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SMALL STATES AND SMALL CITIES:
USING INTERPERSONAL NETWORKS
TO ACCELERATE ECONOMIC
RESTRUCTURING IN WATERLOO

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Abstract

In recent decades, the small states of northwestern Europe have been hailed as models of good governance. These societies have used encompassing, cohesive social networks, where “everyone knows everyone,” to reform public policies and restructure their economies with remarkable speed. At first glance, these pint-sized success stories would appear to hold few lessons for larger, more heterogeneous polities, where diverse, loosely connected sectors and regions compete to influence national-level outcomes. This paper, however, argues that small cities may resemble small states in their capacity to construct cohesive, cross-sectoral networks. While lacking the fiscal and regulatory tools of a nation-state, reform-oriented, municipal actors can use the “politics of interconnectedness” to accelerate restructuring by constructing collective myths. Focusing on Waterloo, Canada, a poorly resourced, thinly institutionalized environment where collective action should be least likely, the paper demonstrates how policymakers and firms could use the image of Waterloo as an IT leader to rapidly transform the region’s industrial base. In doing so, the paper contributes to separate literatures on both small states and cities. In addition to demonstrating how cities can learn from small states, the paper uses regional-level, empirical material to highlight the importance of interpersonal relationships in small, European states.

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In recent years, the small states of northwestern Europe have been hailed as models of good governance (Auer 2003; Becker 2011; Campbell and Hall 2009). These homogenous, cohesive polities have adopted best practice in a staggering variety of policy domains, from macroeconomic policy (McCarthy 2001) to innovation policy (Castells and Himanen 2002) and labor market regulation (Madsen 2003). While tight-knit social relationships are typically perceived to obstruct change (Grabher 1993; Hall and Soskice 2001), rapid and effective policy reform has enabled these small communities to grow by entering fundamentally new industries, such as biotechnology, software, and telecommunications equipment (Ornston 2012). These cohesive and encompassing social relationships thus represent an attractive model for policymakers seeking to promote flexible adjustment to ever-shifting patterns of international competition.

But what can large states possibly learn from their smaller counterparts? Instead of cohesive, encompassing social networks, where “everyone knows everyone,” large countries are more likely to host diverse, loosely connected sectors and regions, each seeking to shape national-level outcomes to fit their divergent preferences. This paper illustrates how large countries *can* learn from small states by shifting attention from the national to the municipal level. Municipalities, particularly small cities, are more likely to possess cohesive, cross-sectoral networks, where elites and ordinary citizens are embedded within high-trust relationships.¹ This heightened level of interconnectedness can enable reform-oriented actors to transform regional economies with surprising speed.

Their capacity to do so is not immediately evident, as cities differ from small states in several respects. Most obviously, they lack the fiscal and regulatory tools that small, European

¹Of course, this is not universally true. While small cities are more likely to possess cohesive, encompassing networks than large states, they exhibit considerable variation (Safford 2009).

states have used to radically transform their business ecosystems (Ornston 2012). Cities in liberal market economies are doubly disadvantaged, insofar as collective action is concerned, because they also lack the patterns of formal coordination in production that enables societal actors to invest autonomously in public goods (Hall and Soskice 2001). Even municipalities in large, liberal countries, however, can use the politics of interconnectedness to construct and diffuse myths about the way their economies can and should operate. Reform-oriented actors can use these ideas to mobilize private sector capital, attract national-level resources, and transform local business practices, in ways that parallel the small states of northwestern Europe.

The paper tests these claims by analyzing Waterloo, Canada, an under-resourced and thinly institutionalized community² where collective action should prove particularly difficult. In illustrating how Waterloo used collective myths to accelerate restructuring, the paper demonstrates how cities, even those in large, liberal economies, can learn from small states. It also uses municipal-level data to contribute to the literature on small states, highlighting the independent influence of interpersonal relationships in Europe's smallest polities.

The paper is organized into four parts. It begins by reviewing the literature on the small states of northwestern Europe, illustrating how these communities can use cohesive, encompassing social networks to facilitate policy reform and economic restructuring. Section two applies the argument to small and medium-sized cities, demonstrating how even weakly resourced and thinly institutionalized communities can use the politics of interconnectedness to facilitate change. Section three tests the argument by tracing the evolution of Waterloo IT industry. The paper concludes by generalizing the argument to other regions such as San Diego and Silicon Valley and identifying avenues for future research.

²When viewed from the perspective of a Nordic state.

Small States, Interconnectedness and Economic Restructuring

The small nations of northwestern Europe rank among the most celebrated success stories in comparative political economy. Radical reform and rapid restructuring in countries such as Ireland (MacSharry and White 2001), Finland (Dahlman et al. 2006) and Denmark (Lundvall 2002) have inspired entire volumes dedicated to small states and their accomplishments (Alesina and Spolaore 2003; Becker 2011; Bodley 2013). Of course, these countries aren't perfect. Their flexibility renders them vulnerable to policy overshooting and asset bubbles (Ornston 2016). But they are likely to continue attracting praise so long as policymakers and scholars prioritize rapid reform and restructuring as the best response to contemporary, economic challenges (Alesina and Giavazzi 2006; Eichengreen 2006; Friedman 1999; Rodrik 2007).

Why are the small states of northwestern Europe so flexible? The answer isn't immediately obvious, because these nations have succeeded in very different ways. Economic openness and market competition certainly appear to play an important role, protecting against cognitive closure and preventing the misallocation of resources (Andersen et al. 2007; Katzenstein 1985). Ireland, which uses low tax rates and a light regulatory touch to attract foreign direct investment ranks among the most open economies in Europe (Clinch et al. 2002). But economic openness isn't the whole story, as postwar Finland used state intervention, financial repression and extensive cartelization to fuel European-leading growth rates until the 1980s (Jäntti and Vartiainen 2013). Even today, it remains less open than Germany, hardly a paragon of radical reform and rapid restructuring (Hall and Soskice 2001; Katzenstein 1985; OECD 2015).

To account for these discrepancies, scholars have also focused on the internal structure of Europe's smallest nations. In small states, elites are connected to one another and ordinary citizens by dense, interpersonal networks that transcend region, sector, and even socio-economic class.³ Scholarship has focused principally on the formal "coordination" of production by well-organized producer associations (Hall and Soskice 2001; Katzenstein 1984). But the small "success stories" described above are not simply a story about formal coordination, as Finland pursued statist, labor exclusionary strategies for much of the postwar period (Ornston and Vail Forthcoming) and Ireland is a liberal market economy with little evidence of inter-firm cooperation (Ornston and Schulze-Cleven 2015). In these countries, elites (and masses) are also connected through informal channels, including professional associations, sports clubs, military service, and roundtables (Rehn 1996: 234). Repeated interaction generates a high level of trust, particularly in countries without strong religious, social, political or regional cleavages and high vulnerability to external economic and geopolitical threats (Campbell and Hall 2009).⁴

Cohesive, encompassing social networks are conventionally understood to inhibit policy reform and delay restructuring (Grabher 1993; Hall and Soskice 2001; Katzenstein 1985), but they can also accelerate change in an open economy (Ornston 2016). For example, entrepreneurial actors can employ the "politics of persuasion," using repeated interaction within dense, social networks to convince their colleagues to embrace change. In Ireland, the National Economic and Social Council provided a formal, tripartite forum for policymakers, industry and labor representatives to identify common challenges and fundamentally restructure

³In this respect, small states differ from highly centralized, statist polities such as France. While the *Grandes Écoles* connect elites in the public sector and several large firms, these ties do not extend to the rest of the private sector, agriculture or labor (Ornston and Vail Forthcoming).

⁴Not all small states possess cohesive, encompassing networks. Countries such as Austria, Belgium and Switzerland, exhibit a high capacity for coordination at the sectoral and firm level, but are divided along linguistic, sectoral and regional lines. Southern European countries like Greece and Portugal are even more polarized (Ornston 2016).

macroeconomic policy and wage setting institutions (Culpepper 2008: 12-18). In addition to interpersonal appeals based on trust, reformers can leverage the strong sense of collective identity that exists in small states to appeal to a broader audience. For example, Swedish IT entrepreneurs secured public and private sector capital by employing mercantilistic rhetoric and nationalist imagery (Augustsson 2005: 82, 106).

Second, reform-oriented agents can use the “politics of compensation,” as high-trust networks enable reformers to make credible commitments across multiple policy domains and time periods. For example, Swedish industrialists such as the Wallenbergs tolerated Swedish social democratic hegemony and welfare state expansion in the early postwar period because economic policies were structured in ways that systematically favored their large, capital-intensive enterprises (Henrekson and Jakobsson 2001). Conversely, Danish trade unions agreed to dismantle Denmark’s generous system of passive unemployment benefits in the 1990s because they had reached an agreement to increase expenditure on training (Madsen 2006).

Finally, the very act of consensus building permits the “politics of coordination,” in which reform-oriented actors can synchronize public and private sector activity. For example, the ability of the Industrial Development Authority to attract foreign capital to Ireland is based in large measure on its ability to leverage small state networks, using formal and informal connections to deliver capital, infrastructure, human capital, favorable regulations, and other benefits from a wide variety of actors (Breznitz 2007: 163; Ornston 2012: 153). The “politics of coordination” also extends to private sector actors, such as the telecommunications firm Nokia, which used interpersonal connections to construct a sprawling network of Finnish sub-contractors and secure supportive public policies (Ornston 2012: 80-83).

As the case of Finland, and Nokia, suggests, tight-knit networks can lead to rapid and radical restructuring. Finland represents perhaps the most dramatic example as the share of high-technology exports more than quintupled from 4.7% in 1985, among the lowest in Western Europe, to 26.8% by 2000 (OECD 2015). But Denmark, Sweden and Ireland all broke with their historic reliance on low and medium-technology industries to enter new, high-technology markets during this time period (Ornston 2012). Nor is radical restructuring limited to high-technology markets, as illustrated by rapid growth of the construction industry in early 21st century Ireland (Waldron and Redmond 2014: 151-52) or Iceland's even more implausible transformation into a financial services center (Wade 2009: 12).

To be clear, these developments were not unambiguously positive. The speed with which Ireland and Iceland redistributed resources to housing and financial services led to unsustainable asset bubbles and devastating financial crises (Wade 2009; Waldron and Redmond 2014). Even Finland's rapid movement into high-technology markets, while based on the "real economy," rendered the country exceptionally dependent on a single firm and vulnerable to a single, disruptive technological innovation, the Internet-enabled smart phone (Ornston 2014: 465-66). At the same time, these small states stand out in a subfield dominated by large, slow-moving economies such as France, Germany, Japan, and the United States (Katzenstein 1987; Levy et al. 1997; Schmidt 2002; Vogel 1999). More specifically, their capacity to use dense, social networks to accelerate reform and restructuring challenges conventional characterizations of cooperation as a profoundly incremental force (Alesina and Giavazzi 2006; Eichengreen 2006; Hall and Soskice 2001). The small states of northwestern Europe also represent an attractive model to policymakers seeking to reform their institutions and inject greater flexibility into their

economies. It remains unclear, however, how much scholars and policymakers can learn from these countries, particularly those in large, liberal economies.

Small Cities and the Politics of Interconnectedness

At first glance, the small states of northwestern Europe appear unique. Comparative analysis suggests that the national-level policymaking and business environment is very different in larger, more heterogeneous states, where reform-oriented actors must grapple with an overwhelming variety of loosely connected sectors, socio-economic classes and regions, each with a very different view about how to organize economic activity (Katzenstein 1985; Ornston 2016). Consider Finland's movement into new, high-technology markets during the 1990s. While German incrementalism is well documented (Casper et al. 1999; Katzenstein 1987), even powerful, unitary states such as France struggled to introduce Finnish-style innovation policies during the 1980s and 1990s (Ornston and Vail Forthcoming). As a result, high-technology growth was concentrated in countries that already enjoyed a significant head-start in these markets (Hall and Soskice 2001). Even here, growth was highly uneven as five regional clusters account for 60% of private sector R&D spending in the United States (Crescenzi and Rodríguez-Pose 2013: 298). This may explain why American innovation policies, in sharp contrast to Finland, remained "hidden" even at the height of the dot com era (Block 2008). Similar dynamics prevail in other areas, as the small states of northwestern Europe pursued statist policies with greater gusto during the early postwar period and liberalized their financial systems more rapidly and radically in the 1980s and 1990s (Ornston 2016). As such, they would appear to hold few lessons for larger societies.

The picture looks different, however, when we disaggregate large countries into regions or even municipalities. Local communities may resemble small states in their capacity to construct cohesive, encompassing social networks as well as their vulnerability to shifting patterns of economic competition (Safford 2009).⁵ This is particularly true of small and medium-sized cities, where elites (and ordinary citizens) are more likely to socialize on a regular basis than large, economically diversified, multi-cultural, “global cities” like New York or Toronto (Bramwell and Wolfe 2014; Sassen 1992). In this cozier environment, reform-oriented agents might be able to employ small state strategies, using dense, interpersonal networks to accelerate reform and economic restructuring.

Their ability to do so is not immediately obvious as cities differ from small states in several respects. First, because cities are not states, they lack the fiscal resources and regulatory tools to redistribute resources. Reform-oriented agents thus lack two important instruments that facilitate change in the small states of northwestern Europe. They cannot engage in the politics of compensation as they lack the instruments to deliver side payments to adversely affected actors (Katzenstein 1985; Rodrik 1998). The lack of hard resources also makes it harder to engage in the politics of coordination. While municipal policymakers control land allocation and possess limited fiscal tools (Zheng and Warner 2010), they are not in a position to deliver the kinds of broad, coordinated policy packages that supported large, capital-intensive manufacturing firms in postwar Sweden or new, high-technology enterprises in late 20th century Finland (Ornston 2016).

Second, cities are not nations and thus lack the collective identity and solidaristic ties that characterize the small states of northwestern Europe (Campbell and Hall 2009; Lundvall 2002).

Modern cities rarely face the kinds of external security threats that forged a strong, common

⁵In his comparative study of Youngstown and Allentown, Safford also notes that social networks may be more cohesive and encompassing in some small cities (Allentown) than others (Youngstown).

identity in small states like 19th century Denmark (Campbell et al. 2006) or 20th century Finland (Kirby 1979). Meanwhile, relatively low barriers to labor mobility encourages residents to respond to challenges by relying on “exit” rather than voice or loyalty (Hirschman 1970). Enjoying, at best, the secondary loyalty of its citizens,⁶ cities are unlikely to inspire the kinds of sacrifices that underpin radical reform and rapid restructuring small states (Campbell and Hall 2009: 552).⁷

Cities may resemble small states, however, in the structure of their social networks. Elites are more likely to know one another, in ways that span sectoral, industrial, and other socio-economic cleavages, when situated within the same small city. Repeated interaction, in turn, can generate trust and facilitate cooperation (Putnam 1993). This is perhaps most evident in the industrial districts of Europe, where firms are connected to policymakers, organized labor and one another through sectoral organizations, professional associations, marketing boards, sub-contracting relationships, and other formal bodies (Farrell 2009; Kristensen 1992; Locke 1995; Piore and Sabel 1984). The industrial districts of Denmark, Germany and Italy possess a capacity for collective action that closely resembles the coordinated market economies of northern Europe (Hall and Soskice 2001; Katzenstein 1984). While policymakers may possess few fiscal resources or regulatory tools, private sector actors can work independently to develop specialized goods such as human capital, technology, shared equipment, and joint standards (Farrell 2009; Kristensen 1992).⁸ Conventionally understood to block restructuring or promote incremental

⁶At least in northern Europe and North America. This may not apply to some countries, like Italy, not considered here (Locke 1995; Piore and Sabel 1984; Putnam 1993)

⁷For example, Finland’s ability to increase taxes to unprecedented levels in the early postwar period was based on the widespread belief that Finland’s existence as an independent state required rapid industrialization (Jääntti and Vartiainen 2013: 27). Similarly, radical liberalization in post-Communist Estonia was as much a geopolitical project as an economic one (Bohle and Greskovits 2012; Ornston 2016).

⁸They can even engage in the “politics of compensation” by reallocating production and human capital within dense, inter-firm networks (Katzenstein 1984; Kristensen 1992)

upmarket movement (Grabher 1993; Locke 1995), these ties can also accelerate change in regions facing disruptive economic shocks (Dalum et al. 2005; Ornston 2012: 112-19).

To separate the role of formal coordination from the influence of dense, interpersonal networks, however, it is more useful to consider cities with a relatively weak tradition of coordination. Many municipalities in liberal market economies lack the professional or sectoral associations that underpin collective action in industrial districts and may even struggle to develop market boards, sub-contracting networks, or other partnerships. Even in this relatively disorganized environment, however, elites may interact with one another and ordinary citizens at school, in sports clubs, in civic associations and other, less formal fora (Safford 2009). Repeated interaction and the trust it endangers, while insufficient to support collaboration in the act of production (Ornston and Schulze-Cleven 2015), can nonetheless permit three forms of collective action that mirror the small states of northwestern Europe.

First, even the most informal networks can facilitate the diffusion of knowledge. While communities may lack the trust necessary to develop integrated production networks, joint ventures, or common standards, they may nonetheless share knowledge about effective business practices. Managers, for example, may share advice about the state of the industry or common challenges within formal, professional associations, and informal meetings without divulging information about their specific business practices or product lines (Saxenian 1994: 32). Similarly, employees may also share information about the latest technological developments and best practices as they move to a new job or socialize amongst themselves (Saxenian 1994: 35-37). These collective goods hardly approximate the kinds of asset-specific investments that characterize industrial districts of Jutland, Baden-Württemberg, or northeastern Italy, but nonetheless lower barriers to firm formation and growth.

Second and more importantly, the exchange of knowledge can enable even weakly institutionalized regions to transform their communities by diffusing new ideas about what a successful business should look like. For example, the American-trained economist, Pentti Kouri, used informal networks to persuade Finnish banks and firms to adopt highly leveraged financial strategies during the mid-1980s. These kinds of persuasive appeals are more compelling in a tight-knit community characterized by a high level of trust, but they can diffuse rapidly even within lower trust communities where individuals interact on a regular basis. Icelandic financiers were fierce rivals, but because they inhabited the same social circles they were highly susceptible to peer pressure and quickly copied one another's lead into international finance (Ornston 2016). To the extent that informal relationships transcend cross industrial and social lines, a successful entrepreneur can use a compelling idea to influence not only industry, but also to attract political support, financial capital, and skilled labor.

Third, the ability to diffuse new ideas within a tight-knit community is not a purely internal affair. Cities can use ideas to appeal to external actors by marketing or rebranding their community. For example, cities can use a carefully crafted image to influence secure public funds from national policymakers or attract financial capital (Walshok and Shragge 2014). Efforts to rebrand a location are more effective when they enjoy the support of stakeholders across the community (Anholt 2007). To the extent that entrepreneurial agents can use cohesive, encompassing networks to diffuse new business models across the community, they can also engineer more comprehensive, compelling rebranding strategies. The IDA's ability to market Ireland as an attractive location for foreign direct investment, for example, is based in part on the broad public support that this particular developmental strategy enjoys in Ireland (Ornston 2012,

2016). In relying on similar strategies to target not just foreign multinationals, but also domestic capital and other assets, regions can mobilize resources that far outstrip their internal capabilities.

Commonly perceived to contribute to technological, political, and cognitive lock-in (Grabher 1993), cohesive, encompassing networks can also accelerate change in an open economy. While insulated from the kinds of geopolitical threats that precipitated reform and restructuring in northwestern Europe, high levels of capital and labor mobility can render cities quite vulnerable to disruptive economic or technological shocks. To the extent that these crises directly threaten regional prosperity, they create an opportunity for ideational entrepreneurs to introduce alternative business models, which can diffuse quickly within tight-knit social networks. The ability to leverage external resources, including public investment, private sector capital, and skilled labor, can enable cities to restructure their economies with remarkable speed, in ways that parallel the small states of northwestern Europe.

In short, I argue that cities can use small state strategies to engineer big leaps into new industries. This does not require the fiscal resources and regulatory authority of a nation-state. Nor does it require formal coordination among firms, business associations, trade unions and other economic actors. When actors are linked across sectors, industries, and socio-economic classes by relatively cohesive, encompassing networks, even weakly resourced, thinly institutionalized communities can engage in forms of collective action that accelerate change. More specifically, I argue that reform-oriented actors can use new ideas to accumulate knowledge, influence corporate behavior, and attract external resources. Far from inhibiting change, dense social networks can facilitate restructuring.

Myth Making and Rapid Restructuring in Waterloo, Canada

To test this argument, I focus on the Kitchener metropolitan area (henceforth referred to as Waterloo), a collection of small cities (Waterloo, Kitchener, and Cambridge) roughly one hundred kilometers west of Toronto with a population of approximately 500,000. The region's growth trajectory resembles several of the Nordic countries. Like Denmark, Finland or Sweden, the region had a reputation as a conservative, manufacturing center (Leibovitz 2003: 2622), relying on textiles, rubber, plastics, metal-working, machinery, and automobile components to support postwar prosperity (Munro and Bathelt 2014: 221).⁹ Like Nordic Europe and in sharp contrast to similarly sized, Canadian manufacturing stalwarts such as Oshawa or Windsor, however, the region has remained one of the most dynamic in Ontario by redefining itself as a high-technology producer in the 1980s and 1990s (Nelles et al. 2005). Traditional industries relied on more technology-intensive strategies to enter advanced manufacturing (Bathelt et al. 2013), while the region witnessed a proliferation of start-ups in new, high-technology industries (Nelles et al. 2005). By the early 21st century, the region acquired an international reputation as a hub for rapid, innovation-based competition, hosting approximately 500 high-technology firms with over 25,000 employees (Bramwell et al. 2008a: 102).

Like Finland and the Nordic countries more generally, Waterloo's rapid transformation into a high-technology cluster could be viewed as a critical case, defying conventional theories of high tech growth (Ornston 2013: 711). The region entered new, high-technology markets relatively recently (Munro and Bathelt 2014: 225), in contrast to many other high-technology clusters such as Boston, Ottawa, or Montreal, which benefited from incumbent computing, telecommunications, or aerospace firms. Nor could Waterloo draw on the lucrative defense

⁹While scholars have hypothesized that this Germanic tradition of high quality engineering facilitated rapid movement into new, high-technology markets during the late 20th century (Nelles et al. 2005), this has not happened in Austria or Germany.

contracts that financed high-technology growth in late-developing American regions such as Silicon Valley (Leslie 2000). The region was further constrained by its status as a collection of small and medium-sized cities. It was not a natural magnet for talent (Florida 2002; Storper and Venables 2004), nor could it leverage the critical mass of sophisticated end-users that has enabled large metropolitan cities like New York City (or Toronto) to become leading IT users and content producers (Kleiman et al. 2013).

Of course, Waterloo's status as a Canadian region could be construed as an advantage, as liberal market economies are perceived to excel in high-technology markets (Hall and Soskice 2001). Without denying the benefits of robust competition, however, a purely market-oriented explanation does not explain why Waterloo's capacity for radical restructuring, particularly in contrast to the more incremental trajectory pursued by other, equally market-oriented Canadian regions.¹⁰ Furthermore, competitive, market relationships hardly helped Waterloo compete in high-technology industries before the 1980s (Munro and Bathelt 2014: 225). On the contrary, aspiring entrepreneurs suffered from a dearth of collective goods, including research, risk capital, skilled labor, and managerial talent. How did Waterloo generate these resources? The Nordic countries relied on private-public, industry-labor and inter-firm cooperation to increase investment in these new, supply-side resources, creating unprecedented opportunities for entrepreneurial, high-technology enterprises (Ornston 2013).

Waterloo, however, differed from the Nordic countries in two key respects. First, Waterloo lacked the public funding and regulatory tools that enabled the small states of Nordic Europe to foster new, high-technology industries. While local tax revenue enabled municipalities to invest in basic infrastructure, amenities, and cultural events (Nelles 2014: 95-96), the region

¹⁰In fact, the claim that liberal market economies are more likely to specialize in radical innovation appears to be driven by a single outlier, the United States (Taylor 2005). This country's status as a leading innovator may stem less from robust market competition than its status as a military powerhouse (Weiss 2014)

did not possess the fiscal resources that the Finns used to subsidize private sector R&D (Ornston 2013: 714-15). Although Waterloo also lacked the regulatory authority that the Swedes used to reallocate pension capital to early stage risk capital markets (Ornston 2013: 720). As a collection of small cities, the region could not rely on procurement to support experimentation at incumbent telecommunication firms (Berggren and Laestadius 2003) nor could it finance a critical mass of digital content producers (Augustsson 2005).¹¹ Even though Waterloo benefited from federal and provincial support (Nelles et al. 2005: 248), its ability to do so was not assured, as the small, peripheral region was not a natural power broker in Toronto or Ottawa.

These fiscal and regulatory constraints were compounded by Waterloo's reliance on arms-length, market competition. While the University of Waterloo's cooperative program is reminiscent of the German apprenticeship system in the way the university collaborates with industry to train students for six months (Bramwell and Wolfe 2008: 1181), formal coordination remains limited. Local business is well-represented within the local chamber of commerce, but the organization functions principally as a lobbying organization (Nelles 2014: 91). Industry associations are not particularly active in skill formation, technological research, standard setting, or other, more demanding forms of cooperation. Nor have firms organized the kinds of dense, supplier networks that characterize industrial districts in continental Europe (Bramwell et al. 2008a: 106-07). High-technology enterprises, in particular, appear more likely to partner with external firms than local businesses (Munro and Bathelt 2014: 230). As a result, reform-oriented policymakers and entrepreneurial could not rely on robust private sector coordination to mobilize resources and share risks.

¹¹In fact, local municipalities struggled to coordinate their policies. In contrast to the IDA's coordinated approach to foreign direct investment (Ornston 2012: 153-154), Waterloo, Kitchener, and Cambridge sometimes undermined one another in their competition for capital (Leibovitz 2003).

While Waterloo possessed few hard resources and no capacity for formal coordination, it resembled the Nordic countries in the way elites and ordinary citizens were linked within an unusually dense network of economic, educational and civic associations (Nelles et al. 2005: 233). This robust associational life is often traced back to the region's German heritage and the proliferation of churches, musical societies, and other clubs in the late 19th century (Nelles et al. 2005: 233). These civic ties were strengthened by business associations and the University of Waterloo, which educated a significant portion of the region's business leaders (Bramwell and Wolfe 2008: 1180). Repeated interaction within these fora forged a strong sense of collective identity that distinguishes Waterloo from many other Canadian municipalities. For example, elites consistently emphasize the region's unique spirit of consensus and cooperation in their interactions with the media, focusing on the region's German heritage with references to "barn-building" and other traditional practices (Nelles 2014: 94). Although the region's German identity may be overstated, the degree to which elites subscribe to this popular narrative underscores the region's capacity to engage in myth making, even in the absence of other, more robust forms of collective action.¹²

A strong sense of collective identity is often perceived to delay change (Grabher 1993) and the Waterloo region was certainly viewed as a conservative, highly traditional region as recently as the 1980s (Leibovitz 2003: 2622). But the Waterloo region also illustrates how reform-oriented actors can use tight-knit social relationships and a strong collective identity to accelerate restructuring. Within the Kitchener metropolitan area, the University of Waterloo functioned as a key agent of change (Bramwell and Wolfe 2008; Nelles et al. 2005). The university's establishment is, in itself, an impressive example of how entrepreneurial actors can

¹²Similarly, one of the most striking examples of Finnish consensus-building is their ability to present new innovation policies as a consensual decision, "forgetting" the bitter disagreements of the 1970s and 1980s (author interviews, Helsinki, Finland).

rapidly redesign a cohesive community. In a speech to the local rotary club, Ira Needles, a local rubber executive, used a national debate over skill shortages to propose the creation of a new, technology-focused university. Local industry, already involved in the administration of Waterloo Lutheran College and anxious about losing skilled labor to larger cities like Toronto, embraced the idea (Nelles et al. 2005: 236). With the full support of local policymakers and industry, Needles was able to leverage Waterloo's strong reputation as a center for manufacturing and a model of industry-university cooperation to propose a new institution with an innovative cooperative program. In doing so, he secured provincial and federal funding that far outstripped locally available resources (Munro and Bathelt 2014: 225).

Once established, the university facilitated the growth of new, high-technology firms (and the modernization of traditional industries) in a variety of ways. Scholars have focused primarily on the university's more tangible contributions, including the production of human capital, the diffusion of knowledge, and entrepreneurial spin-offs (Bramwell and Wolfe 2008; Nelles et al. 2005). While crucial to high-technology growth, it is important not to overstate these developments. Skilled labor was, of course, paramount. In contrast to Finland, however, formal, industry-university cooperation in research is limited. Only the region's largest firms partner on R&D (Bramwell et al. 2008a: 109).

Formal, industry-university collaboration remains limited, but the University of Waterloo has also reshaped the region in other, less tangible, but powerful ways. More specifically, the university popularized new ideas about entrepreneurship and technology, diffusing them throughout the local community. Most obviously, the university's increasing emphasis on engineering research (Nelles et al. 2005: 237) trained graduates to understand and value

technological innovation in ways that were diffused by the university's cooperative program (Bramwell and Wolfe 2008: 1180).

Meanwhile, the university not only prioritized technological innovation but presented an alternative business model to the local community by spinning off Structured Computer Systems (later Watcom), the region's first software firm in 1974 (Nelles et al. 2005: 238). Watcom and its successors did not transform the regional innovation system like Ericsson, Nokia, or other Nordic, high-technology firms by constructing a dense network of local suppliers (Casper 2007; Moen and Lilja 2005). But they did provide a role model to aspiring entrepreneurs like the founders of OpenText and RIM and encouraged students to consider new start-ups as an alternative to traditional, manufacturing firms (Munro and Bathelt 2014: 238). University administrators, recognizing that they would benefit from regional growth, were quick to publicize these developments, highlighting the university's commitment to entrepreneurship (Bramwell and Wolfe 2008: 1184). Internally, the university placed greater emphasis on entrepreneurship in its curriculum and launched a series of programs dedicated to business creation (Bramwell and Wolfe 2008: 1184; Nelles et al. 2005: 241).

Meanwhile, high-technology executives increasingly identified themselves as a coherent, high-technology cluster in their informal interactions with one another, culminating in the establishment of a formal association, Communtech in 1998 (Nelles et al. 2005: 247). Local academics contributed to the shift by documenting the region's transformation into a high-technology leader (Nelles et al. 2005).¹³ By the early 21st century, Communtech was a dominant force in local economic policy (Nelles 2014: 105). Policymakers were keen to associate with the

¹³Similar dynamics prevail in other locales, like Aalborg, Denmark, where Bent Dalum's analysis of the local wireless cluster created a sense of collective identity that culminated in the establishment of NorCOM (Author interviews, Aalborg, Denmark).

organization and firms felt pressured to join it to solidify their credentials as high tech enterprises (Leibovitz 2003: 2632-35).

The region's remarkably rapid and effective rebranding campaign enabled local actors to collaborate in the construction of basic collective goods. Canada's Technology Triangle (CTT), established in 1987, served as a marketing and visioning organization (Nelles 2014: 95-96). Meanwhile, Communitech enabled enterprises to exchange practical information about how to start a business, how to secure risk capital, how to internationalize, or how to resolve technical problems (Munro and Bathelt 2014: 231). In short, these local associations supported restructuring by diffusing knowledge about "how to do business," even if actual collaboration in business remained limited. While limited to the exchange of basic knowledge, this common resource proved particularly useful for small firms struggled to penetrate high-technology markets for the first time (Bramwell et al. 2008a: 112).

Viewed in comparative perspective, formal coordination remained quite modest (Bramwell et al. 2008b; Munro and Bathelt 2014). The principle benefit of rebranding, beyond inspiring local entrepreneurs and engineers to embrace fundamentally new business models (Munro and Bathelt 2014: 237-38), was that it enabled the region to access external resources that could never hope to generate internally. For example, the region's increasing profile as a high-technology hub enabled the University of Waterloo to attract talented faculty, recruit better students, and secure research funding. Naturally, the entry of Microsoft and other large, multinational firms threatened local, high-technology producers by increasing competition for skilled labor (Bramwell and Wolfe 2008: 1181-82). But in legitimating the region's reputation as a high-technology producer, it also helped firms market themselves domestically and internationally (Bramwell et al. 2008a: 113; Bramwell and Wolfe 2008: 1178). Meanwhile, the

region used its brand as a high-technology cluster to attract public and private sector capital. For example, the federal government located a developmental agency in the region, while provincial and federal governments supported initiatives to retain skilled immigrants, construct a life sciences corridor, establish an accelerator, and promote digital media (Nelles et al. 2005; Nelles 2014). Although venture capital remains modest, the region's strong brand helps technology firms to secure financing from external actors and has recently led to the creation of a Waterloo-based fund (Pender 2014).

In short, Waterloo's status as a thinly institutionalized community with few hard resources has not prevented local actors from engaging in collective action. Instead of formal policy concertation or coordination in the act of production (Ornston and Schulze-Cleven 2015), however, we observe the rapid diffusion of new ideas through tight-knit social networks. Commonly perceived to inhibit change, the Waterloo case suggest that a strong, collective identity can also accelerate restructuring by inspiring local firms to adopt new business models, facilitating investment in basic collective goods and, perhaps most importantly, enabling regions to access external resources that could never mobilize internally. Collectively, these developments transformed Waterloo from a center for traditional manufacturing into a high-technology leader, in ways that closely parallel the Nordic countries.

Conclusion: Waterloo in Comparative Perspective

Of course, such a rapid and remarkable transformation raises questions. To what extent does Waterloo's experience generalize to other regions? Comparative analysis suggests that Waterloo is not the only region to leverage the heightened interconnectedness. Certainly, small cities within Nordic Europe like Aalborg and Oulu have relied on tight-knit social networks to

restructure their economies with remarkable speed. This is not particularly surprising, since both municipalities benefited from ambitious, national-level policies and could use a robust tradition of private-public, industry-labor and inter-firm coordination to accelerate the diffusion of ideas and invest in collective goods (Ornston 2012: 112-18; Teräs and Ylienpää 2012).

More intriguingly, it is possible to find small and medium-sized cities in liberal market economies that have also relied on dense, social networks to facilitate restructuring. San Diego's evolution from a tourist destination and military base into a high-technology hub closely parallels Waterloo's as a tight-knit alliance of local policymakers and industrialists successfully lobbied for a research university in 1960. The University of California at San Diego, like the University of Waterloo, emerged as an important agent of change, mobilizing the private sector and public-private networks that would successfully rebrand the region, attracting federal funding and private venture capital from Silicon Valley (Walshok and Shragge 2014). In fact, Silicon Valley employed a very similar strategy of myth-making in the 1960s and 1970s, predicated on tight-knit social networks (Saxenian 1994).¹⁴

Developments in San Diego and Silicon Valley demonstrate that Waterloo is not unique and that even policymakers in thinly institutionalized communities with few hard resources can learn from Nordic Europe, using cooperation to facilitate reform and restructuring. The Waterloo case suggests that repeated interaction within public, economic, educational, and civic institutions may not lead to ambitious long-term supplier networks, ambitious research partnerships or other robust forms of collective action. But dense, social networks can facilitate the diffusion of new ideas, transforming business practices, and, even more importantly, attracting external resources.

¹⁴Those social networks are less cohesive and encompassing today (Cohen and Fields 2000), but this does not appear to hinder growth as the region has acquired the kind of critical mass that enables large municipalities to automatically attract knowledge, skilled labor, and capital (Florida 2002; Storper and Venables 2004).

At the same time, these case studies suggest that small states can learn from cities. To date, scholars have privileged formal patterns of cooperation, from neo-corporatism to coordination (Becker and Kersbergen 2011; Hall 2006; Katzenstein 1985). Waterloo's capacity to restructure its economy suggests that we should also pay attention to interpersonal connections or the fact that "everyone knows everyone" in small states. The "politics of interconnectedness" can facilitate the rapid diffusion of new ideas, independent of public policy or formal coordination. In fact, Finnish industrialization, the Swedish IT bubble, and Iceland's transformation into a financial services center was based not just on inter-firm collaboration and hard resources, but also powerful and widely shared ideas about how to compete in international markets.

Of course, there are also limitations, particularly for small communities seeking to replicate Nordic-style restructuring. Just as not all small states resemble the exceptionally cohesive Nordic countries, small cities vary in their capacity to construct collective myths (Safford 2009). Even though the diffusion of new ideas and identity-building does not require the level of formal organization and trust characteristic of coordinated market economies, this case study suggests that Waterloo benefited from a clear, widely held collective identity and a relatively strong degree of cohesion. Similar dynamics prevailed in San Diego and Silicon Valley (Saxenian 1994; Walshok and Shragge 2014). More fragmented, polarized communities, however, might struggle to employ similar strategies.¹⁵

Second, it is important to recognize that identity-building exercises can fail in even the most tight-knit communities. Waterloo's efforts to redefine itself as a high-technology hub worked because they were based on a strong research university and several early successes.

¹⁵For example, it is hard to envision Toronto constructing a similar, shared vision of what their community should look like (Bramwell and Wolfe 2014).

These radically new ideas would likely have proven less persuasive if they didn't draw on concrete competencies and accomplishments. In other words, successful myth-making not only requires active, stakeholder engagement (Anholt 2007), but a pragmatic vision that accurately reflects regional strengths and weaknesses (Hospers 2007).

Finally, myth making may generate risks even when it succeeds. This is most conspicuous in the Nordic countries, which have proven especially vulnerable to exaggerated policy shifts and overinvestment (Ornston 2016). Waterloo is different. Unlike Sweden, it did not plough public and pension fund capital into early-stage risk capital markets at the height of the dot com bubble. Nor, in the absence of a Finnish-style national innovation system, is the region as dependent on a single industry (wireless communications) and a single firm (Nokia). While RIM's troubles represent a serious threat, the firm has few local suppliers and the region's firms occupy a wide range of high-technology niches (Nelles et al. 2005: 228).

At the same time, there are signs that cooperation has narrowed policymaking and corporate strategizing in Waterloo. For example, CTT and Communitech occupy a near-hegemonic position in the community, acting as de facto gatekeepers in the policymaking realm and threatening to overshadow traditional manufacturing (Nelles 2014: 99). A wave of entrepreneurial startups has limited the impact of RIM's decline by occupying vacant real estate and delivering jobs. Established in an era of relatively abundant venture capital, however, it remains unclear whether they will survive if credit conditions tighten. While the region's vulnerability to Nordic-style overshooting merits further research, these developments serve as a useful reminder that cooperation, while it can accelerate change, is not a panacea.

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