Community, Work and Learning:
Constitutive Elements of the Economic Transformation
in Three Steel Towns

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Introduction

Economies are continually in a state of transition. In recent decades, most communities in Canada have experienced an increase in the proportion of jobs in their local labour markets based in service industries and a corresponding decline in manufacturing employment, particularly in traditional industries such as steel. In many working-class communities, labour forces are growing increasingly vulnerable as unemployment and underemployment become pervasive (Livingstone, 2003; Saunders and Maxwell, 2003). Far-reaching economic and social implications are associated with these transitions, including decreased job security, reduced union participation, loss of collective and individual sense of identity among workers, and generally increased economic fragmentation (Sawchuk, Duarte & Elhammoumi in press, Rifkin, 2004; High, 2003; Winson & Leach, 2002; Wallace & Brady in Berg & Kalleberg, 2001, pp. 101-129).

A multitude of macro forces affect the transformation of local economies. Globalization of production, trade liberalization, technological innovation and demographic shifts all impact the direction and intensity of economic transformation (Torjman, 2002). Communities are also influenced by local factors such as political leadership, land use policies, industry concentrations, and education, training and research resources. Other institutional and organizational factors of community strength and collaboration, such as parent-teacher associations, leisure groups, work-related networks, and community development groups also define the character of communities (Putnam, 2000).

Policy makers at all levels of government generally advocate the emergence of a “new”, “knowledge-based economy”. According to Organization of Economic Co-operation and Development (OECD) (1996), “knowledge-based economies” are “directly based on the production, distribution and use of knowledge and information” and exhibit trends towards “growth in high-technology investments, high-technology industries, more highly-skilled labour and associated productivity gains” (p.7). But as Livingstone (2002) suggests, the original advocates of a knowledge economy assumed a much greater centrality of these high-technology occupations. A fundamental challenge for communities striving to achieve economic growth and community sustainability is to provide conditions that generate and support knowledge-based activity in new and existing industries. Another is creating viable alternatives for restructuring traditional industries to avoid worker dislocation.

This investigation suggests that a community economic activity system operates as a nucleus of interdependent cultural-historical elements including community, learning and work, which cumulatively drive, sustain and differentiate economic development. The patterns of connectivity among these elements, from generation to generation, create
our history and define our future. In developing strategies for the way forward, it is important for communities to recognize the “socio-cultural and historical embeddedness” of these dynamics (Lompscher, p. 65 in Sawchuk, Duarte & Elhammoumi in press). This approach to understanding community economic transformation requires a departure from classic economic analysis and a more holistic, multi-disciplinary perspective that recognizes broad linkages between economic vitality and community sustainability.

The proposed community economic activity system is grounded in Cultural Historical Activity Theory (CHAT) (Vygotsky, 1978, Engestrom, 1987, 2001; Chaiklin, Hedegaard & Jensen, 1999; Livingstone & Sawchuk, 2004; Sawchuk et al, in press). The concept of a community economic activity system is introduced as the primary, multi-dimensional unit of analysis that encompasses articulating activity systems including community, learning and work. Community functions as the primary constitutive element and learning and work activity operate as important determinants of economic transformation. While communities represent geographic locations, as “social systems which are spatially organized” (Winson & Leach, 2002, p. 33), they encompass other meanings that are central to understanding the processes of economic transformation. A community represents a locus of activity, a constellation of knowledge, skills and experiences, and the social fabric that embodies local history and cultural enrichment. The community establishes the specific conditions in which activity occurs.

As people across all cultures (and communities) engage in a multitude of activities at any point in time (Tulviste in Chaiklin et al, 1999), it is necessary to examine those elements which most fundamentally influence or explain the direction of community development, including work and learning activities, and their mediating factors. This research is mainly concerned with paid work and emerging structures of employment. Learning in this context encompasses both formal and informal learning. Learning is largely dependent on the institutions, social organizations and cultural artifacts available in the community (Bonk and Cunningham, 1998).

Using CHAT as a theoretical framework, this comparative study contrasts the developmental trajectories of three communities that have diversified from an economic base of traditional manufacturing, specifically steel, and which have all established priorities to develop “knowledge-based economies”. They include Welland, Ontario, Hamilton, Ontario and Pittsburgh, Pennsylvania.

The research methodology for this paper entails a review of literature pertaining to Cultural Historical Activity Theory and an examination of secondary research relating to the three communities, particularly economic development strategies undertaken by community stakeholders and statistical indicators measuring economic transformation within each community. Personal and telephone interviews were conducted with economic development agencies in the three communities to identify critical relationships and factors influencing their economic transformation. Finally, survey data was gathered from several manufacturing companies, including steel producers in Welland to gain their perspectives regarding the future of their industry. With this information assembled, the
purpose of this research is to explain how Cultural Historical Activity Theory finds expression in these community economic transformations.

Community Economic Activity System: Establishing a Theoretical Framework

Cultural Historical Activity Theory is based on the central principle that people (subjects), individually or collectively, interact within their socio-cultural environment, transforming it through the creation and use of mediating artifacts and through other human beings as they undertake activities directed towards an object. As an individual or group engages in activities, a dynamic system of relationships interacts to form a multi-dimensional activity system. While the object serves as a source of motives for activity, so do the social conditions in which activity occurs, suggesting the need to understand activity based on alternative social standpoints (Kaptelin & Nardi, 1997; Engestrom, 2001; Williams, 2001; Leont’ev, 1978 cited in Livingstone & Sawchuk, 2004).

In a community economic activity system, workers and the organizations in which they earn their living operate as subjects. Individually and collectively, they must adapt to their constantly changing environments. Both formally, but mostly informally, workers undertake learning activities on a continual basis, ranging from the creation or mastery of work processes to the application of new technologies. Work and learning become overlapping and interconnecting activities.

Language, technologies, laws and public policies are among the artifacts that mediate relationships between individuals or groups and the object. Communities with a tradition of heavy manufacturing, for example, may be influenced by a working-class culture supported by strong unions, where the plant is considered a second home. Work is mediated by collective agreements and informal learning is provided through peer relations. Historically, large manufacturing plants that employed large proportions of community residents have factored heavily in influencing formal educational requirements, recreational activities, volunteer work, class relations, and community solidarity (High, 1984; Winson & Leach, 2002). In such communities, strong linkages among activities encompass work, learning and recreation, creating a system of “articulating activities” (Livingstone and Sawchuk, 2004, p. 59).

Vygotsky is considered the founder of the Soviet cultural-historical school of psychology. Vygotsky proposed that there is an intimate connection between individuals’ mental functioning and their environments and that the social context influences more than just attitudes and beliefs - it has a profound influence on how we think and what we think (Vygotsky, 1978). Vygotsky (1978 cited in Bonk & Cunningham, 1999) believed that individuals actively construct knowledge through social interaction, including through human dialogue and the mediation of artifacts available to them within an activity setting.

An important concept for the community economic activity system proposed in this paper is Vygotsky’s “zone of proximal development” defined as “the distance between the actual developmental level as determined by independent problem solving
and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p. 86). According to Vygotsky (1978), collaboration with others creates zones of proximal development, making it possible for people to go beyond the limits of their own capabilities. Through collective activity with peers or teachers, they improve their current capacity or performance by constructing new mediating tools and signs. Much of their learning is informal, for example through mentoring, networking and other social exchange among peers.

The adoption of new technologies represents a form of tool-mediation. As workers learn new work processes using innovative machinery, they often engage in formal and informal apprenticeships and mentorships that lead to new forms of learning or enhanced levels of performance. During this process, workers bring forward much of the knowledge and skills they have acquired through experience. Vygotsky (1978) explains that historical learning is integrated with new learning activities, enriching the worker’s resulting knowledge or skill base.

Since its conceptual development in Russia during the 1920s and 1930s, CHAT has undergone several phases of development and recently, has experienced growing interest internationally across several disciplines (Engeström, 1987; 2001; Kaptelinin and Nardi, 1997; Sawchuk et al in press). Engeström’s (2001) contemporary theory proposes the concept of “learning by expanding” based on five principles. First, Engestrom suggests that the primary unit of analysis is a multidimensional activity system that is best understood in relation to its network of interconnected activity systems. Activity systems involving work and learning, for example, are subordinate units of analysis within the larger network. To understand these activities fully, they must be interpreted as part of the entire system. Secondly, Engestrom (2001) describes the multi-voicedness of activity systems:

An activity system is always a community of multiple points of views, traditions and interests. The division of labor in an activity creates different positions for the participants, the participants carry their own diverse histories, and the activity system itself carries multiple layers and strands of history engraved in its artifacts, rules and conventions. The multi-voicedness is multiplied in networks of interacting activity systems (p. 136).

The multi-voicedness of an activity system points to the need for considering the alternative standpoints of the subjects or actors within the system. In a community economic activity system, for example, the introduction of new technology within an industry may be viewed positively by the firms that achieve productivity improvements, but for workers that are displaced, and for some who remain, the impacts may be contrary.

The third principle, historicity, suggests that activity systems develop over time, taking on characteristics that are shaped by their histories. For example, community
economic activity systems are shaped by the industries that have grown within them, by the labour management relations within firms, by the ethnic mix of the community, and by the political leadership of the community.

Fourth, contradictions drive change and development. Engestrom (2001) defines contradictions as “historically accumulating structural tensions within and between activity systems” (p. 137). Contradictions demand creative solutions. Within a community economic activity system, as major industries decline and can no longer sustain employment levels of the residents within the community, solutions must be developed, and new patterns of work and learning emerge. Economic transformation takes place through the integration of new technologies, through new work structures, through the introduction of new businesses and new industries and through new learning. For example, in reference to the upheavals in steel manufacturing in Hamilton during the 1980s, Livingstone (1993) notes, “In short, all productive capitalist enterprises are at least periodically impelled to invest in new technologies and new product lines, and to undertake a related intensive reorganization of their workforces in order to survive” (p. 14).

This type of complex change in economic structures leads to Engestrom’s fifth principle of expansive transformations. The ongoing struggle within and across communities to reinvent themselves requires the type of “collaborative envisioning” and “deliberate collective change effort” which Engestrom (2001) describes as “expansive transformation” (p. 137).

Economies in Transition: What’s “New” in Steel Town?

The three communities of interest for this study vary in size. Historically, each has prospered from a vibrant steel industry that was central to their economies and their working class culture. Over time, the concentration of steel relative to other industries in these communities has diminished, first, collapsing in Pittsburgh, and then later, declining substantially in Hamilton and Welland. Pittsburgh’s regeneration efforts have been ongoing for several decades. Hamilton’s efforts to diversify its economy have become intensified over the past decade. Welland has just begun to address its inevitable transformation.

Once the heartland of industrial America, Pittsburgh and the surrounding region of Southwestern Pennsylvania produced 75 percent of America’s steel (Working Together Consortium, 2002, p. 2). The collapse of the steel industry devastated the region, causing enormous and sustaining losses. As Pittsburgh was to the United States, Hamilton is renowned as Canada’s steel town. While the industry has declined substantially, Hamilton is still a major player in North American steel manufacturing, with over 40 percent of Canada’s steel-making capacity concentrated in the city (City of Hamilton, 2002). Welland’s steel industry has declined more gradually. Over the past decade restructuring has intensified and downsizing and plant closures have become more frequent, diminishing the city’s steel workforce (Carvalho, 2003). CHAT theory is applied to these community transformations, framing each as a community economic activity system.
Pittsburgh, Pennsylvania

Pittsburgh, Pennsylvania has experienced the most severe and persistent economic devastation among the three cities considered in this investigation. Since post-World War II, the city has undergone extensive restructuring efforts to transform its industrial base from steel to new knowledge-based clusters such as information technology and biotechnology. Once a prosperous community approaching a population of 700,000 people in 1950, the community has shrunk to almost half its size (Ferman, 1996, p. 29).

Throughout the 1970s and 1980s, the Pittsburgh Region encompassing the city experienced a mass exodus of 158,000 manufacturing jobs (Gradeck, 2003, p. 1). By 1985, US Steel had closed over 150 manufacturing facilities, many in the Pittsburgh area. The steel industry collapsed, creating catastrophic economic and social upheaval. Displaced workers lost wages, benefits, pensions, and ultimately many were forced to leave (Warren, 2001, p. 321). Many who left Pittsburgh were young and they took their families with them. Today, Pittsburgh has one of the oldest populations in the country.

Extensive interaction between community, work and learning activity systems played a key role in the community’s revitalization. Established in 1944, the Allegheny Conference on Community Development (ACCD) has evolved as a prominent leadership group dedicated to economic development. The ACCD works in collaboration with the Pennsylvania Economy League-Western Division; Pittsburgh Regional Alliance; and the Greater Pittsburgh Chamber of Commerce. The Steel Valley Authority emerged in the 1980s to support innovative strategies to foster community or worker ownership of factories (Ferman, 1996). Local universities, colleges, research centres and community organizations such as the Workforce Investment Board and the Pittsburgh Technology Council contributed to ensuring that knowledge, skills, and innovation were an integral part of Pittsburgh’s economic development. Many regeneration projects benefited from funding through state and federal programs and private foundations (Pittsburgh Technology Council, 2004).

Today, the service sector is Pittsburgh’s fastest-growing sector; however, it has not compensated for the losses in manufacturing. In 1990, the average wages for Pittsburgh’s service sector were $24,442 compared with $36,989 for manufacturing (Ferman, 1996, p. 29). After decades of regeneration efforts, employment rates and average per capita income are now approaching national averages. For the Pittsburgh MSA, the 1999 per capita income was $20,935 compared to $21,587 for the nation (U.S. Census Bureau, 2000).

In recent years, several new clusters have emerged in southwestern Pennsylvania, including information technology, life sciences, advanced manufacturing, advanced materials and environmental technology. In the Pittsburgh MSA, among the employed civilian population 16 years and over, service occupations total 170,385, while production, transportation, and material moving occupations total 143,970. Significant growth has occurred in
management, professional and related occupations, contributing 364,539 jobs in the Pittsburgh MSA (U.S. Bureau of the Census 2000).

The interplay of business, education, government and community demonstrates the multi-dimensional aspect of this community economic activity system. These subordinate activity systems are inextricably linked within the overall community economic activity system. However, while the community has progressed substantially, the collapse of its steel industry and the transition towards knowledge-based industries resulted in significant losses for Pittsburgh and many of its citizens, especially displaced workers, minorities, young people and the poor. A more holistic approach that recognizes the multivoicedness of a community economic activity system might encourage alternatives that place greater value on disadvantaged people. According to Jan Lauer, Sr. Vice President for ACCD (2004), current strategies for economic development address this issue.

Hamilton, Ontario

Hamilton, a mid-sized community with a population of 490,270, has one of the oldest populations in Canada (City of Hamilton, 2003). The labour force includes approximately 384,400 people (Human Resources and Skills Development Canada, March 2004, p. 5). Hamilton’s goods-producing sector employs 104,100 people. The services-producing sector employs 260,500. The city has experienced a loss of manufacturing jobs over the past decade; however, manufacturing is still the city’s largest employment industry with a work force of 76,700 (City of Hamilton, 2005, p.22). Substantial growth has occurred within Hamilton’s service industries (City of Hamilton, 2002).

Significant layoffs occurred in Canadian steel during the 1980s. Hamilton remains vulnerable to the potential continuing decline of the steel industry, with several challenges including excess steelmaking capacity in the global steel industry; lower-priced steel imports, rising raw material costs and energy costs; and high legacy costs (Bilous and Hon, 2004, p. 3). However, Hamilton’s steel industry continues to contribute substantially to the city’s manufacturing sector and community culture, employing close to 16,000 people directly in steelmaking and processing (City of Hamilton, 2000, p. 9). Canada’s two largest integrated steel mills, Stelco’s Hilton Works and Dofasco Inc., provide the foundation for the Hamilton’s steel cluster of well over 100 companies.

The newly amalgamated city has developed an economic development strategy aimed at establishing a more diversified economic base that includes advanced manufacturing, agriculture, food and beverage processing, biotechnology and biomedical industries, port-related industries, aerotropolis, film and cultural industries, and tourism. In selecting these target industries, the city focused on industries with the types of jobs and firms that would lead to a high and rising standard of living for Hamilton’s citizens (e-Conomics Consulting, 2002; City of Hamilton, 2005).
Like Pittsburgh, Hamilton developed as a working class community and, to a large extent, it remains so. A principal challenge for the community is to maintain congruency between the labour market opportunities within emerging or target industries and the talents among its working class constituents. Learning opportunities must be provided to enable workers to prepare for economic transformation and avoid displacement and dislocation. Dr. Richard Loreto, a local strategic management consultant, advocates that the city should focus on improving job opportunities for unemployed and underemployed people, including part-time and contingent workers. Loreto suggests, “No industry is immune to the impact that specialized knowledge is having on economic activity, but the development of knowledge-intensive industries does not preclude the need for low-skilled jobs in the future” (2004).

Community leaders acknowledge the interdependence between the traditional and emerging sectors. They support an inclusive development process with broad partnerships across business, labour, government, education and other community organizations. As with Pittsburgh, education underpins the capacity-building efforts in Hamilton’s community economic activity system. Strong linkages have been established between local industries and educational institutions. Mohawk College houses a Modern Foundry Technologies Institute that supports the steel industry and McMaster University has created a Steel Research Centre (City of Hamilton, 2003). In partnership with the city, the university is a developing a research park for advanced manufacturing and biotechnology research. Within the centre, a biotechnology incubator will provide support for start up companies and commercialization services for this emerging industry. An employer survey conducted in September, 2001 indicated that availability of skilled labour and access to university and college research and development capabilities are among Hamilton’s key strengths (City of Hamilton, 2005).

Welland, Ontario


Historically, Welland has relied on traditional manufacturing including steel, forging, and textiles as important drivers of economic development. Many local businesses still operate within Welland’s declining steel cluster as suppliers and service providers. In recent years, the downward trend in manufacturing employment has accelerated. Closures such as Welland Pipe, Shaw Pipe, and Atlas Specialty Steels have impacted the steel cluster with the loss of over 1,000 jobs (Welland Development Commission, 2004). Once a driving force of the economy, steel has become Welland’s albatross, leaving deserted brownfield sites scattered throughout the city as symbols of the community’s steel manufacturing history and the heavy burden of its decline.
In contrast, the city’s service sector has grown, with retail trade and call centres emerging as leading industries (Carvalho et al, 2004). The shift from manufacturing to service sector employment has resulted in more part-time, non-unionized and contingent work as well as lower wages. The city, once known as a major manufacturing centre with high wages, job security and strong unions, has a median employment income of $21,505 (City of Welland, 2004). As part of the St. Catharines-Niagara CMA, Welland’s median income is among the lowest of all ten census metropolitan areas in Ontario. (Knafelc, 2004, p. 8).

The overlap of Welland’s community economic activity system with other cities’ is evident in the commuting patterns of Welland’s employed labour force. For example, while 11,295 people both reside and work in Welland, more than 9,000 people leave Welland to work in other communities. The number of people leaving Welland to work elsewhere increased by 15 percent between 1996 and 2001. (Statistics Canada Census 1996 and 2001 cited in HRSDC, 2004b).

Welland recently created a community economic development strategy aimed at strengthening the community’s socio-economic well-being. This initiative was guided by community leaders with representation from business, labour, government and community organizations to ensure that alternative standpoints were considered. Several issues relating to Welland’s socio-economic performance emerged through this process, including low educational attainment levels relative to other communities in Ontario. The proportion of Welland’s population with a college diploma is slightly higher than the province, but the percentage possessing a university degree is only 12.6, compared with 26.3 for the province (Statistics Canada Census, 2001).

According to Dr. Lynn Stewart, Executive Director for the Employment Help Centre in Welland (2005), many of the workers who were recently displaced through restructuring and plant closures have low formal educational attainment, with a large proportion not completing high school. While many of these people possess high levels of skills, their experiential talents are not formally recognized. Displaced workers are ill-prepared to move into the service sector where jobs are available. They are faced with tough choices ranging from accepting lower paid employment, retraining, commuting to other areas of growth, or moving away from their community, their families and their friends (Carvalho, Fennessy & Kuhns, 2004).

A survey conducted this year of ten Welland manufacturing businesses suggests that inter-organizational workforce development networks are needed to help thwart further job losses and business closures. Such networks create a zone of proximal development in which formal and informal learning can be encouraged. All ten businesses indicated that in-house training is provided, but smaller businesses in particular lack the financial resources to support external, formal learning activities. Survey participants also suggested that the community must develop strategies for retaining youth and upgrading the credentials of the existing workforce.
The survey highlighted the lack of interconnectedness between education and work activity systems in Welland. Strong linkages between work and learning have been an important influence for economic transformation in Pittsburgh and Hamilton. Of the ten Welland firms surveyed, all indicated that they do not make use of educational services at Brock University, which is located in a neighbouring city. Niagara College has created a Centre for Integrated Manufacturing and Applied Research and a Centre for Advanced Visualization, which some of the local manufacturers utilize. The college offers apprenticeship programs and call centre training. Several other universities and colleges are within commuting distance of Welland, but none are actively utilized by the employers surveyed.

An important factor influencing Welland’s transformation is the ethos that predominates in this working class community. Welland’s historically strong labour movement has contributed to expectations about job security, fulltime and permanent employment and high wages. For the most part, current employment prospects bear little resemblance to the high-paying manufacturing jobs that have been lost in the community. For at least for some of the workers displaced from jobs they have known for over 20 years, the uncertainty about their capacity to adapt instills fear and reservation (Stewart, 2005).

The challenges of community economic development extend beyond the resources of smaller communities like Welland. This research suggests that Welland needs to consider its prospects for economic transformation in relation to the broader community economic activity system that supports the Niagara Region in order to achieve the critical mass of people and other resources necessary for regeneration. Furthermore, support from higher levels of government is essential, including investments in education, technology enhancements, and infrastructure developments. At this juncture, there is little evidence of an emerging “knowledge-based economy” in Welland.

Conclusion and Recommendations for Future Research

CHAT provides a useful framework for understanding community economic development. The cultural and historical remains of steelmaking continue to shape the transformation of the three communities considered in this research. Their struggles and successes have led to important lessons. The first imperative is “preparedness”. People within the community, including unemployed, underemployed and currently employed, need opportunities to participate in lifelong learning as industries undergo inevitable restructuring. Secondly, at an organizational level, strong linkages between work and learning are needed to support ongoing transformation within community economic activity systems. The interconnectedness of work and learning played a key role in the economic diversification of Pittsburgh, and more recently, Hamilton. On the other hand, weak linkages between work and external learning organizations may be hindering Welland’s economic progress. Thirdly, communities should consider their economic activity systems within the context of broader systems. Pittsburgh’s strong civic alliance was regional in scope, and Hamilton’s recent amalgamation has established a larger
critical mass of people, businesses and resources that may lead to greater prospects for potential new growth relative to small communities like Welland. Fourth, communities suffer serious consequences of residents’ forced occupational mobility. Family time is disrupted, established social relationships are disintegrated, time available for new learning is limited, and workers’ sense of community is diminished. Although preliminary, these research findings suggest a need for further exploration through a CHAT lens to establish empirical validation and understanding of a community economic activity system and its constitutive elements, including community, work, and learning.
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