wealthy hub of American steel production. A reporter from the *New York Times*, in the city's heyday as a manufacturing capital, wrote that Pittsburgh was "producing millionaires like blackberries," and – "[stop] the mills of Pittsburgh and the industries of half the world would feel the shock" (Duffus 1930, 1927). Financial and business services firms grew in Pittsburgh to support the growth of the local steel industry. In 1940, Pittsburgh was among the top ten largest cities in the United States. However, as heavy manufacturing industries in the U.S. began declining in the 1970s, Pittsburgh began losing population. Spikes in local unemployment soon followed as the region's steel industry faced "near collapse" in the early 1980s and sparked an economic crisis: "more than 100,000 workers in steel and related industries – equivalent to 60% of Pittsburgh's current manufacturing employment – lost high-paying union jobs" (Hymowitz and O'Boyle 1984). During this period, manufacturing jobs in the region fell dramatically, as did income and employment. In the decades since, Pittsburgh has experienced substantial income and employment growth, despite stagnant population growth. Acclaim for Pittsburgh's recovery has been wide-ranging, from *The Economist*, which praised the city's "revival" in 2009, to U.S. President Barack Obama, who declared that the city "has transformed itself from the city of steel to a center for high-tech innovation" (Brusk 2009). High-technology investments from Google, Uber, Amazon, and Apple

in Pittsburgh have also been cited as evidence of Pittsburgh's economic recovery. However, there is no single industry that currently dominates the local economy.

The primary source of economic diversification in Pittsburgh is the city's universities and hospitals, which are commonly referred to as the "Eds and Meds" institutions. In the last three decades, Eds and Meds in Pittsburgh have expanded substantially, contributing to the growth of related industries throughout the region. The city's employment in higher education was nearly three times more concentrated than the national average in 2014, whereas higher education jobs in Pittsburgh were less concentrated than the national average in 1980. Consider the transformations of Pittsburgh's three most prominent Eds and Meds institutions: the University of Pittsburgh, the University of Pittsburgh Medical Center (UPMC), and Carnegie Mellon University. Between 1967 and 1990, the University of Pittsburgh's budget grew from $90 million to $630 million with employment more than doubling from 5,000 to 12,000 people (Lubove 1996, 46). During the same period – as national employment in the healthcare sector grew – the consortium of hospitals that had been affiliated with the University of Pittsburgh medical school organized into a "Medical and Health Care Division" of the university that eventually became UPMC (Levine et al. 2008). Today UPMC manages more than thirty hospitals, generates annual revenue of approximately $16 billion, and employs 80,000 people.

Carnegie Mellon, while smaller than the University of Pittsburgh and UPMC in employment and budget, has had an outsized impact on the local economy in terms of the talent that it has attracted and the innovation that it has generated. In the early 1980s, as the region struggled, Carnegie Mellon had already begun investing in the fields of software and robotics. Artificial Intelligence pioneers Simon and Newell were faculty at Carnegie Mellon beginning in the 1940s and 1960s, respectively. The University launched its institute of Robotics in 1979. It

was in the 1980s, however, partly in response to the decline of steel, that Carnegie Mellon became a leader in regional economic development. In 1982, the University became a partner – with the University of Pittsburgh – in leading the Western Pennsylvania Advanced Technology Center, an initiative to stimulate advanced technology industries in the region. The Commonwealth of Pennsylvania helped convene the universities and fund the center, which the universities jointly managed. In 1985, the universities partnered again to lobby for state funding in support of ambitious research initiatives, including Carnegie Mellon's application to host a Department of Defense funded Software Engineering Institute, as well as a National Science Foundation funded Supercomputing Center, in partnership with the University of Pittsburgh and electronics firm Westinghouse (Brayer 1996). In the decades since, Carnegie Mellon's prowess in computer science and robotics has attracted high-technology firms, and – in more recent years – spun out growing startups in the Pittsburgh area. The growth of the university and the region's high-technology economy are intimately linked. When Google established a Pittsburgh office, they ran a shuttle between their campus and Carnegie Mellon's (Carpenter and Todd 2014). Uber infamously recruited its R&D team for its autonomous vehicle initiative directly from a Carnegie Mellon robotics group (Lowensohn 2015).

Pittsburgh's three major Eds and Meds institutions are at the center of what the Brookings Institution has called Pittsburgh's "innovation district," where 29 percent of the city's jobs are concentrated in "only about 3% of the city's land area" (Andes et al. 2017). Eds and Meds in Pittsburgh have contributed to the regional economy directly through their employment and investments – as well as indirectly through the investments that they attract. The model of growth that emerges from Pittsburgh suggests that a city's non-profit institutions can make forward-looking investments and attract talent that can be foundational for economic recovery.

Recovery in the Albany, NY area has similarly revolved around the growth of university-affiliated institutions, but the role of government is more obviously linked to the evolution of the city's research institutions to become magnets of innovative business activity.

The Albany metro area consists of a cluster of three cities: Albany, the seat of state government; Troy, a former hub for heavy industry; and Schenectady, the company town where General Electric (GE) experienced its dramatic growth throughout much of the 20th Century. The story of General Electric's disinvestment from the Albany region in some ways resembles Boeing's decline in Seattle. GE had been an anchor of the Albany economy for decades before it began its decline. In 1900, GE employed 9,000 workers in Schenectady and – together with the American Locomotive Corporation (ALCO), the second largest firm in the city – employed 30% of the Schenectady population – more than 5% of the population of the metro area's three largest cities. By 1950, General Electric had become even more dominant, emboldened by the United States mobilization for war. GE employed 33,000 people in Schenectady in 1950 – ALCO employed 6,000 – and employment at the two companies amounted to 40% of Schenectady's population – more than 13% of the metro area's three largest cities.

For the next fifty years, General Electric largely disinvested from the Albany region, laying off waves of manufacturing workers. GE employment in the region that once neared 40,000 was down to 29,000 in 1974, 17,000 in 1985, and approximately 5,500 (mostly skilled workers) in 2018 (AP 1986; Rulison 2018). Yet overall income and employment in the Albany region grew substantially during this period as a high-tech industry focused on nanotechnology emerged. In 2014, R&D employment was three times more concentrated in Albany than it was nationally. The semiconductor consortium SEMATECH established a $400 million R&D center in Albany in 2002, and – nearly a decade later – the global chip fabricator GlobalFoundries

invested $4.6 Billion in a 2 million square foot chip fabrication facility in the Albany region (Pérez-Peña 2002; Wessner 2013, 156). Total investment in the nanotechnology sector in the region between 2000 and 2010 exceeded $6 billion (Schultz 2011). The region's growing nanotechnology industry has been linked to between 60,000 and 80,000 new jobs (Center for Economic Growth 2018). Albany's path to a growing high-technology "cluster" with high-wage jobs originates with a partnership between state government, the public university system, and industry.

Accounts of the region's economic transition typically credit the "public-private partnership" between the State of New York, the State University of New York at Albany (later the College of Nanoscale Science and Engineering and SUNY Poly), and IBM (among other industry partners) (Wessner 2013). The state government invested hundreds of millions of dollars of public money in grants and tax abatements for research and manufacturing infrastructure. The region's public university grew dramatically with support from state and industry. SUNY Albany had been focused on training teachers until the 1960s, and even into the late 1970s, its research budget was small – only $13 million. Between 1979 and 1989, the university's research budget tripled, and its overall revenues – the majority of which came from the State of New York – more than doubled (SUNY Albany Archives). By the early 1990s, SUNY Albany President Pat Swygert planned to expand the university's campus with a research center devoted to environmental science and technology management in partnership with the National Weather Service. New York State helped fund the new campus, and they declared one research lab within it the Center for Advanced Thin Film Technology. The State of New York's Centers for Advanced Technology aimed to stimulate the transition from heavy manufacturing to high-technology industries. The Center for Advanced Thin Film Technology produced research

that was relevant for the semiconductor industry and developed a strong partnership with IBM. By the early 2000s – with IBM threatening to disinvest from New York State – New York Governor Pataki, IBM, and SUNY Albany announced a $150 million research partnership to establish a Center for Excellence in Nanoelectronics and Nanotechnology in which $50 million of the investment came from the state (Pérez-Peña 2002; DiNapoli 2010). Eventually, the research campus that was originally designed for the environmental sciences became the site of a new state college focused on nanoscale sciences and engineering (SUNY Albany Archives). Industry and academic researchers collocated on campus where state-of-the-art clean rooms were used jointly for industrial R&D and basic research. It was in the context of this university-government-industry partnership that SEMATECH and GlobalFoundries invested in the region.

The Albany and Pittsburgh paths to growth are similar. In both cases, universities helped stimulate the growth of new industries with support from state government. The difference in Albany is that the state government helped create a new set of institutions dedicated to nanotechnology, whereas in Pittsburgh the university's specialization in computer science and robotics was already underway before the state intervened. In plenty of cases – particularly cases of smaller company towns – none of these resources are available. A city neither has the high-skilled talent available to launch spin-offs, nor universities that can become magnets for talent, nor government programs able to support critical infrastructure for growing high-technology industries. For Rochester, however, these resources were abundant, and the city had a legacy of adapting to economic change.

II. What's the Matter with Rochester?

The Rochester economy had experienced economic transitions in the past from a dominant industry to a diverse set of growing ones. In the mid-19th Century, Rochester was growing rapidly as a trade post along the newly constructed Erie Canal. By 1860, Rochester had become known for its specialty in flour production; the city "had become pre-eminently the 'Flour City,' having facilities…for making more flour in a given time than any other one place in the world" (Isaacs 1884, 17). When the flour industry declined in Rochester, small industries such as clothing production and breweries continued to grow. And the city developed a "world-wide reputation" for its nurseries, trees, and exotic plants, which meant Rochester transitioned from "flour city" to "flower city" over the course of several decades (Fitch 1913, 232). In the late 1800s and early 1900s, the local economy transitioned to yet again as three dominant innovator-entrepreneurs helped shape the next era of the Rochester economy.

John Jacob Bausch, a German immigrant, grew his optical instruments startup in the late 1800s with more than forty patents that included rights to hard rubber for the manufacturing of eyeglass frames, as well as various microscopes and binoculars (Bausch + Lomb n.d.). Bausch's company grew with financial support from Henry Lomb, who became his partner in Bausch & Lomb. As the early optics firm continued to grow and expand its business internationally around the turn of the 20th Century, several of Bausch's assistants decided to spin off optical startup companies of their own (McKelvey 1993, 106).

George Eastman's business began growing after Bausch's, but took off even more rapidly. The company that would eventually be called Eastman Kodak emerged from several of Eastman's foundational inventions: first, he developed a photographic coating, which led him also to develop his own photographic film. Then, "[Eastman] had to invent also the tools and

machinery for its manufacture, and a new mechanism to hold the firm in the camera. From this it was a natural step to the making of complete cameras" (Harris 1930). Between 1912 and 1938, Kodak's employment in Rochester expanded by more than an order of magnitude – from 1,500 to more than 16,000 – despite a national economic depression.

In the 1950s, yet another rapidly growing enterprise sprouted in Rochester around another transformative invention: "xerography," which became the basis for office photocopying. The Haloid Company had been a small business in Rochester producing photographic paper since the early 20th Century. Chester Carlson was a patent lawyer and inventor based in New York City. After demonstrating the copying technique he called "electrophotography" first in 1938, he worked with the Battelle Memorial Institute in Ohio to commercialize his invention (D. Hall and Hall 2000). Large technology companies at the time did not take the risk of investing in Carlson's invention, but Rochester's Haloid Company bought the rights to develop a machine that integrated electrophotographic technology (then renamed xerographic technology) (Xerox 1999). The Haloid Company became Haloid Xerox, and as its Xerox machines led the company to meteoric growth beginning in the 1950s, the firm became Xerox Corporation. Carlson moved to Rochester, and the company continued to grow its operations there for decades, employing approximately 15,000 people in the Rochester area by the early 1980s (Herbers 1981). During this time – the early 1980s – Rochester's three anchor firms (Kodak, Xerox, and Bausch & Lomb) dominated the local economy in terms of employment and investment, each directly employing thousands and indirectly contributing to the employment of thousands more through suppliers, construction investments, and local spending.

In the 1970s and 1980s, Rochester had a highly-skilled workforce like Seattle, strong universities like Pittsburgh, and the government of the State of New York willing to invest like Albany. The city had the characteristics and the resources that have been associated with economic recovery and resilience. Just as Boeing Computer Service's reservoir of computer programmers helped fuel the growth of Seattle's computer industry, Rochester had a concentration of skilled engineers and scientists who had conducted research at Kodak, Bausch & Lomb and elsewhere. These researchers developed technologies that could have been spun off into their own ventures, but they were not. For example, when a Kodak researcher developed the first digital camera, there was a debate within the company whether to invest in the new product area, or to continue focusing on film (Kodak Archives). The company chose to continue focusing on film, and Kodak researchers did not make significant efforts to spin out ventures in the digital arena. The absence of spin-outs and poaching in Rochester contrasts sharply with portraits of the business culture in Silicon Valley (Saxenian 1996). No apparent successors to Rochester's big three anchor firms emerged. It has only been since the Great Recession in 2008 – when Rochester's anchors were no longer such giant presences in the local economy – that the city began to show signs of economic transformation. As other large cities saw significant declines in relative income and employment, Rochester mostly held steady.

The University of Rochester and the Rochester Institute of Technology have a history of academic and research excellence, particularly in the study of optics and photonics, which have applications for digital infrastructure, semiconductor production, and consumer electronics. Faculty in the University of Rochester's Institute of Optics – an academic department devoted to the discipline – have frequently served as consultants to local and national firms (Anon Interview). Since the 1980s, the University of Rochester has expressed openness to industry

partnerships and entrepreneurial ventures. The university president said in 1981 that "Rochester has 51 small high-tech firms, and we're trying to help spawn more of them." (Lyons 1982). Around the same time, the University of Rochester re-focused its business school on entrepreneurship with the help of a $30 million endowment (Schmitt 1986). The University of Rochester's Research & Development budget – which includes it medical school's grants – exceeds the budget at Carnegie Mellon, which does not have a medical school. University of Pittsburgh's R&D expenditures, however, are larger than the sum of the University of Rochester and Carnegie Mellon's budgets. In Pittsburgh, also, R&D budgets have increased dramatically since the Great Recession in 2008, whereas the University of Rochester's budget has declined.

The State of New York's support for innovation and regional economic transition was not limited to Albany. The state government also made multiple investments in Rochester that began with providing research support for the University of Rochester's Institute for Optics, as well as its electronic imaging research programs. The state supported a Center for Advanced Optical Technology and a Center for Electronic Imaging Systems as part of its Centers for Advanced Technology – the same program that invested in Thin Films in Albany. Technologies related to optics and electronic imaging were potentially relevant to all three of Rochester's anchor businesses. Public investment in the region's universities was proposing to build upon the area's pre-existing strengths. In the next wave of public investment – under the next New York Governor – the state funded a Center of Excellence in the Rochester region, again focused on photonics. They called the center Infotonics, a collaboration between the University of Rochester and three of the region's biggest companies – Kodak, Xerox, and Corning – focused on photonics R&D. Infotonics was headquartered in a former Xerox facility just outside of the City of Rochester (Campbell and Clausen 2017). Infotonics was in the same batch of public

investments as the Albany program that led to the $150 million push in nanotechnology, $50 million of which came from government. Infotonics, by comparison, attracted nearly the same amount of funding from federal and state government over a longer period ($60 million) and received pledges from its three main corporate partners of up to $50 million. It also recruited a former Director of the University of Rochester's Institute of Optics to lead the effort. However, corporate contributions to the venture ended up being mostly in-kind rather than in cash, and the center was consistently short on funding. Even an Infotonics Board member from Kodak admitted after an audit of the Center that the engagement from the main corporate partners had been lower than expected (Deckert 2007). A former director of the Center suggested that the main companies didn't meet their commitment to the center because their stock prices tumbled during the stock market crash after the tech bubble (Anon Interview 2018). Corning and Xerox, in particular, saw their valuations rise dramatically in the late 1990s, only to face precipitous declines. Infotonics was eventually taken over by the expanding Albany nanotechnology initiative before the building was sold. Infotonics represented an opportunity in Rochester for a scaled-up public initiative to grow a cluster of enterprises related to photonics, but it never came to fruition.

Explaining the absence of recovery in Rochester is more challenging than explaining the presence of economic transformation in the cases of Seattle, Pittsburgh, or Albany. The mystery of inaction in Rochester is similar to Sherlock Holmes's mystery of the dog that didn't bark at an intruder. There are a host of unsurprising and uninteresting potential explanations for the dog's non-response (e.g. the dog was sleeping). The interesting potential explanations for inaction (e.g. the dog was familiar with the intruder) are difficult to prove (Doyle 1892). My approach has been to review the circumstances under which other dogs have barked at similar intruders – or, in

this case, other cities with similar characteristics have transformed their economies to replace their legacy anchor institutions. The next step is to investigate what about Rochester might have prevented it from diversifying as its anchor companies declined. Since Rochester did have what appeared to be good opportunities to diversify, the question is why none of these opportunities – for entrepreneurship, for university-led business attraction, or for a cluster sparked by public investment – led to economic transformation like they did in other, similarly-situated cities (or like they had in Rochester in past generations). In the next section, I examine what differentiated anchor firms in Rochester from anchor firms in the cities that have modeled economic recovery. How might these differences have prevented new companies, new industries, or new research initiatives from emerging in the city?

III. "Mama Kodak" – Influence and Interests in Rochester

For decades Eastman Kodak and its fellow large local corporations assumed a benevolent hegemony in Rochester. The corporation was nicknamed "Mama Kodak" (Cary and Hedges 1996). Its annual bonuses to workers across the company were a stimulus for the entire city, and led other local employers to follow suit (Barron 1980). Kodak's founder, George Eastman, was a legendary philanthropist, donating over $1 Billion in his lifetime, much of it to higher education and civic life in Rochester. He even donated space in a building he owned to the City of Rochester rent-free as a "city hall annex" (Brayer 1996, 371). In later decades, when a problem emerged in the city, the anchor corporations would pool resources to solve it. When a hotel on the Rochester skyline stood unfinished for five years, for example, the city's corporations took over the project and invested $10 Million in finishing it (Ravo 1992). Investments from the Rochester business community to support the local economy might seem like an ideal case of

good corporate citizenship. After all, city governments in the U.S. often have limited resources to tackle public problems (Peterson 1981). Social scientists have emphasized the importance of public-private partnerships and "urban regimes" for managing a city's economic affairs (Stone 1989; Elkin 1987; Stone 1993). Cooperation among businesses and between business and government in cities has often been associated with high social capital and industry clustering, which have in turn been linked to positive economic outcomes for regions (Saxenian 1990; Putnam, Leonardi, and Nanetti 1994; Teece 1992; Porter 1990). In Rochester, high levels of cooperation within the business community – and between the business community, universities, and government – coincided with positive economic outcomes when the businesses that had fostered the cooperation were thriving. However, the dominance of Rochester's business community during good times appeared to crowd out opportunities for diversification or creative destruction in the regional economy. Whereas in other cities there were economic, academic, and political institutions that spearheaded investments in diverse economic activities, these institutions in Rochester were bound up in the investments and the interests of the city's giant corporations. Kodak, Xerox, and Bausch & Lomb had over the course of decades invested private dollars in the provision of what would otherwise be public or non-profit goods: city government, healthcare, unemployment, higher education, and even bowling leagues. The same cooperation that appears to have been a boon for Rochester during its expansion in the mid-20th Century was also a barrier to the city's ability to adapt to economic change. This section has two parts. First, I show how the largest corporations in Rochester shaped politics, higher education, and social programs. Second, I argue how this exercise of corporate power is different from the power that anchor corporations exercised in the cities that successfully recovered from the decline of their dominant industries or firms.

Political Life

Beginning in the early 20th Century and continuing for decades, Kodak and other large employers in the Rochester area helped determine the structure of city government and set the agenda of regional economic policy. When Eastman Kodak grew in employment and prominence during the first decade of the 20th Century, the dominant political forces in New York politics were the bosses of political machines who controlled patronage appointments to local bureaucratic positions. The political boss system in Rochester meant the election of Republicans associated with the local patron, George Aldridge, to local offices (McKelvey 1993). George Eastman, founder of Eastman Kodak, became a leading opponent of the political boss system when he founded and financed the Bureau of Municipal Research in 1915. The Bureau was organized to study ways that city government in Rochester could become more efficient. Its goals were to root out patronage and support a "non partisan and businesslike form of city government," in Eastman's words (Eastman 1927). The Mayor of Rochester at the time had tried to start a "bureau of efficiency" within government, but he was unable to implement the project. The Mayor welcomed George Eastman's proposal to establish a similar bureau independently of government, and Eastman gathered a group of "well-known citizens," including Edward Bausch – a former President of Bausch & Lomb – to help launch the new organization (*Rochester Democrat and Chronicle* 1915).

In 1922, seven years after its founding, the Bureau of Municipal Research issued a report that recommended sweeping reforms to Rochester municipal government. The Bureau recommended that the city adopt a city manager system in which an appointed bureaucrat runs the city's main administrative functions. In 1925, the public was scheduled to vote on a new city

charter that incorporated the Bureau's recommended city manager system. A summary of the new charter suggested that it would implement "businesslike administrative machinery" and eliminate "politics in city government" (Story 1925). George Eastman was a leading proponent of the reform, issuing a public statement on the front page of the city newspaper the day of the vote urging passage of the new charter (Eastman 1925). Candidates for Mayor of Rochester also puzzlingly supported the Charter, which proposed making their jobs largely symbolic (ibid.). The Eastman-backed charter passed by referendum, and the first City Manager was appointed in 1927. Rochester's first City Manager – by unanimous consent – was Stephen Story, the leader of Eastman's Bureau of Municipal Research. Under the City Manager form of government, Story would now have the power to appoint and manage all municipal departments. Eastman first established the Bureau, which controlled the information that guided government decisions. Then he led the charge for reform, which allowed his technocratic allies to lead municipal affairs. The confluence of these events contributed to the idea that Rochester in this era was "George Eastman's town" (McKelvey 1993). The City Manager system survived well after Eastman's death. It was not until the mid-1980s that Rochester had another popularly elected Mayor.

In addition to engineering the reform of government institutions, Rochester's largest corporations were eager to take the lead in developing a local, employer-based safety net. During the early years of the Great Depression, fourteen of Rochester's largest companies began voluntarily providing unemployment insurance to local workers. Under the Rochester Unemployment Benefit Plan, each of the companies would set up a fund to support employees who lost their jobs. These companies had already pledged to implement "stabilization" programs, which enabled them to offer more consistent employment opportunities. In times of economic

emergency – when unemployment would be high and the company fund would predictably run low – the plan allowed companies to withhold 1% of active workers' earnings to support the fund. While the scheme was presented as an admirable display of corporate citizenship during a tumultuous economic time, it was also an exercise in pre-emption to avoid government intervention. The companies argued that unemployment insurance "should be voluntarily and independently set up and maintained by the industries themselves and not by compulsion or in the form of governmental insurance" ("Text of Agreement for Rochester Unemployment Benefit Plan" 1931). As a Forbes Magazine piece put it at the time: " ' Compulsory unemployment insurance.' Not an employer in the country likes the sound of these words" (Hoskins 1931). Several more years into the Great Depression, the leaders behind the Rochester plan admitted the corporate contributions could not meet the gravity of the unemployment problem. One of the Rochester Plan's major advocates and architects, Marion Folsom of Kodak, testified in support of federal unemployment insurance provisions in 1935. He said that he had "reached the conclusion that…voluntary action would be too slow" (quoted in Blaustein, Cohen, and Haber 1993). Although it was short-lived, the Rochester Plan captures the willingness of the city's large employers to – first – coordinate a joint response to a social problem, and – second – invest their own resources in human services in exchange for local, non-governmental control. Rochester's healthcare experiment, over the succeeding five decades, was built around these principles.

Between the 1930s and the 1980s, the Rochester healthcare system was an example of cooperation and cost containment that *The New York Times* called a "jewel" and a "model" (Freudenheim 1992). The "Rochester Model" is based around a system of "community rating," where the same health insurance rates and coverage is offered to every employer throughout the city. The challenge of community rating is that the big employers must agree to forego buying

their own insurance despite having large purchasing power (Field and Shapiro 1993). It was with the cooperation and instigation of Eastman Kodak and other large that Rochester introduced and maintained the "community rating" system (Le Beau 1997). It was coupled, over time, with a series of associations and other groups that allowed healthcare executives to coordinate their activities to keep costs down (W. Hall and Griner 1993). It has been reported that the local community was so committed to their local system that when New York Governor Hugh Carey began advocating for Medicaid reform in the state, business leaders in Rochester wanted Carey to "stay the hell out of Rochester" (Morrison 2017). Yet in the 1980s and 1990s, amid the layoffs of the large local corporations, Rochester employers began exploring and negotiating individualized health plans for their workers, abandoning plans that were community rated (Le Beau 1997). In healthcare – as in unemployment insurance and municipal services – Rochester's corporate leaders invested and cooperated to seize control over affairs that would probably have otherwise been the province of state and local government.

Intellectual Life

Rochester's storied history of innovation – beginning in the 1880s – continued even as Kodak began to decline. In 1990, Rochester had the highest rate of utility patents per capita of any large U.S. metro area. Its per capita patenting was just slightly higher than the San Jose, CA metro area, the home of Silicon Valley. And unlike other industrial hubs of the 20th Century, Rochester was also a magnet for college-educated workers. The large corporations' nationwide recruiting efforts brought young talent to the city (Anon Interview 2018), as did the city's two leading universities: the Rochester Institute of Technology and the University of Rochester. Yet as the region's main employers began downsizing locally, there were few successful attempts to

commercialize or spin out the many local innovations. Nor did the city's universities become a hub for high-technology business attraction. Three examples help illustrate how the power of Rochester's leading corporations contributed to the city's lack of entrepreneurship and commercialization in the 1980s and 1990s.

First, local corporations helped establish the local higher education system, which evolved to be dependent on the success of local industry. George Eastman was influential in the early financing and growth of both RIT and the University of Rochester. His biographer claims that "The University of Rochester…, its School of Medicine and Dentistry, its Eastman School of Music, its attractive River Campus…, and the Eastman Dental Center are obvious community assets that would not exist without Eastman's money and vision" (Brayer 1996, 363). Kodak generously invested in supporting employees at all levels to continue their education. In addition to helping fund their employees' tuition, Kodak also gave grants to the universities where their employees enrolled and supported graduate programs in the fields where they were specialized. These investments were at once good corporate citizenship and self-interested; Kodak sought to maintain a highly-trained workforce with relevant skills, as well as support the next generation of research in its field. Indeed, the University of Rochester and the Rochester Institute of Technology evolved to specialize in fields with particular relevance to local corporations. George Eastman and Edward Bausch – of Bausch & Lomb – helped establish an optics specialty at the University of Rochester in its early decades (Kingslake 2004). The University of Rochester's Institute of Optics was founded in 1929 and evolved with the local optics industry cluster; many of the faculty at the Institute of Optics consulted for various local companies (Anon Interview 2018).

The University of Rochester's endowment was also invested heavily in common stock in Kodak and Xerox. When these companies grew, as they did for much of the 20th Century, the University's endowment expanded dramatically. For a time in the 1970s, the University of Rochester had the third largest endowment in the United States (Harvard and the University of Texas system were the top two) (Lerner, Schoar, and Wang 2008). Yet when the stock prices of Rochester's two leading companies began declining in the 1980s and after, the University of Rochester's endowment plummeted in value (Jarrell and Dorkey 1993). "Largely as a result of its underperforming endowment, Rochester dramatically downsized its faculty and programs in the mid-1990s" (Lerner, Schoar, and Wang 2008, 3). Today, the University of Rochester's endowment is not in the top 40 for U.S. universities (National Center for Education Statistics 2016). Having depended on local industrial leaders for resources and leadership throughout their history, Rochester's universities were unlikely candidates to chart a new direction for the regional economy as the universities in Pittsburgh did.

Second, Rochester's largest corporations emphasized secrecy in such a way that seemed to stifle local knowledge spillovers. When Kodak workers enrolled in continuing education, the company feared that they would share corporate secrets and had employees pledge that they would not discuss proprietary information (UR Archives). Kodak's fear of losing trade secrets went so far that – in 1987 – they intervened in an admissions decision at the University of Rochester business school. Kodak was sending a group of employees to the school's MBA program. Kodak officials learned that an employee from Fujifilm, Kodak's rival, had also been admitted to the program. Kodak contacted the University of Rochester and requested that the Fuji employee's admission be rescinded. The student was offered admission at MIT's Sloan School of Management instead. Kodak said that it intervened because it might constrain "free

exchange of information in the classroom" (Daniels 1987a). After the affair became public and the University's faculty reportedly protested the decision, the University of Rochester again offered the Fuji employee admission. He decided to continue his studies at MIT (Memmott 2018; Daniels 1987b). Kodak's fears of industrial espionage were based in reality. There were reports that a competitor periodically took aerial photographs of the Kodak campus to infer where they were investing in new buildings. Others said that Kodak's competitors sought out dissident or recently-fired employees, although "very few people get fired from Kodak in the first place – especially people who know something of value – so that doesn't amount to much" (Whitmire 1979c).

And third, the companies' success and generous employee benefits seemed to generate a complacency that reduced the likelihood of skilled employees spinning out entrepreneurial ventures. The first digital camera was invented by a young Kodak researcher in 1973. As the researcher and his colleagues in Kodak's labs made a series of advancements in digital technology throughout the 1970s and 1980s, the business side of the company did not invest heavily in commercializing the new technologies (Estrin 2015). Kodak explored the possibility of investing more in digital photography. They even hired McKinsey to present research on the market for digital photography in the 1980s (Kodak Archives). Yet the company continued to invest in film. One possibility is that Kodak's R&D talent was oriented to serve its legacy areas of expertise: chemistry and hardware. Yet this does not explain how the company's labs attracted the talent that was able to generate digital innovations in the first place. The second possibility – popular in Rochester– is that the film business was such a "cash cow" that managers with earnings targets did not want to diversify their business. Maintaining the status quo was too profitable (Anon Interviews 2018).

The failure to invest in digital was not an isolated incident. In the 1980s, the University of Rochester, RIT, and the local Chamber of Commerce founded an industry association to focus on building and supporting high-technology businesses. They called it, fittingly, High Technology of Rochester (HTR). In the organization's early years, it sought to develop an industrial park, a model of economic development that was becoming popular after the success of Research Triangle Park in North Carolina (Byczkowski 1982). In the 1990s, it focused on advising new companies, hosting a business plan competition, and developing a high-technology incubator with a federal earmark (Anon Interview 2018). One leader of the Rochester entrepreneurial community said that HTR never really took off during the 1980s and 1990s because the community still thought that Kodak and Xerox would come back. There was not a perceived need for a separate high-tech sector of the local economy. It was not until the 2000s that the community recognized that there was an economic problem (Anon Interview 2018). In the last decade, a revived HTR – now called NextCorps – has been a leading investor in the local startup and high-technology community in Rochester.

Social Life

Eastman Kodak shaped the social environment in Rochester by supporting strong community ties among their workforce and winning loyalty from their employees and community leaders. The consequence was that when Kodak began to decline, its community remain committed and supportive. Featured prominently among the historical accounts of Kodak are wide participation in Bowling Leagues and Softball teams. In the Kodak archives is ephemera from the company's world champion amateur softball teams. One Kodak employee reflects on his participation in the team: "When we played softball, it was just unbelievable.

They flew us all over the country to play ball, and they paid for everything. I mean cars, food, entry fees, every year we got brand-new uniforms." (quoted in Ryssdal 2016). The company also sponsored 70 bowling leagues, a Camera Club with 30,000 Kodak workers as members, and "4,500 participants in Kodak Park clubs, which include chess, archery, coin, aquarium, bridge, Kodactors (theater group), Parkampers (camping), rod & gun," square dancing, and skating (Whitmire 1979b). The strong bonds among Kodak employees generated a sense of loyalty among the workforce. An entry-level Kodak worker in the late 1970s reported that he felt "set up for life" and "they have so much to offer you could practically live there" (Whitmire 1979a). The Kodak community replete with perks is redolent of the high-tech campuses in Silicon Valley that emerged in the 2000s with free lunches and ping-pong tables.

When Kodak employees had good ideas to enhance productivity in their field, they were encouraged to promote them within the company. Early on in the company's history – in 1898 – Kodak established a "suggestion system" whereby employees would be paid varying amounts when they presented their ideas for improvement to management. Bausch & Lomb later reported inaugurating a similar system. A 1918 article in *Factory: The Magazine of Management* about the suggestion system was titled "Getting Our Men to Give Us Their Ideas" (Hunger 1918). The suggestion system was framed as a competition within Kodak, which published the suggestions that won prizes from the company, as well as how much money each suggestion won. In a 1986 report on Kodak's suggestion system, the company reported that Kodak Rochester had adopted more than 17,000 suggestions in the year -- 31% of its total received – paying out more than $3.6 Million in awards. The year's suggestions, Kodak reported, amounted to more than $17.6 Million in cost savings for the company (Eastman Kodak Company 1986). One of the goals of these programs was talent retention, at which Kodak excelled during its growth in the 20th

Century. An internal chart shows that Kodak's turnover was less than 20 employee separations per 100 employees through the 1950s and early 1960s. That was a fraction of the national average, which hovered between 40 and 60 separations per 100 employees during the period. Turnover for Rochester employers as a whole – even excluding Kodak – was also well below the national trend, staying below 40 employee separations per 100 in the 1950s and dipping near 20 employee separations per 100 in the early 1960s (Eastman Kodak Company 1965).

Local loyalty to Kodak shone through when the company began to struggle in the late 1980s, beginning a wave of layoffs in which thousands of Kodak employees lost their jobs or went into early retirement. In turmoil, when local political officials and Kodak employees could have invested in alternative bases of economic activity, they expressed faith that Kodak could recover. In 1993, after Kodak had already been shrinking its Rochester employment for a decade, Mayor Thomas Ryan expressed faith that Kodak would continue to drive the local economy. He said in response to reports of layoffs that "[p]eople here [in Rochester] have to be reminded that the real question is whether Kodak remains a strong company…. If the pain of job losses is needed to keep the company viable and successful, then we have to be prepared for that" (Quint 1993). In 1997, after Kodak had cut its Rochester workforce from over 60,000 to 34,000 in 15 years, its employees still looked at the company as an anchor in the community. *The New York Times* quoted two employees who – faced with the possibility of being laid off – maintained their loyalty to and support of Kodak. One said: "Sure, I'm scared about losing my job…. 'But I want to see Kodak survive one way or the other, with or without me. Kodak is essential to the future of this community" (Hernandez 1997). Another was quoted as saying: "I would feel some remorse if I wound up being laid off…But you have to take the cards as they come…. The

important thing is that Rochester remains viable and Kodak stays here for the good of everyone" (ibid.).

The continued loyalty of the Mayor and vulnerable employees to Kodak challenges what social scientists might assume are these actors' "fundamental interests, captured by their utility functions, which they attempt to maximize. For political actors, this means maximizing their ability to retain office; for social actors, maximizing their net income" (Milner 1997, 33). Mayors are often assumed to deplore job losses and act aggressively to avoid them for fear of losing office. Individuals are often assumed to have more concern for their personal well-being (and income) than the income of any firm. Yet in Rochester, leaders and line workers seemed to continue to support Kodak over diversification even as it declined. It seems more likely that the interests of people in Rochester are not fixed based on their position in the local economy as a politician or worker, but are shaped by the local power structure of which Kodak had long been the anchor.

Power in Company Towns

The role of Kodak and – to some extent – Xerox and Bausch & Lomb in the Rochester economy was different than the role of large corporations and industries in other cities. There are two familiar "dimensions" of corporate power that commonly manifest in cities (Lukes 2005). First, when actors come into conflict, "A has power over B to the extent that he can get B to do something that B would not otherwise do" (Dahl 1957). For powerful businesses in cities, a city might offer a business tax incentives to induce the company to invest in the local economy. The tax incentives reduce the costs for the business while reducing short-term revenue for the local government. The businesses that win tax abatements are powerful enough to cause government

to sacrifice revenue and reduce tax rates below the standard set in law. Companies frequently threaten to leave a jurisdiction unless some entity accedes to their demands. In the 1960s, GE in the Albany area threatened to disinvest from the city unless union workers took a significant pay cut (The New York Times 1964). When businesses exercise power over other actors in this way, businesses are visibly extracting resources or other concessions from other actors, such as government or the local community.

The second manifestation of corporate power is more difficult to observe. It is the power to set the policy agenda. An Actor "A" – in this case a corporation – exercises this power "when A devotes his energies to creating or reinforcing social and political values and institutional practice that limit the scope of the political process to public consideration of only those issues which are comparatively innocuous to A" (Bachrach and Baratz 1962, 948). For businesses in cities, Chambers of Commerce or industry groups might publish materials that articulate the impact of certain businesses on the local economy. These organized interests can exercise power by pre-empting harmful legislation from ever being considered. For most of the post-World War II period in Pittsburgh, for example, the city's Mayor was allied with the Allegheny Conference on Community Development, which served as the regional business interest group representing financial and manufacturing interests in the heyday of steel. Corporations can also exercise this type of power when they join political coalitions, or regimes, with urban political leaders (Stone 1989). The implicit bargain of urban regimes often appears to be that business leaders help implement projects that are important for the local economy (but the city government cannot afford), while political leaders refrain from placing undue burdens on business.

What differentiates corporate power in Rochester from corporate power in Pittsburgh or Albany is the ability of Rochester corporations – particularly Kodak – to wield a third kind of

influence. Lukes describes it as A exercising power over B by "influencing, shaping or determining his very wants" (Lukes 2005, 27). The mechanisms through which this type of power is exercised are socialization and information control (Gaventa 1980). The result is that Actor B accepts circumstances that put them at a disadvantage, yet Actor B does not recognize the circumstances as disadvantageous. Gaventa's example is the coal industry in Appalachia, where communities had stayed loyal to legacy mining interests and politically complacent despite pervasive poverty and corporate exploitation of local resources (ibid. 36).

Kodak was far closer to a model corporate citizen than it was to a corporate predator. Community members in Rochester – workers, civic leaders, elected officials, and even Kodak executives – did not oppose the business community's many efforts to shape political, intellectual, and social life. Kodak's investments in Rochester, for example, appeared to serve Kodak's interests as a company while also advancing community priorities. George Eastman aimed for a reliable government without patronage politics, universities where Kodak workers could enhance their skills; and a community of people who found security and enjoyment in their experience with the company. These efforts cultivated a loyalty from local actors that led the community to adhere to a general philosophy of "what's good for Kodak is good for Rochester" – even when the interests and priorities of Kodak and Rochester began to diverge. Elected Mayors supported Eastman's proposal of a city manager system. The University of Rochester shunned Kodak's competitors and kept Kodak and Xerox stock in its endowment rather than diversifying. And when Kodak's decline should have been obvious – after it cut 40% of its local workforce in 15 years – pledges of loyalty seemed to drown out investments in diversification. One report suggested that "[t]he corporate culture in upstate New York has bred out the innovation that Eastman and Carlson brought into the region" (Council on Competitiveness

2006, 45). The institutions in Rochester that had the potential to invest in diversification – innovative employees, research institutions, and government – were either motivated to continue investing in Kodak or crowded out from investing locally because Kodak was so dominant.

IV. Conclusion

Explanations of regional economic growth are often divorced from politics. The cities that thrive, according to many scholarly accounts, benefit from skilled populations, innovative anchor institutions, and a culture of local cooperation. The cities that struggle typically lack these characteristics and risk becoming bogged down by declining industries like many traditional manufacturing sectors. The challenge for many cities with a manufacturing legacy is how to develop the characteristics that would enable them to thrive. In response to the decline of manufacturing in the 1970s and 1980s, state governments across the U.S. began investing heavily in programs to develop and retain talent, stimulate local innovation, and promote cooperation among local institutions. Government sought to build the characteristics that had been associated with economic success. While the Pittsburgh and Albany models highlight the potential for government interventions like these to be effective, the Rochester case illustrates how the "characteristics" associated with growth are perhaps necessary, but certainly not sufficient. Skilled workers, innovative universities, and a culture of cooperation were all present in Rochester, but had long been oriented to serve the interests of the city's powerful corporations. The lesson from Rochester is that powerful economic actors can effectively disable otherwise beneficial characteristics of a city.

It has been more than thirty years since Kodak began its decline in the mid-1980s. The company filed for bankruptcy protection in 2012. Now that Kodak's corporate presence in Rochester has diminished, has the city's economy been liberated on a path to diversification? It is too early to tell definitively. In the past several years, public investment from the State of New York has poured into High Technology of Rochester, which rebranded itself as NextCorps in 2018. The establishment of a NextCorps tech hub in downtown Rochester was the leading economic development proposal that the Finger Lakes region (in which Rochester is included) proposed to the State of New York for public investment. The state has also funded a high-tech incubator of optics companies through a program called Luminate (Anon Interview 2018). The State of New York's investments in Rochester are part of a larger upstate economic revitalization strategy. New York began with large public investments in Albany's nanotechnology industry in the early 2000s, followed by a $1 Billion economic development commitment to Buffalo. Now the State is pledging to invest in other upstate communities, including Rochester. When I asked a Rochester politician why the State's investments in the past had shaped the economic direction of Albany without having much influence in Rochester, they responded that the leaders of Rochester's large corporations never would have let the State come in and dictate the local investment strategy (Anon Interview 2018). That seems to have changed.

The recent public investments in the Rochester economy could prove to be a boon for local income and employment growth. State investment and what appears to be the beginnings of local economic diversification represent an alternative explanation of Rochester's economic trajectory. University of Rochester Vice Provost Duncan Moore, for example, argues that it was no small feat for Rochester to hold its employment steady in the 1990s and 2000s as its major employer shed tens of thousands of local jobs (Moore 2012). The emergence in recent decades of

a cluster of small and medium optics firms in Rochester is yet another testament to local economic resilience. It appears to be true that Rochester's economy in recent decades could have fared far worse in the face of an extraordinary corporate decline. Ongoing research can identify the new sources of influence that emerge in the city, and how these local actors wield their power to shape Rochester's economic path.

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**Note: Interview and archival citations are a work in progress. Interview evidence comes from multiple Rochester sources despite all being cited as “Anon Interview 2018.” Some archival citations are incomplete. They denote the general archival collection, but the specific document and its location in the archive is not yet cited.