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MASTER'S THESIS

In the shadow of the telecom boom: The rural – urban dynamic in Ottawa

by Robert M. Kramer

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Submitted August, 2001

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In the shadow of the telecom boom: The rural – urban dynamic in Ottawa

submitted by Robert M. Kramer

in partial fulfilment of the the requirement for the degree of Master of Arts

Thesis Supervisor:

Director, School of Journalism and Communication:

Abstract

Ottawa, with a large rural component and a major high technology sector, is the context for interrogating assumptions about a technopole mode of development. The traditional rural – urban infrastructure and development divide is present, although the domination of city planning discourse by high technology interests is of greater importance. The rural – urban continuum is addressed. Myths inform the definitions of ‘rural’ and ‘urban,’ as well as the popular conception of an ‘information society.’ The general acceptance of the information society thesis legitimates a discourse of high technology development which, as a political economy of Ottawa shows, is dominated by high technology industry. As a result, rural interests tend to be marginalised, while the industry presence on the city’s primary development agencies amplifies and advances industry interests.

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Table of Contents

Acceptance Form.....	ii
Abstract.....	iii
Acknowledgements.....	iv
Chapter One: Introduction	1
Chapter Two: The rural – urban distinction.....	14
Quantitative Measures.....	15
Qualitative Measures.....	17
Conceptualising: Dichotomy and Continuum.....	30
Another way of looking at it: Regional Cities and urban fringes.....	33
Stereotypes and Myths.....	44
Chapter Three: Technology, development and the rural.....	51
The Information Society as a problematic.....	51
The Informational City.....	55
Modernisation theory - echoes.....	62
Technology parks and technopoles.....	64
Rural development through technology.....	72
Technology and rural development locally.....	78
Chapter Four – Context: Ottawa.....	81
Amalgamation.....	86
Rural Ottawa.....	91
Chapter 5: A Political Economy of Technically Beautiful Ottawa.....	104
Ottawa Economic Development Corporation.....	106

Ottawa Centre for Research and Innovation.....	110
The Ottawa Partnership (TOP).....	118
Ottawa 20/20: The Smart Growth Summit.....	120
Agricultural and rural affairs committee.....	126
Chapter 6: Conclusion.....	133
Coda.....	143
References.....	144

Chapter One: Introduction

An emphasis on developing the high technology and telecommunications industry in the amalgamated city of Ottawa engenders a divide between the rural and urban areas of the region. This paper undertakes to investigate the dynamic between the urban and the rural in a city where economic activity is increasingly driven by the telecommunications industry and information technology development. The amalgamated city of Ottawa provides a specific context for exploring this rural – urban dynamic, as the information technology and telecommunications sector is increasingly promoted as one of the key motivators of economic growth and development. Within the city of Ottawa, the high technology sector is concentrated in a few urban areas, while the outlying rural parts of the region remain predominantly agricultural in their mode of production. The growing emphasis on information technology development suggests that there is a disparity between the urban and rural areas of the region, in terms of economic prosperity, political influence, and cultural recognition. This paper thus seeks to uncover the implications of the emphasis on the development of high technology industry, and development of the region through this emphasis.

Locating the rural-urban dynamic in this specific context allows the investigation to address certain key issues. First among these is the relation of the city restructuring process to the promotion of information technology development as an engine of prosperity. The restructuring of the Ottawa-Carleton region is primarily informed by

economic concerns, particularly that of making the administration of government and public works more cost effective. Savings are thus to be realised through the streamlining of government through the elimination of functions duplicated among the existing municipalities, reducing the number of councillors as well as eliminating the separate levels of government between the municipalities and the region. Similarly, by consolidating public works services such as road maintenance and emergency services, further savings are supposed to be made.

Beyond these direct economic consequences, which are all projected and may or may not be realised, the restructuring is also presented as making the new city more attractive to increased investment, particularly by the high technology sector. An argument to this effect is that a single city structure is more conducive to companies locating their facilities throughout the amalgamated city, rather than the present concentration in the urban west end. The dispersal of the companies, and thus of the economic spinoffs in the building industry and the service sector to less prosperous areas of the city could conceivably contribute to the overall success of the city. This would indeed be a beneficial outcome; however, there appears to be a tendency for these agglomerations of high technology industry to persist, despite the administrative structure of an area.

Given that the dispersal of telecommunications companies throughout Ottawa would be beneficial, the benefits seem to be assumed to accrue to the urban areas. It is not clear how emphasising high technology growth will benefit the rural areas. By

comparison to the high technology centres in Ottawa, the surrounding farming communities within the region encompassed by the new city are less well off economically, and the high technology development focus does not foreshadow any direct causal improvement to this situation.

It should be made clear that the rural-urban economic disparity is not exclusively a result of the growth of technology industries in the city. Rather, there are larger, systemic impulses in the agricultural sector and the rural experience that are at work. However, it is the placement of the rural dynamic within the domain of the Ottawa “mega-city” that suggests issues of the derivative benefits of high technology industry on the rural experience, and thus the relevance of addressing the urban-rural divide in terms of communications and technology.

The rural areas will have to have a role to play under the new city administration. The character of these areas suggests that they would not easily become a subset of the high technology areas – indeed, there is a sense of being on the other side of a divide between the countryside and the city. Currently, rural areas and small towns are experiencing the most growth through the development of housing subdivisions, essentially creating bedroom communities for the high technology workers who commute to and from the city. That is, daily activities are conducted in the urban areas, and the subdivisions tend to be occupied only outside of working hours. As a result, there appears to be little incentive to develop any diversified economic activity in these areas besides housing construction and service provision. A further issue

arising from this rapid construction of housing developments is the conversion of agricultural land to these purposes, which further undermines – or transforms – the agricultural nature of these areas. This is not to suggest that there should be a concerted effort to prevent the building of subdivisions, but to argue the continued importance of farming in the region.

Another issue that can also serve as an index of the rural – urban divide is the very presence of communications infrastructure – or the lack thereof. For example, while cable television technology has long been a fact of life in the urban and suburban experience, and high speed Internet access is heavily promoted, much of the rural area in the new Ottawa does not have this infrastructure in place. The key explanation is that the return on investment for the cable companies does not merit extending service to these areas. The processes at work here may be reminiscent of the earlier implementation of telephone service in these more remote regions, although this time around there appears to be less potential for popular implementation of the technology.

This technology disparity does not by itself render the rural areas economically nonviable. It is rather a symptom of the dominance of urban areas in the development of a city in a global context. The problem is that by emphasising urban growth motivators, rural concerns at the city level face the potential of marginalisation. This is not an argument for connecting the rural in order to create a subset of the technology sector, or that in the interests of fairness, the technology industry should have a

presence all through the city, and certainly not that the rural should be impelled into the so-called information age. It is an argument that pursuing high technology investment for the city should not dominate the discourse of the city.

This last point – the conception of the rural areas as a hinterland to the urban metropole – suggests another interesting aspect of the issue. There are a number of myths at work: of the rural, of the urban, and of technology. It would be overstating the case to argue that the myths of the country and the city are the key ingredients of the divide between city and country. However, the phenomenon of this divide is undoubtedly more complex than just the interplay of economic factors. Investigating the myths can provide insight toward the human factors at play in this urban-rural dynamic and the technology divide.

In addressing these issues, the dynamic is of sufficient complexity that a single theoretical approach, though arguably simpler to deal with, will not address the myriad aspects that emerge. Therefore, approaching the problematic from a political economy approach, and informed by a cultural studies method offers a more complete understanding of the forces at work. In addition, the rhetoric of developing the city's high technology sector, with the assumption that the benefits will ripple outwards to eventually benefit all residents of the city residents resounds with echoes of modernisation theory; therefore this will be addressed as well.

A political economy approach, which concentrates on the study of the social relations that mutually constitute the production, distribution and consumption of resources

(Mosco, 1996, p. 25) responds to the questions surrounding the relationship between the telecommunications industry and associated infrastructure, and the related rural-urban divide. Such an approach lends itself to this complex dynamic by virtue of the diverse issues that fall under its rubric. Borrowing again from Mosco (1996) the characteristics of a political economy approach are indeed amenable to this project. In addressing social change and historical transformation (p. 27), this approach suggests questions of how the Ottawa-Carleton region and the sub-regions within it are changing under different impulses. That is, the historical transformations from lumber town to government town, and now, arguably, toward a high technology centre. This also suggests the question of transformation in the rural surroundings – be it from a productive agricultural economy, perhaps to the bedroom community role, or in a more dire prediction, a systemically depressed region.

The second characteristic of a political economy approach that speaks to this study is its rooting in a social totality (Mosco, 1996, p. 29). The merit of this characteristic lies in that it will allow the study to recognise that there are myriad forces impinging upon the problematic. Specifically, there are connections between political and economic elements that need to be excavated. For instance, why and how does the information and communication industry have such a key role in the city? Furthermore, the political and the economic do not operate in a vacuum, therefore the totality and social elements – which here suggests that the people and their motivations or aims involved in political and economic processes are as much a factor as the processes themselves. This characteristic of the approach also allows the study to highlight that these process

do indeed have real consequences on real people, and that the prosperity of a region should not be measured only in terms of economic indicators.

The third aspect of political economy suggests a normative framework or moral philosophy (Mosco, 1996, p. 34). For the purposes of this study, this means that the values upon which decisions are based are made explicit. In addition, this aspect of the approach allows a space to justify arguments as to why the rural regions of the mega-city should not be discounted as superfluous appendages. In terms of formulating questions for the study, this particular focus means that not only will the values be made explicit, they can be incorporated into an understanding of a philosophy of development or administration for the region. Understanding this philosophy will then provide a deeper understanding of the processes that are going on in the technology and communications divide.

The final element of a political economy approach that speaks to this study is praxis (Mosco, 1996, p. 37). It is this element that will work to make the study practically useful, in that the knowledge developed or gleaned from this study is intended to be translatable into action. There is no illusion though, that this paper will be a foundation upon which to shape the development of the city of Ottawa. However, the intention is that this work can serve to inform the discussion regarding the rural areas' prospects in the Ottawa mega-city.

The political economy approach thus speaks to the economic and political imperatives that frame the mega-city restructuring and the role of the rural areas therein. The

approach suggests questions about the allocation of resources, which are defined broadly enough so as to include infrastructure and promotion, along with straightforward fiscal concerns. By addressing the political and its relationship to the economic, this approach suggests questions of influence and power in terms of deciding how, and which, regions receive the bulk of the benefits of a given decision. Finally, the inclusiveness of the approach also suggests that although political economic issues are important, they are not necessarily the sole or even the final determinant of a given phenomenon – here, the rural-urban dynamic.

The inclusiveness of this particular strand of political economy is also indicative that it is welcoming enough to add a cultural studies approach. The application of a cultural studies approach to this research effort does not necessarily entail a direct emulation of the tradition as it developed in the 1960s and 1970s (Boyd-Barrett & Newbold, 1997, p. 328). That is, this study is not so much focussed on the cultural reverberations with respect to media content as it is interested in relating the trends identified in the political economic analysis to the lived experience and perceptions of the people who are affected by those processes. There is not a media text to ‘analyse,’ per se; the text is largely the lives of the people involved in the rural-urban dynamic and divide.

Cultural studies also speaks to the question of cultural hegemony (Boyd-Barrett & Newbold, 1997, p. 329) in media. What this study intends to do is not necessarily to address directly the cultural hegemony (if any) in the rural – urban dynamic, mediated or otherwise. Rather, the aim is to borrow the methodology of cultural studies to

expand the understanding of the dynamic That methodology is the privileging of the experience of the “average person.” The reasoning behind this is that while the political economic approach concentrates on the macro processes of the political and the economic, a cultural studies informed approach will highlight the issues at them micro level.

This micro level approach suggests question of how people (on both sides of the rural-urban divide) view their and their region’s role in relation to the mega-city that means perceptions of relative importance to the whole, how the restructuring affects their everyday life, whether the perceptions of the other side of the divide suggest animosity, friendliness or ambivalence, or if there is a negotiation of the divide on personal level that transcends the political economic macro level view.

It is this perspective that allows the study to address the idea of the “myth of the country.” This is not something that is traceable through political economic processes of analysis. It is one of those intangibles that is woven into people’s perception of their environment or social context. Once the schema of the myth is made clear, it may well have roots in political or economic considerations. Thus, by being able to find out what people on the urban side of the divide have as conceptions of the rural regions, both in terms of “average” people as well as decision makers, and vice versa from the rural perspective, and then linking those perspectives to processes of political and economic concern, the picture is further enriched again.

Thus, this is not a cultural studies exercise in the strictest sense of the tradition.

However, in the spirit of the tradition of emphasising the experience of everyday life (similar also to the Chicago School's approach), adapting the focus and methods should work to further enrich this study.

A third theory that can be brought to bear on the problematic of emphasising high technology industry as a growth engine for a regional economy is modernisation theory, which developed in the early post World War Two era, and quickly became dominant, or conventional, as a liberal theory of economic development. Basically, these Western-oriented interpretations emphasised internal aspects of Third World¹ countries as impediments to their economic development. These impediments were then cast as obstacles to be overcome in achieving economic growth, which in turn was measured mechanically in terms of increasing per capita gross national product, as opposed to more humane measures such as being able to feed the population. Hence, development or modernisation theorists sought to identify these obstacles, and recommended overcoming the barriers by using wealthy countries' supply of missing elements, such as investment capital, in order to jump start economic development. Once sufficient capital was accumulated to spur on economic growth, the theorists predicted that the benefits reaped would trickle down to benefit all segments of a given population, rather than accumulating in the coffers of the wealthy elite. Rostow's stages of economic growth is the formalisation of this theory, where traditional societies enter into the development process. Through the operation of the free market, these societies progress through various stages, eventually to become similar

¹ The term "Third World" is not to be construed here as a pejorative. Rather, it is taken from modernisation discourse, and the myriad alternative presentations of North-South relations are acknowledged.

to the mass-consumption societies of the West (Kegley and Wittkopf, 1995, p. 136). Of course, the results were not always as expected. However, the theory itself is the relevant part; and the fact that the reality did not conform to the predictions will suffice for the moment in terms of discussing the outcome.

By taking this theory and analysing the current dynamic in its terms will serve to investigate the idea that a push to high technology development echoes of classical development strategies. That is, the idea of emphasising the high technology sector as a spur to economic growth seems tied to the dubious trickle down concept, albeit on a much smaller scale than that of a poor or undeveloped country. In the current context, the urban high technology centres are the locale of intensive investment, while the rural areas are analogous to the role of the periphery in terms of the trickling down or around of the benefits. It is important to note that these rural areas are analogues, and not exact duplications of the 1960s' version of the developmental hinterland. The current rural-urban dynamic is different, in that there is a relatively sustainable existence despite the disparity in benefits derived from the high technology development. This is also why the details of the outcome of modernisation theory is not of immediate great interest: the present-day example is still in process, and the regime of accumulation arguably has different nuances.

Specifically, the push is not to accelerate the mass production and consumption of consumer and heavy goods, but to deal with ever more information in increasingly technically sophisticated ways. As Harvey (1989) argues, there is a transition to a

regime of flexible accumulation and specialisation that may affect the process. Thus, this approach will lead to questions about the nature and sustainability of the growth, as well as investigations into other locales that undertook a similar approach.

Thus, by bringing these three theories together to bear on an analysis of the relationship of high technology industries on the Ottawa region, it is possible to build an understanding of the rural-urban relationship that addresses the complexity of the dynamic. With this theoretical background to inform the research, a synthesis between the theory and the reality of the situation should both cast the problems into relief, as well as suggest solutions to these problems and potential benefits to the various actors in the dynamic.

From the political economy approach, the study details the relationships between agencies charged with charting the development of the city and the high technology industry. To flesh this out with reflections on the micro level, interviews with city councillors from various wards, rural and urban, were undertaken. The interviewees had all lived in their respective wards for many years, and were in a position to be able to aggregate the concerns and views of their constituents. The interviews were based upon set questions, with opportunities for diversion into issues of relevance that were not directly addressed by the interview questions. The councillors who were able to participate in interviews were Councillor Phil McNeely (Cumberland), Councillor Dwight Eastman (West Carleton), Councillor Glenn Brooks (Rideau), Councillor Doug Thompson (Osgoode), Councillor Alex Munter (Kanata), and Councillor Jan

Harder (Bell-South Nepean. Councillors Janet Stavinga (Goulbourn) and Diane Deans (Gloucester-Southgate) were not able to participate.

Chapter two deals with the urban – rural distinction. In order to discuss the rural and the urban, it is important to define the terms. Drawing a clear line between the two is problematic, so the chapter also introduces the regional city thesis, which is applicable to Ottawa. It is in defining these terms that the respective myths operate, as pre- and misconceptions inform the basis for understanding the two realms. Chapter three discusses the nexus of technology and development. The initial assumptions of an “information society” are addressed, with the resulting caution against a dogmatic acceptance of the phenomenon. The development of technopoles, cities as milieux of high technology innovation leads into the discussion of applying technology as a facilitator for development. Chapter five presents a political economy of the high technology sector in Ottawa, highlighting the connections between high tech interests and agencies charged with the economic development of the city and generating an image for global recognition. Chapter six concludes the thesis by summarising the findings, and suggesting avenues to pursue both for further research and to develop a functional rural – urban dynamic.

Chapter Two: The rural – urban distinction

Investigating the rural-urban dynamic in Ottawa initially presents an intuitive context for analysis, as the difference between “city” and “not-city” appears to be a straightforward distinction. A more involved consideration reveals that the categories of rural and urban are more complex, and dealing with the complexities and nuances is the first step in understanding the processes at work.

Actual patterns of settlement are less clear-cut than the basic concepts’ definition implies: the very concepts of ‘rural’ and ‘urban’ constitute an ideological transformation of terms, and the meanings include ways of life, cultural patterns, attitudes, and value systems. Thus, carefully establishing a definition to set out the parameters of the distinction is important, as it will guide the questions and answers in the course of the investigation (Gibbs, 1961, pp. 464-479). This chapter examines the concepts of rural and urban, the use of a dichotomous distinction versus a continuum model, and the myths and stereotypes that adhere to either realm.

There are two main modes of distinguishing the rural from the urban. On one hand, quantitative measures, particularly census data, are used to define rural regions; on the other hand, qualitative, intuitive, or even idiosyncratic definitions can be applied. Intuitive definitions are less quantitatively rigorous, but include more qualitatively complex elements that reflect more accurately the nature of rural spaces. A definition

can therefore be based upon population structure, composition, or distribution; or a qualitative scale of ruralness and urbanness (Melton, 1983, pp. 3-4).

Quantitative Measures

Canadian census methodology divides the country into three broad geographic categories. After accounting for large and medium urban centres (census metropolitan areas (CMAs) and census agglomerations (CAs) respectively), the remainder contains both small urban and rural areas. The general concept of a rural area is simply that of a sparsely populated area lying outside of urban areas. Within the categorisation of rural areas is a distinction between rural farm and rural non-farm, to separate rural residents from rural agricultural enterprises (Statistics Canada, 1993, p. 1). A census farm is defined as a “farm, ranch, or other agricultural holding which produces at least one of the following products intended for sale: crops, livestock, poultry, animal products, greenhouse or nursery products, mushrooms, sod, honey or maple syrup products.” A farm operator is specifically involved in the day to day agricultural decisions of such a holding, while a farm resident is an operator living on an census farm (Statistics Canada, 1993, pp. 163-5). These divisions separate the agricultural from the rural based on occupational designations, in a relatively fixed quantitative scheme, and inform contemporary census definitions and categories. By comparison, the American census definition of a rural area is an arbitrary level of under 50,000 inhabitants outside an MSA (metropolitan statistical area). This categorisation comprises only 25 percent of the American population, but fully 90 percent of the natural resources

(Schmandt, Williams, Wilson & Stover, 1991, p. 15).

Statistics Canada defines urban areas as those regions with a minimum population concentration of 1000 individuals, at a density of at least 400 per square kilometre. A CA consists of a large urbanised core of at least 10,000 individuals, together with adjacent urban and rural areas that have a high degree of economic and social integration with that urban area. A CMA is similar in definition and concept to a CA, however the population threshold is 100,000 (Statistics Canada, 1993, pp. 163-6). These threshold levels are contested; for example, Sim (1988, p. 22) argues for a 10,000 individual cut-off for rural areas. Quantitative distinctions tend to centre on the number of people in an area and the density of that population – other quantifiable indicators such as communications measures – are increasingly mitigated in an overlap between rural and urban areas.

Where quantitative definitions provide a concrete classification of the rural, qualitative definitions bring out cultural elements, or even intuitive aspects, as well as aiding in avoiding the arbitrary threshold imposed by quantitative definitions. The difficulty in developing a qualitative definition of the rural is the fluidity of spaces, which complicates categorisation. For instance, a bucolic landscape may contain a building that is as wired and connected as any in an urban core; while a city park may intimate a rural character in its urban milieu. In addition, the liminal space of the interaction between urban space and rural milieu presents a third substantive region.

Qualitative Measures

Troughton, Nelson and Brown (1974) argue that an expanding urban landscape encroaches upon a rural landscape, and that this encroachment partly stems from a failure to recognise an overall structure or value framework for the countryside. In order to develop such a framework, they outline several viewpoints for understanding the rural. One viewpoint focusses on the social, where people typify the countryside, and seeks to find human population elements that are long-term and viable. Given the recent transfer of many ruralities to the city, a key question is why the heritage aspect of the countryside, embodied in the population, is so little developed and incorporated into the urban way of life. A second viewpoint is based on agriculture, and the meshing with more general utilities of the working landscape as a backdrop or active element in rural functions. A third viewpoint addresses the rural as a space for leisure activity, especially recreation and tourism. A fourth viewpoint addresses the uses of the countryside for education and scientific inquiry, while a fifth viewpoint looks at planning, policies, and administration of the countryside in relation to the urban environment, and asks if a holistic or unitary approach encompassing the two is possible (Troughton, Nelson & Brown, 1974).

A perceptual dimension defines the rural in the way that individuals see it, either through their own lived experiences, or vicariously through a lens that colours the perception. A given value perception can apply to either the urban or the rural, depending upon the individual's perspective: the civilised city can oppose the backward

country; conversely, the evil city contrasts with the virtuous countryside. Perceptions in Canada tend to centre predominately on economics, but also includes religion, ecology, geography and politics. The rural is generally seen as a place of economic poverty and human or spiritual value; while the spatial organisation is seen as agricultural, with dispersed dwellings; and self-sufficiency, conservatism and inertia as a normal state. However, these perceptions are often false, based on stereotypes, and vary with social class (Dugas, 1995, p. 12-16).

Data suggest that urban perceptions of rural places tend to be in positive terms, and inform a general view that rural areas and lifestyles should be preserved. The desirability of development strategies suggests that urban residents would promote traditional extractive activities, and conversely give little support for other business or industry development. Those who visit for recreation or environmental contact tend to lean towards preservation, while those who visit socially tend to support development activities. It is not in a vacuum that the rural falls behind, and a general concern for rural socio-economic well-being exists. Another important component is the heritage perception of a space that is friendlier, safer, and less stressful. This feeds into a rural mystique, which holds misconceptions to generate a positive belief that it is not the money that is important, but security and well-being, as well as an over-estimation of the importance of farming in the rural. Rural tourism is in the form of relaxation and play, and in the desire to preserve this playground, development is often blocked by urban residents. The availability in rural areas of housing on cheap land with low wage labour tends to mean profit for outside investors, where non-local holdings exploit

rural labour, promote community dependency, and enforce underdevelopment. Thus the question is how to improve well-being without exploitation, with the added need to understand that humans are not resources (Willits & Luloff, 1995). These issues were raised by several councillors in interviews, as well. Councillors McNeely and Thompson emphasised the potential for produce from rural Ottawa to come into the city. Councillor Thompson noted the aggregates available in the area, and the value of having materials and produce available locally, rather than shipped from afar. Councillor Brooks further emphasised the need for co-operation and education on both sides of the rural – urban dynamic.

In a study of attitudes toward wilderness areas, both rural and urban groups demonstrated a positive attitude and a high degree of environmental concern. However, differences between the groups showed a divergent understanding of what constitutes wilderness: the same environment revealed two perceptions. Rural respondents were more discriminating as to what constituted wilderness, as signs of human presence precluded categorisation as wilderness, while urban residents were more inclusive of such elements. (Lutz, Simpson-Housley & De Man, 1999, pp. 259-265). Councillors McNeely and Brooks noted this point in their characterisations of the difference between the rural and the urban in Ottawa.

While rural space may defy precise characterisation, settlers new to the rural area arrive with a common expectation: a rural lifestyle with the advantages of being fairly close to a city. The wishes of these exurban pioneers are rather inconsistent, as rural

households depend on resource exploitation for a living, while exurban households flee the city to enjoy unexploited resources. Overall, exurban households may be more like rural households in socio-cultural aspects, but more like urban households in economic and environmental aspects. This is an aspect of a 'rural resurgence,' or the reversal of a flight to the city beginning in the 1980s (Wolf, 1999, pp. 57-62), although Jean (1997, p. 14) considers this as yet too recent to be a significant social event. In the wake of this migration, growth towns are at a crossroads, where too much growth is not a good thing, particularly when it is unplanned or unmanaged (Wolf, 1999, pp. 115- 127).

Key perceptual indicators of county commissioners surveyed in the Western US were the degree of population concentration, followed by the total population of an area, and then the existence of an agricultural land base. There are four phases of understanding the rural, which are not mutually exclusive. In the first phase, rurality means particular spaces and functions, specifically large, open tracts of land, small-scale settlements, and lifestyles to match the landscape. This is an ecological approach, concentrating on low population, occupational (agriculture and natural resource extraction), and socio-cultural in the attention to rural values, behavioural norms, and systems of actions. The second phase tends toward heterogeneity, in macro scale economic, political, and social processes that characterise and transform rural areas. A third phase, the social construction mode, examines the ways the rural is constructed, negotiated, and experienced by agents and structures. It is contextual, dealing in perceptions, images, and myths. The fourth and final phase is focussed on the

expression and communication of ordinary people - a classic cultural studies approach (Berry, Markee, Fowler & Giewat, 2000; Cloke & Thrift 1994).

Working the earth is a generally emphasised aspect. This reflects ambiguity about rurality as a way of life, and about the rural as a sociological concept; for example the concept “rural” is often misused as a synonym for “farm.” In Canada, although there are between six and nine million people in areas classified as rural (including towns under 10 000 population), agriculture is no more overall than a weak source of employment, comprising at most four percent of Canadians. There tends to be confusion between agricultural activity and the collection of occupations of a collective or group in a given space and this confusion then extends to cultural and social issues. “Rural” is then equated with “agricultural” or “farming,” which are possible, but not necessary equations (Dugas, 1995, pp. 1-9; Sim, 1988, p. 21).

Cochrane (1965) suggests that with the shift of farms as a complex of economic and productive activity to a single element (function) within a larger web of economic activity, “agriculture” refers to all activities in the production and distribution of food and fibre products. “Farming,” by comparison, means those productive activities that make extensive use of land and take place under essentially uncontrolled environmental conditions. Thus, the agricultural complex comprises the non-farm supply sector which supplies goods and services for farmers; the farming operation itself, which combines land, labour, management, and capital to turn out raw food and fibre products, the marketing system which ultimately distributes a finished product to

consumers; and government services including research, extension and education, regulatory activities, and financial and income support and assistance to farmers (Cochrane, 1965, pp. 4-5).

Another characteristic of rural life that has received sociological attention is a specific rural etiquette. One example of this rural code of behaviour is the ‘nod line,” which is an unwritten rule of sorts that guides members of a rural community in acknowledging one another (Goffman, 1959). A particular proximity between individuals demands a nod of acknowledgement. The maintenance of this ritual serves to preserve social ties and acquaintance, even in the absence of dialogue. This emphasis on acknowledgement is a consistent indicator of rural social life. Ultimately, such identification within groups is the ways and means of community life (Sim, 1988, pp. 86-99). Barrett notes in his focus on social change in small town Ontario a continued stratification of class and power, which remains in a sort of stasis. In the process of the migration from urban to rural, newcomers tend not to interact with native residents, and one manifestation of the impact is the cessation of automatically greeting people on the street (Barrett, 1994, pp. 17-20). This aspect was consistently raised by councillors representing rural wards of Ottawa in interviews, most often described as ‘a different way of life’ from that of the city. A common theme within this aspect was the sense of community.

The notion of community has at least 94 different meanings (Lyon, 1987). Of these, three senses are of some interest. First is the sense of *Gemeinschaft*, with traditional,

affective solidarity, and attachment to place which overrides other loyalties. It is a pre-industrial characteristic, assumed to be in decline, though still celebrated by some conservatives and postmodernists as a means to combat alienation and powerlessness of the masses in urban society. However, small communities may restrict freedom, for though government may be more representative and accountable, it may not be as functionally effective. Second is a sense of an extension of private space, which encompasses processes of segregation and fragmentation. Third is a sense of community as a space for social interaction where political exchange can take place, but there is enough social solidarity to guarantee cohesion and legitimacy to political outcomes presupposing individual freedom and capacity for collective action. This third sense is critical in the politics of a liberal democracy (Keating, 1995, p. 128).

This assignation of the quality of neighbourhood to the rural setting is perhaps a nostalgic view – and one that tends to recur when discussing the rural. Network analysis in a rural setting reveals ties of greater intensity, role multiplexity, kinship and neighbourhood solidarity, than friendship. These ties are more homogenous for education, race/ethnic and religious elements, and less homogeneous for age and gender (Beggs, Haines & Hurlbert, 1996). However, interviewees' evaluations of these demographic elements suggests that this model does not completely generalise to rural Ottawa.

In looking at network and relation differences between urban and rural originated families, Hofferth and Iceland (1998) note that rural residents were more likely to

exchange exclusively within families. The process of giving is more complex, as rural origin families with younger household heads were more likely to give support to kin, and older heads of families less, as compared to similar families of urban origin. There were only modest rural – urban differences between similar types of families. Some differences can be explained by different family characteristics, however key urban rural differences remain, probably reflecting differences in norms and the availability of institutional support services in different areas. The definition of rural for this study (set in a US county context) was an area devoid of urban centres. Along these lines, the rural councillors tended to identify volunteerism and a view of helping neighbours as normal as part of the rural experience. Councillor Thompson referred to the community response to the 1998 ice storm, suggesting that the impulse to render assistance was to be expected.

The question of a rural community is mutable as well. At a minimum, there is an ecology (demarcated geographical area) and solidarity (shared values, belonging); Gans (1962) also holds that conflict is a key component. Weber would present community as a function of competition for economic, political and social resources, where solidarity stems from competition with other groups (Barrett, 1994, p. 22-3). Thus, the rural consists of shared interests within a specific area, and in the Ottawa context, the rural areas were in competition with each other and the city for various resources. The unanswered question at this point is whether the inclusion of the rural wards into the single city will obviate this competition, or merely mask it under a veneer of unity in amalgamation, while traditional, parochial interests remain.

There is a recurring view of the countryside as a resource hinterland to the metropolitan centre. Exurbanites, or those who moved from the city to the countryside exist as an added pressure, while urbanites on a tour of the country become transient consumers of the countryside (Troughton, Nelson & Brown, 1974, pp. 14- 33). Sim suggests referring or recognising newcomers to the countryside as new ruralites rather than exurbanites in order to base the characterisation upon their new place of residence, rather than in terms of where they used to live (Sim, 1988, p. 69).

These issues arise in that rural areas are often seen as a passive hinterland, a resource to play, hunt, and picnic in, expropriate and burden with concrete when so required in the national, or urban interest. Sim notes efforts to avoid using “rural” as a descriptor, such as: non-metropolitan, non-urban, regional city and micropolis. As an example, the US Library of Congress has removed the word rural as an adjective from many of its categories. For Sim, the disappearance of “rural” is a manifestation of urban imperialism. This leads Sim to argue that if nothing out there is deserving of a name, then it becomes a place to play in, play with, override, and destroy at will. This ‘imperial’ view provides silent justification for the imposition of regional government on small communities, and the democratic right of small communities to plan and direct their own development can be snatched away. The city and its environs are interlaced and integrated on many levels, but the flow is one way, and as the power, economic and political, is held in the urban centre. The expansion of city and government means enclosing the rural sector into an urban system, and in this vein, Sim argues that words like periphery, fringe, and hinterland are pejorative, evoking

urban cultural imperialism (Sim, 1988, pp. 22-27). Sim paints a dire picture, and perhaps overstates the intentions of the urban. However, the rural councillors in Ottawa tended to view their political voice as significantly weaker than that of the urban, while the urban councillors seemed to see the rural more in terms of an adjunct to the city, and thus of secondary importance.

Shifting focus to identifying the urban, there are three major perspectives that provide an example of how to understand the city. Political scientists see the city as a governmental unit with power and duties of a specific kind. The city is the corporate body, legal personality, or a little prototype of the state. Urban sociologists, under the influence of the ecological approach present a two dimensional theory of the city, a sprawling map of people in places. It is the mass of population, heterogeneous and dense, segregated by wealth and cultural background. Finally, economists see the city first as a matrix of locations for firms, and second as an economic unit. For Greer, all these approaches are far too partial, and tinted by the 'heavy hand of 19th century liberalism.' He argues that the basic assumptions are not tested or defined, and they focus upon the city without adequate concern for its environment in space and time. In an attempt to improve explanation and prediction in particular cases, each school of thought is extended toward the others, and as a result the virtue of clarity in the original images is lost in a confusion of so-called interdisciplinary thought. As a result, the view becomes clouded and tangled (Greer, 1962, pp. 2-9).

Wirth in 1938 argued that heterogeneity partly defined urbanism; hence subcultures

are a key component. However, testing the subcultural theory of urbanism tends to remain undone, and there are many elements that are not fully worked out (Fischer, 1995). Social characteristics of urban life derive from its large size and high density of population and social heterogeneity. Secondary, rather than primary group relations predominate yielding anonymity, impersonal, transitory, superficial and utilitarian social contacts. A high division of labour and greater interdependence of specialists, a rarefied and sharpened, although more flexible and mobile, system of social stratification based on income and social status comes into existence. Symbols and stereotypes become important because of a lack of personal acquaintance; people become involuntarily segregated by race. (Dasgupta, 1988, p. 9; Wirth, 1938). A city consists of exclusive membership groups, versus inclusive spatial groups (Greer, 1962, p. 37).

Spengler presented the death of culture in the cities of the Autumn, phenomena that would lead to the deification of massive power. Durkheim marked the city as epitomising the social dust heap, where organic society was unified by interdependence through the division of labour, but producing an unstable unity in which consensus and solidarity are partial and problematic. Tönnies argued that the community gave way to the urban world in which most bonds are instrumental, negotiable, contractual, while rights and duties become separated from the age-old sanctification of the community and its rewards. All of the above see the city as the summation of contemporary society. Other writers, such as Lincoln Steffens (*The Shame of the Cities*), Ralph Borzodi (*Are Cities Abnormal?*), and Lewis Mumford

write with a sense of nostalgia, with an implicit definition of the small town of an earlier time as normal, healthy society. Finally, Wirth defined the city as a large, dense permanent settlement of unlike groups and derives from these attributes certain likely patterns of interaction and their consequences, such as impersonality, isolation, the decline of primary group membership, and the dominance of formal organisations (Greer, 1962). However, this fails to address the city as a place of diversity, where the members of the unlike groups may interact, and gain wider experience from this interaction. In this manner, Wirth's comment evokes the stereotype of the evil city versus the good countryside.

From a rural farm perspective, it is conceivable to define the city as comprising people who do not grow their own food, and are hence dependent upon the rural. A role reversal actually results in interdependence, as there is general agreement that most social and economic innovations occur in cities (Gibbs, 1961, pp. 542-4).

Moving from ideas about what the city is to what the city means, the identification of something as 'urban' tends to mean edgy or 'cool,' not just 'of the city.' It seems to be a culturally cool term. And edgy is another thing – young, hip, modern? Notably, in the United States, urban does mean inner city, and in urban music, it is a code for "black music." Urban seems to be a misnomer for "urbane," or that which is sophisticated, worldly, or challenging (Smith, 2001).

As for culture and community, Sim presents the rural community as a raft swept downstream on a river of change and suggests a culture of change with the attendant

excitement, danger, powerlessness, and a stubborn will to survive. There seems to have been no systematic attempt to identify a rural culture in Canada, which implies the assumption that life in the country has been completely urbanised. Sim cannot accept this hypothesis. There is indeed a different style or quality of life. The claim that “rural culture is dead” really means that it is altered beyond almost all recognition, or is not recognised at all. By reaching back to the rural heritage we can select and retain values of neighbourhood, self help and respect for the land. Sim argues that community, like culture, has many popular meanings, such as space, tradition, and a common interest that has to be strong enough. Sim argues that mobility and communication are threats to community; and that in modern life community is both enriched and threatened by the flux of populations, the influx of values, and the absorption of values, styles and traits from outside (Sim, 1988, pp. 59-61). There is a difference between viability and vitality. Viability is the current and potential performance of a given community in terms of decline, stability or growth. But some that appear to be viable fail, and others, conversely, which do not appear to be viable, prosper. (Sim, 1988, p. 84).

However, there is an important difference in conceptualisation between the end of the rural and the restructuring of the rural. That is, the end of rural societies does not necessarily equal the end of the rural; the urbanisation of the country is not less important than the ruralisation of towns; and finally, the end of the hegemony of the rural function does not, in itself, signify the end of the rural (Jean, 1997, pp. 7-8).

Conceptualising: Dichotomy and Continuum

Even in the art of sport utility advertisements, the country and the city are interwoven. Is there reconciliation of the two realms in the 'garden suburbs?' Jane Jacobs would likely disagree, painting the two as irreconcilable. The thing is, though, that nature does not spill into the city: the city spills into nature (Gladwell, 1999, p. 67).

While a dichotomous conceptualisation is convenient for constructing the two realms in the abstract, as well as simplifying research efforts, it is an arbitrary split. In simplifying, a dichotomous conceptualisation threatens to obscure nuances that would otherwise lend a better understanding of processes at work in rural and urban areas, as well as in the liminal spaces between them. To address these nuances, a model of a continuum between the ideal types of 'the rural' and 'the urban' is more suited to the complexities of the processes at hand. In developing the continuum model, the dichotomy is not wholly abandoned; rather it aids in developing the ideal type characterisations of the extremes on the continuum.

A strong heterogeneity of spatial organisational forms usually two exclusive concepts (rural/urban). This is an oversimplification that ignores lived and observed experiences and harms the identification and understanding of problems affecting the rural world. The annex or fusion of municipalities makes contiguous areas exist as towns, with a net rural character (Dugas, 1995, p. 2). The ideal typology of distinguishing between the rural and the urban is rather weak (Dasgupta, 1996, p. 68). The approaches of different disciplines such as geography and sociology lead to ambiguities in definition,

so setting up a rural/urban division does simplify the conceptualisation, however both rural and urban areas have shared characteristics in varying degrees. Thus, the transition is not as brutal as implied in the dichotomous presentation (Dugas, 1995, p. 10). Dasgupta also advocates a continuum as a conceptual model as the dichotomy characterisation, while simplifying the matter for research initiatives such as census data collection, is a wholly arbitrary division - as it is indeed in the census (Dasgupta, 1988, p. 3).

A dichotomous definition, despite being the approach adopted by census efforts, is problematic. Rural and urban are dichotomous ideal types, not generalisations, but conceptual models stressing features or essential qualities in exaggerated terms, without specifying details that may be observed in reality. Tönnies (1887) theorised the opposition of *Gemeinschaft* (natural will) and *Gesellschaft* (rational will); Durkheim (1893) described Mechanical and Organic solidarity; Cooley (1909) outlined primary and secondary groups; and Becker (1950) put forward the difference between sacred and secular society. Cooley's primary groups are key and informal, while secondary groups are formal relations. There are then three dimensions of difference: homogeneity/heterogeneity; primariness/secondariness; sacredness and secularity (Dasgupta, 1988, pp. 3-7). The question of a dichotomy versus a continuum therefore centres about these various attributes of "urbaness" (Gibbs, 1961, p. 467).

Duncan (1961) undertakes a critical investigation of the continuum, and finds that size is assumed to be a key component by which to classify on the continuum. He points to

the heterogeneity of communities, as in white versus non-white yet a main definition of urbanism is size. When demographic characteristics such as gender, age and mobility; socio-economic characteristics such as income and education; or family characteristics are factored in, the continuum does not hold exactly (Duncan, 1961, pp. 490-502).

Problems with a dichotomous conceptualisation are manifested in metaphors of the 'dual city,' and help to demonstrate the difficulties with a rural-urban dichotomy. The dual city has many formulations, and is most frequently invoked to suggest the polarisation of society, perhaps first in Disraeli's *Sybil*² in 1845. They share a reference to a division of society, where one part is doing well, and one is not. There are problems: this is a vague and shapeless metaphor; it suggests a continuum along a single axis of consumption with quantitative rather than qualitative divisions; it is ahistorical, obscuring what is constant and what is new; it ignores or mischaracterises the position of the majority of the population; it plays into the underclass fallacy and obscures the role of racism; it supports the conclusion that the redistribution, rather than changes in the causes of the undesired distribution is the desired solution; and it distorts the perception of the coalition that may be formed to deal with those causes. The advantage is that it points to a real phenomenon. It further describes a result, not a relationship. Marcuse suggests the quartered city as a substitute metaphor that reflects reality, mirroring the deep sense of division throughout society, and further suggests the action at hand (quartering). A drawback to this new metaphor could be that it is merely substituting four divisions for two. The quartered city conception needs to

² Disraeli's treatise on the dynamic between the 'two nations' of the rich and the poor in 19th century England.

continue the emphasis on relations among the other divisions, and recognising internal cleavages where the ruler is ruled. Finally, the number of divisions is variable: there may be more or less than four divisions. So, Marcuse wants to divide according to who uses the city – in his example, the luxury city, the gentrified city, the suburban city, the tenement city and the ghetto. The final problem with the dual city metaphor is that with two divisions, both will want to be the one ‘in the light,’ it melds the interests of all but the poorest together, obscuring the real relationships of power and profit (Marcuse, 1989). For these problems of a dual city, the present paper is not suggesting that there is a simple bipolar division between rural and urban segments of the city. Rather, there are various elements of inequality, that may differ between different rural areas, and indeed may be shared with some urban areas.

Another way of looking at it: Regional Cities and urban fringes

There is a proposition for the development of a category of exurbs that are not quite suburbs, not urban, but not quite yet what would be considered intuitively rural. It is more a transitional zone between the dense urban suburban settlement and the very sparsely settled open countryside (Melton, 1983; Wolf, 1999). No other definable space in North America has as much conflict, contest and change as the rural - urban fringe. It is a space of up to 100 miles around a city, and its development is linked to the expansion of highway systems, cheap land, the flight from cities, the footloose nature of modern economic activities, and Internet homeworking. The space is contested by industrialists, retailers, hobby farmers, wealthy commuters, poor service

workers, commercial farmers, conservation agencies, and eco-activists (Furuseth and Lapping, 1999).

The countryside surrounding urban areas is one of the most critical areas of the human ecumene, containing resources vital for human society, both for present and future generations. Many urban centres are located in regions endowed with excellent agricultural resources; and aggregate resources such as sand and gravel are most valuable when found close to the major markets, the cities, because of transportation costs; groundwater resources in such zones may sometimes prove significant in determining levels of urban growth; the landscape possesses amenity value and constitutes a major recreational resource for urban populations; and of course, the vast bulk of the developable land needed to support expanding urban populations, economic activities and infrastructure will be found in the countryside currently surrounding cities in most countries. The land and resources are subject to competing, often conflicting demands. There is a particular form of settlement organisation characteristic of the post-industrial age, the regional city, a system that has been expanding into, and becoming integrated with countryside, so that the countryside is an integral part of this settlement form. The city's countryside can also be thought of as an environment itself, a complex system, with various dimensions: natural, economic, cultural, social and political. The regional city consists of a concentrated built-up part, and an open, dispersed part. It is a spatial organisation that Lewis Mumford finds repugnant, and characteristic of the regional city is a scattering of natural environment areas in the built up city and of urban related functions in the open

environment of the countryside with a mix of nodes of intensive land use and human activity scattered amidst farmland, woodland, and sometime swampland. Smaller cities, towns, villages, new communities, country estate subdivisions, and ribbon, crossroad, and isolated developments all occur within this space, and there is a wide choice of possible living environments as existing small cities, towns and villages, farmlands, forests, land abutting lakes and streams, and hillsides, are all potential living spaces. The pattern of flows, while largest toward built-up city core, is as well cross directional oriented to activity nodes. The fringe is a zone of transition in land use, social and demographic characteristics, lying between the continuously built up urban and suburban areas of the central city, and the rural hinterland, characterised by the almost complete absence of non farm dwellings occupations and land use (Bryant, Russwurm & McLellan, 1982, pp. 3-12).

The geographical dimensions of the fringe are roughly as follows: 1) the inner fringe, an area adjacent to the built-up city and its suburban zone where most building additions to the city will occur, and is seldom more than 10 km from the contiguous built-up area, often within the administrative boundaries of urban centres; it may already be serviced by trunk water and sewer in anticipation of growth. The urban land market is dominant. 2) a commuting zone of 80 km or more, it includes the outer fringe and urban shadow, and features competitive urban and rural land uses such as agriculture, rural non-farm residences, hobby farms, recreation sites, mobile home parks, aggregate and quarry mineral operations, town and villages, and other land uses. Each element of the natural environment is under stress. It is a collective action

problem: with individual versus collective actions, private versus public goods; equity versus efficiency considerations; and economic versus cultural values, including aesthetic and ecological values, all in competition. Needs from the socio-cultural system that arise in the fringe include changing lifestyles, a search for improved quality of life, increasing interest in environmental quality; and conflict between individuals and groups (farmers and exurbanite residents; new residents with urban oriented ideas and old residents who prefer things to remain as they have been in the past); or between farmer/residents and speculators or resource extraction interests (Lyon, 1983, pp. 8- 11).

The stereotypical view of the fringe includes several components: 1) a previously rural agricultural component, with a good agricultural land base and a closely-knit rural community. 2) an area encroached upon by urban interests (private developers and speculators) 3) an “invasion” by urban and suburban people whose ties and roots are effectively in the city, and 4) an area where conflict is endemic (between old-timers/newcomers, villagers/urbanites, farmers/developers) (Beesley, 1981, p. 87).

Beesley argues that this is false in a number of cases, that there is a process of maturation in areas that undermines the stereotype, and therefore that we must adopt a more dynamic adaptable view or perspective. Specifically, there is a shift from encroachment or invasion to a more developed or mature area, with increased land use and development control; increasing costs associated with living in the urban fringe; and a process of social and community development. “A widely accepted interpretation of residential development in the urban fringe is that it is strongly

motivated by the attraction of various aspects of rural living. Yet what is often ignored is that the attraction has been influenced by a rural sentiment that is deeply entrenched in urban and bourgeois western culture. This sentiment has been exploited in ways that have stylised the fringe landscape and moulded our perception of its role in urban society. This has encouraged a consumerist attitude to the fringe and has contributed to its persistent ambiguity.” Numerous surveys “uncover” the appeal of the rural life (Bunce, 1981, p. 109).

Effects of exurbanite settlement in rural areas include such manifestations as hobby farms, country estates, and residential subdivisions that emerged on farm land, wildlife habitat and other rural spaces in an often haphazard, dispersed fashion. For example, the Niagara area and the Okanagan Valley are synonymous with such negative consequences. This represents the loss and fragmentation of prime farm land, but the impact of development on the economic viability of farming operations in fringe areas were not the only concerns: rising rural land prices, property tax inequities, public servicing of scattered development, land use conflicts, socio-political tensions between new and old residents of rural areas, and disruption of the environment are further difficult issues (Lyon, 1983, p. 4).

The rural-urban fringe includes various dimensions and systems. By definition, it is

... an open, process-response system, in which the centrifugal and centripetal forces of urbanisation and the contrast between economic and social utilities results in a set of socio-economic accessibility and land-use characteristics that collectively describe a distinct internal morphology. The boundaries of the system fluctuate over space and

time reflecting the strength of 'fringe processes' and the nature of the bounding urban and countryside system. (Troughton, 1981, p 236)

This suggests that it is a region embodying normal processes of urban expansion. But not all definitions are so neutral. For example, the urban fringe

... is best understood as a broad but temporary mobile belt, wastefully consuming farmscape at its outer edge and expensively being converted to townscape at its inner edge. In the years that elapse between the successive passage of these two edges through any given point, it has been the scene of hopes, satisfactions, and subsequent disappointments, the scene of profiteering, lost livelihoods, and environmental despoliation, the scene of a colossal haphazardness. It has been the mid-twentieth century's experimental type of settlement, made possible by the combination of affluence and automobility, as as the century draws into its last quarter we are approaching a general consensus that the experiment has failed. It has failed on a grandiose scale, since it has coincided with the period of most rapid population growth in Canada and also with the period of most rapid urbanisation (Coleman 1977, p 29).

Compared to Troughton's analysis, Coleman argues in the same vein as Sim, suggesting that the rural is in grave danger from malevolent urbanising forces. Whether or not such a degree of alarm is warranted likely depends upon the attitudes within a specific locality, however.

Much of the literature tends to portray a stereotypical image of the fringe. It is an image of a rural agricultural area with a good land base and closely knit community, encroached upon by urban interests whose ties remain in the city but whose activities have introduced a host of problems for rural areas; this does not address the question of mature fringe areas. Geographic factors are key, but not alone: while people may not prefer to live in big cities, few want to live far from one. Demographic, economic,

technological, socio-cultural and public policy factors are also important and the interaction of these factors is complex. For example, demographic trends include a migration turnaround, showing a return to the rural. Other demographic considerations for this return include a) age profile of the population b) changes in household structure, and c) rural demographics. Economic factors include the proximity to the city, which entails lower costs and competitive activity. Socio-cultural factors include: pull factors such as the attractions of rural atmosphere (physical setting, quiet, friendly people, privacy, less crowding, better place to raise children; proximity to services and or major urban centre; lower taxes and cheaper land); and push factors such as crime, pollution, crowding, and the hectic pace of life in the cities. The treatment of land as a commodity rather than resource (the assertion of individual, property rights) means that actions of individuals can collectively produce negative externalities at the rural urban fringe, while counter trends suggest that things valued most become hollow promises under pressure from growing population. A second counter trend is a strong impetus for conservation of natural resources, and a third is a gentrification (back to the city) movement in some places (Lyon, 1983, pp. 12-26).

Considering technology and fringe development, effects of public policy include hidden subsidies that can promote fringe development: good roads, public utilities, provincial and federal programs to help farming can encourage hobby farming or part time farming; however, planning, servicing, and regulatory options can contradict each other and can incite competition between local governments. This is supposed to be mitigated in Ottawa with the amalgamation, however, with the NCC as a form of land

control body, this may still arise. Unanticipated consequences of fringe development include restricted development zones, leapfrogging development. In the end, cooperation and integrated planning among the various public agencies and governments involved in fringe development are needed to manage resources of the fringe in a rational, long term manner. It is not so much a question of whether there will be an urban fringe: it is a component of the regional city form. The real question is whether it will be used well (Lyon, 1983, p. 26-29).

There are several issues to this question of good use. First, urban uses are worth more economically than 'natural' uses. Second, rural amenity areas (or public access, at least) are lost to the activities of developers. Third, conflict from multiple land uses generates stresses on natural resource base. Fourth, there are problems in rehabilitating and encouraging more rational use of land. Fifth, pollution and ecological damage: rural subdivisions can contribute to a loss of slope stability, altered drainage courses, depletion of groundwater, ground or surface water pollution from septic tanks, and the loss and fragmentation of agricultural land. A high proportion of Canadian land is held by investors and rented to farms, thus it remains under the plough pending development. This short term uncertainty discourages sound management of the land. The effects on the viability of farm operation nets a rise in property value which is incentive for farmers to pack it in along with increased costs from various inputs, regulatory restrictions on agricultural activities. So while agriculture may be a 'best use' of land in the context of resource management principles and the long term public interest, however, it is often not a competitive activity in the shorter term context of

the operations of the economic system, where the concepts of 'highest use' and of land as a commodity prevail, as in tax increases brought by service provision to exurbanite population (Lyon, 1983, p. 26-35). These are indeed issues brought up by the councillors interviewed.

In the process of change that is the urban fringe zone, Fitzsimons notes that no community is static, and there are three main sources of resident concerns. First is an influx of a largely exurbanite population, many with different needs, interests and expectations than the existing population. Many bring preconceived notions as to the place to which they are locating, resulting in problems of adjustment in both the existing and newcomer population. Exurbanites have to adjust to realities of living in a rural environment, and reconcile differences between their preconceived images and reality. The rural population has to adjust to new and different neighbours. It is also a disruptive force at the community level, changing existing community institutions and causing the evolution of new institutions and groupings that more closely reflect the changing reality. In the transition is where issues remain unresolved. Second, policies and actions of government and agencies at the local, provincial and federal level, which combine to influence the rate and nature of change in fringe communities are a source of concern. Such policies and actions may often be in conflict, and lack the co-ordination and the means to deal effectively with the changes taking place in the fringe zone. Third, there are a multitude of factors external to the fringe environment itself – regional, national and world levels of the economy influence rates of in and out migration and the structure and vitality of new and existing economic activity

(Fitzsimons, 1983, pp. 1-4). This is true also in Ottawa, with the telecommunication industry's intimate connection to global markets, and susceptibility to fluctuations in it.

Problem areas are for the most part double-sided issues. For example, while land is too expensive for new farmers, retiring farmers like high land prices. In the case of absentee ownership the question is whether to develop, or to maintain low rents. It is a nearly impossible question when posed as which choice is good or bad. Similarly, a valid aim is to preserve farmland, but set against that is the eventual need to find land upon which to build. In the loss of a policy voice, there was a strong feeling that the planning system in Ontario favoured powerful organised interests and that individual residents and farmers stood little chance. In terms of rural etiquette, the rural residents thought that the exurbanites should try to fit in, but on the part of the exurbanites was a sense of disillusion by the lack of expected friendliness, and a difficulty in cracking the social structure. In this context, it may be time for community activities; but attracting individuals from both sides of the divide is a difficult task. Simply living in a rural area does not provide enough of a common link to yield a cohesive voice (Fitzsimons, 1983: 26-37).

Fitzsimons argues that problems stem from the modernisation approach to the management of change, and outlines the different processes of change based on a modernisation model versus a community development model, as presented by Stinson (1981). The objective of the modernisation model is to transform a nation into a modern state, where the community development model's objective is to meet the felt

needs of communities. Impediments to change are seen as “progress” hampered by “traditional” society, versus people lacking motivation, resources and mechanisms to improve their lot. The problems are defined in the modernisation model by the élite, and deficiencies seen in substantive areas (i.e., agricultural production, health, investment capital etc.); and each approached through a separate bureaucracy; where in the community development model problems are self-defined, tend to be holistic (i.e., problems seen in one area related to others); life centred; and priorities determined by the community. Modernisation goals tend to be short term (typically five year) plans with defined targets in order to catch up with standards set externally, versus immediate project goals seen as steps in evolutionary process, to an end not clearly defined but including human betterment. Goals are set in the modernisation model as political and expedient with the aid of technical experts (often expatriate consultants), in contrast to an indigenous process of discussion and consultation seeking consensus. Power, in the modernisation model is derived from government authority based on mandate of periodic elections, versus the sapiential authority of people most affected by the decision to be made amidst continual feedback. The modernisation model has a strategy for change that is usually utilitarian, but may be coercive for minorities, combining carrot and stick; whereas the community development model is usually normative, depending upon goodwill, education and raising consciousness. The tactics of change for the modernisation model are generally the provision of direct state services through a bureaucracy; infusions of resources and technology, as opposed to a tactic of self-help toward a better use of local human and natural resources, and the application of outside resources to augment community

lacks. The role of education in the modernisation model is in the form of mass formal education; with higher education to meet the needs of the modern state, compared to non-formal education on experimental level, with learning by problem solving. Finally, the modernisation model evaluates success by the degree to which quantitative goals of a plan are achieved such as the growth of GNP etc. in comparison with some international standard, where the community development model evaluates the degree to which people developed capability to solve their own problems and satisfy needs (Fitzsimons, 1983, p. 38-40).

Stereotypes and Myths

The urban fringe plays into a form of a 'rural sentiment.' The fringe is an idealised rather than a real environment, idealised to a product of a mythology that has grown as genuine rural experience fades from our memories. It is thus a manifestation of an underlying reverence for rural environment and culture, and with the growth of urbanism, this has been nurtured by art, music, literature, Madison Avenue and the mass media: nostalgic, sentimental, and romantic, and thus yields the dichotomous view. The sentiment for the countryside is in contrast to the environment of the city, and has classical origins; such as the "delight and luxury" of Theocritus' countryside and Virgil's "Magical Utopian vision" of rural ease and abundance (Williams, 1973, p. 29). But it is really a landscape somewhere between the opposing forces of artificiality and nature, rather than a Jeffersonian dichotomy between rural good and urban evil, where farmers are the chosen people of God, and an integral part of the ordered rural

garden. The rural contains, and is itself, symbols of the past. In Hesiod and Aristotle, the rural life is moral, virtuous and simple. Despite these characterisations, the agrarian image of the good life, purveyed since Jefferson, was remote from the way of life actually led by most. Rural sentiment is a rural stereotype, the product of cultural attitudes which idealise landscape and society beyond the city, and this is most apparent in the fringe treatment as it is the most accessible of 'country' areas that the rural mythology of urban society has been projected to a residential estate, for example, where "a Madison Avenue executive can become Tom Sawyer for a few blessed hours each weekend." There are various local expressions of selective images of what constitutes a country retreat. This sentiment is exploited in fringe development, in efforts to transform our perceptions of the role of the fringe in general. The essence of this is a consumerist approach to the fringe in which country living is promoted as a kind of acquisition of an affluent society. The key is property value, where prestige and investment value is increased by the extent to which it matches preconceived notions of a perfect country retreat. Status symbols include symbolic value. Consider the recreation of an antique image for small town main streets, also known as heritage conservation. Advertising is a key force as well, as a primary aim is to manipulate attitudes and implant a certain conception of life, and ultimately to create needs. The advertising content exploits values, and then distorts those values to create a myth. Rural imagery is used to promote items that have no particular rural connection. Therefore, marketing the fringe is selling a concept rather than a reality. There is further ambiguity in the confusion between role and purpose. This yields planning problems with dual plans to zone and service good farmland for

residential development, and to preserve prime agricultural land. Town councils at the same time call for an improved tax base and bemoan the threat to the identity of the community. There is an attraction to rural values in real estate ads, but coupled with a demand for convenience and conformity of suburban style subdivision. Thus, they are residents of rural estates who value the view of an agricultural landscape, but press for the removal of the odours and structures of modern farming. And, by their use of the term rural-urban fringe, it is academics that have perpetuated the ultimate ambiguity (Bunce, 1981, pp. 110-118).

Much of what has been written about rural life and landscape is romantic and at times utopian. Yet the sheer volume of literature and the passion with which it has been written and read reveals the great importance of ruralism and pastoralism in many societies (Bunce, 1982, p. 14). Marx (1964), in the seminal text on this theme, traces the contrast between idealised rural peace and simplicity and urban power and sophistication in Theocritus' first pastoral poems, Virgil's Eclogues, Shakespeare's *Tempest*, by Nathaniel Hawthorne in 1844 writing in his "Sleepy Hollow," Jefferson's musings on the rural as a moral compass, and in Pope's coining of the now overworked phrase "the annihilation of space and time." Marx distinguishes between a popular and sentimental form of pastoralism, versus a more imaginative and complex version. The former is a mere longing for a simpler way of life, a nostalgia for an idealised country life, and ultimately simple escapism from the trials and tribulations of industrial life. The latter, as a literary form, serves to clarify the contemporary condition, by setting what is against what may have been in a normative mode (Marx,

1964).

Whatever the application, the concepts of “rural” and “urban” engender particular stereotypes. The stereotypes tend to hold the rural person as religious, insular, a family man, ignorant of world affairs, and a servant of tradition. In contrast, the urbanite has dismissed the gods, is a stranger to all, is creative with little care for matrimony and less for progeny, all knowing in his own way, and contemptuous of anything that happened earlier than yesterday. While these stereotypes are certainly not reflective of the reality, stereotypes tend to hold an element of truth. Furthermore, these stereotypes are reflected in census data and research, as cities and their inhabitants are regularly studied without reference to rural populations, indicating the full impact of urbanisation on man and his culture. Thus we can ask: “how have the socio-cultural aspects of man’s (*sic*) existence changed with the course of civilisation?” (Gibbs, 1961, p. 462).

Stereotypes of the rural and urban are enduring, and while Marx did not explore the stereotypes so much as the theme of pastoralism, they too have existed at least since the time of Aristophanes, where, in the Aristophanic world, there was an apparent perceptual opposition between urban expertise and rustic values. The expertise of the city was characterised by sophistication, skill, and swindling; and the development of these particular aspects is embodied in Dicaeopolis’ character in the transition from country to city in *Acharnians* (Compton-Engle, 1999). In counterpoint, rural dwellers in a print from 17th century Netherlands travel to the city to conduct business in the

market, while the opposite flow of city dwellers is for recreation. In its entirety, the print appears to glorify the town and its life, while the country presents an attractive, yet dangerous freedom (Honig, 1996).

In the American context, and arguably the Canadian, the rural holds a romantic, nostalgic view that heralds a positive stereotype of honesty, religiosity, and strong sense of individualism. At the same time, though, the stereotyped rural dweller is naïve, unsophisticated and ignorant (Melton, 1983, p. 1). Despite this duality, the subjective characterisations of the rural tend to be more positive than objective considerations (Korte, 1983, p. 213). Indeed, Sim (1988) writes a prototypical paean to the lost world of the rural life, the good life in the countryside. Indeed, it is a lament for all that is vanishing before the onslaught of the urban world, by a sociologist aged seventy-six at the time of writing, reminiscing about the “good” old days. Sim works to identify some traditional rural values that remain relevant, “as we ride on the momentum of the post-industrial world” (Sim, 1988, p. 2). Similarly, writing from the British experience, Green (1971) argues that a nation of town-dwellers holds country life and traditions in high esteem, where the countryside is seen as a natural phenomenon to be protected from the pressures, economic and social, of the towns. Country life is generally seen as uncomplicated, with direct and real values compared to the apparent sophistication and superficiality of urban life. This nostalgic or stereotypical view may suggest that while a great many indicate that they would prefer to live in the country, the population concentrates in the city (Korte, 1983: 201). Thus, mythologies of the city suggest that it is either evil, crime-ridden, smelly, crowded,

embodying all the ancient evils back to Sodom and Gomorra, with plenty of new ones; or it is flush with amenities and opportunity for stimulation, and economically enticing. Similarly, the rural life is good, simple, and peaceful; but it is a dreadful place to earn a living, with only hard work, a lack of conveniences and prying neighbours. The myth of the rural explodes without warning, as the elements of suburbia appear, amid tumbledown barns, abandoned silos, overgrown fields, bankruptcy sales and closed stores (Sim, 1988: 24-5)

Continuing on the theme of myths, Nye (1994) presents a history of technology from a social context perspective, evaluating how new objects are interpreted and incorporated into the fabric of social life (p. xv). The technological sublime, first articulated in Perry Miller's *The life of the mind in America*, and elaborated by Leo Marx, is the investiture of items of human construction with a transcendent significance. Nye argues that the technological sublime has been a defining ideal of a diverse and pluralistic American society. Contrast the technological sublime, where machines evoke a sense of wonder, to the natural sublime where phenomena such as Niagara Falls do the same. The difference is that the constructed sublime has as a central component the sense of progress, or of human advancement.

Thus, the introduction and proliferation of constructed phenomena such as the railroad, bridges, skyscrapers, factories, and electricity all had a power to awe the population, and instil a sense of wonder, and significantly, the idea that the world is immeasurably improved for their existence. A similar effect appears to stem from

advances in information and communication technologies in the hype and vast wonder at the possibilities of various incarnations. With information and communication technologies, as with almost all other technological advances, the potential for advancing the human condition is heralded, and consequently, the facility of the technology to foster development – socially, politically, and economically. The relation of information and communication technology to development in the rural is explored in the next chapter.

Chapter Three: Technology, development and the rural

It is a peculiar matrix of conditions that makes the embracing of high technology and information technology activity seem appealing to those involved in promoting or advancing a given area's economic potential and performance. Contemporary society's apparent adoption of an "information age" or "information society" paradigm is central to this. Concomitant with this paradigm is a sense of directed development or advancement, reminiscent of 1960s modernisation theory, in promoting information technology enterprise to advance a given area's economic prospects.

The Information Society as a problematic

The notion of the information society, or an information economy is widely claimed. It does seem that there is a shift occurring in the role of information based enterprise, in that its importance is increasing in relation to traditional industrial and agricultural modes of production. However, it is questionable that society as a whole is undergoing a reorganisation that would render it an information society.

There are five analytical categories of definitions for an information society. The most common is a technological definition, which, at its most simplistic, takes the application of information technology across almost all facets of society. In a more developed form, technological definitions take the networking of computers,

universally linked to become the railways and roads of an information society. The problems with these definitions are of measurement (how is information technology counted, and how much of it makes an information society), and of inherent technological determinism, or holding that the asocial phenomenon of technology expansion defines the social world. Bell (1973) is a prime example of this definition, as is Toffler (1980).

Another definition takes the economic value of information activities as the base line. The argument is that producing goods has given way to producing knowledge or information as the primary economic motivator, as in the arguments from Machlup (1962) and Porat (1977). However, information activities are difficult to separate from the rest of the economic process. As well, the qualitative distinctions of information activities are subject to interpretation – a librarian and a quantum physicist both deal in information, but in qualitatively different manners. Further, information is intrinsic to industrial production, in the various elements of product development, production, and distribution.

An occupational definition marks the onset of an information society when information workers outnumber industrial workers. This is at the heart of Bell's (1973) theory of the benign post-industrial society. This category of definitions is often linked to the economic versions, and a similar problem exists – how to classify workers into a valid category system, as Porat tried to do. Again, the categorisation is a matter of interpretation, as homogeneous category headings can contain heterogeneous groups

of occupations.

Defining the information society spatially emphasises the information networks which connect places, and have as a consequence effects on space and time – the death of distance thesis. The emphasis is then on the flow of information as the harbinger of the information society. A recurring problem in definition rises again: setting the threshold of information flow at which the information society is manifested, such as Castells (1989). This approach, besides the lack of a clear overall picture of the operation of these networks, suffers from a tendency to neglect the incremental increases in the flow of information since the first letter was posted (Webster, 1995).

The fifth formulation of an information society is the increase of information in social circulation – a cultural definition. A frequent indicator is the volume of content in multiple media, such as the telephone, television, and the Internet. Ubiquitousness is a key signifier for this formulation: there is so much, therefore this must be the information society. A second aspect of the definition is that of signification; as in Baudrillard and Poster's formulations. The problem again is setting the threshold and measurement of the signs (Webster, 1995).

These definitions all call upon qualitative variations in the meaning of information – from bits to signs – and methods of quantifying it. Despite these difficulties in defining an information society, the term has found its way into popular discourse. Thus, it would be facile to argue that the notion has no merit. Rather, it should be approached with caution, and avoid the assumption that there has been a radical disjunction in

social organisation. Rather, characterising the process as a continuity where the use of information is increasing in an ongoing, historical process of social relations makes more sense. Without holding every premise of Herbert Schiller, Jürgen Habermas, and Anthony Giddens as the truth, or suggesting that they agree on key issues, their arguments tend to hold an increasing role of information as a component of social processes, which is an effective antidote to the uncritical assumption of a fundamental shift to an information society.

Thus, with this proviso regarding the state of the information society, it is possible to speak of the implications of information and communication technologies without losing sight of the fact that these technologies are grounded in and shaped by the social realm. Further, granting that the information society argument pertains mainly to the modern, western, advanced industrial experience, still relevant is the fact that the “information revolution” has reached a minuscule segment of the world’s population – at most 5 percent, while about 80 percent of the world’s population has never even made a phone call (Graham, 2000), and as an indicator of the disparities, Manhattan has more telephones than in all of sub-Saharan Africa (Sussman, 1997, p. 231). In the relevant sphere of experience, information technology based production and economic advance seem to focus upon the development and extension of the infrastructure, rather than on the development of relevant information. The greatest and most consistent advances are in the hardware of the various information technologies, while content remains largely adaptations of traditional media. Admittedly, there is an enormous amount of information available, but that there is not a qualitative shift in

the character of the information. For a readily accessible example, the information and knowledge sharing potential of new media technologies, both in wired and wireless incarnations, is strongly oriented to facilitating shopping, other commerce related activity, and entertainment pursuits. This does not herald a qualitative change in the way industrial society operates: it merely speeds it up by increasing the presence of opportunity to be a consumer.

The problematic goes further than arguing whether or not there is a shift to an information based society. The relevance of interrogating the information society premise lies in its adoption as a fundamental premise in understanding city processes. By making the blithe assumption of the existence of an information society or economy, it becomes all too appealing – attractive, even – to frame the processes of the city within a limited world view that does not maintain an awareness of non-information society elements. In real terms, this means that in a city that has adopted the information society paradigm, citizens who are not involved in that particular mode of production face the possibility of being marginalised, and left out of the new networks of power and participation.

The Informational City

Castells' informational city is a concept that takes the city as being reformed in its fundamental elements by the installation of information technology infrastructure and related professional employment. In the process, technology professionals rise to the fore, and in their shadow fall the more menial service related industries. The city

becomes a mechanism to support the activity of the informational elite. Places in the city are not as important as the connections of the city to the wider global information network infrastructure. This is an element of the tenuous argument that place does not matter anymore, that cyber-reality is eclipsing physical reality. The problem with this conceptualisation misses the importance of place. It is one thing to present the wired or informational city as the harbinger of the future (or even as a manifestation of the present), but to ignore the importance of place in people's daily life is a mistake. A cyber existence, while perhaps attractive to the futurologists who foresee humanity as a collection of connected, wired brains with no need for the body or physical experience, is likely to be looked at askance by the non-wired members of the city, who certainly outnumber the wired professionals. The hypothesis, in short, is that the spatial expression of a new form of social organisation is made up of technology, cultural information, and social information, as well as their interactions (Castells, 1989, 1991).

Castells' framework, though not perfect, provides a good starting point for understanding the intersection of technology and communications with the city. In an informational city, the core issue is that people, activities and cultures that are not valued could easily be switched off the network, and excluded from participation. In a city where the only meaningful places are those associated with the highest functions, the space with meaning for only a few tends to be the space of exclusion for most. Thus, between the discontinuous spatial elements of the informational city, there will

remain switched off, wireless communities³. These are still real people in real places, yet they are transformed into urban shadows, doomed to haunt the ultimate urban dream of the new technocracy (Castells, 1985, p. 13-19).

A further merit of Castells' analysis is his eventual insistence that space, society, and technology can only be understood in the social framework; that is, by asking what is going to happen with regard to people, institutions, and location; who is going to control this intersection, and how all this fits into broader frameworks of social relations (Castells, 1991, p. iv). Thus, the informational city is not so much the city as it relates directly to the information technologies themselves, but the city that could parallel the industrial city as it developed from the industrial revolution. In the same way, the industrial city is not merely the city where industry is located, but the city which has the spatial and social form that corresponds to a number of social and techno-economic processes, which form a coherent ensemble of material and cultural structures that provide the basis for a new spatial form.

Castells argues, in the same vein as Bell, that the process of change in the technological revolution is based on information, which involves the manipulation of symbols, which in turn demands intelligence and hence the human mind, and so finally it involves culture. The importance, then of this revolution is that for the first time productive forces and the cultural society have become directly tied and interdependent, even though other technological revolutions had the intelligence and

3 Note that wireless is the dream of the new net generation. A more relevant description would be "unconnected," or perhaps "un-networked."

information component. The information revolution is process oriented rather than product oriented, with less emphasis on the development of new products than on the focus of the technology in the process itself. This sounds the alarm bells for technological determinism, in arguing that a revolutionary change of the technological paradigm is intimately linked to the change in the material basis of our social structure.

Castells' general proposition, in vague terms, that cities and regions, spatial forms and spatial processes are directly affected and transformed by the technological impact of the information revolution is an ideological argument. It sounds like a prophecy that information technologies and telecommunications will mean the end of cities as dense agglomerations; and that the telecommunication/transportation trade-off will result in undifferentiated agglomerations in which people will stay home and work through computers and telecommunications. This is a traditional 'end of the city' ideology linked to the immediate extrapolation of the effects of information technology on spatial forms and processes. However, experience indicates that this is misguided. Consider New York City, where the growth of telecommunications has increased the concentration of business transactions and therefore of office space in Manhattan particularly, because the concentration results in demand for sophisticated telecommunications. Despite forecasts of a suburban world where everyone stays home and plays on their computer, culture has fortunately overcome and harnessed technology. In Castells' example, LA without Minitel is still an endless suburb and Paris with Minitel is still a dense, active urban place (Castells, 1991, p. 2-5).

Castells argues for understanding the economy as processes rather than statistically rigid categories, as most service activity is dependent on the functions it performs for manufacturing, agriculture, and the production of symbols or goods. The key element is that most of the labour force increase in our societies is in information processing, as a component of most activities. The manipulation of symbols, ideas and knowledge has become the core of our economy, a claim that Castells bases upon Porat's (1977) problematic study (Castells, 1991, p. 6-9).

There is a dual development through information technologies of macro networks through telecommunication, and micro networks through face-to-face interaction. In the simultaneous flexible processes of centralising and decentralising, there is a move to connect functions that are not footloose and link them in one unit through space. This results in the formation of the space of flows versus the space of places, where flows are abstract in social, cultural, historical terms and places are condensations of human history, culture and matter. Castells argues that there is a move from a materially constructed, historical space to a technologically deconstructed space based upon the ability to constantly reprogram according to the interests of the different interactive elements in the process of flows. The labour force is a combination of the skilled and the unskilled, who do not mix in either functional or social terms (Castells, 1991, p. 12- 15).

In a space of flows which supersedes the actual meaning of any particular place there are social consequences of new spatial forms. The meaning of place in terms of new

production management systems is lost in the series of interactions that take place along a network of instructions and commands. The effect on a community has less to do with what happens in the particular place of the community than what happens in the overall network. However, the network itself is not self controlling but is a site of asymmetrical power (not powerless or equal powered). That is, individual nodes along the flow lose their autonomy vis-à-vis the network. Within the logic of the network and flows, place becomes increasingly meaningless – it does not matter where a node is located. However, people retain a desire for a developed sense of place, and therefore become increasingly place oriented and linked to their communities.

Community attempts to control the space of flows stem from a dialectic between a desire for a better life through work and production, and wanting to re-appropriate the result of that effort (Castells, 1991).

Building on the thesis that humans impute meaning to constructed urban places, Allison and Allison (1995) contend that with post-modern conditions the mode of social organisation is changing and that, as a result of this change, a qualitatively new form of space has developed: a mental space called the space of flows or cyberspace. In this new stage, urban planning must be performed in a framework that is both ecological and cybernetic, which demands the nexus of the disciplines of urban planning and communication studies. Several additional implications follow from this claim. Urban science in general rests on a basic premise that the spatial patterns of settlement correspond to the action of deep level forces of social organisation. If a qualitatively new form of space has developed, as is suggested, this implies that the

very mode of social organisation has also changed. The space of flows and the concomitant development of global cities are changing the nature of city inhabitants and the dynamics of urban competitiveness and survival. From Sassen (1991) and Castells (1989), the definition and reality of a successful city are changing, and old industrial determinants are no longer sufficient. For example, happy living is no longer an amenity but an essential factor, and a suggested response is a shift from modernist thinking concepts that focus on functional principles to those involving a normative approach that recognises the role cities' residents can and should play as participants in modifying spaces, in an ecological cybernetic system that is interconnected and interdependent and in which no single variable is a determinant. Culture and communication analyses use a sense of place to define an intellectual, emotional or visceral feeling of comfort, coherence, appropriateness, usefulness in context, and aesthetics. This sense of place comes from empirical experience, from Hall (1966), the human experience of physical place is constituted by sensory experience. A sense of place also stems from analogical and digital symbols that either represent the object signified (as in a map), or are arbitrary designations, with no direct perceptual relationship to their objects. Imputed meanings also contribute to a sense of place, with denotative and connotative meanings that buildings do not intrinsically have, but end up possessing by virtue of humans' understanding of a given space and arrangement. Finally, sense of place comes from the history and culture that is developed by populations in particular spaces (Allison & Allison, 1995).

Modernisation theory - echoes

The perspective that inserting technological infrastructure will generate benefits to that space reflects technologically determinist modernisation theory, which as developed in the early post World War Two era quickly became a conventional liberal theory of economic development. Western-oriented interpretations of the processes of development emphasised internal aspects of Third World⁴ countries as impediments to their economic development. These impediments were then cast as obstacles to be overcome in achieving economic growth, which in turn was measured mechanically in terms of increasing per capita gross national product, as opposed to more humane measures, such as being able to feed the population. Development or modernisation theorists sought to identify these obstacles, and recommended overcoming the barriers by using wealthy countries' supply of missing elements, such as investment capital, in order to jump start economic development. Once sufficient capital was accumulated to spur on economic growth, the theorists predicted that a general advancement of the society towards the modern western model would occur (Kegley and Wittkopf, 1995, p. 136). For example Cochrane (1965) displays incredible faith in modernity, and in the ability to control all aspects of farm production, even heralding an evolution to factory production with technology as the answer, and the only path, with the final step in the natural course of the technological revolution that people leave the farm and are made available for producing other goods and services. This is the unabashed promotion of modernisation which recurs in contemporary discussions.

⁴ The "Third World" as an appellation is problematic in itself. For the purposes of this proposal, however, the term is used as it was incorporated into modernisation theory.

In a discussion of communications development in a modernisation in the Third World context, Howenstine notes a causation between media availability and development. There are several factors, including urbanisation and economic concentration, as well as increased literacy as urban immigrants are forced to survive in a new society. Alongside this, an exposure to flourishing mass media leads to rising expectations, a development of empathy, or the ability to imagine self-improvement through emulation, and the development of opinions and therefore the rise of political participation. On the flip side, of course, are rising expectations, leading to rising frustrations, resulting in military take-over. There has been an increase in the complexity of modernisation and development theory, such as from Schramm and Lerner (1976), to a second generation, and from the 1970s a third generation with a focus on international and global context within which national development occurs. Development in this context is defined as structural or scalar changes on a regional or national scale, encompassing economic growth and improvements in social well being. This includes the expansion of output and income within a region, the integration of regional economy with diversified employment and entrepreneurship, and improvements of the efficiency of the system of cities in the region (Howenstine, 1991). Howenstine also notes that both modernisation theories and radical dependency theories of repression have valid points (1991, p. 295), in that while applying technology to development can be effective, it should be done with the advancement of the area for the sake of the area, not as an adjunct or resource for another, already developed area. The same concerns apply when harnessing a city's development to technology, as in a technopole project.

Technology parks and technopoles

The notion of the technopole builds on the idea of the informational city and the adoption of an information technology or information society paradigm and some variant of modernisation theory. A technopole's basic function is to generate the materials of the informational economy and it is an urban concentration of infrastructure and industry geared to developing and producing the hardware and software that are currency in an economy based on information (Castells & Hall, 1994).

The development of technopoles is not spontaneous; rather, it is driven by the attempts of 'farseeing' public and private actors to guide fundamental transformations of society, economy and territory. Technopoles are evidence that cities are being profoundly changed, a process involving the three major, interrelated processes of the technological revolution (info tech), the global economy, and a new, 'informational' mode of economic production and management (Castells & Hall, 1994). Though Castells and Hall do not really develop this theme, the purpose of technology parks does seem to reflect development theory thinking and premises adapted to the paradigm of the information age.

Policy literature generated in the technopole regions, journalistic commentary, and some academic literature contribute to a somewhat weak popular conceptualisation of the science park model. A more analytical view would include a practical model of scientific investigation and industrial innovation, an understanding of the particular

spatial form and context, and recognition of the fact that they are property developments carried out by particular agents with specific interests (Massey, Quintas & Wield, 1992, pp. 2-9). A key element of science parks is a set of formal links between industry, education, and research. Science parks, and the linkages have several objectives, including stimulating the formation of start-up new technology based firms, (NTBFs) and to encourage the growth of existing NTBFs and encouraging spinoff firms started by academics. They also aim to encourage and facilitate links between HEIs (higher educational institutions) and industry and to facilitate technology transfer from academic institutions to park firms; to commercialise academic research; to increase the 'relevance' to industry of HEI research; to give academic institutions access to leading edge R&D in park firms; and to bolster the economy. Furthermore, and this is of great interest to city managers, science parks offer the opportunity for employment creation. These causal assumptions are not necessarily borne out, but suggest the parks' role and operation viewed in isolation from the wider environment (Massey, Quintas & Wield, 1992, pp. 14- 51).

A simplistic linear model of innovation contains the assumption at the core of most science parks that research leads to development, which leads to diffusion (science to tech to markets). At a policy level this means a simple effort to increase supply of basic research ideas available for development, and to bridge research for greater and quicker diffusion. For this to be a successful endeavour, a necessary condition is a close link between the early and late stages of development, and spatial proximity

alone does not generate the necessary linkages for success. Further, it appears that in developing science parks, the public sector is the risk taker, not the private investor as the public purse pays for developing infrastructure, inducing investment, and so on, while the private sector can reap the benefits of the development.

In a manifestation of Nye's (1994) analysis of the technological sublime, science parks hold a near mythical significance, given the enthusiasm for the 'new society' and information economies. There is a definite, complex connection between science, society and space, and it is the complexity of this connection that reveals the fantasy of the tautological view that merely inserting technology and funds yields success. (Massey, Quintas & Wield, 1992).

Thus, a technopole is a deliberate attempt to create a concentrated area of "milieux of innovation." This characterisation includes 'spontaneous' historical precedents. Milieux of innovation are social, institutional, organisational, economic, and territorial structures that create the conditions for the continuous generation of synergy, and its investment in a process of production that results from this very synergistic capacity both for the units of production that are part of the milieu and for the milieux as a whole. There is a basic typology of technopoles. Industrial complexes of high tech firms are built on the bases of innovative milieux, linking R&D and manufacturing, and these are the true command centres of the new industrial space. Science cities are strictly scientific research complexes. Finally, there are high technology regions founded in efforts to stimulate new industrial growth. This final category leads to the

question of technology parks acting as agents of economic development (Castells & Hall, 1994).

Silicon Valley is the paradigm of the first type of technopole. From the early twentieth century, the area held historical precedents of technological innovation. In the 1950s there was a high technology industrial base in the establishment of Stanford Industrial Park, while the 1960s saw the growth of innovative microelectronics firms, both as spinoffs and supported by US Department of Defence electronics based programs. The area saw the consolidation of the personal computer industry from the 1970s onward. Finally, the growing domination of the computer industry, internationalisation, and a new round of innovative spinoffs solidified Silicon Valley's position. The Silicon Valley culture exhibits the centrality of work as a primary focus of social activity; a positive feeling towards work as opportunity for innovation; entrepreneurialism; very aggressive competition, as well as extreme individualism. Corporate subcultures are a large part of life in Silicon Valley, as is the idea of compensatory consumption, where spending money makes up for other things in life. This is the definition or factors for quality of life in Silicon Valley. The milieu of innovation is a goal in itself. The Silicon Valley model then contains a) new raw material, b) large amounts of investment capital, and c) the availability of highly skilled scientific and technical labour (Castells & Hall, 1994, pp. 15-27).

However, the combination of individual economic affluence and collective environmental degradation has led to acute pressures on scarce land, and there is a

sharp socio-spatial segregation. There are also severe transportation problems due to the enormous volume of commuters in a sprawling area relying on individual automotive transportation. The explosive growth in Santa Clara has met with an increase in social problems, as well as leaving few traces of the area's agricultural past. There is an unusually large proportion of professional and managerial employees alongside an equally large, but minimally skilled, production workforce, a configuration which shapes social structure and urban geography. The urban landscape mimics the social order of the economy and workforce. The rapid expansion has rendered San Jose a bedroom city, amidst congestion and traffic stemming from an inability to cope with the expansion. In light of these problems, Santa Clara county has instituted controls over industrial growth, and has attempted to address the cost of living increases (Saxenian, 1985, pp. 81-91).

In spite of the problems engendered in the Silicon Valley model, the assumption of an information society has led to the adoption of the paradigm in projects to revitalise or spur regional economies worldwide. Castells and Hall detail numerous early examples of technopole programs. For example, Boston's Highway 128 region is a paradigm of high technology reindustrialisation. The area is at heart a military industrial complex, influenced by the patterns of US military spending. By adopting a high technology focus for economic activity, the aim is to generate a sustainable, stable rate of growth – a new mode of development, tied more to the perceived universal demand for information services and products than to cycles dependent on US government defence priorities and spending (Castells & Hall, 1994).

Another version of the process is the development of science cities, an interesting, and perhaps oxymoronic, notion of “innovation by design.” The assumption inherent in science city projects is the added scientific value of spatially concentrating resources and institutions. The experience of various science cities is clearly that spatial proximity, as a development plan, does not work without effective linkages and social milieux such as in the flawed Akademgorodok experiment in Siberia. Another variant, technology parks, is a type of technopole within a city. These more resemble new style industrial districts than innovative milieux in the Silicon Valley model. As an example, Cambridge, UK, was seen as a rural backwater until technology enterprises took off in the 1980s, and the area now contains several campus style technology parks (Castells & Hall, 1994, pp. 84-111). Japan undertook an intensive technopolis program to preserve its hard won spot on the leading edge of technology. The general tendency was for the government to institute the construction of the necessary infrastructure, but a consistent difficulty was establishing the linkages between research and production. As well, maintaining the momentum of the capital intensive efforts proved difficult. However, the process continues, as the deputy mayor of Yokohama recently visited Ottawa with the expressed aim of gaining insight into the development of a high technology centred city (Interview with Councillor Doug Thompson, July 3, 2001).

Technopoles are not only technological or business phenomena, they are highly politicised entities as well. Bringing investment and prosperity to an area is a successful political strategy. In implementing a technopolis program, it is common to

provide concessions to firms or individuals that are seen as necessary for the program. While concessions may be inevitable, especially those that are for expedience rather than facilitating a long term, sustainable process, the long term consequences can have negative consequences (Castells & Hall, 1994, p. 193-206). That is, cyber based spaces do not harbour some “value free technological panacea,” but rather tend to be an impulse to polarisation – the social and economic cores and peripheries of the global information age tend to be geographically adjacent with individual regions, rather than separated by continents and oceans (Graham, 2000).

Technopoles are either a mode of reindustrialisation, a scheme for regional development, or a plan to generate synergies between research and production. The technopole experience highlights the need for continuing close links between research and development and production, in Schumpeter’s mode of innovation, or Marshall’s concept of cascading. These elements are necessary to generate corporate innovative milieux. Further, the state and innovation are involved in interventions to support technopole projects; locally, the National Research Council is an appropriate example. Universities serve several functions, as technology generators; in the generation of new knowledge; in the training of a scientific labour force; and with a direct entrepreneurial role in spinoffs. With respect to finance, institutions and the innovative milieu, it is clear that success breeds success. In the end, the Silicon Valley model is in effect mythological, and is certainly not the only, nor the best possible route. (Castells & Hall, 1994, pp. 222-236).

Whatever schema a given technopole falls into, the evolution of the phenomenon tends toward emphasising global linkages rather than the mere spatial concentration of research and development resources within a region. That is, the technopole takes on elements of the world city (e.g., Sassen, 1991, 1994, 1999), the development of which is increasingly reliant on advanced telecommunications networks and services (Leyshon and Thrift, 1997). With the construction of global – local connections between the highly valued spaces of nodes in the global network, the connections of those spaces to geographically proximate, though less desirable, spaces are weakened (Graham, 1999). There is growing evidence that investment and use of communication technologies is concentrated in these city regions (Graham and Marvin, 1996). With the processes of globalisation, Western national states recast their internal institutional hierarchies to play more entrepreneurial roles in developing the infrastructure to accommodate the emphasis on information flows, which intensifies uneven geographical development (Brenner, 1998).

As a departure from the Silicon Valley model, Ottawa is part of a new iteration of the technopole phenomenon (Mosco and Mazepa, 2001). The amalgamated city, incorporating a large rural area, contains a nexus between high technology development and the rural. Trends in global city development indicate that there is cause for concern that the future of the city may be cast in developing its global connections, and thus result in a core – periphery relation within the city, demarcated by the urban boundary. On the other hand, there may develop within the city specialised network nodes, which could refigure the city (Sikiaridi and Vogelaar,

2000). The question of what the high tech industry means in terms of opportunities for the rural suggests discussion of rural development.

Rural development through technology

Rural development tends to be of less importance in Canada than it is the US or Europe, as the priorities of the federal government for rural development have to a large extent been replaced by regional development. Stemming from a lack of agreement on a suitable definition for rural development, there is frequent disagreement on the nature of rural development. The most important issues are agricultural development; land use and regional planning; and agricultural market development. In the process of addressing these issues, many agencies involved avoid each other. Thus, the question is how to develop opportunities in non-metropolitan areas which will support a level of services and social and economic development which is judged adequate by rural people, and determined by rural people (Clemenson, Cummings & Lapping, 1983, pp. 1-4).

In the face of the increasing focus on technology as a mode of production in western society, sociologists studying rural areas have seen the potential for benefit to rural areas, as well as the need to address a disparity in opportunity between wired urban areas and unwired rural areas. In its simplest form, the argument is that by introducing high technology and communications infrastructure to rural areas, the economic decline stemming from an overall shift from primary and secondary economic activity to tertiary and quaternary levels can be mitigated. That is, by wiring the rural areas, they can be given a degree of competitiveness for the tertiary and quaternary activities

and so achieve a level of parity with urban areas. A second consideration for connecting rural areas is that the access to information that the infrastructure could provide is such that it should not be an exclusive privilege of the urban citizens with access to the communications technology. Thus, by casting advanced communications ability as a necessary service, much as electrification and basic telephone service are considered necessary, the argument that access to such technology in rural areas becomes a matter of a right to accessing information technologies and content.

There has long been a call for new development strategies for rural areas to survive economically, given a permanent decline of rural based industries and the increasing importance of information related services; strategies that address the “untapped potential of new telecom services for rural business enterprises.” Statistically, nine percent of rural jobs are in agriculture, 65 percent are in services, and 17 percent are based in manufacturing. Further, few rural economies are diverse in nature. Rural telecommunications investments bring various spin-off benefits, such as price competition, eliminating middlemen suppliers to help lower inventory costs, improving delivery and reducing travel. However, merely inserting technology is not enough, development is ultimately dependent on the uses of the telecommunications technology. Processes such as US deregulation threaten rural service provision (particularly POTS or Plain Old Telephone Service), through the loss of cross subsidisation. US single line service only became universal in the 1990s, with a projection of 25 years or more to digital capability. Thus, policy goals and recommendations should 1) spur new economic development with basic telecom

infrastructure, 2) develop special transition policies for adjustment to the new telecom marketplace, and 3) empower rural communities to compete, with comparable opportunities to the urban areas. The primary goal is therefore to encourage rural telephone carriers to provide affordable access to telecommunications and information services comparable to those in urban areas. Rural development generally depends on some geographic advantage. The structural shift to services is not limited to urban areas, so rural areas now need specialised human resources. (Parker, Hudson, Dillman, and Roscos, 1989, pp. 2-11).

There are certain conclusions regarding telecommunications and rural development: 1) investment in telecom contributes to economic growth, 2) both residential and business telephones contribute to economic growth, 3) indirect benefits of telecom generally greatly exceed revenues generated by the telecom network, 4) Rural / remote areas where distances are greater and the telephone penetration is generally lower may benefit most from investment, 5) telecommunication is complementary, 6) increased quality and accessibility of education, health care, and other social services, 7) telecom can help a wide range of rural businesses and organisations, improve productivity, boost product quality, provide more efficient services and reduce costs, 8) telecom can foster a sense of community and strengthen cultural identity, which contribute to development in intangible but important ways (Parker, Hudson, Dillman, and Roscos, 1989, pp. 30-31).

A basic, sustainable argument is that in the face of a major structural decline

telecommunication infrastructure is not the magic solution, but a versatile enabling tool. This argument is framed around rural America competing in the new global economy. There is a need to focus on investment in human capital, in basic physical infrastructure and social infrastructure development. Note that there is a distinct separation between development and telecommunications. There is a larger community process that has to take place for acceptance and ultimate success, reflecting the adage that a horse can be led to water, but not made to drink. However, telecommunication development is a two edged sword, for as it brings new opportunities and possibilities, it renders obsolete certain rural institutions (Parker and Hudson, 1992, pp. 28-35).

There are different possible spatial arrangements for rural regions to develop their telecommunications possibilities, specifically based in geographic location. These include roles as hubs, in partnerships or alliances, or complementing adjacent regions (Parker and Hudson, 1992, p. 115). However, a study of businesses in rural Washington state shows that rural barriers to job creation are not erased by the information age (Dillman, 1999).

The idea that rural areas are necessarily going to be advanced by the provision of communications technologies is part of a tendency to hold assumptions that urban and rural residential users will demand the same POTS plus⁵ services, and that residential users are indeed primarily interested in POTS plus. There is little evidence for telecommunications have/have not polarisation, at least in the US between urban and rural, and little rural interest in the issue. On the other hand, policy tends to hold top of

⁵ Regular telephone service, with touchtone enabled features such as Call Display.

the line telecommunications infrastructure as the key to the wealth of state and nation. There is a further argument that urban and rural residents (consumers) want the same type of service, and casts technology as an economic barrier. The aim then becomes to enlighten rural citizens about their true needs. The problem is that rural telecom advocates do not address the possibility that rural users may desire different services than urban users, which is based in a homogeneous view of the rural and the urban. Ultimately, the distinction is not the most valid characteristic of users needs or demands. Generally, a linear relation was found between urbanity and POTS plus demand; the rural-urban distinction is however not as straightforward. In terms of past, present and future ownership, more responses to helps and hindrances, there are small differences and exceptions, and the patterns vary, even within the general themes. A final point is that unavailable technology is rarely demanded in the responses of the rural residents (Shields, Dervin, Richter, & Soffer, 1993).

However, there is a growing dominance of large cities as the economy moves towards information based quaternary activities and becomes increasing reliant on telecommunications as a medium of interaction, as a comparative study of large versus small cities in Indiana shows. In effect, the large cities, with the established customer bases, are more attractive to private telecommunications infrastructure owners. Even so, the private ownership means that the cities do not have that much control in providing infrastructure to promote business investment (Alles, Lucas and Esparza, 1994, pp. 307-309).

On this theme, Wolf (1999) notes that the fastest growing areas (in the US) are those that are equipped to attract migrants who are comfortable, well educated, and well trained. Two themes influence this process, that of globalisation and cybernation, or the spread of communication technologies. Wolf posits as a result of cybernation the fragmentation of the traditional organisation of work, which in part explains the recent and rapid movement into growth towns and further is connected to the expansion of telecommuting as a way of work life. When a town possesses many of the sought out natural, social and environmental attributes, the cybernation of work enables allows the new migrants to move in. This tendency, leads Calvin Beale, senior demographer at the USDA to say "If you wire them, they will come." Telecommunications and the postal service innovations allow millions of people of all ages to live conveniently in the most desirable enclaves. Thus, many legislators from rural areas are convinced that the information revolution is the best hope for economically developing their remote districts. And according to Wolf, they are probably right (Wolf, 1999, pp. 41- 45).

Borrowing from Jane Jacobs, Wolf suggests that the vitality of an area stems from a careful balance to ensure a mixed use of the space (Wolf, 1999, p. 132). In dealing with growth towns, Wolf presents several guidelines or principles. A long term view is necessary to think of the consequences of plans, and to ensure public/private sector collaboration. Linking population growth to the desired rate of development should be balanced with strategic initiatives to protect the natural environment. Preserving places of historical significance, controlling the use of automobiles (and hence pollution), enhancing the town centre, expanding recreational areas and reserving rights of way in

advance for future infrastructure are key for liveability. To maintain a mixed use and diverse population, Wolf recommends zoning for accessory apartments, home offices, and affordable housing. To facilitate future development, it is imperative to have a clear policy as to who pays what and when, and to invest in and control infrastructure. One of the most important factors in Wolf's analysis is to ensure the safety and security of present and future residents. For quality of life components, providing incentives for religious, medical, educational and cultural institutions is an invaluable resource, as is linking business recruitment to community goals. Administrative bodies should use tax revenue to acquire land for these projects, as well as to control tourism, to provide an additional economic resource without 'selling out' the town. Finally, decision makers should encourage the involvement of private citizens and citizen organisations to monitor local progress (Wolf, 1999, pp. 229-238).

Technology and rural development locally

The application of technology to rural development is being undertaken apace. For example, the province of Ontario, and public sector partners will connect 270 rural communities, arguing that it will enable residents and businesses in rural communities to compete on an equal footing with those in urban centres by providing them with the same technology to take full advantage of the opportunities online. The Ontario government is investing up to \$3.5 million through the Telecommunications Access Program, and Bell Canada will provide \$8 million in data network upgrades. Other partners in the project include the Regional Networks for Ontario and the Ontario

Rural Council (McHardie, 1999). Similarly, the Governor of New York State endorsed a US\$1.2 million plan to push a fibre optic network through economically depressed northern New York to the 1000 Islands bridge. The President of the Upper Canada Network suggests that developing this link between New York and Ottawa is an opportunity to bridge the digital divide between cities and rural areas (Hill, 2000). In the same area, the township of South Dundas used its municipal surplus to string its own fibre optic cable throughout the township, in order to give residents access to high speed internet and offer high tech companies the bandwidth they need. Tom Morrow, of the South Dundas chamber of commerce figures that connectivity is essential to attract business and promote economic growth, in addition to having a great place to live (Pilieci, 2000).

In March of this year, representatives from eastern Ontario and northern New York met to begin the next phase of a project to bring broadband connectivity into their regions. The meeting, dubbed the “Cyber Bridge Conference,” included delegates from both sides of the Canada-US border, as well as Tundra Semiconductor’s president Adam Chowaniec. The goal of the coalition is to link both regions with a fibre optic link that crosses the Thousand Islands Bridge, as both regions are facing economic challenges because their rural populations aren't a big priority for fiber optic providers. As a result, the high-tech explosion in Ottawa is not translating into spin-off benefits for the rest of region. Upper Canada Networks argues that telecommunications is essentially the building block of the 21st century and the digital divide is more pervasive than one thinks. Therefore, the first step to getting technology companies to

locate outside of Ottawa is to build the infrastructure that allows for cheap broadband access. However, not all interpretations of the project are as optimistic as the North Country Alliance, a coalition of business associations in Northern New York, suggests getting the broadband link between each region is more about economic survival. Both regions are facing a “chicken and the egg” problem, as companies decide where to expand based on available infrastructure, but telecom network providers won’t build in an area unless there is a sufficient amount of business to justify the investment (Hammond, 2001).

Chapter Four – Context: Ottawa

The preceding chapters have discussed the distinction between the rural and the urban, information and communication technology as a facilitator for development in the rural, and technopoles. The present chapter locates these discussions in the context of the City of Ottawa. By highlighting Ottawa's development, addressing the recent amalgamation of the region, and discussing the sizeable rural component of the new city, this chapter will demonstrate the relevance of addressing the rural, especially in the face of the technology minded development of the contemporary city.

The Ottawa regions' first settlement was the village of Richmond, founded in 1818. Bytown was established as a construction camp to house Colonel By's workers at the mouth of the Rideau River in September 1826, for the construction of the Rideau Canal. The name of the city was changed to Ottawa in 1855, and the city became the capital of the Province of Canada in 1857, and capital of the country upon Confederation in 1867. Much of Ottawa's early existence was centred around the timber trade and paper products, as the Ottawa River flowed through the city and local waterfalls provided a ready source of power. As land was cleared, farming also played a large role. As the century old timber trade waned and disappeared in the early twentieth century, the federal government grew rapidly, and during the twentieth century has been the single largest employer in the city.

Historically, the City of Ottawa has grown by annexing parts of neighbouring townships, a process that did not stir much opposition until the 1950s, when Ottawa council wanted to annex 13,000 acres of Nepean. Eventually, the deal was approved, with the area of annexation reduced by almost half, and Ottawa assuming a portion of Nepean's municipal debt. At about the same time, Ottawa annexed 14,600 acres of Gloucester, an area that included Billings Bridge, the urban core of Gloucester, which relegated the township to rural status. Attempts in the 1960s by then mayor Charlotte Whitten to annex all the land out to the Greenbelt were defeated, and in 1969 the Regional Municipality of Ottawa Carleton (RMOC) was established in an attempt to foster co-operation between the city and the country, without the need for further annexation, or amalgamation. However, neither the city nor the country were particularly pleased with the arrangement, and the experience has seen considerable conflict between the various municipalities and levels of government in the region (Adam, 2000c; Taylor, 1986).

As the city expanded, so did the high technology and communications sector in the city. Indeed, while contemporary discourse labels Ottawa as variations of Silicon Valley North or Telecom Valley, the connections go back to the late nineteenth century, with a series of developments that led to the incorporation of the Northern Electric Company in 1914, one of the elements that ultimately became Nortel Networks. The federal government played an enormous role in the establishment of the high technology sector, both through the National Research Council (NRC) and with a defence contract in 1948 that led to the creation of Computing Devices of

Canada, the first of over 100 high technology companies spun off from government research agencies. Computing Devices was the cornerstone for the development of the high technology sector in Ottawa for several decades.

The next two decades saw a steady expansion of the sector, and the next major milestone was the formation of Bell Northern Research by Bell Canada in 1971; while a symbolic marker of the telecommunications sector, Northern's first computer controlled telephone switch was installed in Aylmer. By December 1975, BNR's first digital telephone switch was ready for commercial production by Northern Electric, and Ottawa's high-tech companies employed nearly 8200 in 1976, compared to the federal government's 87,000. On March 1st 1976 Northern Electric became Northern Telecom and announced plans to deliver the world's first full line of digital switch equipment by 1980; the key chip was successfully tested in 1978 while the Apple II personal computer debuted, marking the beginning of the computer enabled generation, and the Internet boom in the still distant high-tech future (Pappone, 2000).

Bell Canada installed the world's first digital telephone switch, Northern Telecom's DMS 100 at the Iona Street switching station on December 15, 1979. The activation of the system vaulted Ottawa into the digital world, and heralded the beginning of the high technology and communications industry in the city (Boswell, 2000d).

Terry Matthews launched Newbridge Communications Networks Corporation, with 15 workers in 1987. On June fifth of the same year, the city of Kanata named streets after Michael Cowpland, Matthews, and Denzil Doyle, to honour these key players in

the development of the local high technology sector. By 1990, the federal government employed about 80 000 in Ottawa, or about 22 percent of the work force, while approximately 300 high tech companies employed about 27 500. In 1992 Ottawa's numerous high tech companies issued initial public offerings (IPOs), heralding the imminent boom. By 1996, about 41 000 were employed in 700 high technology companies, as the federal government's staffing dropped to 72,800. Antoine Paquin, founder of Skystone Systems, became an instant millionaire when he sold the company to Cisco for US\$89 million, and set off an acquisition frenzy in the region, as small start-up companies begin to sell for enormous sums. 2000 saw Ottawa Economic Development Corporation (OEDC) projections that the high-tech sector would overtake the federal government as the largest employer in the region, despite a hiring spree by the federal government. The acquisition mania continued, until a global slump in the telecommunications markets took the bloom off the boom, and job cuts, rather than expansions, became the standard news through mid-2001 (Pappone, 2000).

While the industry enjoys its image of self reliant private enterprise, the federal government has historically been the largest supporter of the sector, both in operating research agencies that spawn new companies and by being the single largest user of information technology products and services in Canada. As the founder of Digital Equipment Canada, Denzil Doyle, now a venture capitalist and industry guru of some large repute and venture capitalist, put it, "the government was a major user and producer of technology at the end of the Second World War. And in those days, you could fund operations out of government contracts..." Doyle notes further that

founders of these companies “were smart enough to use that government funding to launch other businesses” (Standen, 1998, p. C-1).

The federal government gave preferential treatment to national firms for economic and security reasons, but also due to political pressures. With the continuous funding from contracts with the federal government, and research from government agencies such as the NRC and CRC, fledgling technology companies were able to expand into firms with powerful presences. For example, one of the region’s leading early electronics firms, Lumonics was created by engineers who left Computing Devices when they learned that the government was planning a major push into laser technology research and would be looking for firms to develop the technology. The creation of BNR and Northern Telecom occurred as Bell Canada’s telecommunications monopoly was safely protected in the 1970s. BNR eventually led to Mitel, Newbridge Networks, Corel, Mosaid Technologies and numerous other firms that are mainstays of Canada’s high technology industry and of the Ottawa technopole.

There are alternatives to the argument that government was fundamental to Ottawa’s success in advanced technology. Doyle himself believes that the resource industries which were pillars of the nineteenth century Ottawa economy provided much-needed capital. Moreover, he maintains, the absence of capital gains and stock options taxes in Canada until 1972 offered a secure base for risk-taking businesses. Nevertheless, there is little room to doubt that the federal government played an important role in launching and sustaining the Ottawa technopole (Mosco and Mazepa 2001).

But this is quite normal for technopoles – even the original model, Silicon Valley, was initially largely supported by US government defense contracts for high technology equipment (Castells & Hall, 1994).

Amalgamation

However, at a provincial level, there is a prevailing view that less municipal government is more, so on January 1st, 2001, the twelve municipalities that comprised the Region of Ottawa Carleton were transformed into a single mega-city. Claimed in the various interests of promoting efficiency, democracy, distribution or development, the trend to consolidation of regions was strong in the 1960s and 1970s, was somewhat exhausted in the 1980s, and has since returned in full force, despite the Ontario government's recent stepping back from pushing the process. A key driving force behind the push to amalgamate or consolidate is public choice theory, with its individualist and utilitarian views, and market analogues. In this mode, the government and citizen are recast as firms and consumers. The application of this theory results in the provision, rather than the production of the public: rather than reproducing the necessary components of a public sphere, the process is in the provision of amenities to citizen/consumers. Any redistribution of resources does not occur because of abstract concerns with equity, political and social systems that sustain notions of solidarity, and common interests in which the individual feels some responsibility for the whole, but because of more market concern related functions. This would suggest that while a political, economic and social entity is functioning, it does not necessarily

mean that it is functioning well (Keating, 1995, pp. 117-127). As an example, the City of Ottawa provides 'client services,' rather than services for citizens or residents.

While the amalgamation was couched in terms of providing more "value for the money" to the citizens (clients) of the region of Ottawa, by eliminating the duplication of the various levels of bureaucracy, another core factor was the fact that business was unhappy with eleven local governments in the Ottawa region because, however they may have reflected local concerns, such as the needs of Francophone or new immigrant neighbourhoods, they hindered making the region into a unified market. Marketing was further complicated with the varying locations of the industry with Nortel and Corel in the City of Nepean, and Mitel and Newbridge in the City of Kanata, and IBM and SHL Systemhouse located in Ottawa. Such fragmentation was an unhealthy environment for business, so said a University of Ottawa study that suggested the city should become one mega-city, or "city-region". The study explained that the municipalities needed to be "combined into one urban identity to give Ottawa a powerful national and international presence" necessary to "survive the global economy." Similar to the OED's mandate of "one voice, one vision", the University study favoured amalgamation so that the city can "speak with one powerful voice". (Centre on Governance, 1999) However, despite this vision of a single voice, during the battle over amalgamation, the councillors and mayors of the various municipalities wrapped themselves in their municipal flags, and promised to fight for the individuality of their constituencies (Boswell, 2000e).

Prior to amalgamation, there was heated competition among jurisdictions to attract businesses to their respective areas. In the west-end of the region, the former City of Kanata (where Mitel, Newbridge (now Alcatel), Calian Technology, and other high tech businesses are concentrated) was left to establish its own attractions in order to improve its image and marketing position. Kanata's efforts were not only directed to attract new businesses to the area, but they aimed to satisfy the requirements of key employees and already existing businesses. For instance, without a historical town centre, Kanata worked to create one. Local media reports suggested the council's logic was supported by a voter desire for a town core that would rid Kanata of its suburban image and establish itself as a city in its own right, together with a sense of resident's nostalgia for a communal meeting place or civic centre. Kanata's mayor described the "Main Street Project" as being an exciting undertaking to create a civic square, in the form of a regional shopping centre with up to a million square feet of retail space over 100 acres expected to accommodate 2.5 to four million people each year. The vision for the complex is trendy, upscale, and leading edge (Hebert, 1998).

The Ontario government made the decision to amalgamate the municipalities into one city of Ottawa and appointed a small group of its own "experts" to take over the elected powers of the region's municipalities and impose a new central government conducive to its pro-business priorities (Mosco and Mazepa, 2001). Overnight, Ottawa's population "grew" from 327,000 to 750,000, the geographical area increased from 27,200 acres to 681,270 acres, and the number of elected politicians reduced from eighty-four to a twenty-two person city council (including the Mayor) (Adam,

2000c; Denley, 2000b). The total cost of amalgamation is approximately \$189 million of which \$102 million is earmarked for severance pay of the 1,100 public employees who were laid off, \$83 million for amalgamation of services and facilities, and \$4 million for the costs of the transition board itself (Adam, 2000b). But in the eyes of the high tech community and its friends in government, Ottawa became the “Smart Capital” (Gray, 2000a), and Tony Clement, Ontario municipal affairs minister characterised Ottawa’s role as a magnet for jobs and a magnet for prosperity; as members of the new city will be innovators when it comes to the new economy, which is ‘going to be so critical to Ontario’s success’ (Adam, 2000e). Indeed, during a visit by top development officers from Raleigh, North Carolina and from the San Jose area, they saw the amalgamation as an extremely positive step towards addressing the problems shared by cities experiencing rapid expansion. In fact, they thought it would give Ottawa an advantage, as the single city model makes regional planning simpler (Gray, 2000c).

The amalgamation is not an unprecedented effort, as the City of Ottawa and the surrounding region have undertaken regular reorganisations as an attempt to reconcile chronic problems. Carleton University history professor John Taylor notes that jurisdictional intricacies tended to make urban planning decisions either uncoordinated or over co-ordinated, and concerned things such as systems of transportation across municipal borders, or parochialised English and French communities. The usual recourse has been brute annexation, often with a lack of historical context resulting from a records management outlook, which is more of a clerical undertaking rather

than aimed at preserving archives and heritage. Despite the promotion of the vision of the unified city, parochialism was the weakness and indeed the strength of the 12 former governments (11 municipalities plus the region), as competing interests were balanced against local community spirit and involvement. In the new city, a major challenge for those working within its framework will be to remain cognisant of the neighbourhoods and citizens: to be able to see the big picture of the city while attending to the small concerns that citizens charge their elected officials with (Ottawa Citizen, 2001).

In practice, the vision leads to uneven local development as employment and population patterns result in wide disparities between portions of the new city. In the west, where the majority of high tech companies are located, population and employment have increased. In the central core and near-east part of the region, where industry is primarily office and retail, population has decreased and unemployment is high. This disparity had east Ottawa planners stepping up offers to attract a Taiwanese chip plant and setting aside an area as part of the deal to attract the company. The east end further holds a reputation as the shabbier cousin, a reputation reinforced by generally poorer agricultural land, cheaper housing, and a Francophone character. Historically, NRC set up facilities in the east, while BNR was established in the west, and in the combination of government cuts and booming private industry, the east faltered. The west end, especially Kanata, enjoys average incomes among the highest in Canadian cities. According to Dan Champagne, director of economic development of the former City of Cumberland, in 1995 73.6 percent of high tech jobs were west of

the Rideau River, 15.2 percent were in the inner city, and 11.1 percent in the east; while in 1999 the numbers were 68.8, 16.6, and 14.7. However, planners tend to accept that forcing development to locate in the east is a faulty premise, since the prestige of being in Kanata is worth a lot. However, Don Loguisto says that although San Jose and the research triangle in North Carolina (for example) are bigger, they are single economic zones, so benefits accrue to the whole area. (Egan, 2000). Councillor Munter echoed this view for the amalgamated city during the interview, revealing the economic premises and assumptions behind the value of amalgamation. However, during the election campaign, candidates for Orleans and Innes wards, though differing on how to lure jobs eastward, insisted that the new council would have to make sure that the economy improved east of Highway 417, and so to ensure that Kanata did not receive all the future investments and thus leave the east out (Bailey 2000b).

Another concern that rose out of the amalgamation process was the worry about the impact the super-city would have upon existing spaces within the RMOC. One of the odder realisations was that, for example, the village of Constance Bay, which is an archetypal rural village, would be then part of the fourth largest city in Canada. As may be expected in any process of change, the question arises whether the rural experience will survive in the face of the imminent cityscape (Winston, 2000).

Rural Ottawa

Despite the supposed economic benefits that are borne of amalgamation, there was significant opposition on the grounds that the individuality of the different

communities would be threatened. This was particularly the case for the rural townships, many of whose residents and representatives were concerned about losing elements of the rural way of life. John Taylor describes the phenomenon of the imperial central city, a process of rapid urbanisation that sees cities grow rapidly in relation to the rural areas around them. (Adam, 2000c). Ottawa's experience is a variation on that theme, as the rural areas surrounding the city are now a part of the city, rather than remaining separate, autonomous, peripheral entities. The imperial central city has thus incorporated the periphery, which means that the rural region is now a part of the political process, and in terms of taxation and spending part of the economic process. It is now also incorporated into a discourse that holds the city as 'Silicon Valley North' or 'Telecom Valley.' With the bulk of the population of the city located in urban areas, and hence the majority of city councillors representing urban interests, a vision of Ottawa as a technopole is the popular conception for the city.

Besides being imposed upon the region by bureaucrats appointed by the province, the amalgamation has, in its goal of creating a single, more cost effective entity with fewer net elected representatives, presented the potential for subsuming the myriad disparate, and often opposing voices within the region within a single set of interests and goals. For example, the rural townships that now form part of the city were vociferous in their opposition to the single city model that was ultimately chosen. The Rural Alliance, a network of mayors from the rural townships argued strenuously for an alternative in order to maintain autonomy from the city, and to preserve rural interests. The Transition Board, once in operation after the single city decision was made

discarded a recommendation for a standing committee of council to address rural affairs, arguing that issues of specific rural character would be too difficult to identify. City Council soon reversed this decision, establishing the Agricultural and Rural Affairs Committee.

The rural in the new Ottawa comprises about 90 percent of the land area, and contains about 10 percent of the city's population. Of the total rural population of 79,000, 32,000 live in villages, 7,000 on country lot subdivisions, while 40,000 are scattered on farms or on rural roads (City of Ottawa, 2001d). The identification of the rural category tends to centre around the traditional quantitative elements, particularly population density. The boundary, however, can be starkly apparent. For example, a farmhouse sits at 139 March Road, a landmark of arrested development amidst all the signs of progress. Built in 1877, it is now the property of the NCC, but is inhabited by a tenant couple. The house sits on Greenbelt land, so the immediate surroundings are relatively static. To the north, towards Kanata, are cornfields, an old stone house, and an apple orchard. To the east is another working farm, a campground, and an equestrian park. The period of hyperactive high tech growth has changed the landscape, though. March Road, formerly a two lane undivided road is now a six lane thoroughfare to the high technology sector, en route to which cars whiz along, seemingly oblivious to the 80 km/h speed limit. Family farms disappear annually, office buildings sprout, subdivisions appear, and suburban amenities proliferate to serve the technology workers (Tam, 2000).

Beyond the quantitative indicators, interviews with councillors from the rural wards (Eastman, McNeely, Brooks and Thompson)⁶ endeavoured to discover what sorts of things would characterise the rural. It proved simultaneously frustrating and informative. There is an intuitive sense of the rural, but trying to identify the source of that intuition was difficult. The “different way of life out there” was a common starting point. That way of life held a number of common themes. All of the councillors identified a strong tendency to volunteerism. Essentially, the majority of services that are provided the city in urban areas, such as fire departments, community centre programs, and sports and recreation facilities, are supported almost exclusively by volunteers in the rural. Councillors readily acknowledged the presence of volunteers in the city, but emphasised that it is a fundamental aspect of rural life.

Associated with the volunteerism, another component is a sense of independence. As one councillor noted, if rural residents need or want something done, they tend to accomplish it by and within their own means, rather than asking governments to attend to the problem. It may be partially due to this trait that the Rural Alliance gained momentum, by appealing to the independence and autonomy from the city that that option offered.

Another rural trait identified that is even more elusive was the sense of being more laid back. These councillors all work at City Hall, and live in the countryside. Each one identified a sense of relaxation as they returned home from the city. A number of

⁶ Councillor Stavinga was unable to schedule an interview. She represents Ward 6-Goulbourn, which includes 4 villages and a large rural component.

councillors, speaking from experience with their constituents, noted the tendency for individuals to move from the city to the country, and this is a key, recurring factor in the matrix of reasons for doing so. For example, while a common summer activity is to head to the cottage to escape and unwind, these migrants to the rural tend to find less of a need for this.

This “different way of life” was also a catalyst for debates in the rural election campaigns for the amalgamated city Council (Hughes, 2000). For example, Ward 5-West Carleton residents, who last experienced a merger in the 1970s of small townships like Fitzroy, Torbolton and others, were presented with becoming part of a large city. The preservation of rural lifestyles, particularly during that period of high tech development was a prominent concern during candidate’s meetings (Bailey, 2000b; Boswell, 2000e). However, while residents are anxious about keeping the area’s rural nature, more West Carleton businesses are globally linked, such as a rare book dealer operating out of a 1850s log house with contacts around the world. Despite the desire to keep the rural nature of West Carleton, which is 80 percent farm or wilderness area, there are mixed feelings about expansion, as increased traffic helps the local service industry (Boswell, 2000a). In this manner, the ward works to balance economic progress with rural roots, an area where ‘you can find farmers still working the land, seniors savouring a peaceful retirement and schools bursting with kids.’ Another concern articulated in this ward’s campaign was, in seeking to preserve the lifestyle, to make sure the area was not neglected by the new city (Murray, 2000).

Candidates for Ward 6-Goulbourn similarly pledged to promote rural needs in the new city. The eventual victor emphasised the ward's diverse community, and preservation of the affordable family oriented aspects of the ward. This emphasis may be in part in response to the ward's residents who work in the nearby high tech area. (Steinbachs, 2000a). Candidates in this ward also paid significant attention to the fact that with one out of 22 voices on council, residents' political voice would not be as strong as they were used to.

In Ward 19-Cumberland, taxes, rural identity, and traffic problems were top in local concerns. Cumberland residents hoped that this municipal election would put them on an equal footing with their more urban neighbours, in such things as a better matching of taxes and services, infrastructure, and job opportunities (Trepanier, 2000; Quan 2000). Candidates for Ward 21-Rideau promised to keep the rural lifestyle alive and well in the shadow of the mega-city. The candidates noted that the primary concerns are being forgotten in the mega-city and high taxes. They emphasised that they were not criticising city life, but wanted the unique community lifestyle of Rideau recognised for its independence and self reliance. In fact, they tended to welcome the new city, as it has the potential of a lot to offer while letting them preserve their lifestyle (Steinbachs, 2000b).

The creation of the single city, in spite of the projected economic benefit to the city and the improvements in the way the city is supposed to work that the new arrangement is supposed to bring, an overarching critique of the process centred

around the implications for the various communities, both rural and urban. For example, the absorption of Kanata into the new city was cast as a “death knell to a developer’s dream of a utopia among suburbs.” The city, christened by a developer and built largely over the last 40 years became a haven for young families looking to escape the congestion and cost of living in the downtown core, and developed around the idea of community and as a nice place for raising families. The majority of Kanata residents are not long established: the city only had 16 000 residents at inception 22 years ago, but is now 3 times that. The city of Kanata has its own history of amalgamation, as March township joined Hazeldean and Bridlewood in 1978 to create a new city of Kanata. Kanata’s development was based upon a guiding principle of a community of villages, connected by footpaths and parks, well served by recreation facilities and schools, and an environment that blends together in earth tones. While this was attractive to young families, it resulted in a difficulty in choosing a focal point in the era of rapid growth. As one indicator of that, Kanata City Hall had three different locations. The fact that Kanata lies beyond the Greenbelt helps to give it a sense of place that is more distinct from Ottawa than former cities that are closer to the core, such as Nepean. While people typically do not want to erase the past, with the stroke of a pen, as it were, the most direct possible impact most young Kanata families fear is on their tax bill (Wheeler, 2000). Against this complimentary picture of Kanata, another resident argues that the “lamentation for the end of Kanata as a city is misplaced, as it died long ago, plundered by development,” which has resulted in a “desolate concrete and asphalt jungle.” The resident goes on to suggest that the lack of a library or pool in Bridlewood are just two elements that the wave of development

passed by, arguing that it is the wealthy developers that have caught the ear of city council. Addressing the historical community, or heritage of the area, the resident points to the Bradley farmhouse, one of the earlier buildings in the area, standing amidst new development, and that another historical landmark, the Grierson house has been turned into a toboggan hill. The resident further argues that the city of Kanata had set aside issues of public interest in favour of pursuing and facilitating the rapid pace of development (Kletke, 2001). While this is a scathing indictment of the development of the city of Kanata, this example serves to highlight the nature of concerns voiced by citizens when a municipal framework is altered, and when economic growth takes front and centre as a municipal concern.

The concern over the role of the rural was addressed by another resident of the city, who argues that in the amalgamated city, the largest single land use will still be primary food production. Despite the geographic presence, as a result of their remarkable productivity, farmers have become accustomed to making up less than three per cent of the population, which clearly limits their political clout. However, food production is not only of interest to farmers: in addition to the common physiological need to eat, the transportation, marketing, processing and serving of that food provides a significant number of jobs in the new city. The resident argues that that while the public service and the high tech industry may argue over which has the largest work force, both are outnumbered by the people who keep us supplied with food and beverages, in that the agri-food industry includes everyone from the farmer who milks the cow to the cashier in the supermarket to the high school student who

sweeps the floor in a restaurant. Many of these are also the people who interface most often with the lucrative tourist trade. Most visitors will judge the city by the servers and the quality of the food in the restaurants, not the tech workers or public service employees. The resident suggests that the region might also benefit from a look at how the city of Laval- put together 35 years ago from a gaggle of small rural communities- not only protects its farm land, but builds agriculture into its tourist promotion. The new city thus has a wonderful opportunity to capitalise on its farming heritage, both by protecting it and according it some political importance, and by recognising its contribution to the city and then incorporating that into the vision of the city (Heald, 2000). This resident's projections were borne out by a recent study – The Economic Impacts of Agriculture on the Economy of the New City of Ottawa – which determined that 2.5 percent of all jobs in Ottawa are tied to agriculture in some way: indeed, every job on the farm supports 1.8 jobs in the city among those supplying goods and services to farmers. The study also notes the continuing consolidation of small farms into larger, more intensive farms. For example, Paul and Grace Mussell run a dairy farm on River Road in Manotick. It means working 14 hours a day, seven days a week, to turn a yearly profit of \$15, 000. But, for them, farm is the family business, home and history in one. They acknowledge that someone may come knocking to buy the farm for development, but farming is a fact of life, and is likely to remain a vibrant part of the city (Reeveley, 2001).

In contrast to this optimistic view, which is shared to varying degrees with the rural councillors interviewed, there is also a common view that rural dwellers will be subject

to decisions made by urban bureaucrats, who seem to know little about rural municipal governance. One resident recalls the experience of amalgamation in Chatham-Kent, which was amalgamated in 1998, and has as a result seen a small savings, at the cost of severe service reductions (Wiltenburg, 2000). This view is echoed by yet another resident, who argues that while the Rural Alliance option was preferred for the rural townships, the way things turned out is a “disenfranchisement of rural communities.” This resident projected a substantial tax increase, where the Rural Alliance would have “provided local, accountable governance and property and business tax controls and would meet rural/social needs, build an environmental infrastructure and allow council/public debates on policy issues, while avoiding creating a financial hardship for residents” (Muzeen, 2001).

In order to discover what really was going on with the rural wards in the new city, interviews were conducted with the councillors from the rural wards, approximately six months into the life of the new city. These interviews revealed that any rural – urban division within the city is a complicated matrix of factors. The first, and perhaps least interesting aspect, is that of the availability of infrastructure. While telecommunications infrastructure is less developed in rural areas, particularly in the area of high speed internet access, but also in terms of local calling areas where it is a long distance call from some households to their local municipal office. Infrastructure problems like this can operate as a hindrance to development in rural areas. However, with the incorporation of the new city of Ottawa, the region is in a stronger position to pressure the various service providers to extend the necessary infrastructure so as to

provide an acceptable level of access. Indeed, the councillors are generally optimistic that the infrastructure divide, such as it is, will soon be mitigated. Whether the inclusion of the rural areas into the mega-city is indeed a push factor to this end remains to be seen, however. In addition, there are private companies whose focus is telecommunication service provision in rural areas, especially those in the Ottawa Valley, to facilitate their ability to compete for subcontracts from the Ottawa high tech sector (Van Dusen, 2000).

Doyletech Corporation, and Denzil Doyle himself, argue that smaller cities and rural parts of the area could gain economically by strengthening ties to the high technology sector, as well as nurturing their own companies and work force. Although this sector is already supplying part of the four billion dollars of equipment and services that Ottawa tech companies buy, the linkages are still weak, and must be strengthened. If the linkages area developed, Doyletech suggests that that process could take economies in different directions, for example, the gamut could run from manufacturing to biotechnology, and serve to diversify Eastern Ontario's technology base. A report issued by the company recommends that eastern Ontario tap the intellectual and economic assets of many of the Ottawa commuters who already live in their communities to develop new companies. The report also includes predictions for employment in technology and related fields in rural areas that range from 44 000 to 29500, and projects that Ottawa tech employment will rise from about 72000 presently 425000 in 2030. This will have the effect of raising the technology share of employment in the city from about 10 percent presently to a projected 16 percent in

2030 (Hill, 2001).

The more interesting divide between the rural and the urban is the varying voice that the different interests tend to possess in guiding the future of the city. In a city that is marketing itself to the world as a technology centre, traditional economic activity may seem anachronistic. On the other hand, to the workers in the 'traditional economy,' the emphasis on the 'new economy' can be worrisome (Campbell, 2000). That is, the high valuation placed upon the 'new economy,' if construed as a zero-sum formula, means that traditional activity is less valued, and hence marginalised. In what appears to be a move to allay some of these fears, and, optimistically, to recognise the particular role of the rural in the new city, the Agricultural and Rural Affairs Committee has been established as a standing committee of city council.

The Agricultural and Rural Affairs Committee (ARAC) is the first of its kind in the country taking the extra step of including the farming and rural community within the cadre of policy making and advisory bodies that constitute a local government. Ottawa has overnight become a Canadian agricultural phenomenon at the same time as the urban city is transforming itself into a high tech powerhouse. This dual phenomenon means balancing the needs of farmers, the companies who need homes for their employees, and the bedroom residents or city refugees who live in and around the villages clustered in the former townships. So far, conflicts have been limited to a few scattered skirmishes over land use, and the newcomer rarely complaining about agricultural smells or dust. There is an understanding between residents that it is an

agricultural thing. Rural relationships have been more strained between city refugees themselves, over issues of a distinctly neighbourhood nature. It seems that the source of the division is within the rural, not between urban and rural councillors (Banks, 2001). The tendency, as Councillor Munter outlines it, is that the long-time residents of the rural are more open to change and development, while those who have moved to the country from the city want to maintain their rural environment.

The city of Ottawa has thus a traditional realm, located in the rural, and the high tech sector, which is, despite the current slowdown, the sector to which the city appears to be harnessing its fortunes. When an industry has such an influence, especially in the development context, the linkages and flows of influence are tangled and pervasive. The following chapter undertakes a political economy analysis of the high tech industry in Ottawa.

Chapter 5: A Political Economy of Technically Beautiful Ottawa.

Communication and information technology have long been linked to economic development, and the argument is often framed in terms that echo modernisation theory, or the idea that less developed economies can be set upon the path that industrialised societies have followed by inserting technology into the society. It is a tautological argument that economic dynamism and expansion will necessarily follow, simply because it did in the industrialised societies' experience. Debates on the role of communication and information technologies in both developed and less developed areas continue, based on the proposition that new communications technologies are reshaping the economic process (Kegley and Wittkopf, 1995, Thussu, 2000). As the discussion of technopoles has shown, a common approach is to link the city's economy to information technology, so as to achieve a strategic position for the future.

In the face of the processes of globalisation, various public and private actors in Ottawa have undertaken the development of an image of a city that is a wonderful place to live, and at the same time is a global shining light in high technology and telecommunication research and development. This is a also common approach in the development of technopoles, with repeated mantras about the potency of local high tech effort, and the showcasing of various attributes that appeal to the coveted

workers of the Knowledge Economy. This chapter will describe some of the players in the curious private-public interaction that has resulted in the marketing of a city that is rooted in unquestioned merits of a technological centre.

There is nothing inherently wrong with positioning a city as a high technology hot spot. The problem that develops is in the headlong rush to achieve a competitive edge over other regions, both nationally and worldwide. A narrowly defined discourse of high technology development operates to relegate other visions of the city to the margins, and by assuming control of the discourse, the various actors work to build an uncritical, technically beautiful vision of Ottawa. To achieve this promised state of the city, the integration of government and industry is justified to promote the activities of innovating and generating knowledge (e.g., NRC: 1997); an integration and justification based upon uncritical acceptance of both the knowledge economy and the knowledge society thesis.

ICT business concentration and cross-board memberships contribute to the formation of communication links fostered through personal contacts and common political economic interests. The resulting combination of alliances and organisations advances the power to alter communication and information flows including electronic networking, transportation, and media. At the local level, a mix of the largest company's CEOs together with local senior politicians and university faculty, head a number of public-private agencies with goals to facilitate high tech development.

The concentration of these public-private organisations in Ottawa stems from the dual

role the city plays as national capital and as “Silicon Valley North.” Historically, federal high technology initiatives are based in Ottawa, such as the National Research Council (NRC) and Communications Research Centre (CRC), the National Capital Institute of Telecommunications (NCIT), the Canadian Network for the Advancement of Research, Industry and Education (CANARIE) and the Pre-Competitive Applied Research Program (PRECARN). Another element is the presence of myriad high technology companies that owe their beginnings to government research and contracts, such as the spinoffs from the NRC. At a municipal level, though, two recently merged organisations operated to promote the needs and demands of the high technology and communications industry in Ottawa. The Ottawa Centre for Research and Innovation (OCRI) and the Ottawa Economic Development Corporation (OED) are public – private agencies whose stated common goal is to facilitate high tech development. Indeed, the goal was common enough that the agencies have merged, and the OED has become a component of the OCRI initiative, known as OCRI Economic Development. A more recent addition to the discourse is The Ottawa Partnership (TOP), established in the course of the city’s amalgamation as a further advisory body to City Council.

Ottawa Economic Development Corporation

The OED is the oldest of these agencies, formed by the City of Ottawa in 1962. Its mandate was expanded in 1969 to include the 11 municipalities that formed the then new Regional Municipality of Ottawa Carleton. Recently, OED has “concentrated on

creating the winning conditions for economic development driven by the high tech sector and for the benefit of the whole community" (OED 2001b). The very stated goal of the agency equates winning conditions for the high tech sector with benefit to the whole community. While it would be uncharitable to assume that members of the OED pay only lip service to community benefits, a nagging concern is the fact that OED members are not elected by the community. An examination of the board of directors will show that there are far more representatives of industry interests than individuals charged with pursuing citizen concerns making key decisions. Indeed, local and provincial governments and corporate contributions fund the OED's mandate to foster "one vision-one voice for economic, industrial and business development" (OED 2001a)

Adam Chowaniec, chair of the OED board of directors, is also CEO of Tundra Semiconductor Corporation, founded in 1995 as a spinoff from Newbridge Networks Corporation, which in turn had acquired Calmos Systems in 1989, where Chowaniec was President and CEO. He was awarded the OCRI Chairman's Award in 1998, and the Gold 'Business Person of the Year' from the Ottawa Board of Trade in 1999. In March, Time Magazine featured him as a mover and shaker in the New Ottawa, citing his innovation in addressing some of the infrastructure problems by incorporating a new community in the development of the Tundra headquarters in Kanata, which will include commercial, research, retail and residential space. The OED Chair's role in setting the terms of development discourse in Ottawa is further demonstrated by his frequent appearance as an information source for articles regarding the sector in local

newspapers.

The Vice Chair, Chris Henderson, is the CEO of The Delphi Group, who are “strategic business advisors and technology market makers” (www.delphigroup.com). Bruce Joyce, the Secretary-Treasurer, is the Managing Partner of Deloitte and Touche offices in Ottawa⁷, and sits on a number of advisory boards, including the OED, and the business faculty for two universities.

The past Chair, Franklin Holtforster, is the President of MHPM Project Managers Inc., who manage development and construction projects. Bob Chiarelli, Mayor of the newly amalgamated City of Ottawa also sits on the board, as does Paul Hindo of Royal LePage Commercial, where he is Vice President and General Manager in Ottawa, and also serves as Chair of the OED's Partnership Committee⁸. Jocelyn Ghent-Mallett is President of Rippon Associates Inc., and serves on the Board of Directors of Ridgeway Research, Elcombe Systems Inc., and SpaceBridge Networks Corporation. Besides the OED, she serves on several public sector advisory boards, including the Industrial Research Assistance Program (IRAP), OCRI, the University of Ottawa Executive MBA Program, as well as sitting on the Carleton University Board of Governors. The President and CEO of Lucent Technologies Canada Inc. sits on the board, as does Ron Connelly, President of the Connelly Group of Companies, which has developed technology oriented trade shows and conferences throughout Canada; the company also has holdings in commercial and residential real estate and is involved

7 Deloitte and Touche also manage the City of Ottawa's electronic services portal.

8 Paul Hindo, like Adam Chowaniec, is a frequent source for local news articles, specifically in the intersection between real estate concerns and high technology industry.

in several technology companies. The Vice President of Corporate Communications at Mitel Corporation, Jacques Guerette, and the Director of Business Commercialisation at Nortel Networks round out the industry representatives on the board. The board also includes two other publicly elected individuals besides the mayor, Clive Doucet and Jan Harder, both Councillors for the City of Ottawa (OED 2001a).

The OED board demonstrates an imbalance of representation between the public and the private sectors, with most of the members representing either high tech, business or even realty interests. Of particular note, the three publicly elected members represent primarily urban areas of the city – Councillor Harder’s ward has some nominally rural space, however, her interview responses indicate that the issues of the rural constituency are marginal. Indeed, with the business focus of the individuals on the board, it is doubtful that telecom and the rural receive any significant attention.

The OED positions Ottawa as a technology capital by highlighting its role as primary centre for the federal government's \$5 billion annual science and technology program, conducted through agencies such as the National Research Council (NRC), Communications Research Centre (CRC), Atomic Energy of Canada Ltd. (AECL) and by major government departments; as well as the headquarters for the Natural Sciences and Engineering Research Council (NSERC), the Medical Research Council (MRC) and Social Sciences and Humanities Research Council (SSHRC). The Canadian Network for the Advancement of Research, Industry and Education (Canarie) is an industry led consortium funded in 1993 for seven years to stimulate

development of the information highway. PRECARN and Communications and Information Technology Ontario (CITO) are also based here, financed by the federal government and industry, and the provincial government respectively, for research in robotics, and IT and telecommunication (Patterson, 1998).

All the granting councils are located in Ottawa within the responsibility of Industry Canada (rather than Health Canada or Canadian Heritage for example) and function to promote the transfer of technology to private industry. The widely reported “skills shortage” and shift to a “knowledge-based economy” are both used to justify changes to post-secondary programs and curricula to feed into industry research and labour requirements which are primarily focused on science and technology (ACST, 2000, p. 2).

The OED notes that OCRI is the facilitator for these public-private partnerships, and works to increase resources for R&D and to promote the development of the high technology sector generally, however the OED is the first contact for business looking to Ottawa for markets, products, and services, or to establish alliances with corporate citizens of the city (Patterson, 1998).

Ottawa Centre for Research and Innovation

The OCRI was created in 1983 to facilitate collaborative research between universities, colleges and industry, and to encourage the growth of an advanced technology economy. OCRI credits its ‘wide range of unique grassroots programs’

with assisting the development of Ottawa's technology industry. In recent years OCRI has focused on the key drivers of technology development: human resources, education, retraining, public awareness and international marketing. It is a not-for-profit organisation supported by over 600 members. These members include large corporations and research laboratories, small and medium sized technology companies, post-secondary academic institutions, all of the region's school boards, regional government and private individuals. OCRI strives to contribute to the prosperity and quality of life in Ottawa region by using investments in R&D to advance the commercialisation of technology; fostering a superior lifelong learning environment to increase the technology sector talent pool; connecting people with technology to develop a comprehensive and sustainable technology infrastructure; and delivering professional development initiatives to build communities of technical and management expertise (OCRI, 2001h).

OCRI's vision is to bring people, ideas, and technology together to advance the capital region's globally competitive knowledge economy and superior quality of life. Their mission is to help their members achieve their goals by creating and facilitating partnerships that expand and enrich the region's talent pool, support innovative research, foster quality education and life-long learning, and develop effective technological solutions that meet community and individual needs (OCRI, 2001f).

The Ottawa-Carleton Research Institute, later renamed the Ottawa Centre for Research and Innovation, (OCRI) was created from just such a mix with a mandate to

create a “Silicon Valley North” modelled after California’s Silicon Valley. Its objective is to connect with universities, colleges and high schools in the area to graduate potential employees for the local high tech businesses. The OCRI was the catalyst behind CITO and the development of industry-led research chairs at the local universities, and helped develop Intranets to connect industry, universities and government through the NCIT*Net, a high-speed network linking the NRC, the University of Ottawa, Carleton University and the Canadian national optical Internet, CA*Net3. One function of these private initiatives is to limit federal government efforts to expand public networks. Private sector participation was taken to the next level through government industry collaborations in the creation of the National Capital Institute of Telecommunications (NCIT). The NCIT had its conceptual beginnings as the “MIT of the North” and was established in Ottawa thanks to an initial federal government investment of \$5.3 million under the CFI program. NCIT’s mandate is to “foster collaborative research between academia, government and the private sector” with a total of \$36 million pledged over the next five years establishing a “training ground for high-tech grads” (www.ncit.ca). The decisions concerning the continued development of high speed networks as public, private or a mix have been referred to a National Broadband Task Force comprised primarily of private sector executives (Canada, Governor General, 2001).

The OCRI board of directors consists of five representatives from local institutions of higher education as well as the public school board, the mayor, 15 industry representatives, two individuals from federal research agencies, and two other

individuals with no indicated affiliation (OCRI, 2001c). Of these directors, seven are also on the OED board of directors – Jacques Guerette (Mitel), Paul Hindo (Royal LePage), Bruce Joyce (Deloitte and Touche), Ron Connelly (the Connelly Group of Companies), Jocelyn Ghent-Mallett (Rippon Associates), and the Mayor.

Like the OED Board, the OCRI board is heavily represented by individuals from the high technology community in Ottawa and of all the board members, only the Mayor of Ottawa is a publicly elected official. While OCRI makes no pretence to be a publicly accountable body, the inclusion of both industry players and members of public school boards indicates a collaboration that links the aims of education to the aims of the high tech industry – it is the OCRI's stated mission to aid the interests of the high technology community.

Within the OCRI are a number of ongoing committees and working groups, two of which are permanent installations. The Business Education Leadership Group, composed of industry representatives and members of virtually all the institutions of public education in the Ottawa area, works to project business and industry values into Eastern Ontario school boards, by establishing partnerships between boards and business. Programs are varied, from suggesting elements for curricula to providing training for both new and experienced principals.

The Research Management Board, consisting of individuals from various high technology research councils and local university research departments, is mandated with pursuing the commercialisation of technology, and deciding what the OCRI is

going to participate in and fund (OCRI, 2001b).

The OCRI also collaborates with the Centre on Governance at the University of Ottawa. This is an interdisciplinary research and teaching unit, created to examine the changing patterns of organisational and social co-ordination. The Centre brings together academics from different university faculties and a number of first-rate practitioners from the private, public and civic sectors. In collaboration with OCRI, the Centre is exploring network-based business models, civic entrepreneurship, and the dynamics of regional innovation (OCRI, 2001d).

The OCRI is also heavily involved in promoting education leading to high technology employment – that is, supplying the workforce for the industry, through various scholarship and partnership programs, as well as sponsorships. The logic is that OCRI members benefit from working together to achieve common objectives. OCRI staff provide links between members-only activity to broader initiatives which are supposed to maximise member investment. For example, Talentworks is a TOP initiative managed by OCRI to integrate programs that develop, attract and retain talent for all sectors, Techopia.ca is a blend of Ottawa lifestyle information, career development resources, profiles of Ottawa technology companies and career opportunities created in partnership with InBusiness Media Network. The OCRI also worked towards getting Industry Canada to name Ottawa as the official SmartCommunities Demonstration Site for Ontario. The OCRI argues that a smart community uses information and communication technologies to link people and organisations together

so that they can share ideas, address needs and work together in ways they never could before. Smart communities deliver online applications for government, business, education, community and healthcare -- all to make our lives easier, richer and better (OCRI, 2001a; OCRI, 2001f). As the project continues, it will be interesting to see if the community does operate smarter in civic matters, or if it is primarily an effective marketing discourse.

OCRI argues that "In today's wired world, the Internet is essential for success." They acknowledge that there are currently 250,000 Ottawa residents who either don't have access to the Internet or don't know how to use it, and have undertaken to "narrow this "Digital Divide" in the nation's capital with 160 Sm@rtSite locations to provide Internet-ready computers, conveniently located in schools, municipal offices, libraries and community locations throughout Ottawa. Friendly, Internet-savvy staff and volunteers will be on hand to help users explore the many Smart services available. Sm@rtSites link all residents to a suite of electronic services that includes basic training, E Government, E Commerce and E Democracy. New users will learn how to use computers, navigate the Net and use Email. Connected citizens can search job sites, find housing, and link to Ottawa's many online services" (OCRI, 2001g). However, if the Sm@rtSites are to result in universal access and use, each site would have to serve 1562.5 people, and would afford each person 15 minutes per month. This is assuming each of the quarter million unconnected individuals estimated by OCRI wants to make use of the sites -- even if only half wish to participate, that leaves

a half hour per month⁹. OCRI is very proud of the degree of technology penetration in Ottawa, and suggests that everyone can take pride in calling Ottawa Canada's Most Wired City – suggesting based on OED data that 55.6% of Ottawa homes have computers, 41.4% have modems, and 36% are connected to the Internet (OCRI, 2001i).

The vision shared by the OCRI and OED makes for a formidable voice influencing decisions related to the city's economic evolution. On March 26, 2001 OCRI and OED announced a new union of mandates that will “result in a united economic development voice for the new City of Ottawa. Given the competitive realities of the global knowledge-based economy, it was determined that bringing these two organisations together would enable Ottawa to work from a position of greater strength. The extended board would reflect the interests of the communities currently served by OED and OCRI, and will work diligently as a team to advance Ottawa's aspirations. This union of mandates provides the new City of Ottawa with one strong voice for economic development and international marketing” (OEDC, 2001b).

Where regional politics conflict in overlapping jurisdictions and complex public goals, organisations such as the OCRI and OED representing dominant interests are having increasing sway over regional planning and development decisions. Noting their influence in local decision-making, Dandy and Hunt (1998) suggest that there is a shift

9 Assumptions: a quarter million people, with 160 Sm@rtSites; equal distribution between sites means that 52 people would use a site each day of the month; each person would use a site on one day per month.; sites are available for 12 hours per day; no lag time between individuals; and the machines operate flawlessly. The key assumption, though, is that each of the 250 000 would wish to use a terminal. These assumptions are naturally open to challenge; however, they are logical extensions of the implicit goal of universal access in this “most wired city.”

in local governance from elected to non-elected agencies. The power of the OED is illustrated in its success in altering both air and land transportation networks to facilitate business travel and communication links.

The OCRI and the OED, in co-operation with the NRC, also organise annual Regional Innovation Forums (RIF) bringing together top decision-makers from government, business and education to exchange ideas and collaborate on projects for high tech sector development. The RIF is one of many conferences held to plan and promote relationships among the various "stakeholders" in the region's development, including the local media who sit on its various committees. The 1997 RIF concluded its proceedings with a set of suggestions for media coverage of high tech that remarkably came from the publisher of the city's major newspaper:

The media should tell success stories and celebrate entrepreneurial spirit. It can act as a bridge between the business community and the general public, helping to build support for changes that are required for the Region's economic development. It should continue to prod our leaders forward with editorial comments when they lose focus on the longer term interests of the Region (Chhatbar and Darch, 1997, p.31).

This call for business "agitprop" completely ignores the view that the OED's mandate of "one-vision, one-voice" excludes the many, as alternative voices of labour and community groups are missing from its membership and decision-making. Without their participation, the local hegemony, i.e., "the taken-for-granted belief in the right to use power" is significantly strengthened (Mosco, 1996, p.189). Such conditions and practices illustrate that the globalisation of privatisation and the growing international

division of labour in the service of media and technology producers (including education and research) further exacerbates class inequality. Similarly, this development discourse, in promoting the needs, or demands of high technology industry relegates the needs and demands of rural citizens of the city to the margins. While some argue that the amalgamation of the city means that the benefits of a dynamic and growing high technology sector accrue to the whole city, in the form of taxation revenue, the relevant issue is the appropriation of the discourse, and the government – industry combination which serves to legitimate the technology development discourse over that of other concerns.

The Ottawa Partnership (TOP)

The Ottawa Partnership is chaired by Rod Bryden and City of Ottawa Mayor Bob Chiarelli, and is a joint public-private development group, formed on recommendation of the amalgamation Transition Board serving as an advisory council to the new city's director of development services, Réjean Chartrand. Mr. Chartrand also serves as staff administrator for TOP, while Mr. Bryden is also the Chairman of WorldHeart Corporation, and Terrace Investments, which is heavily involved in high technology development in Kanata. At the same time, Mr. Bryden is a majority owner of the Ottawa Senators NHL Team, whose arena is surrounded by farmland that is slated for development into business parks.

TOP's aim is to recommend guidelines for economic growth by pushing a municipal focus on prime wealth sectors. A report released in May 2000 suggests developing

Ottawa's telecommunication infrastructure to facilitate information sharing among agencies, research facilities, and business, as well as strengthening the links between R&D and commercialisation. This report also demanded development of a SmartGrowth plan, with industry input from growth cluster¹⁰ leaders to address infrastructure concerns as a key component. Another component of that report was a call to address "skilling" issues, by establishing education for business, and planning education for workforce needs. Other recommendations included branding Ottawa for international marketing strategies, establishing a global learning centre, financing enterprise to accelerate development and to establish Ottawa Internet Portals (Goff, 2000b, 2000c; Boswell, 2000b; Wake, 2000). The TOP was established in addition to the influential OCRI/OED duopoly on discourse.

High tech hegemony provides an answer to the city's various concerns: accommodate industry and all will be well. The situation is not entirely new. In the nineteenth century regions competed with each other to attract the resource industry by supplying required water, electricity and sewage (Magnussen, 1983, p. 11). Today, regions compete to provide the necessary technological infrastructure. The former region's Official Plan, now defunct after amalgamation, noted a change in context from reliance on the federal government to a region which is "increasingly tied to the high technology sector." The plan stipulates the guidelines to sustain and facilitate the industry by ensuring 'servicing priorities, the provision of fibre-optic cable, supporting community telecenters,' and "other measures ... to encourage the use of new

10 The clusters are telecommunications equipment, microelectronics, software and communications services, professional services, tourism, photonics, and life sciences.

technologies” (RMOC, 1998, Section 4.2.1(4a-4c). For the new city to address the challenges of the future, challenges in large part predicated upon the pressures of rapid growth of the high tech sector, the city organised a growth summit in June 2001. This summit was conceived as the beginning of a process to create a new Official Plan for the city.

Ottawa 20/20: The Smart Growth Summit.

The Ottawa 20/20 growth summit presented participants with the question of what makes a city liveable. This first step to a new Official Plan for the city aimed to address not only infrastructure and economic drivers, but also issues of social balance, arts and culture, and urban intensification versus more diverse development (Goff, 200d).

According to the Alf Chaiton, senior fellow at the University of Ottawa Centre of Governance, the summit is the first element in six to 12 months of consultation, where a stated goal is ensuring that the public has the opportunity to be creators of the new city. In order to involve the community as much as possible, the summit was televised on cable as well as Web cast, as they were “hoping to have as much input from inside the meeting as from outside,” Chaiton says. Prior to the summit, position papers and documents were made available on the city's Web site for the public to comment on (Chappell, 2001).

The background information to the Smart Growth concentrated on issues of the growth of the city, and particularly on dealing with growth, in a transportation and other infrastructure based frame. For instance, “Information technologies : The future

– and how technology will affect it – is unknown, but questions abound. It is now possible for some people to work from home using network connections to the office, thus removing the necessity of commuting,” and questions for the future included “As communication technologies improve, will the need to move physically from one place to another (as in commuting to work) decline? If people in large numbers stop commuting to work, would that end the need for more and wider roads? If the ‘cost of distance’ declines, will there be more pressure on cities to spread out? Alternatively, would a reduction in automobile use make cities at higher densities more attractive places in which to live?” (City of Ottawa 2001b).

The organisers of the Summit also intended it to showcase ‘e-democracy.’ Chiarelli claimed that the summit would show the people of Ottawa that they could be more closely connected to government through leading-edge technology, as web casting, the Internet and broadcasting would make it easier for the public to actively participate in the city-building project. As such, the summit was the first demonstration of e-democracy initiatives under the OCRI’s SmartCapital project, which is supported by more than 45 contributing partners from all sectors of the community, including industry, government, education and healthcare. The summit is marketed as ‘just the latest example of how Canada’s most wired city is using technology to provide information, value and convenience to citizens and better connect them to government.’ This is part of a program to make Ottawa a municipal centre of excellence, and to provide citizens with value for their money and access to quality services through the delivery of broad informational, transactional and eDemocracy

services through its eGovernment portal (City of Ottawa, 2001c).

This, however, neglected to account for the quarter million people who do not have access to the technology, and ignores the issues of access use and participation. Here, universal access is defined by casting users as citizens, rather than consumers. In terms of access, infrastructure penetration does not ensure participation – or even use.

Infrastructure access is the broadest definition of access, where the availability of a technology is the key indicator. However, at the higher level of use, the number of individuals included declines, as this level takes into account the ability to apply the technology to personal interests. The highest level, participation, where individuals are able to use the technology to, for example, gain a voice in public affairs, includes the smallest number of individuals. Those who are included have the socio-economic and knowledge wherewithal to apply the technology to such an end. There are myriad factors that contribute to the declining pyramid, such as gender and class, and indeed, living in a rural versus an urban area (Karim, Smeltzer and Loucher, 1998).

An interesting aspect of the summit that seems to have gone unnoticed is that during the election campaign for mayor of the new City of Ottawa, the concept of the summit was advanced by several parties, such as a local MPP who advocated including the ‘area’s foremost citizens to help steer the city’s growth,’ and naming a prominent high tech executive. While one of Mayor Chiarelli’s opponents was supportive of the idea, as a candidate Chiarelli was not so eager to entertain the notion (Gray, 2000 September 23). Then, as part of his inaugural address to the new Ottawa City Council,

he announced his desire for that very summit (City of Ottawa, 2001a). This announcement came within a week of a report by the Economic Council of Canada that projected a continued rapid growth for the city. Chiarelli expressed the intention to convene the summit as a conference on 'smart growth' with international experts and local leaders, and argued that "This is no time to be complacent. It is a time for action. It is a time for commitment. It is a time for facing up to challenges and meeting our responsibilities" (CBC.CA: 2001b January 17). The attention to 'smart growth' may stem in part from arguments by high tech executives such as Adam Chowaniec and Denzil Doyle that companies will pack up for Denver or Boston, and that the fragile boom economy needs to be supported (Bailey, 2000a).

The appellation "smart" is a consistently recurring theme in policy discussion surrounding Ottawa. A couple of the "smart" decisions made in the amalgamation process concern the area surrounding the Corel Centre, and dealing with Tundra Semiconductor in the development of a mixed use portion of the city, ceding the municipal government's role in exchange for the provision of services.

Just what "smart" really means is best seen in the light of decisions made just prior to the amalgamation, including a regional rezoning of land from rural to urban of 1,000 acres around the Corel Centre: "Overnight, inexpensive rural property in Kanata shot from \$30,000 an acre to \$150,000 ... their decision enriched a group of property owners by at least \$80 million. ... The biggest single beneficiary was Ottawa Senator's owner Rod Bryden: Council's decision raised the net value of his property around the

Corel Centre by at least \$26 million. ... A business park planned for land near the Corel Centre will create an employment area as large as the downtown, but will also cost the public tens of millions of dollars for roads and sewers" (Denley, 2000a).

Gerald Moore, a resident near the Corel Centre interchange has called for rezoning of nearby land for development or offices to take advantage of the unused interchange, and the former western municipalities, of Kanata, West Carleton, and Goulbourn supported Mr. Moore's position. As the the Ontario Municipal Board zoned 100 acres for development around the Corel Centre, a 1990 development study of 7000 surrounding acres highlighted fears over the loss of agricultural land. By rezoning, Mr. Moore argues for extracting the full value of the land, which is owned by Terrace Investments, in taxes and revenue. However, Kanata's former mayor, Merle Nicholds, saw the potential development as competition to the town centre, and suggested a need to focus on tourism and entertainment. (Goff, 1999).

By 2000, in the months prior to the cooling of the high tech sector, plans were underway for the biggest expansion in over a decade to accommodate the booming industry. This included the rezoning over 800 acres of farmland near the Corel Centre, for a total of 1370 acres of business parks and infrastructure at a public cost of \$40 million. This would encroach on agricultural land that the OMB has said should not be developed for at least 25 years, but Pamela Sweet, the former region's director of policy and infrastructure planning said that "Times change. If we don't respond, we'd be out of land in the west in five years." Former Kanata Mayor Merle Nicholds argued

that if they didn't respond to demand, the region would lose the technology players. Against this view, opponents to the expansion indicated defeat, and then Kanata Councillor Alex Munter figures there is no stopping it (Adam, 2000a). In November, another big business park was approved just north of Kanata. Terry Matthews is one of the people pushing for the large expansions, arguing that large business parks are the preferred habitat for high tech companies which tend to cluster, and to be sensitive about the quality of life, so to attract people, the parks need green space, good views, good buildings, and so on. Anna Brown, however, who lives near there is not in favour of the expansions, as she argues that they are boxed in by high tech developments and a very busy March Road. Kanata city council approved the park, despite advice to the contrary from staff, as the land was originally designated for new housing (CBC.CA, 2000c November 8).

A report titled "Corel Centre Lands: Justification of Need was presented at the Chateau Laurier by the OED in June 2000, and recommended releasing 200 - 250 new hectares of land for industrial development, even though the city had allocated 1900 ha over the next 20 years. The problem is that the tech companies are all going west, where there are only 638 hectares that meet the needs (demands) of high tech, such as proximity to current locations, plenty of parking, expansion potential, high design standards, transit service, direct access to the Queensway corridor, and the opportunity to work with a developer who understands their needs (Singer, 2000). However, this has all been put on hold with a massive deficit after disagreements with the provincial government about the amount of funding to pay for the transition costs

(CSEDC, 2001).

Other land decisions made under the Transition Board included a \$300 million plan by chipmaker Tundra Semiconductor to develop a 25-acre site within the former City of Kanata's "town centre combining high-tech office, residential, and retail space." Just weeks before amalgamation, Tundra won permission to buy the land from Kanata for \$60,000 rather than the appraised value of \$8.83 million in exchange for providing servicing costs such as roads, water and sewers (Adam, 2000c).

The Ottawa Transition Board approved the deal for Kanata's town centre, which will see Tundra Semiconductor pump as much as \$250 million into Kanata over the next 15 years. Merle Nicholds, Kanata's former mayor, says Tundra's plans for the city centre will help avoid traffic and congestion caused by traditional high-tech business parks. Tundra will also develop other residential and commercial buildings in Kanata (CBC.CA: 2000a). This will bring to fruition the dream politicians have had for 30 years: a bustling downtown in Kanata. Council did demand multiple uses of the space, though details are scarce (Baker, 2000).

Agricultural and rural affairs committee

In the face of the interests representing and promoting technology concern, there exists a standing committee of city council whose purpose is to give voice to both concerns unique to, and concerns involving, the rural component of the city that is enormous geographically, but with a population inversely proportionate to the size.

The Agricultural and Rural Affairs Committee (ARAC) consists of five councillors representing rural wards, and three councillors from urban wards (ARAC 2001).

The committee is a nod to the demands raised by members of the Rural Alliance, a group of rural mayors and residents that argued that that the rural areas now part of the city of Ottawa would have been able to sustain a viable existence as an entity separate from the city (Spencer, 1999). However, as noted the Transition Board appointed by the province saw otherwise, and even dismissed the idea of such a committee.

Councillor Thompson noted that among city council, when the idea was revived, there was initial reluctance. This is not to say fierce resistance, but a sense that the urban councillors were not entirely convinced that there were specific rural issues that warranted a committee devoted to them. Perhaps reflecting the variety of perspectives on the rural – urban definition problem, councillors initially had some difficulty deciding which issues would fall under the auspices of the ARAC (Wheeler, 2001).

Councillor Eastman suggests that the ARAC is important to maintain some visibility of rural concerns, but says that they hold only a quiet voice. On the other hand, Councillor Brooks sees the potential of the ARAC to generate understanding by each side of the rural-urban split of the other, and to contribute to creating a better city. Councillor Harder echoed this sentiment.

However, in the face of the ARAC to highlight rural concerns among urban interests, there is a plan to rejig ward boundaries. The rural wards currently have a lower

number of constituents per councillor than do urban wards, and the planned changes are to “design more equitable wards...[which] will lead to more effective representation for all...” (Interview response from Councillor Harder). The goal of equity is admirable, however, on a strict representation by population system would further marginalise the rural voice at Council. Consider the federal analogue where provinces with smaller populations are over-represented in the House of Commons – e.g., PEI, without this sort of adjustment, would warrant less than one Member of Parliament.

Thus, the ARAC is an important acknowledgement of the rural component. However, in the face of the voice of industry and market interests, the rural does not have a towering presence, which suggests that any rural – urban divide is best looked at not in terms of whether or not access to infrastructure exists, but what happens in terms of political and economic components.

Driven by corporate needs, boosted by blue-ribbon business-friendly government bodies and promoted by mass media, high tech hegemony transforms communities like Ottawa into local models of private governance. Globalization means more than a world run by the World Bank, IMF, WTO and other international private regimes. It also means transforming the local, including the neighborhood and the community, schools and governments, health care facilities and playgrounds, to reflect the singular hegemony of the market in everyday life. For the rural, this means that the marginalized voices face great challenges in protecting their interests. The steady

acquisition of rural land, subsequent rezoning as urban and various degrees of commercial and industrial uses is a process that is like a self-perpetuating dynamic – as the rural is whittled away, its strength is further diminished.

In contrast, the perceived importance of the dot.com community has generated a fierce rivalry for influence in the political scene. For example, Antoine Paquin, who arguably set off the venture capital frenzy in Ottawa when he sold Skystone in 1998, is extensively courted. Paquin, in speaking about the issue, notes that he turns down all the requests, both for attending parties and for donations (O'Neill, 2000). Similarly, the municipal election campaign for the amalgamated city council was as much about raising money as winning votes, and at the top of the targeted donors list was the business sector, and specifically developers, who at the time were enjoying unprecedented building by the pre-slump tech sector.

Adam Chowanec, however, insists that the tech slowdown is not all doom and gloom). Barry Nabatian (general manager of Market Research Corporation) argues that the more negative impact could be psychological amid continued overall growth - growth of 22 000 jobs a year could not be sustained. (Boswell, 2001 February 16).

While there are many progressive possibilities in the use of the technology, public policy decisions and directives are increasingly being led by the private sector. In the opening address to the Inaugural Technology Forecast Roundtable for Innovation held in Ottawa in 1996, the President of the Treasury Board told the delegates that the government has changed its role from “a doer to a facilitator”. This means the

continued expansion of the transfer and commercialisation of technology from government research laboratories like the Communications Research Centre (CRC) and the National Research Council (NRC), with additional powers and support extended to so-called public-private institutions and/or private organisations of the ICT industry. Where changes in government telecommunication regulations favouring market development end, these programs begin (Winseck, 1998). The designation “private-public” given to Ottawa-based organisations like the Canadian Network for the Advancement of Research, Industry and Education (CANARIE), the Optical Processing and Computing Consortium of Canada (OPCOM), and the Pre-Competitive Applied Research Program (PRECARN) indicates market-led and public funding. Between them, they receive over a billion dollars in public funding devoted to the application, exploitation and commercialisation of technology for Canadian business interests. If the technology does not fall within the mandates of these institutions, there is a range of programs for R&D support, tax incentives and numerous other means of financial support, including those provided by provincial and municipal governments (Ontario, 1999).

The Canadian Advanced Technology Alliance (CATA) and the Information Technology Association of Canada (ITAC) take the lead in lobbying the governments at all levels. Members of the Board of Directors include CEOs and CFOs of the major high tech companies in Ottawa such as Nortel, JetForm, and SHL Systemhouse, with associate members from major legal, accounting and banking firms. These associations have considerable clout in influencing policy directions. As CATA claims, it “... has

received major wins in areas such as R&D Tax Policy, capital formation, human resource development, and tax and trade policy” (www.cata.com).

With so much in the way of public resources going into commercialisation, however, there is less time and space available for public alternatives. The presence of the federal government in Ottawa, its research laboratories and federally funded organisations used to stimulate and promote the ICT industry, as well as the additions of ICT research and training at university and college facilities and curricula, combine to contribute to a political economic and socio-cultural environment in the region that is supportive of the industry.

The degree of focus upon policy matters that work in the interests of one industry, especially one that has effectively set the terms of the discourse on growth in the new city, has the potential to drown out voices and interests that are not directly supportive of the set direction. While the Agricultural and Rural Affairs Committee operates as part of city government, the population that it represents is small, which leads to a quieter voice in planning, development and growth decisions. The input into city decisions from the technology industry, and the decisions rendered by the city are generally in terms of fiscal matters in the last determination. Issues such as quality of life apply insofar as they are necessary to attract the type of people that a technopole needs to function. The quality of life for the citizens of a city should, however, be an end in itself. In decisions about upgrading or maintaining infrastructure, the city has demonstrated that it is working within a very finite budget – the application of funds,

should the industry voice overpower the public voice, will continue to be disparately distributed, and potentially in ways that will benefit a select few.

These are some of the dangers in overemphasising one discourse of the city. It would be uncharitable to suggest that city government is more interested in pleasing industry than in serving its citizens. It is reasonable, however, given the strength of the industry interconnections and associated increase in volume of their unified voice, to suppose that without a countervailing presence, private interests could become cast as public interests – a hegemonic appropriation of the public interest, of which the rural is already a weaker voice.

Chapter 6: Conclusion

The rural is distinguished from the urban in a number of ways. The simplest is to take population and population density as a key indicator. This is a standard means of definition, and employed by census takers. The problem is that the threshold between the urban and the rural is essentially arbitrary. With this arbitrary definition, the threshold can be adjusted to reflect a preconception, or even a desired definition of the rural. A potential result is then the rezoning of land that suits urban interests, rather than those of the rural. This conversion of rural space to urban use and development is a continuing process in the urban fringe, and is manifested in Ottawa in the area around the Corel Centre, as an example.

The process often brings conflict, between interests that view the best use of the land as urban development, and those that see maintaining the rural character as more valuable. The former generally argues for the increased economic productivity of urban space; the latter generally emphasises environmental concerns and the value of the rural 'way of life.'

This way of life signifies various qualitative components of the distinction between the urban and the rural. Characteristics of the rural way of life in Ottawa are a more casual lifestyle, an emphasis on volunteerism, a sense of independence. However, the qualitative evaluation of the rural tends to vary with where a respondent comes

form: rural residents tend to emphasise these characteristics, while urban respondents tend not to do so to the same degree. The urban definition of the rural tends to highlight the quantitative elements of population and density, or the provision of municipal services such as sewer and water.

In the Ottawa experience, the distinction between rural naïveté and urban sophistication did not appear in high relief, although one difference noted from a rural perspective was that the city contains museums, clubs and other cultural facilities, where the rural has a different mode of recreation. However, it was also acknowledged that residents from either region were likely to participate in activities in the other as their interest dictated. Thus, the rural – urban difference in sophistication did not appear to be borne out.

Conceiving of the rural – urban distinction as a dichotomy is to obscure the reality that elements of one can often be found in the other, especially in the fringe zone of a regional city. Therefore, a continuum model, while more complex to deal with, offers a scale of urbanness with which to understand the dynamic. Thus, for Ottawa, a continuum model would not categorise a working farm near the outskirts of the new city with a country estate subdivision.

Stereotypes and myths play a large part in the difficulty in developing a definition of the distinction that can be operationalised. Historically, dual myths of the city and countryside have exhibited a general continuity. Either the virtuous countryside is set against the degenerate city, or the progressive city is cast against the backward rural

realm. These valorisations either privilege the countryside over the city, or vice versa. A more profitable conceptualisation, especially in a city such as the new Ottawa, with a significant rural component, would be an equal valorisation. That is, the benefits of the city as a decompression zone from the city's pace, and the environmental value ought to be as important as the city's advantages in economic activity, and services. Casting one as better than the other induces a competition of interests that implies a zero sum game – when one's interests are met, it is at the expense of the other. A value system for the different spaces that promotes a positive sum approach would ultimately benefit the city and its citizens.

Myths also colour the visions of information technology and development. Information technology, which is asocial when considered in isolation, is often perceived as a transcendent presence. Arguments for an information society accord information technology the power to shape patterns of social organisation. The advent of technological advances are held up as harbingers of radical disjunctures in the process of social, economic, or political relations. The development of information and communication technologies is treated with the awe traditionally accorded the sublime, and this awe obscures the fact that those advances do not, in and of themselves, transform human existence.

A more conservative and critical view of information technology, communication and social relations suggests that these advances are applied to various aspects of existing relations, in ways that are determined by different needs and goals. Technology by

itself is asocial: a printing press sitting idle does not alter anything – it is the application that can have an impact. Similarly, increasing the quantity of information, and the speed at which it may be transmitted or diffused, or the audience for this information, does not alter anything – it is the nature of the information, the knowledge and ideas, that is transmitted. Finally, the application of technology is not determined by the nature of the technology. It is how the technology is adapted to a need or presents an opportunity; and this adaptation and application is directed by human activity – not the other way around.

Thus, the information technology thesis is arguable. However, often it is not argued, but accepted uncritically as fact. Claims of various iterations of the information society – knowledge, network, post-industrial and so on – or the equivalent in economic terms, particularly the “new” economy, have entered the popular consciousness and mainstream discourse. Thus, while information and communication technologies may not really be fundamentally transforming society, the *idea* of the technology may well be changing society’s popular conception of itself. Whether this popular conception is rooted in some social need for identification as a kind of society, or is promoted in some political or economic interest is open to speculation. It does not seem probable that with earlier advances in communication technology that there were claims, for example, that a “postal” society was brought into existence.

This popular acceptance of the existence of an information society indicates that simply dismissing the notion would be to disregard social realities. Therefore, in order

to acknowledge the popular conception, but more importantly, to address the fact that, while not transforming society of itself, information technologies are advancing, and being applied to various social, political and economic activities. Within the study context, this occurs within the environment of the city.

Information technology intersects with the city at a number of levels. The implementation of linkages to global information flows positions a city as a node within the global network. The quantity and quality of these connections determine the importance of the city in relation to other city-nodes in the network. At another level, the acceptance of the information society thesis suggests that a city which does not have investment or industry related to the information economy is destined to languish in the hinterland of the old economy. Whether or not this is the case remains to be seen. However, the trend is to rather overestimate, rather than underestimate the future importance of information based industry. To this end, a myriad of cities are undertaking technopole development projects, either to remain At a third level, as a subset of the other two aspects, information technology is cast as refiguring the city, with the concentrations of local and global network connections demarcating the regions of greatest power and influence, given the importance of these international flows and connections, whether or not the information society thesis is accepted.

The adoption of the technology development paradigm is reminiscent of modernisation theory, particularly in early technopole development. It is clear that merely having a technology park within city limits does not of itself generate any development moment,

unless the project is undertaken with goals in mind, and an idea of how to achieve them. Similarly, simply having technology infrastructure in place does not mean that economic success or civic well-being will develop as part of some causal link. This is true for both rural areas, and urban settings. However, the acknowledged importance of communications indicates that the presence of communications infrastructure can be an enabler for rural economies, but not a guarantee. Thus, rural communities outside of the national capital region are undertaking large scale infrastructure investments in an attempt to draw new business investment into that area.

These processes are manifested within the new amalgamated City of Ottawa. While the city has evolved from a army construction camp in the early 1800s to a lumber town, and then the seat of federal government in Canada, it seems to be going through another transformation, into a high technology centre. Perhaps coincidentally, the city's amalgamation, mandated by the provincial government is presented as being conducive to attracting investment, as it presents a single level of government to deal with. The mantra for the amalgamation was the projected cost savings to the residents of the city, which, and it is not a complete surprise, have proven to be rather optimistic.

The road to amalgamation was a rough one – despite the claims of cost savings with a single city, various other options were advanced that would maintain some degree of more local representative bodies. These other options received considerable public preference to the single city option, largely because they would have maintained a

degree of autonomy for the localities. However, economics won the day, and a mega city was created, to acclamations from business and government that it would be ideally positioned to compete in the global information age.

The discourse of the future of the city places a heavy emphasis upon the information and technology sector. A political economy view of the city goes a long way to explaining this – the major bodies mandated with developing a course for development are public-private entities, with an overwhelming presence by the telecommunication and technology industry in the city. In addition, the cross board membership of a significant number of industry representatives serves to amplify their voice in charting future directions. This presence provides the opportunity for such things as insinuating elements that conform with industry interests into the public education system.

The political economy approach reveals that much of the discourse is predicated upon the information society thesis. The depth of the argument regarding what this entails is limited to the economic value of having a city that is a key player in the development and implementation of technology, relative to a global economy. This is not an invalid perspective: the trend to globalisation does warrant these concerns. However, in configuring the city it is imperative to bear in mind the interests of all the citizens – however competing those interests may be. The rural, while a significant component of the new city, in economic, cultural, and heritage terms, is accorded a relatively insignificant political voice. The establishment of the Agricultural and Rural Affairs

Committee is a welcome development, and indicates that rural concerns are not completely relegated to the margins. It further presents an opportunity to develop an innovative nexus between the rural realm and the urban, by addressing the best ways to incorporate and involve the rural areas of Ottawa into the city, so that the city functions as a whole, rather than as an urban core with a rural subset.

Various avenues are open, and which are followed depends upon the vision of the city. The least preferable type of option would be to have the rural areas within the city, but to maintain an operationalisation of the rural – urban dichotomy. That is, setting rural and urban interests as inimical, and pursuing a valorisation that privileges the city. This would serve to marginalise rural citizens, rural space, and rural interests. A second type of option would view the rural area of the city as spare land for the spread of the urban dynamic as a form of development. This not a good option either, for the same reasons as the first option, as well as the problems that arise from a sprawling city, identified in the June 2001 growth summit. A better approach is to discard the view of the rural as a hinterland to the urban core, to develop good use of the land so as to play a part in a city that functions well, and to maintain the rural voice. But the question remains of how to accomplish this.

A simple, though false, answer would be to push for a parity of telecommunication infrastructure. However, this argument stems from the technologically determinist stream of thought that links the presence of communications infrastructure with development. What is required is moving away from a simple rural-urban technological

divide conception, which in any event will be a moot point as the technology will be available in the coming years, with public and private initiatives. What needs to be questioned is the nature of the implementation, and specifically what is going to happen once the infrastructure is in place. The city's experiments in electronic democracy, such as during the Ottawa 2020 growth summit are a reasonable first step at facilitating civic involvement, particularly given the geographic size of the new city, the possibility of participating electronically may well be a viable alternative to residents living at a considerable distance from City Hall. The option of following the proceedings online makes sense, since the other mediated option, tuning into the local community cable station, is not available in regions not served by cable television. This is an aspect where improving infrastructure throughout the whole city is a good thing, since a "live webcast" requires a wide bandwidth in order to be effective.

Electronic service provision, such as applying for permits or paying parking tickets online is not really an exercise in electronic democracy, or even electronic government – it is the application of an electronic commerce vision to civic functions. The ability to contact city councillors and officials via electronic mail is not a fantastic advance in electronic government either. In organising interviews for this project, e-mail was the initial mode of contact, but following up by telephone was more effective. The e-mail approach was convenient, especially for councillors who were too busy to be interviewed and elected to respond to questions via e-mail, except in the case where the councillor was having trouble with her computer, which delayed things considerably.

Therefore the answer to developing a good rural – urban dynamic does not lie in infrastructure provision or the development of high technology industry. The key is to operate with a more complex vision than “the information society,” one that sees information and communication technology as more than an economic function, and more than an end unto itself. This is not only applicable to the rural, but would prove beneficial to, quite possibly, the whole citizenry of the city. The rural – urban divide is not simply about the presence and absence of telecommunication infrastructure and industry. It is about a narrow vision of what information and technology means to a city, and the need to develop a wider perspective.

Coda

This thesis was undertaken as the Ottawa high tech sector was experiencing a massive boom. The growth of the sector, and of the city was shattering predictions monthly. Start-up telecommunication companies were sprouting, and subsequently being purchased in a frenzy of acquisitions, venture capital flowed into the region to finance these start-ups, and stock valuations rose like rockets. The high tech sector even (briefly) employed more people than the federal government in 2000, a milestone that was eagerly anticipated, and whose arrival touched off rejoicing in the high tech community.

The boom has bust. High technology shares trade at about ten percent of their heady highs, and companies are shedding staff in the thousands or even closing down. In an industry intimately linked to global concerns, a global economic slowdown in the sector has hit the local high tech sector hard. This has not led to any serious questioning of the paradigm, however. For example, the president of JDS Uniphase, one of the prime technology employers in the city, in announcing a \$50 billion loss, and 7,000 job cuts world wide, part of a total 16,000 jobs and 4,500 locally, maintains “[his] conviction that the telecommunications market will endure healthy growth in the future,” (Pilieci, 2000).

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