Case Studies of Some Suburban Office Centres in Toronto

Urban Resources No. 4

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by Malcolm R. Matthew
1993

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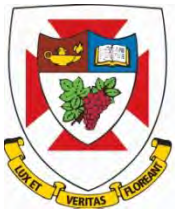

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1.0 INTRODUCTION

Offices in general, and suburban offices in particular, deserve more attention than geographers and planners have given them in the past. All too often, geographers have regarded office functions either as typically central area activities, or, paradoxically, as being ubiquitous and thus of limited spatial significance. Suburban planning often has treated office functions as a subset of "industry" or retailing, without recognizing offices as a discrete form of land use with peculiar locational needs.

Although office buildings now contain a larger share of the labour force than do urban structures of any other type, and although office densities are so much higher than other workplaces that any cluster of office buildings places extreme demands on the urban infrastructure, location research has concentrated more on other activities such as manufacturing and retailing. The office research that has been published has generally concentrated either on offices in large metropolitan central business districts (CBDs), where virtually all high-order offices once were concentrated, or on offices that have moved from the major metropolitan CBDs to smaller cities. The journals contain little examination of the experiences of those urban centres that have attempted to use office development as a catalyst for growth.

As over 60 percent of the population in Canadian metropolitan areas lives in post-second World War suburbs, it should not be surprising that roughly half of all metropolitan offices are not located in the CBD. Since the suburbs are home to such a large part of the population, that is where many people can be expected to seek employment and services. So, it is time to determine which types of offices operate effectively in suburban locations and the conditions under which they can do so.

This study was based on the premises that offices are not footloose, that they are no longer a singularly central city phenomenon, that the spatial reorganization that is occurring is creating hierarchical office locations, and that such reorganization can be either helped or hindered by planning initiatives. The study's objectives were to determine overall spatial changes and quantitative trends in the location of purpose-designed office buildings in the Toronto Census Metropolitan Area (CMA) between 1951 and 1986, and to examine trends in its suburban office pattern between 1966 and 1986. In an attempt to identify the most significant factors affecting contemporary suburban office morphology, the study examined changes in the distribution of office space and employment, the changing mix of suburban office activities, and changes in the physical form of suburban office buildings and centres.

As context for a review of the research literature, three basic topics will be outlined briefly: office agglomeration tendencies, telecommunications and the information industry, and Metropolitan Toronto's office complex.

1.1 OFFICE AGGLOMERATION TENDENCIES

Developing telecommunications technology during the last century permitted the functional separation of office activities from their related operating facilities, and encouraged functional specialization both within firms and in the establishment of independent "consultants." Corporate head offices and the specialists they relied upon sought to congregate spatially to facilitate the exchange of information and ideas. The additional need to assemble a large and diverse work force daily made the metropolitan CBD, at the focus of the public transportation network, an attractive location for such agglomeration.

In the early twentieth century, the centrally located offices multiplied and competition for increasingly scarce central space pushed up rents, inducing some firms to relocate their routine clerical functions to lower rent quarters elsewhere. Meanwhile, consumer service offices followed the suburbanization of housing, industry and retailing that has been taking place in North America since the 1920s. But headquarter and business service offices did not decentralize until quite recently. This dichotomy in locational tendencies reflects the two distinct clienteles served by offices: consumer service offices serve the public directly, whereas business service offices serve other firms.

Nonetheless, by the late 1950s it was clear that some higher order offices were starting to appear in suburban locations, often attached or adjacent to operating facilities such as factories. However, it is really only since the late 1960s that appreciable deconcentration of headquarter and specialized business service offices has occurred. Even so, the central concentration of such offices has persisted in the vast majority of large metropolitan areas. Thus in the Toronto CMA, half of all office floorspace in office buildings is still located within the relatively minute area of the central office district. Is such office agglomeration determined by the nature of information or is it merely traditional? A study of Detroit, currently underway, is showing that only about one fifth of its office building space is in the CBD.

1.2 TELECOMMUNICATIONS AND THE INFORMATION INDUSTRIES

The city has always represented a pooling of the physical and intellectual resources of its citizens, but such resources are only useful to the extent that they are accessible. Thus transportation and communication networks determine the utility level of the goods, services and information the city

contains. Much of the information that is communicated is office-based, and improvements in the speed, reliability and cost of transporting information have allowed higher order, information-related (quaternary) and control (quinary) offices to seek scale economies—both internally within ever larger corporations and externally in office agglomerations where specialist services abound.

However, the main geographic characteristic of telecommunication is to overcome the friction of distance so efficiently that profound changes in spatial relations become possible. And, when telecommunications do alter spatial relationships, the main beneficiary must be the information industries (e.g., the head offices of large corporations, consulting, finance and government services). These quaternary and quinary activities are the growth industries and the leading employment sectors of this half century. By 1975, they employed one third of the U.S. labour force, and in 1980 over 40 percent of Canada's labour force (Kellerman, 1984). If telecommunication has reduced the functional need for the burgeoning information dependent offices to cluster in the CBD, it is essential to know what office activities are affected most and what spatial changes are occurring.

1.3 METROPOLITAN TORONTO'S OFFICE COMPLEX

Toronto is the corporate administration/control capital of Canada (Kerr, 1968; Semple and Smith, 1981), and a very significant North American centre in international currency transactions and stock market activities (Gad, 1979). In addition, Toronto's office complex is by far the largest in Canada, occupying over 10 million square metres of floorspace in office buildings alone. The next largest is Montreal's, at just under 6 million square metres, followed by Calgary with 5 million, Vancouver at just over 4 million, and Ottawa with about 3.5 million (Gad, 1991).

While Toronto has been the focus of significant studies of central area office activities, examination of the suburbanization of its offices has generally been meagre. This is so despite the fact that there has been a geographical transformation "from the tightly-focused single-core urban region of the past to the widely-dispersed multi-nodal metropolis of today [so that] conventional core-periphery models of metropolitan spatial structure are no longer inclusive enough for understanding contemporary urban geography" (Muller, 1976, p. 1).

Whereas about five sixths of office building floorspace in the Toronto CMA was in the core area in the early 1950s, the non-central share grew steadily to about half by the mid-1980s. The first non-central office buildings were in scattered locations, but during the late 1960s and the 1970s they appeared increasingly in office parks. Since the late 1970s, a co-ordinated attempt has been made to plan and promote office reconcentration in a few mixed-use sub-centres.

That is the phenomenon which this study was designed to examine. The major part of this work describes case studies of three suburban office centres; studies focused on the types of office function that are able to operate successfully in those centres and the attributes that attract offices to them. Offices have certainly become dispersed from the core office districts of cities such as Montreal, Vancouver, Calgary, Ottawa and Edmonton. However, "Unlike the Toronto developments, subcentres or office parks with concentrations of 10,000 to 20,000 office workers seem to have been lacking so far, but smaller versions of these have appeared in a number of metropolitan areas in the 1980s" (Gad, 1991, p. 450). Thus one benefit of examining Toronto's office centres is that they may be prototypical of what will occur in some other Canadian metropolitan areas in the very near future, particularly since policies to "create" suburban office centres are gaining currency (e.g., in the Greater Vancouver Regional District's "livable region" strategy).

The study does not examine the scattered office buildings, an urban form of diminishing relative significance, nor offices attached to their operating facilities, which are surely located according to factors dictated by the needs of the plants to which they are attached.

2.0 OFFICE RESEARCH AND THEORY

The commentary in this chapter attempts to isolate significant elements of office location theory in their approximate chronological order of publication, with very brief notes on their relationship to classical theories of metropolitan structure and change. Since much of the research fails to define "office activities," the office activities examined in this study have been defined as: "Activities dealing with the collection, storage, manipulation, retrieval or transmission of alpha-numeric information, and taking place in quarters designed to accommodate them, in an office building not attached to an operating facility."

2.1 EARLY OFFICE PATTERNS AND EXPLANATIONS

Corporate head offices and the specialized business services they relied on sought to locate in a tight cluster because, while managerial co-ordination seems to be "singularly independent of transportation, . . . what is all important is transportation of intelligence [where] easy contact of man to man is essential, . . . The work is facilitated when the time of the men whose time is most valuable is conserved" (Haig, 1926, p. 427). Haig noted an advantage for executives to be near potential meeting partners, not merely in the CBD, but in clusters of complementary firms within an office quarter of the CBD. Since the company executives who exchanged information also relied on office staffs, it was essential to be in a location where employees from a broad-spectrum labour pool could be assembled. The CBD, at the focus of the metropolitan transportation network, not only met this need but also provided a choice of food, shopping and entertainment for staff and management alike. Thus, in the early twentieth century, office firms multiplied in the CBDs of many major cities. This created intense competition for choice locations, which became such a scarce and costly resource that firms started moving routine functions to low-rent premises elsewhere so as to conserve central space for those activities best able to use the advantages of central agglomeration.

A thread linking Haig's findings to the monocentric models formulated by Burgess (1925) and Hoyt (1939) and the theories of the traditional economists (e.g., Alonso, 1960, 1964) was that offices belong in the CBD where, to minimize transportation costs, there was a distinct office area. The dynamics of the mononuclear city depended on a strong centre to generate growth, while the multinuclear city described by Harris and Ullman (1945) depended on a variety of growth-generating centres, which included the CBD. The economists stressed trade-offs between rent and transportation/communication costs, often to or from CBD locations or between locations within the CBD, and a common notion in all these approaches was that high-order retailing could outbid all other uses of land for key CBD sites. However, over thirty years ago, Smith (1961) demonstrated clearly

that offices occupied the highest valued sites, for which they could outbid even department stores.

Despite Haig's pioneering insights into the agglomerative tendencies of high-order office functions and the far lesser agglomerative needs of routine office functions, a generation later economists still posited that offices were less constrained locationally than retailing. For instance, Ratcliff (1949) merely noted that offices were found in office buildings and above stores in commercial areas, favoured a central location for convenient access by customers and employees and to other offices, and that similar offices often clustered to facilitate interfirm communications. These researchers generally ignored the locational influence of the inertia of vested interests and sunk capital, of conditions of tenure, of tradition, of availability of suitable space, and of the personal preferences of top management.

2.2 RESEARCH OF THE LATE 1950s, 1960s AND EARLY 1970s

The 1950s at last brought a wealth of significant new office research. In Philadelphia, Rannells (1956) found that, while the relative pattern of the major functional groups in the CBD had changed little from 1934 to 1949, the office-based services had become more concentrated, which confirmed the snow-balling dynamic of office agglomerations, with particular external economies in clusters of strongly linked offices. He also noted that when a firm expanded, it tended to relocate as close as possible to its former address in order to maintain its linkages in the area, while a new subsidiary was usually located away from its parent company's locale.

Foley's (1957) study of suburbanizing large offices in the San Francisco Bay Area found that there was some relocation of main administrative offices and branch offices to the suburbs. The main reason for moving was to become attached to an operating facility, although offices also moved in order to gain space for expansion, reduce rental costs, escape downtown congestion or shorten the journey to work. Large firms were increasingly willing to open suburban branches to supplement their downtown headquarter offices, but the CBD remained attractive to those offices, particularly head offices, seeking access to the whole metropolitan area and to the external economies of the CBD.

In New York, Hoover and Vernon (1959) confirmed that head offices of large corporations and the offices of related services concentrated in the CBD to achieve economies in service access, face-to-face contact opportunities, rapid exchange of important paper, proximity to particular institutions, access to a huge labour pool and the advantages of good shopping and entertainment, while avoiding the uncertainties of decentralization. However, they recognized the disbenefits of congestion, and of the long distance commuting associated with a huge central office agglomeration. The study identified a level of sub-regional offices, which might prefer suburban locations more central

to their smaller hinterlands, and for which telecommunications allowed adequate contacts with central functions. It also noted that offices doing repetitive work tended to deconcentrate, and that consumer service offices were distributed throughout the suburbs. It assumed that offices attached to operating facilities, which employed 685,000 office workers (one third of all office jobs in the New York Region), were located according to the needs of the enterprises to which they were attached. This study's main value was its confirmation of the different locational needs of various types of office.

Although he did not deal specifically with offices, Vance (1966) tried to trace the evolution of "downtown" through seven stages. The first four phases fit the classical monocentric models but in the fifth stage he saw "central" functions being replicated in outlying areas, mostly in shopping centres or in massive head office buildings, as the city expands. Vance believed that in the final stage a "city of realms" would emerge because, as the city expands, "the resident will live his life largely in only a part of the metropolis rather than in all of it, . . . [encouraging] duplication of facilities . . . as near his home as possible" (p. 119).

Goddard's (1967) studies of office location, linkages and the potential for substituting telecommunications for face-to-face contact found the decentralization of offices from central London to be more apparent than real, as it resulted more from deaths of firms in the centre, and births of new firms elsewhere, than from actual relocations. He found that functional clustering had decreased over time, either because telecommunication was reducing the cost of information transfer or because the process of segregation had not yet reached a mature stage in the newer office areas. He also concluded that the availability of suitable modern office space might be a key variable in office location.

Thorngren's (1970) typology of office activities as "programmed," "planning" or "orientation" processes was a huge advance which brought much better understanding of the differing characteristics and locational requirements of contact systems. His programmed processes are routine transactions involving short contacts within a narrow environment, for which the telephone or mail usually suffice. Planning processes relate to changes in routine transactions, and contacts are longer exchanges of information by telephone or face-to-face. Orientation processes scan a wide environment for new ideas, and involve a sophisticated network within which contacts are time consuming, face-to-face, and often involve three or more participants. Since the need for propinquity is related to the proportion of orientation, and to some extent planning, activities involved in a particular function, orientation functions tend to gravitate to the urban core while programmed functions can disperse. Thorngren felt that improved means of communicating information over long distances might lead to more, rather than less, spatial concentration of the orientation functions

which, with the dispersal of programmed functions, could produce a polarization of "information-rich" agglomerations and areas with less contact opportunities.

Most of the office research of this period was elemental, but Armstrong's (1972) study of office jobs in office buildings in the New York Region was both systemic and comprehensive. It identified three levels of offices with successively lower communications and hinterland requirements:

- complex headquarter operations with national or international hinterlands sought easy face-to-face communication between their executives. In 1965 this was 30 percent of all jobs in office buildings in the Region, and 80 percent of them were in the Manhattan CBD;
- middle-market offices had hinterlands ranging from metropolitan regions down to areas with about 150,000 population. This was 47 percent of all jobs in office buildings, and 55 percent of them were in the Manhattan CBD. The rest were in inner and intermediate suburbs so as to have access to large labour pools and to both the sub-regional consumer market and the national office market; and
- local market offices sought ready access to local consumers and were distributed in rough proportion to population. This was 23 percent of office building jobs, and only 9 percent of them were in the CBD.

In 1965, 52 percent of the Region's office building employment was in the Manhattan CBD, where the main offices were the finance, insurance and real estate group followed by services and manufacturing. The main suburban office types were government, transportation and utilities. The fifteen suburban office centres with over 2 million square feet of office space together contained 13 percent of the Region's office building floorspace, the fastest growing ones being those close to Manhattan or suburban downtowns with central area renewal schemes. (These findings generally anticipate the situation found to exist in Toronto in the late 1980s).

In summary, although business service offices expanded, diversified and specialized rapidly between 1945 and 1970, and although the post World War II decades brought continuing improvement in the quality and universality of telecommunications, there were no dramatic changes in the location of offices. Mass car use did enable "office parks" to come into being, and some of them were groupings of similar or complementary functions such as in Hartford's insurance complex (Murphy, 1966). However, those offices were seldom strongly linked, being attracted to the office parks by custom designed buildings in a car-oriented setting that offered quick highway access to the core area (City of Toronto, 1978). Overall, the office research of that period confirmed a number of important principles:

1. It is fruitful to distinguish between office activities involving personal or consumer services and those involving business or producer services, since the two categories generally have distinctly different clienteles, service areas and locational characteristics.
2. Consumer service offices serve the population directly and locate within quite limited market areas, much as lower order retailing does.
3. Business service offices divide roughly into two levels of control:
   - head offices of large companies may have metropolitan, national or even international hinterlands;
   - branch or sub-regional offices administer territories which may be of less than metropolitan scale.

   Both levels tend to congregate, as such offices deal almost exclusively with other business offices and institutions.
4. Elite office functions not only depend on information transfer from many sources but also benefit from convenient access to a choice of sources of information, and the face-to-face contacts deemed necessary by some elite (orientation) office functions are so costly in the travel time of participants that their concentration brings sought-after economies.
5. Since elite office functions require a broad range of skills, employing a relatively large proportion of executive and professional staff as well as clerical and technical support, they must be able to assemble suitable employees conveniently.
6. Routine or standardized office functions need minimal external face-to-face contacts and can maintain internal links by mail and telecommunications.
7. Since routine office functions employ large numbers and proportions of clerical workers they can be located in space outside the core, often in suburban locations.

These factors encourage high-order offices to congregate at the point of minimum aggregate travel, where they also have ready access to the CBD's retail and personal services. Branch offices locate centrally to the areas they administer, using telecommunications and mail to maintain contact with their headquarters. Programmed office functions can locate wherever clerical staff are available, such as in new premises in the suburbs, with the potential benefit of shorter commuting but where parking and other facilities have to be provided (Daniels, 1975). And consumer service offices locate in a pattern similar to low-order retailing.

The office location literature of this era still concentrated on the "necessity" for face-to-face contact in the transmission of certain types of intelligence, many of the researchers seeming to regard this as the determinant of office agglomeration and overlooking the role of other values in shaping

office patterns. There seems to have been little research concern about issues which are specific to the planning and efficient operation of cities, such as the affect that invading office buildings have on land prices in industrial areas, or the significance of rapid transit links to the success or failure of particular office centres.

2.3 SOME CITY DIFFERENCES AND NATIONAL DICHOTOMIES

In the 1970s and 1980s, various writers stressed the fact that cities exist within a systemic context, so that there are city specializations in corporate sectors (Borchert, 1978; George *et al.*, 1980; Marshall, 1981; Noyelle, 1983). In Canada, for instance, Montreal is strong in transportation and business services; Toronto in business services and in finance, insurance and real estate; and Vancouver in wholesaling and transportation (Davis and Hutton, 1981; Semple and Phipps, 1982). What is not clear is whether interurban differences in office specialization affect intraurban spatial patterns of offices, although it seems likely that certain specializations (such as stock market activities) should strengthen the core office area while others (e.g., insurance) might gravitate to suburban centres.

It is also clear that there are national hierarchies of corporate cities, in which the largest congregations of head offices are found in cities of national or international management importance such as London (Goddard and Marshall, 1983), New York (Daniels and Holly, 1983) and Toronto (see Chapter 3). Since information and services are transmitted through the internal structure of multi-site corporations, specialized business services tend to be poorly developed in provincial cities where many of the offices are controlled by head offices elsewhere (Palm, 1981). For example, Polese (1982) found that businesses in Quebec's Eastern Townships imported over half their business service needs from larger centres, and that half of those imports were acquired via their head offices. Thus business services can be an important basic economic activity in major headquarter cities.

In addition, in recent decades office patterns in many U.S. metropolitan areas have differed significantly from ones elsewhere. In Britain, France, Sweden, Holland and Canada, metropolitan CBDs remained attractive enough to offices that the governments encouraged deconcentration, so as to relieve downtown congestion and to achieve a more equitable distribution of office jobs (Cadwallader, 1985; Daniels, 1985; DeSmidt, 1984, 1985; Gad, 1975; Herbert and Thomas, 1982). In Toronto and Vancouver, such policies have included incentives to encourage the creation and growth of suburban office centres so as to improve "livability" and, at least potentially, to shorten the journey to work for suburban residents (Toronto, 1976; Vancouver, 1975).

On the other hand, in U.S. metropolitan areas business service offices have been deconcentrating steadily from the CBDs to suburban nuclei since the end of World War II, despite the inertia of capital invested in very large concentrations of monumental office buildings in the CBDs (Borchert, 1978, pp. 230-31). First manufacturing sales offices and the routine operations moved, then small business service firms and regional offices of large companies, followed by a rising number of corporate head offices (Muller, 1976).

Muller concluded that the construction of beltways has led to the American metropolitan CBD losing its accessibility advantage for a dispersing population which prefers cars, while the radial expressways have made non-rush hour business trips to the CBD very convenient. In addition, since suburban locations generally have better access to airports, most large cities have an airport/expressway complex of offices, hotels, shopping centres and industrial parks. He predicted that the CBD will attract a decreasing share of office activities because of its poor image, freeway accessibility which increasingly favours suburbia, and the growing strength of the suburbs as self generators of office growth. Nonetheless, office building employment in Manhattan increased by 40 percent between 1965 and 1975 (Armstrong, 1979), and Daniels (1982, p. 76) claimed that "The burst of office development following the construction of the suburban beltways . . . has not, with the possible exception of some regional capitals, been sustained."

A number of Canadian, British, Swedish and Dutch studies sought to identify office types best suited to decentralize from the largest CBDs (e.g., Tornquist, 1970; Daniels, 1975; Code, 1983). In Toronto, Code found that the most frequent movers have been offices in manufacturing, oil and finance. In terms of information potential, he rated life insurance, engineering consultants and oil companies as the offices most suited to suburban relocation, with investment dealers and customs brokers least mobile. Bennett (1980) found that Toronto International Airport had attracted small and medium sized professional service firms relying heavily on air travel in consultancy, as well as branch offices of foreign controlled firms. London offices most willing to move have been in manufacturing, insurance, finance, and transport and communications (Daniels, 1984).

Gad's (1975) examination of offices and their linkages in Toronto's "central corridor" stressed linkage characteristics as an explanation of decentralization tendencies: central area "stayers" had higher meeting frequencies than did decentralized "movers." He suggested that activities which complement each other should be encouraged to locate in the same centre to offset the high cost of face-to-face information transfer. Yet he found little evidence of actual functional clustering in Toronto's central corridor except for the cluster of related finance, law and mining company offices, which, paradoxically, had a low intensity of face-to-face contacts. He also found that manufacturing

offices were the most or second-most frequent meeting partner for the majority of types of office establishments, but that manufacturing company offices were widely dispersed.

Even when they do move, many relocating offices prefer short distance moves because they fear "contact damage" (Alexander, 1979; Bennett, 1980; Code *et al.*, 1981). Of all offices relocating from central London between 1963 and 1976, 38 percent remained within Greater London (Goddard and Marshall, 1983). A similar tendency has been noted in Toronto (Bennett, 1980; Code, 1983), Seattle (Daniels, 1982), Vancouver and Ottawa.

In Canada, despite office decentralization in a number of metropolitan areas, only Toronto has experienced significant suburbanization of elements of the high-order corporate office complex, while the agglomeration benefits related to vertical disintegration have fostered downtown growth of increasingly specialized jobs (Hutton and Ley, 1987). Hutton and Ley consider that there could be some modest potential for decentralization of head offices and related producer services in Vancouver, as a result of dissatisfaction with rising costs in the CBD, but that no more than one or two suburban centres could be primary receptors for such offices. Since research on information transmission needs has shown that over half of all face-to-face meetings could be replaced by audio conferencing (Goddard and Morris, 1976; Pye, 1979), the resistance to moving suggests conservatism regarding more than contact needs alone (DeSmidt, 1984).

The differences between Canadian and U.S. office location experience may stem from different national approaches to planning, different images of city centres and different levels of acceptance that what is good for General Motors is good for the country. Canada's more stringent planning controls have resulted in quite compact metropolitan areas, while the willingness of provincial governments to impose metropolitan-wide tax sharing provisions has inhibited new development beyond the urban fringe. In addition, big city Canadians have remained willing to rely quite heavily on public transportation, so that metropolitan and provincial governments have maintained and expanded their transit services. This has included expansion of fixed rail systems not only in the two largest centres but also in some of the next tier cities (e.g., Vancouver and Edmonton). All of these factors have contributed to the continuing vitality of Canadian metropolitan CBDs, further lessening the impetus for flight to a peripheral utopia.

In U.S. metropolitan areas, the poor pathological image and uncertain financial ability of the central cities have led new development of all types to leap-frog well beyond the urban fringes to "safe" greenfield sites in rural municipalities, where planning controls are minimal and where tax incentives are used to attract development. The aversion of Americans to regional government and their governments' readiness to facilitate dispersal by building both circumferential and radial urban

highways have resulted in continuing deterioration of downtown services as the central city tax base is eroded further, only exacerbating a poor-city versus affluent-suburb polarization. These factors led to office decentralization occurring earlier in the U.S. than in Canada, and a stronger tendency for office centres and regional shopping malls to be juxtaposed.

2.4 RECENT ELEMENTAL RESEARCH

During the 1980s, office research continued to focus on elements of function or of location, and few attempts were made to place those elements within a conceptual framework. Mathematical models explored location and contact patterns within a CBD as other factors varied (e.g., Tauchen and Witte, 1983; Clapp, 1983) or related office space demand to building cycles (Barras, 1983). Edwards (1983) modelled satisfying decision-making, representing the imperfect way in which many decisions are made but leaving the location outcomes unpredictable. Kutay's (1986) model linked decentralization to the size and sophistication of the firm, which he accepted as determinants of willingness to embrace new communications technology.

Scott (1982) observed that there has been some decentralization of routine office functions from the "nerve centres" of the major capitalist cities, and predicted that as head office functions standardize they too will decentralize, as has been the case in insurance. Yet, in examining vertical disintegration, he concluded that when the fragmented tasks are reconstituted within specialized independent firms, the clustering of those firms minimizes the costs of external transactions (Scott, 1986). This clustering in turn stimulates further vertical disintegration, so that the clusters grow in size and become increasingly differentiated internally. Thus the vertical disintegration of white collar functions strongly encourages spatial clustering in the metropolitan area, and most particularly in the CBD. Nonetheless, in the Los Angeles region a "major territorial complex" of high-technology establishments and related services has grown dramatically in Orange County (Soja and Scott, 1986). This appears to be contradictory.

The paradox may be resolved, at least partially, by recognizing that the 1960s wave of manufacturing decentralization in the U.S. stimulated the growth of business services in some lower order centres, where the existence of those ". . . producer services [subsequently] helped to create and attract new business, including manufacturing, and also to enhance the productivity and competitiveness of local firms" (Kirn, 1987, p. 370). If this process could attract producer services to smaller urban areas, then surely concentrations of decentralized manufacturing within metropolitan regions could have provided a similar attraction. Hansen (1990) noted that, since the ready availability of producer services can enhance manufacturing productivity, the density of such services in a

metropolitan area might be more important to its economic health than the size of its population. Ihlanfeldt and Raper (1990) found that the location of new independent office establishments in Atlanta was very strongly influenced by the proximity of support services, while new branch offices tended to rely on intracorporate provision of such services.

Yet the functional need for much of the face-to-face contact that high-order offices appear to seek has been questioned in studies concerned with modern means of information transfer, so that the very foundation of office agglomeration theory may be vulnerable. In fact, MacPherson (1988), while noting the advantage of proximity between plant and consultant as small- and medium-sized firms rely increasingly on external technical services for research and development, defined proximity as being within one and a half hours' driving time.

2.5 OFFICES IN THE SUBURBS AND (AT LAST) THREE MODELS

It has generally been accepted that routine back offices can be relocated to the suburbs (Gad, 1986); that offices cluster around the largest shopping centres in the "outer city" of large American metropolises (Muller, 1976); that relocating an office from city centre to suburbs or beyond brings a significant shift from public to private transportation for commuting (Daniels, 1975; Ley, 1985a); and that offices near large airports rely more heavily on air transportation than do offices elsewhere (Bennett, 1980). *But there seems to have been a less than satisfactory examination of which specific types of office do manage to operate successfully in suburban centres, and why; how successfully they maintain contact with related establishments; and what this implies for future urban spatial patterns.*

Gad (1979) acknowledged that the decreasing degree of clustering implied that it might not matter exactly where a certain office located provided it was within the central area. But must it even be central? Gad found that in Toronto, by the early 1970s, a quarter of the law firms, half of the accountants and two thirds of the engineering consultants were not in the central corridor, and that even the head offices of manufacturing and insurance companies were appearing in suburbia. Many of the law and accounting firms may simply serve local populations. But some suburban offices—certainly the engineering and manufacturing offices—must surely be of a higher order, and a few might be in the highest corporate order, even though office theory would predict a downtown location for them.

Code (1983) claimed that the quality and range of choice of information available in suburban office centres is so much lower than in the core agglomeration that any office moving from the core to a suburban centre would suffer a greater marginal loss in agglomeration economies than the centre's

marginal gain. However, Daniels (1985) claimed that high centralization of business services brings negative externalities in rising rents, taxes and the salaries of specialized staff; traffic congestion and longer commuting as population disperses; people congestion in central facilities; fragmentation of premises; and general social decay reflected in rising crime rates; most of which could be alleviated in suburban locations.

Clearly, offices do relocate from the CBD to the suburbs and, when those offices congregate in centres, this creates a demand for support services (restaurants, shops, printing); and the more convenient these services are the more attractive a centre will be. In the 1950s, the London Borough of Croydon committed itself to creating such a centre, which attracted "an impressive complex of office-based mixed and producer services, many of which moved some or all of their activities from central London" (Daniels, 1985, p. 246). In Atlanta too, Ihlanfeldt and Raper (1990) found that new office establishments were attracted by "amenities," implying that the quality of personal and hospitality services in a centre might influence firms to locate there. This supports the logic of municipal planning attempts to create clusters of office buildings in metropolitan suburbs. Office firms and their employees, potential employees or clients living in the suburbs might all benefit from the existence of suburban office centres.

Erickson (1983) concluded that clustering in fact reduces operating costs for some office functions, and that clustered suburban businesses would reap higher demand for their services than would isolated ones. He also identified a follow-the-leader process in which "...firms may cluster in established suburban locations because the perceived risk of failure is less in suburbs which have proven successful" as business centres (ibid., 115). Most importantly, Erickson formulated a model of metropolitan suburban morphology which included offices. He posited that the pattern of suburban employment stemmed from three sequential pairs of coincident spatial and structural processes:

- *Spillover and Specialization (1920-1940)*: Employment growth in suburban areas was led by industrial plants spilling over city boundaries, while their management functions remained downtown. The spread of commercial activities lagged and suburban residents remained dependent on the CBD. Differences in the specialized needs of plants, in terms of location characteristics and employment structures, encouraged agglomeration as the initial small clusters attracted more businesses and the first-in businesses expanded.
- *Dispersal and Diversification (1940-1960)*: A massive suburbanization of population and employment coincided with the growth of trucking, which freed many manufacturing establishments from locating in congested cities or rail corridors, while mass car ownership allowed commerce greater locational freedom. Only the office component of services,

characterized by high inter-establishment linkages, remained predominantly in the CBD. Growing urban economies achieved the thresholds needed to support an expanding range of functions, bringing increasing diversification of local economies. Although commercial facilities tended to locate in shopping centres, there was considerable geographical dispersal of suburban employment.

- *Infilling and Multinucleation (1960- ?)*: While U.S. central city populations remained unchanged, suburban populations grew by almost half and suburban employment increased even more rapidly. Infilling occurred in some of the areas initially passed over, partly because of rapidly rising transportation costs and partly because the new beltways usually provided better overall access to inner suburban areas. Where it was no longer marginally efficient to serve the expanding urban area from a single core, highly accessible locations at freeway interchanges attracted super-regional malls and commercial/industrial complexes. In these nucleations, business costs can be reduced by sharing services and infrastructure, interfirm transportation costs can be minimized, and the ability of consumers to make multi-purpose trips creates higher levels of demand. Erickson (1986) reported that almost all of the nucleations in 14 metropolitan areas were in inner suburban areas or in major intermetropolitan movement corridors, and that 90 percent of them were at or within two miles of a freeway interchange.

A rather similar recent contribution has been Daniel's (1985) descriptive, four-stage model of the suburbanization of business service offices:

- *Pre-1960*: Typically business service offices were highly centralized in the CBD.
- *1960-1969*: CBD disbenefits, as well as steady growth and diversification of business services, made suburban areas an alternative and a dispersed pattern of locations, often in single buildings, emerged. Much of this was exploratory since the nature of suburban office space demand was not yet clearly articulated.
- *1970-1979*: Business service demand for suburban offices more clearly favoured agglomeration economies similar to those of the CBD, and concentrations of offices began to appear at freeway interchanges in North American metropolises or at interchanges of public and private transportation in European cities.
- *Post-1980*: Suburban office centres are being consolidated for the same reasons that attracted business services to the CBD, and the centres are attracting some of the dispersed offices involved in the first stage.

Daniels felt that "Office parks do not fit at all easily into this schema . . . [since] they offer an environment which is the antithesis of that pertaining in the suburban centres . . . [which have] a morphology and density much like that of the CBD" (ibid., pp. 224-25). Yet the model could be modified to include office parks, which clearly satisfy a demand by certain types of low-contact, car-oriented offices.

The most encouraging progress towards a general theory of suburban office location has been Hartshorn's and Muller's (1989) model, which focuses directly on suburban office centres. They noted that, since the 1970s, there has been a steadily increasing deconcentration of high-order functions that had traditionally been bound to the CBDs of large cities. Large, multi-functional clusters of high-order activities, or "suburban downtowns" serving as corporate headquarter locations and the nexus for high-order support services, emerged in the 1980s, accelerating the transformation of suburbia into a fully developed "outer city." Hartshorn/Muller concluded that for a centre to be defined as a "suburban downtown" it should have at least: five million square feet of office space, including three or more high-rise office buildings housing at least one Fortune 1,000 firm's headquarters; one regional mall containing more than one million square feet of retail space; two major hotels; and total employment of over 50,000 (ibid., p. 376).

This notion of "suburban downtowns" is integral to their four-stage model of urban spatio-economic development:

- *Bedroom Community*: Suburban residential amenities and popular desires for homeownership attracted residents, who continued to work in the central city despite continually increasing commuting distances and growing peak-hour congestion. Some retailing migrated to the suburbs, but it was low-order and of limited range.
- *Independence*: Regional malls containing department stores appeared around freeway interchanges in the suburbs and, by the mid-1960s, started to lead development at the suburban edge. The accessibility and image of the malls attracted industrial and office parks to adjacent sites. Initially the suburban office parks housed small offices and largely clerical back offices, but the arrival of high-order retailing and a wide range of office and light industrial jobs made the suburbs largely independent of the central city.
- *Catalytic Growth*: By 1973 the suburbs contained more than half of U.S. metropolitan employment; this growth was paralleled by expansion of high income suburban housing and ever-more-specialized office functions in the centres. These took the form of either corridors along major suburban highways or clusters, the latter being either rings of office buildings and other activities around shopping centres or specialty groupings of various types including

office parks. The most prominent suburban centres emerged in the higher income realms, and housed corporate regional or national headquarters supported by a full range of professional functions and retailing, as well as hotels and cultural facilities. As their prestige and ability to attract high-order activities increased, these centres functioned increasingly as metropolitan level downtowns.

- *High-rise/High-technology*: In aggregate, the suburban downtowns came to surpass the CBD in office activity, and some of them became recognized for their well-designed highrise buildings, whose rents exceeded those in the CBD. Thus, in Atlanta, two suburban downtowns surpassed the CBD, and their share of office space continued to increase disproportionately in the late 1980s. Expansion of R and D activity usually occurs on less expensive land some distance from the suburban downtown, but is functionally linked to its services. The demand for clerical, hotel, retail and blue-collar workers exceeds the local supply, and the shortfall is met by rural-fringe commuters and reverse commuters from the central city. Commercial densities in the "downtowns" have been rising as parking lots have been decked and built on, while the introduction of townhouses and apartments have increased nearby housing densities as well. This mix of housing serves a wider cross section of incomes, and the need for long distance commuting to the centres has decreased.

Case studies revealed that suburban downtowns have "a variety of internal compositions, but there is much similarity in their overall function and impact" (ibid., p. 393). These "downtowns" have restructured the outer city: sprawl and dependency have given way to independence, specialization and high-order economic and cultural institutions.

The three models developed since 1983 appear to meet the criteria that each stage must be characterized by distinct elements, and that they identify the processes which produce the shift to each new stage. These models seem to be reasonable representations of what is known about the forces of change and consequent patterns in the suburbanization of offices and, upon further empirical testing, some synthesis of the concepts embedded in them should be possible.

2.6 SUBURBAN OFFICES AND GOVERNMENT INTERVENTION

In view of government policies aimed at decentralizing economic activities from capital cities to less developed regions, much of the British and Dutch literature related to the effect of such policies on office location. Repetitive themes were that restrictions on new office buildings in the CBDs of the capital cities led to some exodus, but the majority of the moves were to sites within the same urban field as the origin and generally involved low-order functions. Incentives to attract firms to

disadvantaged areas seldom achieved their targets—either they were too low to balance the costs of moving any but programmed functions, or the information potential and the social or business environment available at the destination were insufficient to attract high order activities. Attempts to relocate government services invariably met strong resistance from the upper levels of the civil service; data processing or customer service jobs might be relocated, but the decision making echelons remained in the capitals (DeSmidt, 1984).

Apart from some decentralization of government services, such national policies are unknown in North America. However, in the 1970s some Canadian metropolitan areas (e.g., Toronto and Vancouver) introduced policies aimed at office decentralization. Initially, these policies took the form of restrictions on the erection of large new office buildings in the CBD, particularly in Toronto, but later these were complemented by planning incentives to attract office construction to selected suburban locations. In essence, these initiatives sought to widen the range of services and jobs in the suburbs so as to improve livability there, while reducing the need for suburban residents to commute long distances and generating a better two-way balance of rush hour travel on radial transportation routes.

There has been little objective examination of the effect of such planning policies on office (re-)location. Ley (1985a, 1985b) examined the perceptions of employees regarding the central and suburban locations respectively of two large utility company head offices in Vancouver. Code *et al.* (1981) and Code (1983) sought to demonstrate the marginal costs for offices relocating to the suburbs in response to Toronto's policies. Gad (1986) mentioned types of firms relocating to Toronto's suburbs, and Gad (1991) added some description of the degree of decentralization that has occurred in other Canadian metropolitan areas. However, the published research has generally not evaluated the attractions of suburban office centres. Nor has there been a satisfactory analysis of the extent to which suburban office centres achieve the supposed benefits of reducing aggregate commuting distances or of increasing the reverse direction use of commuter routes, particular on public transit. Such issues must be addressed.

2.7 SOME GENERAL COMMENTS ON THE LITERATURE

Advances in telecommunications technology have virtually eliminated the friction of distance in transporting intelligence that was so significant in Haig's 1920s. In addition, mass use of the car has greatly increased freedom of choice for individuals regarding their places of work and residence and the distance between them. Other disciplines have identified the consequent emergence of "urban villages" as the metropolis expands beyond the day-to-day comprehension of its inhabitants, but office research has been slow to recognize these developments.

Hepworth's (1990) review of literature on "the information city" shows that many researchers now consider information production, processing and distribution to be the major force in economic development. Recent advances in electronic data processing and transmission have created a disproportionately expanding demand for computer literate experts and professionals who, some researchers claim, tend to be located in offices downtown. There has been a concomitant attrition of routine clerical jobs, which are generally claimed to have moved to peripheral locations, but which are readily capable of the automation that is now occurring. If this is indeed the case, a "ghettoization" of routine-task, clerical workers may create a multitude of poorly paid jobs beyond the protection of any collective action. Nelson (1986) claimed that a shortage of suitable clerical workers in the central city would induce offices to locate in the suburbs to take advantage of their pool of married, female secretarial workers who are unable to travel long distances to work. And in Toronto there has been some concern that a loss of clerical jobs from the CBD is making it increasingly specialized and "elite," and that such exclusivity has important social implications (Gad, 1986).

However, Huang (1989) found that this has *not* happened in Toronto, since there appear to be only very minor differences between the core office area and the suburban office centres in terms of occupation mix, gender proportions and commuting distances. She also found, rather surprisingly in view of conventional wisdom, that "back offices" provide a rather small proportion of the suburban office employment. Nonetheless, there appears to be an overall implication that, while specialist small service and production firms that are flexible will proliferate and form successful clusters of functionally linked activities, a large segment of society may be left behind.

Today, some high order offices are located in suburban centres in Canada. Does the suburbanization of higher order offices hold any real promise of stemming the perceived polarization of office functions that may be leading to a ghettoization of low-paid office workers? That question too must be addressed.

3.0 THE TORONTO METROPOLITAN OFFICE COMPLEX

Since this study was designed to examine the evolution of office location patterns in the Toronto CMA in general, and the patterns and processes of the spread of office buildings to suburban office centres in particular, it is necessary to establish the way in which the overall pattern has changed over time. However, it is useful first to describe some long-term trends.

The robust growth of Toronto's office complex since World War II reflects two large-scale trends which, while concurrent, are not necessarily related in a casual sense. First has been a long-term trend in developed countries to rationalize primary and secondary production for rising levels of labour efficiency, while an increasing proportion of the labour force participates in services. Second has been Toronto's emergence as Canada's pre-eminent control centre, as a centre of continental importance in stock market transactions, and as an international monetary centre.

All developed nations have experienced rising efficiency in the primary and secondary sectors and a steadily growing demand for services. Substantial "rationalization" of manufacturing during the current recession indicates that services will continue to be the main growth sectors of the economy. Table 1 shows the long-term trend to rising service sector employment in Canada, Ontario and the Toronto CMA. While not all service employees work in offices, most managerial, professional, technical and clerical workers do. Table 1 shows that while Ontario has marginally higher proportions in these occupations than does Canada, Toronto's proportions are even higher. The strength of these categories combined (in 1981: 52% for Toronto compared to 42% for Canada) confirms the dominant size of Toronto's office complex. The strength of the Managerial/Professional/Technical component (28% *v.* 23%) indicates the "elite" strength in its office jobs.

Toronto has the seventh largest metropolitan office market and the second largest stock exchange in North America (City of Toronto, 1985), but the clearest measure of Toronto's importance as a control centre has been its attraction of head offices. Table 2 ranks Canada's nine largest metropolitan areas by population, and shows the number of major head offices in each one. Toronto's dominance is overwhelming in all categories. In 1986, Toronto had the head offices of 45 of Canada's largest 100 industrial corporations and 50 of the top 100 financial institutions. Montreal was second with 19 and 17 respectively. The *Financial Post*'s largest 500 industrials, 100 "companies of tomorrow," 100 private companies, 100 financial institutions and 40 insurance companies are a fair surrogate for the 840 most "controlling" companies in Canada. Toronto had the head offices of 359 of these, Montreal had 147, Calgary 58 and Vancouver 55; and while Toronto had 10.5 of these head offices per 100,000 population, Calgary had 8.7 and Montreal 5.0. By all of these measures, Toronto is Canada's pre-eminent head office city.

Table 1: Sectoral Shares of the Labour Force: Canada, Ontario, Toronto

CANADA	1931	1941	1951	1961	1971	1981
Man/Pro/Tec	11.7	12.2	14.9	18.6	18.9	22.9
Clerical	6.7	7.3	10.8	13.2	17.8	19.2
Services	10.0	11.0	10.6	12.6	12.6	12.5
Sales	5.4	5.4	6.1	6.5	10.6	10.1
Secondary	33.8	33.5	37.6	36.0	31.5	29.1
Primary	32.4	30.6	20.1	13.1	8.6	6.2
ONTARIO						
Man/Pro/Tech	12.4	12.7	15.6	19.1	19.5	23.4
Clerical	8.3	9.7	13.2	15.3	19.5	20.3
Services	10.0	11.0	10.4	12.6	11.8	12.2
Sales	6.2	6.0	6.4	6.8	10.6	10.1
Secondary	38.3	39.0	41.4	37.2	32.8	29.6
Primary	24.8	21.6	13.0	9.0	5.8	4.4
TORONTO CMA						
Man/Pro/Tec			18.9	21.7	21.2	27.6
Clerical			20.4	21.2	24.7	24.5
Services			10.6	11.8	10.5	10.4
Sales			8.0	7.8	11.5	9.6
Secondary			41.1	36.4	30.9	26.9
Primary			1.0	1.1	1.2	1.0

Source: Various census bulletins of the Dominion Bureau of Statistics and Statistics Canada - see References.

Toronto's dominance in Canada's economy implies that its office complex may be structurally unique, with unique location characteristics. Nonetheless, as Canada's second tier metropolises grow, producing unacceptable travel times between their CBDs and suburbs, and as the use of telecommunications becomes more universal, office decentralization there should accelerate. Some Vancouver head offices and service firms already are dissatisfied with high costs in the CBD or place "relatively low importance on a central location . . . [so that there is] . . . some modest potential for decentralization" of head offices to peripheral centres (Hutton and Ley, 1987, p. 139). Thus Toronto's suburban office centres may be prototypical for those metropolitan areas.

3.1 TORONTO'S OFFICE COMPLEX—THE FIRST CENTURY

Toronto's office complex developed gradually during the nineteenth and first half of the twentieth century. In 1833, there were only five office buildings and the largest office establishment had just 11 employees, but subsequent eras brought more and more office buildings and steady growth in the size of the largest establishments. During those decades, the scattering of offices coalesced into a single cohesive mass around some significant institutions such as City Hall and the Stock Exchange. As that mass expanded, the demand for office space grew and the risk in erecting purely office buildings decreased, so that office buildings multiplied and increased in size. Also, as competition for central office space grew, driving up the costs for such space, certain office functions started to spin off to buildings in less central locations. As time passed, many of those buildings became integral to new sub-centres, only to be reabsorbed later into the expanding central office district. Meanwhile, new types of business services emerged.

Some offices remained, and still remain, attached to factories, warehouses and stores throughout the metropolitan area. Some small consumer service offices (e.g., lawyers and travel agents) were, and still are, located above stores, in shopping centres and in houses. These two types of offices account for about one third of office jobs. But the component located in free-standing office buildings, employing about two thirds of all office workers, remained highly concentrated until after World War II. Since then the office district has continued to expand westward and has also thrust northwards.

3.2 OFFICE GROWTH TRENDS: 1951-1986

Toronto's overall office complex mushroomed from about 50,000 workers and 1.3 million square metres of office building space in 1951 to about 409,000 workers and 10.3 million square metres in 1986 (Table 4). This is equivalent to an average compounded growth rate of 6.4 percent

Table 2: Head Office Locations of Major Canadian Corporations: 1986

Metropolitan area	Pop. (mil.)	Top 100 Industs.	Top 100 Finance	Top 840	Top 840/ 100,000
Toronto	3.43	45	50	359	10.5
Montreal	2.92	19	17	147	5.0
Vancouver	1.38	11	8	55	4.0
Ottawa	.82	--	3	21	2.6
Edmonton	.79	1	2	16	2.0
Calgary	.67	11	1	58	8.7
Winnipeg	.63	8	2	25	4.0
Quebec	.60	--	1	10	1.7
Hamilton	.56	1	1	16	2.9

Source: Financial Post 500, (1987).

per year—for 30 years, while the CMA's population grew at a compounded average of only 3.1 percent per year.

Whereas five sixths of all office building space was in Metro Toronto's Planning District 1 (PD1)* in 1951, half had located elsewhere by 1986, much of this being in the post-World War II suburbs. Thus, between 1951 and 1986, while the central office building floorspace grew fivefold, the non-central floorspace increased twentyfold. And, just as office buildings spread to non-central locations within Metro Toronto after World War II, so they are now also spreading to urban centres in four regional municipalities which are part of the CMA but beyond Metro's boundaries. In 1971, these "regions" contained 21 percent of the CMA's population, but only three percent of its office building floorspace. By 1986, the regions' share of the CMA's population had risen to 36 percent and they had eight percent of the CMA's office building space (Table 3).

3.3 THE LOCATION OF NON-CENTRAL OFFICE BUILDINGS

The majority of Toronto's early office buildings outside PD1 were single buildings in scattered locations. They appeared initially in areas designated for "industrial" uses or in "commercial" areas at intersections that were to become subway stations. These office buildings were pioneering efforts to accommodate small office establishments serving localized markets, and their locations were largely experimental. In general, they provided satisfactory space at reasonable cost for small business and consumer service offices such as travel agencies, accountants, lawyers and engineers. Although most of these establishments drew their clientele from their immediate surroundings, some of them served a wider suburban area. That clientele relied almost solely on cars for business travel, and this car orientation brought to light a locational deficiency in many of the scattered buildings. They were located satisfactorily relative to the immediately surrounding clients of most of the offices, but those establishments seeking to serve a wider market needed buildings related more conveniently to the highway system.

By the late 1960s a few locations, generally intended for industrial use but which were well served by both east-west and north-south car routes, emerged as key areas for clusters of suburban

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*There have been various delineations of the central office area and thus estimates of its office building floorspace and employment. Metropolitan Toronto Planning Department maintains an inventory of office buildings by Planning District, and, in a study of relative change, consistent definition of a core office district is more important than the exact delineation of that district's boundaries. Therefore, Metro's office building statistics for its PD1 have been used in this study as a fair surrogate for the central office agglomeration.

Table 3: Growth in Office Building Space in the Toronto CMA: 1951-1986.

	Core (PD1)	Rest Metro	Rest CMA	Total CMA
1951	1,097,900	224,200	N/A	1,322,100
----	=83.0%	=17.0%	=0.0%	=100.0%
Increase	48.7%	47.6%	3.7%	100.0%
1961	1,702,500	815,800	46,000*	2,564,300
----	=66.4%	=31.8%	=1.8%	=100.0%
Increase	46.7%	49.3%	4.0%	100.0%
1971	2,824,900	2,002,100	143,500	4,970,500
----	=56.8%	=40.3%	=2.9%	=100.0%
Increase	42.5%	45.9%	11.6%	100.0%
1981	4,466,200	3,771,400	592,500	8,830,100
----	=50.6%	=42.7%	=6.7%	=100.0%
Increase	49.8%	35.2%	15.0%	100.0%
1986	5,208,500	4,297,000	816,500	10,322,000
----	=50.5%	=41.6%	=7.9%	=100.0%

Note: Absolute data are square metres of floorspace.

Source: Derived from Metro Toronto, 1987, Tables 2, 8; and from Metro's inventory of office buildings.

offices; particularly areas adjacent to the radial Don Valley Parkway and the crosstown Highway 401. Clusters also appeared at the St. Clair and Eglinton subway stations. Now concentrations of office buildings are emerging in a variety of locations, including some in the outer regions. By 1986 there were 19 identifiable clusters of office buildings in the CMA, all at or near either a highway intersection or an intersection of a highway or subway with a main road in the cross direction. Most have a highway or subway link to the CBD (Table 4 and Figure 1).

By 1986 these clusters contained almost one third of all office building floorspace and employment in the Toronto CMA. A pattern that initially had 100 percent of the non-central buildings scattered had evolved into one where about 58 percent of the non-central office building floorspace and employment had reconcentrated into 19 centres; three quarters of that space being in just eight of them. So, although a substantial number of non-central clusters of office buildings have emerged, eight of those centres have attracted most of the offices which have gravitated to non-CBD clusters.

3.4 PLANNING AND THE LOCATION OF OFFICE CENTRES

In the early 1970s, the City of Toronto adopted policies to slow the growth of office space in the CBD to combat increasing traffic congestion downtown, while Metro Toronto promoted the growth of suburban centres to provide better services and more job opportunities for suburban residents and to achieve better two-directional use of commuter transportation routes (Metropolitan Toronto, 1976). North York was the first suburban municipality to encourage office buildings to be grouped by awarding density bonuses for new buildings in a half-dozen "office development areas," which were mainly on land zoned for industrial use. North York also encouraged office building on land within 457 metres (1500 feet) of its stations on the radial Yonge subway line, a policy that favoured the replacement of small mixed-use buildings by new office and apartment towers (North York, 1977, 1981). North York's and Metro Toronto's office policies reinforced established trends in the case of those office development areas that were alongside either the Don Valley Parkway or the Yonge subway, and these areas have attracted the vast majority of the office buildings erected in North York since the mid-1970s. However, North York's other office development areas, which were so designated simply because of the few scattered office buildings in them by 1973, have been ignored by office building developers. Since the mid-1970s, first Scarborough and more recently Etobicoke and Mississauga (three other suburban municipalities) have all attempted to promote the development of office buildings clustered in centres near highway interchanges or around rapid transit stations.

Table 4: Distribution of Office Buildings in the Toronto CMA: 1986.

Metropolitan Toronto		% Floor Area		% Employment	
Central area (PD1)			50.5		50.4
Centres:	Yonge/Eglinton	3.3		3.1	
	Yonge/St. Clair	2.8		2.5	
	North York Downtown	2.2		2.7	
	Scarborough City C.	2.1		2.3	
	Islington/Bloor	1.0		1.1	
	Sub-total		11.4		11.7
Parks:	Don Mills/Flem.Pk.	3.5		3.4	
	Consumers' Road	3.2		3.0	
	Duncan Mills	1.9		1.9	
	Hwy. 427/Etobicoke	1.8		1.8	
	Hwy. 404/Finch	1.3		1.1	
	Thorncliff Park	0.6		0.7	
	Keele/Wilson	0.6		0.8	
	Yorkdale	0.4		0.4	
	Airport Strip	0.3		0.3	
	York Mills/Yonge	0.3		0.3	
	Sub-total		13.9		13.7
Other locations in Metro			16.3		16.4
Rest of the CMA					
Centres/ Parks:	Mississauga City C.	1.3		1.3	
	Meadowvale	1.0		.9	
	Airport Road	.7		.7	
	Cooksville	.4		.4	
	Sub-total		3.4		3.3
Other locations in Rest of CMA			4.5		4.5
(%)			100.0		100.0
Total in Toronto CMA (sq. metres/employees)		10,322,000		409,000	

Note: Employment in the Rest was estimated at 25.5 sq. metres of floorspace per employee.

Source: Derived from Metro Toronto, 1987, Tables 9, 13; and from Metro's inventory of office buildings.

3.5 TRENDS AND CHARACTERISTICS IN TORONTO'S OFFICE COMPLEX

Some overall metropolitan trends can be identified in the evolution of Toronto's office complex. Even during the early stages in the evolution of Toronto's offices:

- the scattering of offices coalesced into one cohesive mass around significant institutions;
- as that mass grew the market for office space expanded and, as the risk in erecting office buildings decreased, the size of the new office buildings increased; and
- as competition for central office space increased certain office functions moved to less central buildings.

A recent trend has been that, while central office building floorspace increased fivefold between 1951 and 1986, the non-central office space grew twentyfold, with non-central office building floorspace and employment rising from one sixth to half of the total, almost half of the latter being concentrated in eight clusters of office buildings. And, because of continuing efforts to enhance labour efficiency in the primary and secondary sectors and steadily rising demand for services, office functions will remain the growth sectors of the economy for the forseeable future, so that these trends are unlikely to change.

Some of the characteristics of office location are more specific to the metropolitan suburbs. Firstly, in suburban areas scattered office buildings provide space for offices serving a restricted market area, but that need is limited and can be satisfied by occasional additions of similarly located buildings. Secondly, since many office establishments in suburban office buildings serve a large market area, their highway access to that market must be very convenient and such firms must be close to an intersection of two highways or an highway/arterial-road intersection. In addition, many establishments that locate in suburban office buildings seek a location which has either highway or good rapid transit access (or both) to the CBD.

Thirdly, there is a strong tendency for suburban office buildings and establishments to be clustered in a few mixed-use "downtowns" and a greater number of single-use office parks. While this may stem from an agglomerative need on the part of the office functions, it may be because there are only a limited number of locations which have the level of accessibility sought by the office functions. Such concentrations of office buildings and establishments can *not* be attracted to areas that do not have the accessibility regarded as essential by the office functions. Therefore transportation network planning is a critical part of, and must be integral to, any planning for office centres. And fourthly, building size in some suburban centres increases significantly as those centres prove themselves to be capable of sustained growth, with rising demand for office space and reduced investment uncertainty.

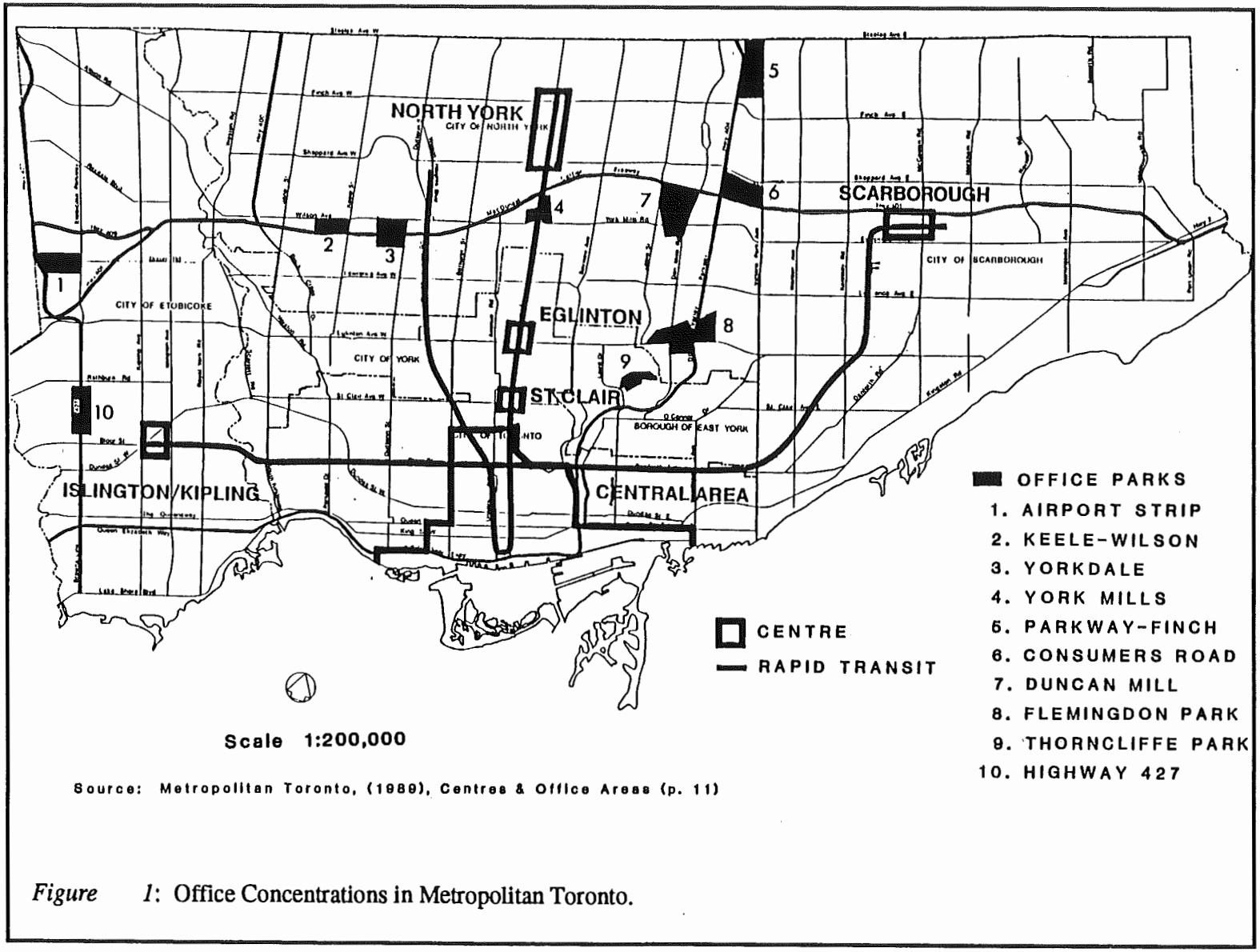


Figure 1: Office Concentrations in Metropolitan Toronto.

However, the overwhelming conclusions are that offices are decentralizing and that locations for suburban office establishments are determined largely by access: highway access, road access, rapid transit access and access to the CBD.

3.6 TORONTO SUBURBAN OFFICE CENTRE CASE STUDIES

Just eight of the 19 clusters of non-central office buildings in Toronto contain three quarters of the total office building space and employment that is in the centres (see Table 4 and Figure 1). Therefore these eight must surely be the centres which best meet the location needs of the offices attracted to suburban clusters. So three of them—North York's "Downtown," Scarborough's "City Centre" and the Consumers' Road "office park"—were selected as case studies.

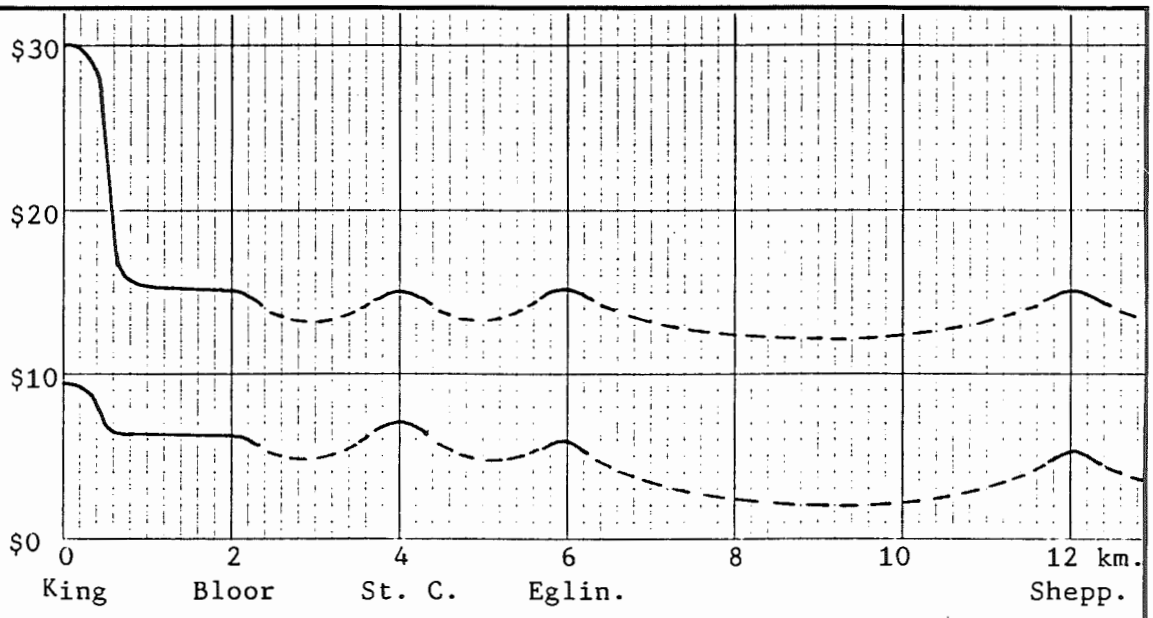
Each of the selected centres has a concentration of offices and each is attracting a growing proportion of office space, establishments and employment. Their sites differ, however, ranging from vacant land to sparsely developed industrial land to land covered by small buildings 30 or more years old. The intensity of land use varies between them, as do the variety of activities in them. Each has a transportation link to the CBD but those links differ in mode, travel time and convenience. In 1986, these three areas contained one sixth of the office space and employment in the Toronto CMA's non-central office buildings and, given their range of characteristics, they seem to represent most of Toronto's office building space in centres other than the CBD.

The case study centres were examined to determine their evolving characteristics in land use composition, activity mix, types and sizes of buildings, rate of growth in office floorspace, size of resident and worker populations, major access, and surrounding uses. The aim was to identify the centres' similarities and differences, to identify the types of offices that operate successfully in them, and to explore the characteristics of these centres which attract office establishments. The findings could then be used to provide a rationale for suburban office location decisions.

In addition, this study was intended to complement the Toronto central office area research undertaken by Gad since the early 1970s and by Code *et al.* since the mid-1970s, and the findings of other relevant studies such as Bennett's (1980) study of airport related offices and Huang's (1989) study of office area labour sheds. Wherever possible this study's findings have been related to their conclusions.

3.7 DIFFERENTIALS IN FLOORSPACE COSTS

Although space costs are usually under 15 percent of office overhead (Manners, 1974; Hutton and Ley, 1987), it is commonly believed that rents strongly influence location decisions.



Source: Building Owners and Managers Association (1986)
Gibson Willoughby Limited (1973)

Figure 2: Asking Rents/Sq. Foot of Vacant Office Space along Yonge Street

Preliminary investigation showed that rent differentials between much of Toronto's central office district and the suburban office centres are minimal, so that rents should seldom be the determining factor in office location choices. Nonetheless, rents were examined as a context for location decisions, but from a singular perspective. While the usual practice is to examine the average cost of all space in given locations, that value is irrelevant to any enterprise seeking a new location. In such cases the effective measure is the cost of space that is not only suitable but also *available*. Therefore, this study examined rents for vacant office space in the financial district, the rest of the central office district, two other office centres at subway stations in the City of Toronto, and the three case study areas.

In 1973, the asking net lease cost of vacant space in the "financial district" was generally between $8.00 and $10.50 per square foot, with prestige space commanding up to $15.00. In the remainder of PD1 rates generally ranged from $6.00 to $6.50. This was slightly lower than in the St. Clair/Yonge centre (about $7.00, with prestige space at $9.00), higher than in the Eglinton/Yonge area (about $5.50, with prestige space at $7.00), identical to the Consumers' area, and higher than in the North York centre (about $5.00). There was no leasable space yet in the Scarborough centre (Gibson Willoughby, 1973). Thus, there was a clear differential between asking net rents for vacant office building space in the financial district and rents for vacant space in the rest of the CBD and in the other centres. However, as the normally assumed inverse relationship between rents and distance from the "centre" did not continue beyond a limited distance from Toronto's centre, a smooth curve of diminishing rents could not be drawn (Figure 2).

Asking net rents for vacant office space in 1986 presented an even less traditional picture. There was an obvious gap between rents in the financial district ($25.00 to $35.00, with prestige space at up to $45.00) and all other locations. But, apart from the Consumers' area (where rents were $2.00 to $5.00 lower than in the other areas), the asking rents for vacant office space were identical in the other centres. In the core office area (excluding the financial district), St. Clair/Yonge, Eglinton/Yonge, North York Centre and Scarborough Centre, the majority of vacant office space was being offered at net rents of $10.00 to $20.00, with the actual rate related to quality of space rather than distance from the centre (BOMA, 1986).

Code (1987/88) reported that Toronto's "downtown" office rents averaged 157 percent of suburban rents until 1976, and slightly over 190 percent after 1980. Provided that Code's "downtown" was the financial district, this study found similar differentials of 168 percent in 1973 and 200 percent in 1986. It seems that Toronto's elite office establishments will pay a huge premium for the most truly central locations. But most of the central office area is now competing with a few other major office centres on equal terms. In fact, most of the bid-rent curve for office space has

become a "level playing field" with some bumps and hollows in it. A similar situation has recently been shown to exist in the Detroit metropolitan area (Morrison, 1990).

Having established that rents should have a minimal influence on most office location decisions, it is now time to examine the physical evolution of the three case study centres.

4.0 THE CASE STUDY CENTRES

North York and Scarborough were both rural townships, containing a few villages, until Toronto's expansion spilled into them after World War II. Between 1951 and 1971, North York's population exploded from 86,000 to 500,000, but by the mid-1970s there was virtually no vacant land left in the municipality and its population has remained just under 560,000 since then. Scarborough's population grew steadily from 56,000 in 1951 to 485,000 in 1986 but, although Scarborough is the only municipality in Metro Toronto that still has undeveloped land, its population growth also has slowed since vacant land became scarce in the mid-1980s.

In the late 1960s, North York's retail needs were well served by two regional malls and a hierarchy of community and neighbourhood centres. But it did not have a downtown, and the possibility of attracting office functions of any significant scale had not even been anticipated in its municipal plan and zoning. The municipality did not allocate any land specifically for office buildings when it drew up its first municipal plan and zoning by-law in the late 1940s and early 1950s, or when it revised its plan in the late 1960s. In the 1950s, when a demand for office buildings was becomming evident, North York permitted office development by "deeming" that the intent of its plan and zoning had been to allow office buildings in all industrial areas. Thus in North York office buildings were seen as being associated with manufacturing rather than business. Similarly, until the early 1970s, Scarborough's retailing was provided by a number of shopping strips and shopping centres. It too lacked a downtown, and it too had not seriously considered the possibility of attracting major office functions and buildings.

4.1 INITIAL DEVELOPMENT IN THE CASE STUDY AREAS

In 1966, when an insurance company erected a one-storey office building on Brimley Road, it and a farm house were the only buildings in the block bounded by Highway 401, McGowan and Brimley Roads, and Ellesmere Avenue, that was to become Scarborough's "City Centre" (Figure 3). By 1972, much of the land west of this block was covered by industrial buildings, low-density residential subdivisions covered the land to the south, and four one-storey buildings had appeared along Progress Avenue east of McGowan. But, despite its centrality in Scarborough and its accessibility via Highway 401, no further buildings had been erected in the future "City Centre" block.

In North York, Yonge Street had served as "main street" for two villages which became central to a vast residential area in the 1950s. The first office building on Yonge Street was the township office, erected one and half kilometers north of Highway 401 in 1956. Between 1959 and 1965 four other small, two-storey office buildings opened, three of them being north of Finch Avenue

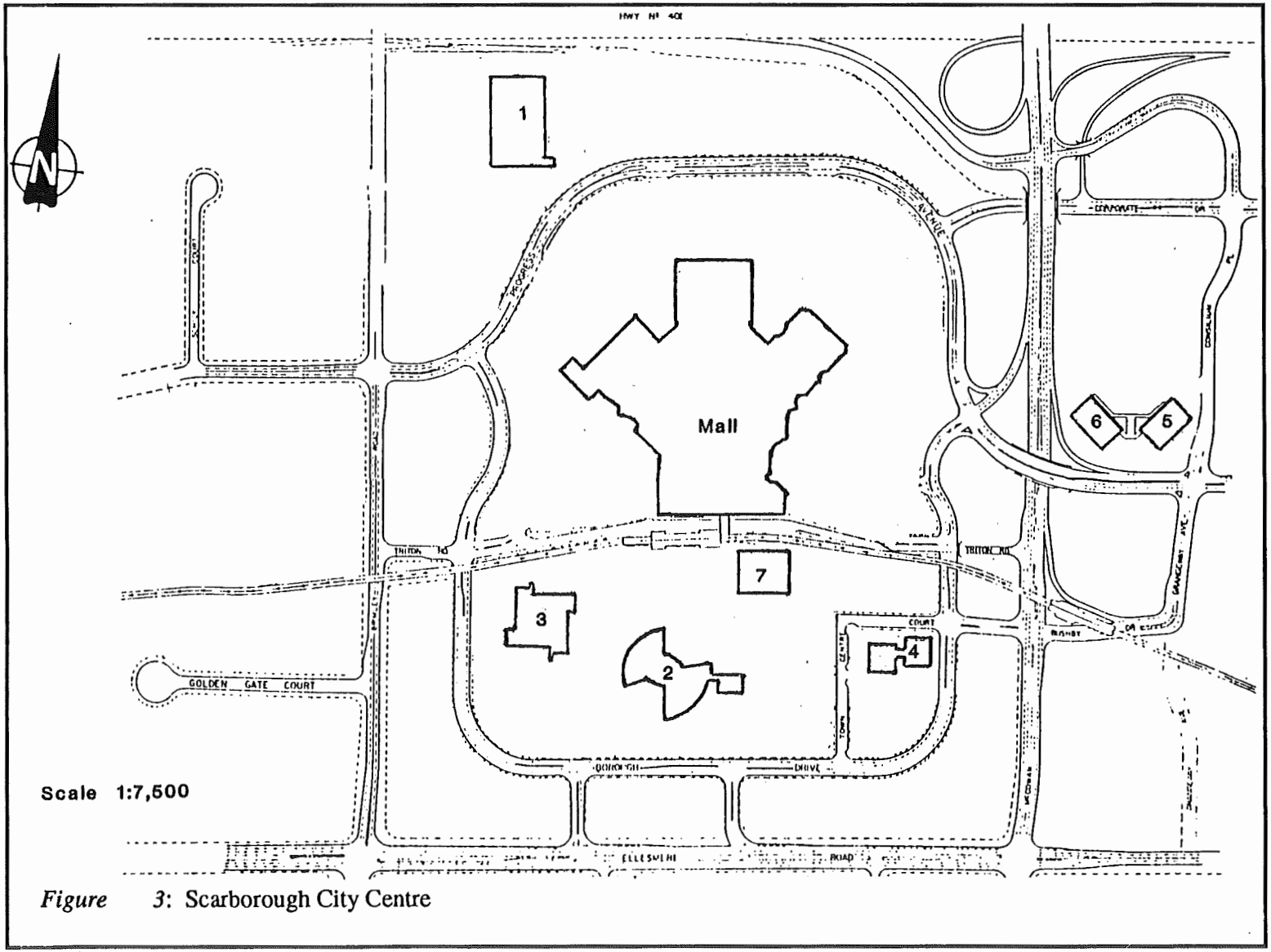


Figure 3: Scarborough City Centre

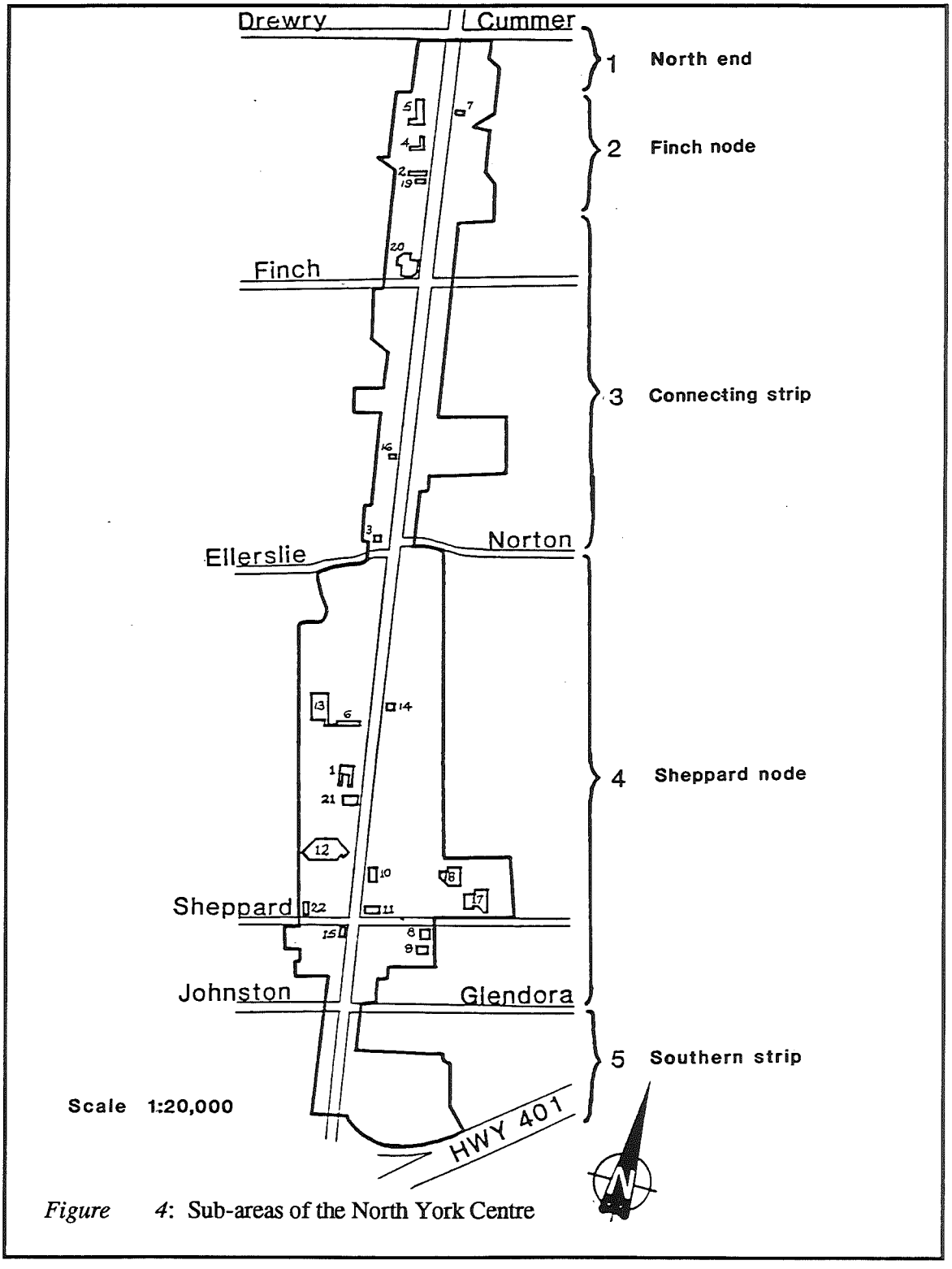


Figure 4: Sub-areas of the North York Centre

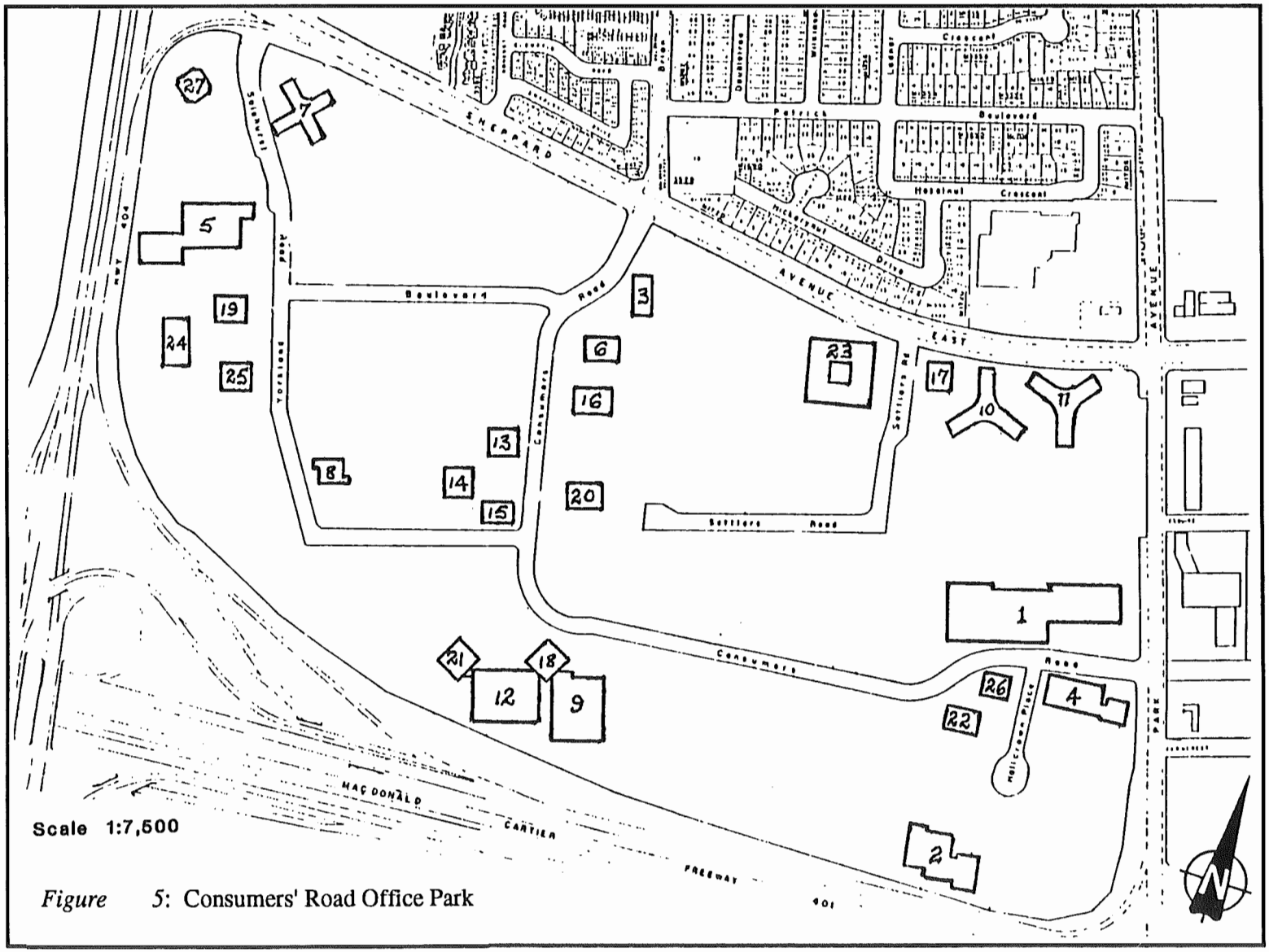


Figure 5: Consumers' Road Office Park

(Figure 4). Only one of these contained space for lease, the others being occupied by two utility companies and a credit union. The first relatively modern office buildings were the School Board office, built north of Sheppard in 1970, and a speculative building north of Finch in 1971.

The Yonge subway extension to Finch, with a station at Sheppard, opened in 1973, and two custom-designed corporate offices were built on Sheppard in 1974. Thus, by the mid-1970s the Centre had nine office buildings, of which four (containing 17,400 square metres of office space) were clustered north of Finch and four much larger ones (containing 41,100 square metres of space) were all within walking distance of the Sheppard station. The centrality of Yonge Street to North York, the opening of the subway stations at Sheppard and Finch and the presence of the municipal, schoolboard and utility company offices clearly indicated that this section of Yonge was the "centre" of North York. But this strip of largely two-storey buildings, with stores at street level and offices above, lacked "central" functions.

Also in North York, but at its eastern boundary, an 85 hectare parcel of land bounded by Woodbine, Sheppard and Victoria Park Avenues and Highway 401 seemed to have no special attraction, other than its proximity to the highway, until the mid-1960s (Figure 5). This farmland was zoned for industrial use, but the only urban facilities on it were a drive-in movie, a gas station and a tiny commercial building. By the mid-1960s, a car dealership and one industrial building were under construction and streets, including Consumers' Road, were being built into the area. More importantly, however, the Don Valley Parkway was being extended northward along its western boundary and would open not only as the rate of office building construction in North York was accelerating, but also as the tendency for those buildings to be grouped alongside major highways started to appear.

The Don Valley Parkway extension and the area's basic internal roads were completed between 1966 and 1971, and a wave of development invaded the area. Six small commercial buildings, a mall of 28 small industrial/commercial units and eleven new single-storey industrial buildings were erected. The area also attracted 92,000 square metres of office floorspace in twelve new office buildings, which ranged from 2,800 to 21,700 square metres in size and from two to seven storeys in height, with five of them containing a mixture of uses.

4.2 DEVELOPMENT PRESSURE AND PLANNING FOR CHANGE

In the late 1960s, Scarborough decided to build a new city hall at the same time as Eatons/Trizec was planning to build a regional shopping mall in the east end of Metro. Both were seeking easy car access and high visibility, which led to a collaborative decision to build both the mall and the civic centre south of Highway 401, in the vacant block between Brimley and McGowan Roads,

Table 5: Office Buildings in Scarborough City Centre

No.	Address	Year Occ.	No. of Stys.	Office Space (sq.m)	Project Space (sq.m)	Off. % of Proj.	FAR of Proj
1	1801 Brim.	1966	1	6,900	6,900	100%	0.1
Sub-total: pre-1971			1	6,900	6,900	100%	0.1
2	150 Borough	1973	5	27,900	27,900	100%	0.5
Sub-total: 1972-76			5	27,900	27,900	100%	0.5
3	100 Borough	1979	6	23,400	23,400	100%	0.9
Sub-total: 1977-81			6	23,400	23,400	100%	0.9
4	55 Town Cen.	1983	8	20,700	20,700	100%	2.6
5	200 Consil.	1984	16	34,500	34,500	100%	1.7
6	100 Consil.	1985	16	34,500	34,500	100%	1.7
7	200 Town C.	1985	12	40,000	40,000	100%	3.7
Sub-total: 1982-86			13	129,700	129,700	100%	2.2
Total to 1986			9	187,900	187,900	100%	1.0

Source: Author's data.

as catalysts for the development of a mixed-use centre. In 1973, both the Scarborough Town Centre mall and the new City Hall opened. By 1978, the old farm house had been converted into a restaurant and another eight one-storey buildings had opened on Progress east of McGowan, completing a cluster of twelve one-storey buildings there (Table 5).

The City reviewed its Centre plan in 1981, deciding that pedestrian comfort was inadequate and that the urban form should be more compact. Glassed pedestrian tubes were built and paved surfaces around City Hall were improved so as to create pedestrian precincts. But there has been little intensification of the activities and parking still dominates large areas. The pedestrian environment is so bleak that one office complex runs a bus to and from the mall, only 400 metres away. The City is committed to developing a "City Centre" and has installed the essential roads and services, but it seems to be ambivalent as to the nature of that centre, which is now dominated by the shopping mall and parking lots.

Between 1979 and 1985, five modern office buildings were erected: the six-storey Bell Telephone building opened in 1979, the six-storey Canada Life Centre in 1983, two 16-storey office buildings on Consilium Place (immediately east of McGowan) in 1984 and 1985, and the 12-storey federal government building in 1985. Thus, in 1985, the centre included a regional shopping mall, a small 1960s office building and six modern office buildings which contained a total of 181,000 square metres of space, averaging 30,200 each. Since the business community seems to view the centre as having potential but not having reached that potential yet, no new construction was undertaken between 1973 and 1979, nor in the second half of the 1980s.

In the early 1970s, North York was confronted with a huge redevelopment proposal which anticipated the opening of the Yonge subway extension. A developer proposed to erect a mixed-use complex containing 140,000 square metres of space, at a floor area ratio of over four times its site area, covering two city blocks opposite the future Sheppard station. North York clearly favoured redevelopment, since it was ever ready to amend its own official plan to accommodate development proposals, but the limits to which the zoned densities would be increased and the rules which would govern the changes were not clear.

The massive complex at the Sheppard subway station was completed in 1976. All of its retail space and 1,029 apartments were rented immediately, but leasing of the 33,500 square metres of office space took a year and a half. A large federal government office building opened in 1977, the new city hall in 1979, three other small office buildings were completed, and a number of apartment projects were under construction by the end of the 1970s. Some of these projects included shopping at street level. Thus the late 1970s saw the opening of six more office buildings containing a total of

Table 6: Office Buildings in the North York Centre

No.	Address	Year Occ.	No. of Stys	Office Space (sq.m)	Project Space (sq.m)	Off. % of Proj	FAR of Proj
1	5000 Yonge	1956	2	6,900	6,900	100%	0.2
2	5740 Yonge	1959	2	2,100	3,700	57%	1.0
3	5290 Yonge	1960	2	1,300	1,300	100%	0.5
4	5760 Yonge	1962	2	3,300	3,300	100%	0.3
5	5800 Yonge	1965	2	4,600	4,600	100%	0.1
Sub-total: pre-1966			2	18,200	19,800	92%	0.2
6	5050 Yonge	1970	5	10,600	10,600	100%	0.6
7	5799 Yonge	1971	11	7,300	21,100	35%	0.6
Sub-total: 1967-71			8	17,900	31,700	57%	0.6
8	45 Shep E	1974	7	10,500	23,600	100%	2.0
9	47 Shep E	1974	9	13,100			
10	4881 Yonge	1976	9	10,100	140,700	24%	4.1
11	2 Shep E	1976	19	23,500			
Sub-total: 1972-76			11	57,200	164,300	35%	3.5
12	4900 Yonge	1977	13	54,600	61,400	89%	4.1
13	5100 Yonge	1978	6	18,300	24,300	75%	0.7
14	5075 Yonge	1978	10	7,700	8,200	94%	3.3
15	4800 Yonge	1979	2	1,200	2,300	51%	1.9
16	5400 Yonge	1980	5	2,700	3,300	80%	1.6
17	90 Shep E	1981	7	27,700	27,700	100%	1.1
Sub-total: 1977-81			7	112,200	127,200	88%	1.6
18	80 Shep E	1982	4	13,700	13,700	100%	1.1
19	5734 Yonge	1982	8	5,800	5,800	100%	2.5
20	5650 Yonge	1986	23	63,400	79,100	80%	3.3
21	4950 Yonge	1986	23	36,200	44,200	82%	5.1
22	40 Shep W	1986	8	9,100	9,700	94%	4.8
Sub-total: 1982-86			13	128,200	152,500	84%	3.1
Total to 1986			8	333,700	495,400	67%	1.6

Source:Compiled from the author's data.

115,000 square metres of office space. These buildings tripled the amount of office space available in the centre, and all were located at or near the Sheppard station (Table 6).

In 1979, North York adopted a new plan for its Yonge Street corridor. It set density limits that were below what developers claimed was necessary to achieve redevelopment, but above what citizens' groups claimed was needed to protect their homes. It would not restrict redevelopment to a compact area, where it might achieve a "critical mass," but allowed large scale redevelopment around both the Sheppard and Finch subway stations with less intensive redevelopment along the strip joining the two nodes and along a strip from Sheppard south to Highway 401. It relaxed the zoning to allow a wide range of CBD-type functions in the area. The municipality improved piped services to accommodate redevelopment, a strong majority of council supported the policy so that development proposals were approved readily, and a development department was set up to publicize the centre and attract investment. Meanwhile the City of Toronto was trying to restrict office growth in its CBD, and Metro Toronto was drafting a policy to deflect some of the office growth to suburban centres.

Between 1980 and 1986, a number of apartment buildings were completed and seven new office buildings added a further 220,000 square metres of space. These offices included a small rental building over half a kilometer south of Finch, plus a small rental building and a large corporate building just north of Finch. The other four buildings were all close to Sheppard. Whereas all pre-1970 office buildings were very small, and more than half of the 1970s buildings were under 10,000 square metres, the 1980s buildings are predominantly large and high-rise. By 1986, the centre had 336,000 square metres of office space in 22 office buildings, which ranged in size from 1,200 to 63,400 square metres and from two to 23 storeys. Six were under 5,000 square metres but two were over 50,000.

In 1987, at the same time as Toronto's Transit Commission completed a new subway station opposite City Hall, about 700 metres north of the Sheppard station, the density incentives for redevelopment in the Sheppard sub-area were raised. By then North York's "Downtown" had gained a very favourable image in business circles so that five new office buildings, containing 128,000 square metres of floorspace, opened between 1986 and 1989.

Elsewhere in North York, there had been a steady intrusion of office buildings into industrial areas by the early 1970s, and the official plan's failure to accommodate office buildings explicitly could no longer be ignored. North York formulated a policy of continuing to allow office buildings in industrial areas, where it encouraged them to be concentrated in designated "office development areas" by allowing them higher densities there. Some of the areas were designated simply because they contained one or two office buildings in 1973, and they have attracted few office buildings since

Table 7: Office Buildings in the Consumers' Road Area

No.	Address	Year Occ.	No. of Stys	Office Space (sq.m)	Project Space (sq.m)	Off. % of Proj	FAR of Proj
1	500 Consum	1968	5	6,900	21,700	31%	0.4
2	50 Hallcro	1969	2	2,400	5,000	48%	0.4
3	2175 Shepp	1969	3	5,000	5,000	100%	0.6
4	2450 Vic P	1969	7	4,000	4,000	100%	0.4
5	255 Yorkla	1969	2	4,100	8,500	48%	0.4
6	150 Consum	1970	5	6,100	6,100	100%	0.7
7	2025 Shepp	1970	4	9,000	10,000	91%	0.4
8	180 Yorkla	1970	2	1,600	2,800	56%	0.4
9	255 Consum	1971	6	21,100	21,100	100%	1.8
10	4 Lansing	1971	2	5,800	5,800	100%	0.4
11	6 Lansing	1971	2	5,900	5,900	100%	0.4
12	245 Consum	1971	6	20,300	20,300	100%	2.0
Sub-total: pre-1971			4	92,200	116,200	79%	0.6
13	201 Consum	1973	3	3,700	3,700	100%	0.6
14	211 Consum	1973	3	3,700	3,700	100%	0.6
15	225 Consum	1973	2	1,100	1,900	60%	0.5
16	200 Consum	1974	9	11,700	11,700	100%	1.0
17	2 Lansing	1975	12	15,000	15,000	100%	0.4
18	251 Consum	1975	12	19,700	19,700	100%	1.9
19	245 Yorkla	1976	3	4,900	4,900	100%	0.8
Sub-total: 1972-76			6	59,900	60,600	99%	0.8
20	250 Consum	1977	11	14,600	14,600	100%	1.1
21	243 Consum	1977	12	28,500	28,500	100%	2.0
1-A	500 Consum	1978	5	10,300	10,300	100%	(0.2)
22	505 Consum	1978	11	15,900	15,900	100%	1.5
23	2255 Shepp	1978	4	27,800	27,800	100%	1.4
24	235 Yorkla	1980	12	18,200	18,200	100%	1.0
25	225 Yorkla	1980	4	5,700	5,700	100%	1.0
Sub-total: 1977-81			9	121,000	121,000	100%	1.5
26	515 Consum	1982	7	8,200	8,200	100%	1.0
8-A	180 Yorkla	1984	2	700	700	100%	(0.1)
27	2001 Shepp	1985	8	15,300	15,300	100%	1.5
Sub-total: 1982-86			8	24,200	24,200	100%	1.5
Total to 1986			6	297,300	322,100	92%	0.9

Source: Author's data.

then. However, four of the areas, including the Consumers' Road area, were alongside the Don Valley Parkway, and these areas rapidly became North York's most successful "office parks."

In the Consumers' Road area, development slowed after the 1960s wave, but continued nonetheless. Between 1971 and 1976, three of the industrial buildings were expanded but no new ones were built. Two hotels were built on sites close to Highway 401 and seven new office buildings, containing 60,000 square metres of space, opened. These buildings ranged from 1,100 to 19,700 square metres and from two to 12 storeys, with six of them being exclusively office buildings (Table 7). Between 1976 and 1981, six new offices appeared and one of the existing ones expanded. These six buildings, containing 111,000 square metres of office space, ranged from 5,800 to 28,500 square metres and from four to 12 storeys, and all were single-use buildings.

Development slowed in the early 1980s, as the previous decade had produced a glut of office space in the area, resulting in high vacancy rates. Between 1981 and 1986, the only new construction consisted of a social club, expansion of a mixed-use building and two new office buildings. More recently two major office buildings were completed in 1988 and a third in 1989, which together added 53,000 square metres of office space.

Although North York made conscious efforts to plan and encourage the redevelopment in its "downtown," it did not plan its office parks as *office parks*. They have been regarded as areas that need occasional road improvements as the office component grows, each such improvement being made to alleviate an immediate problem with little attempt to anticipate future needs. The Consumers' Road area's development as an office park clearly has been initiated by the private sector in response to *its* needs, while the municipality's role always has been a reactive one. The facts that the only new industrial construction in the area after 1971 was on sites already committed to industry by existing buildings, and that the only new commercial buildings were two hotels, while new office construction continued apace, indicate the bid rent process at work: offices readily outbid industry and most commercial activities for sites. Yet the municipality seems to have been oblivious to the constraint that this imposes on industrial viability in an area.

4.3 DEFINITION AND REDEFINITION OF THE STUDY AREAS

The Consumers' Road study area is bounded on two sides by Highway 401 and the Don Valley Parkway respectively, on the third side by a well established residential community, and on the fourth by a residential area and some strip retail outlets. While it is clearly defined the delineations of the other two study areas were not as clear cut.

Table 8: Office Buildings in Sub-areas of the North York Centre

Area	1966	1971	1976	1981	1986
1	Buildings	--	--	--	--
	Off.Space	--	--	--	--
	0% of OS	--	--	--	--
2	3 bldg	4 bldg	4 bldg	4 bldg	6 bldg
	10,300	17,600	17,600	17,600	86,900
	66.4%	48.4%	18.8%	8.6%	26.0%
3	1 bldg	1 bldg	1 bldg	2 bldg	2 bldg
	1,300	1,300	1,300	4,000	4,000
	8.3%	3.6%	1.4%	1.9%	1.2%
4	1 bldg	2 bldg	6 bldg	11 bldg	14 bldg
	3,900	17,500	74,600	184,100	243,100
	25.2%	48.0%	79.7%	89.5%	72.8%
5	--	--	--	--	--
	--	--	--	--	--
	--	--	--	--	--
Total	5 bldg	7 bldg	11 bldg	17 bldg	22 bldg
	15,500	36,400	93,600	205,700	334,000
	100%	100%	100%	100%	100%

Notes: Area 1 - The northern 0.2 km. of the "Centre".
Area 2 - 0.6 km. north from Finch -- Finch node.
Area 3 - The 0.9 km. connecting strip.
Area 4 - The area including, but mainly north of, Sheppard -- the 1.4 km. Sheppard node.
Area 5 - The 0.5 km. southern strip to Hwy 401.

Source: Author's data.

Immediately east of Scarborough's official "City Centre," a cluster of twelve one-storey buildings appeared along Progress Avenue between 1969 and 1974. Since 10 of them appeared to contain a mixture of activities which included offices, they were included in the initial surveys. However, a questionnaire survey indicated that there were few offices in these buildings and that most of those were ancilliary to other activities which sought one-storey premises. Therefore, these buildings were excluded from the interview phase of the study, which covered only the 76 hectare area between Brimley Road and Consilium Place.

In the case of North York's officially designated "Downtown," by 1986 the Finch node had attracted six office buildings, the Sheppard node had fourteen, and the remaining 1.6 kilometres of the "centre" had only two very small ones. The fourteen buildings near Sheppard contained 240,000 square metres of office space, the six north of Finch had 87,000 and the two in the connecting strip contained just 4,000 (Table 8). While the Finch area was able to attract only three new office buildings between 1970 and 1986, two of them being very small, the Sheppard area had attracted thirteen. The edges of the two clusters are a kilometer apart and a third subway station, at the northern end of the Sheppard node, opened in 1987. This clearly has influenced the location of new development projects, and since 1986 a number of office buildings have been completed, or are under construction, in the area around the new station. Thus the detailed study of offices in North York's "downtown" was limited to the main cluster of office buildings in the 54 hectare Sheppard node.

4.4 GENERAL TRENDS IN LAND AND BUILDING USE

The land use changes in Scarborough's centre took place in three phases. In 1966, farmland was invaded by one office building; in the early 1970s a regional shopping mall and a modern City Hall followed; and between 1979 and 1985, five modern office buildings appeared. Meanwhile, the industrial area to the west and the residential area to the south became fully developed, while the mixed industrial area to the east filled in more gradually.

The first small office building, the shopping mall and City Hall were all very extensive with floorspace to site ratios of 0.5 or less. The 1979 Bell building had a ratio of only 0.9, and even the four 1980s office buildings averaged only 2.2. In addition, a large proportion of land in the centre remained vacant (Table 9). The modern office buildings resemble downtown offices in their size and quality, but the "compact urban form," sought in the 1981 planning review, has yet to be achieved.

Table 9 also illustrates the growing amount of floorspace within the centre since 1966 and confirms the impression that the centre contains a very narrow range of activities. It has a shopping mall and seven office buildings, which include two government offices and a utility company office.

Table 9: Land and Building Use in Scarborough Centre

LAND USE	1966	1971	1976	1981	1986
Office	5.14	5.14	11.03	13.72	19.69
Commercial	--	--	23.01	23.01	23.01
Industrial	--	--	--	--	--
Residential	--	--	--	--	--
Miscellaneous	.50	.50	--	--	--
Vacant	70.17	70.17	41.77	39.08	33.11
Total	75.81	75.81	75.81	75.81	75.81

Note: All data are in hectares.

FLOORSPACE					
Office	6.9	6.9	34.7	58.2	187.9
Commercial	--	--	107.5	107.5	107.5
Industrial	--	--	--	--	--
Residential	--	--	--	--	--
Miscellaneous	.4	.4	--	--	--
Total	7.3	7.3	142.2	165.6	295.3

Note: All data are 000 square metres.

Source: Author's data.

The other four office buildings contain some ground floor restaurants and personal service outlets, but only sufficient to serve each building's occupants. Also, the buildings are all very similar in terms of space quality and rents, so that the range of office functions in them is much narrower than would be found in an office district with a greater variety of office buildings.

In the Sheppard node of North York's downtown, the land-use changes between 1966 and 1986 can be summarized as a steady, fourfold growth in the total area of office sites, which forced out all industrial uses and a large cemetery reserve, and reduced the amount of land in commercial and residential uses by one third and one fifth respectively. The amount of land in "miscellaneous" uses remained quite stable, while the vacant land was mainly land in some stage of redevelopment (Table 10).

In terms of building use, office space expanded spectacularly between 1966 and 1986, particularly during the late 1970s and the 1980s. Industrial buildings disappeared completely; commercial space decreased by 27 percent but this was balanced roughly by retail space which was under construction in 1986; and half of the houses were demolished while the number of apartments quadrupled (Table 10).

While the pre-1971 office buildings had a floorspace:site ratio which averaged only 0.4, the 1971/86 buildings averaged 2.9, and the most recent ones are generally about 5.0. The five pre-1966 offices averaged 3,600 square metres and were all two-storey, while the five built between 1981 and 1986 averaged 25,600 square metres and 13 storeys. Not only are the most recent office buildings and the quality of space in them coming more and more to resemble those in the CBD, but this centre also offers a wide range of building size and floorspace quality.

In the Consumers' Road area the most obvious land-use trends have been: firstly, rapid mixed-use development of an almost completely vacant area immediately after the Don Valley Parkway was built past it; and secondly, the speed with which industrial and commercial expansion were constrained as soon as the area was identified as a desirable location for office buildings (Table 11). In the mid-1960s, the sparse development was entirely commercial and industrial, while the area attracted equal amounts of office and industrial/commercial construction in the late 1960s. During the early 1970s, the total of commercial and industrial building roughly matched the new office space, but the industrial development was limited to the expansion of existing buildings. However, since 1976 there has been no new industrial or commercial construction while office development has continued. This continuing office development, and the simultaneous cessation of industrial and commercial expansion, clearly illustrates the inexorable influence of the bid rent process.

Table 10: Land and Building Use in the Sheppard Node

LAND USE	1966	1971	1976	1981	1986
Office	4.01	5.67	7.70	13.48	17.25
Commercial	10.77	10.46	8.40	7.93	7.27
Industrial	4.90	4.90	3.68	--	--
Residential	21.65	21.34	21.37	18.35	17.47
Miscellaneous	6.88	6.89	9.54	9.54	7.50
" (cemetery)	5.32	3.66	--	--	--
Vacant	.58	1.19	3.42	4.80	4.62
Total	54.11	54.11	54.11	54.11	54.11

Note: All data are in hectares.

FLOORSPACE					
Office	3.9	17.5	74.6	184.1	243.1
Commercial	58.6	52.1	52.8	41.8	42.6
Industrial	13.7	13.7	10.1	--	--
Residential	85.0	84.2	183.1	207.1	304.6
(houses)	(273)	(265)	(228)	(178)	(147)
(aparts)	(705)	(705)	(2018)	(2241)	(2917)
Miscellaneous	19.5	19.5	21.6	21.6	16.8
Total	180.8	186.9	342.2	454.6	607.0

Note: Residential includes (number of dwelling units).
All other data are 000 square metres.

Source: Author's data.

The trend away from a mixture of uses of the land occurred also within the office buildings themselves. Five of the eight offices built between 1966 and 1970 were mixed-use projects, in which over one third of the space was used for non-office activities (Tables 7 and 11). Between 1971 and 1985, nineteen more office buildings opened and only one was a mixed-use building.

The size of the office buildings has increased substantially. The first eight (1968-1970) contained an average of 5,000 square metres of office space, the next eleven (1971-1976) averaged 10,300 and the eight erected from 1977 to 1985 averaged 16,800. Similarly, of the first fifteen office buildings, thirteen were five or fewer storeys and the tallest was seven storeys. Of the next twelve, only five were five or less storeys and four were 12 storeys. The recent buildings are not quite comparable to downtown office buildings but nonetheless are substantial structures.

The intensity of site use also increased appreciably. The first eight office buildings had an average floorspace to site ratio of 0.4 while the newest eight averaged 1.5. The facts that the overall average ratio for all the office projects erected by 1986 was 0.9, and that only two of the office buildings had ratios of over 1.5, seem to confirm a development maxim that 1.5 is the maximum practical ratio for development of car-oriented office buildings with surface parking.

.5 CHANGES IN POPULATION, EMPLOYMENT AND SERVICES

The Scarborough City centre is located at the edge of a residential community and, since there is no housing in the centre itself, it has little night-time clientele. However, by 1986 there were 10,400 people working in the centre, and 7,500 of them worked in its office buildings. Until recently, the centre depended almost completely on car access. In 1985, however, an elevated rapid transit line linked the centre to the eastern terminus of the crosstown subway line. However, service has been less reliable than anticipated: one has to transfer twice, to different lines, on any trip between the centre and the CBD, and in 1988 the entire line was shut down for two months. Perhaps because of its relationship to residential areas and/or because of its lacklustre public transit service, this centre contains too narrow a range of activities for it yet to function as Scarborough's "downtown."

On the other hand, North York's downtown not only contains a number of apartment buildings but is also at the centre of a huge residential community. Thus there is a selection of housing close at hand for office executives and staff, while the centre provides an ever widening range of services to the area's residents. Within the centre as a whole, the populations increased from about 3,400 residents and 4,400 employees in 1966 to about 5,400 residents and 14,000 employees in 1986. In the Sheppard node the resident population doubled, from 2,500 to 4,800, while employment

Table 11: Land and Building Use in the Consumers' Area

LAND USE	1966	1971	1976	1981	1986
Office	--	13.83	21.72	30.34	31.39
Commercial	10.16	20.71	24.63	15.52	15.52
Industrial	.48	15.23	15.38	15.38	15.38
Residential	--	--	--	--	--
Miscellaneous	--	--	--	--	1.00
Vacant	68.43	29.30	17.33	17.82	15.77
Total	79.06	79.06	79.06	79.06	79.06

Note: All data are in hectares.

FLOORSPACE					
Office	--	92.2	152.1	281.3	297.3
Commercial	2.4	39.1	63.2	62.8	62.9
Industrial	.9	54.1	82.2	82.2	82.2
Residential	--	--	--	--	--
Miscellaneous	--	3.3	3.3	12.2	14.4
Total	3.3	188.7	300.8	438.5	456.8

Note: All other data are 000 square metres.

Source: Author's data.

increased fivefold, from 2,000 to 10,400, with office building employment increasing from 200 to 9,600.

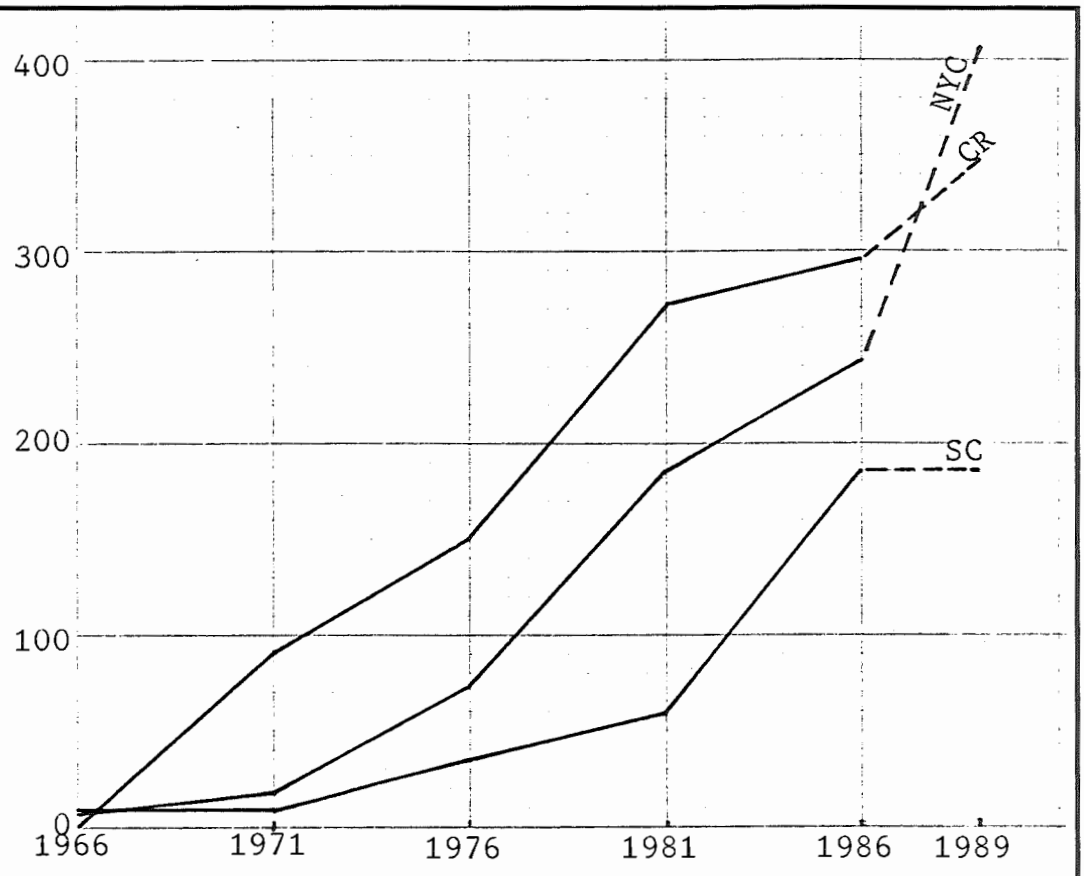
In addition a qualitative change is occurring in ground floor activities. The Sheppard sub-area had only 14 meagre restaurants or pubs in 1966, but by the late 1980s it had over 30 restaurants and pubs of some variety and a modern hotel. Extensive retail activities such as car dealerships and a lumber yard have been displaced by far more intensive electronic, computer, clothing and book stores. Also, coincident with the construction of the new Civic Centre subway station, building activity around it accelerated. Between mid-1986 and mid-1989, three apartment buildings, five office towers, an hotel, a central reference library and 29,000 square metres of retail space were completed. Thus the southern node within North York's "Downtown" is alive and growing vigorously. Meanwhile, in the entire remainder of the designated "Centre," only five apartment buildings and 2,500 square metres of retail space were built.

The residential areas to the south and east of the Consumers' Road office park were fully developed by 1966, and commercial development fronting on the east side of Victoria Park had started. Five years later apartments and townhouses had been built to the west of the area and houses were being built to the north and north-east as well. So, by the late 1970s, except for the shops fronting onto Victoria Park Avenue, the office area was surrounded by residential development which provides a wide selection of housing for those who work in the office park.

In 1971, there were about 3,000 office employees, out of a total of just over 4,000 employees of all types, in the area. By 1986, the centre had about 11,300 office employees, giving it the highest office employment of the three case study areas. However, the office park houses no residents. Also, it depends very heavily on car access since it is at the intersection of Highway 401 and the Don Valley Parkway and since, although it has frequent bus service in both the east-west and north-south directions, it does not have rapid transit service. Perhaps for these reasons, the area does not provide the range of services that a mixed-use centre would offer.

4.6 CONCLUSIONS

One clear finding is that, notwithstanding traditional notions of bid rents, asking rents for vacant office space in the core office area, excepting the small financial district, are very similar to rents for vacant space in the three suburban study centres. Therefore, although some elite offices will pay a substantial rental premium for truly central locations, rent differentials should not be a significant location factor for most office establishments.



Source: Author's data.

Figure 6: Total Office Building Floorspace: 1966-1989

4.6.1 Total Office Floorspace and Accessibility

All three areas started from minimal amounts of office space in office buildings in the mid-1960s. By 1971, after extension of the radial Don Valley Parkway past the Consumers' area, that centre contained over 70,000 square metres more floorspace than either of the other two. For the next 15 years, the Consumers' and North York centres maintained similar rates of office growth so that the difference between them remained constant (Figure 6). The Scarborough centre's growth rate was lower and not as constant, so that it had less space and the gap varied.

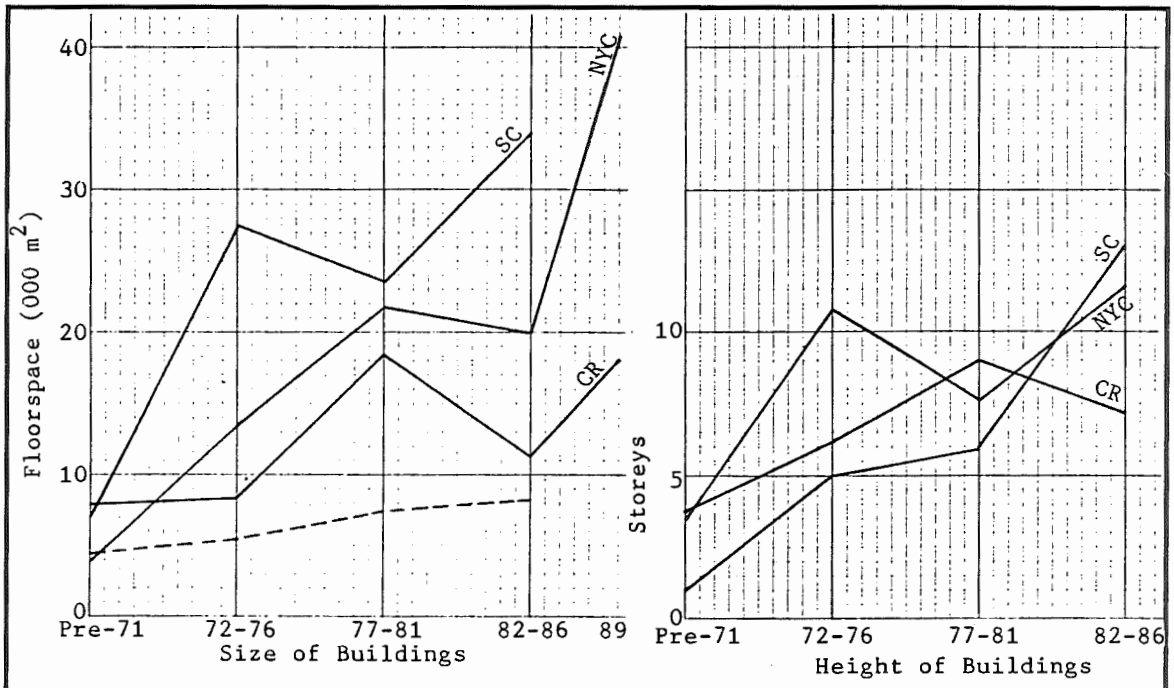
The data were extrapolated to include buildings completed by mid-1989. These data show the surge of office construction in the North York centre that anticipated, and followed, opening of the Civic Centre subway station in 1987. Meanwhile, Consumers' Road maintained its established growth rate, which allowed the North York centre to surpass it in total office space by 1989. While the extremely highway-accessible Consumers' Road area held an initial advantage, improved subway access seems to have given North York the advantage in recent years. Meanwhile, no additional office construction had occurred in the Scarborough centre, possibly due either to investor uncertainty or to the light rail transit's inability to match expectations.

4.6.2 Building Size

In all three centres the buildings have consistently been larger than the office buildings erected in most other non-CBD locations (Figure 7). This probably reflects a greater amount and certainty of demand for office space in the established office centres than elsewhere, or more willingness to risk large capital investments in such centres, or both. The new buildings erected in all three centres have also become larger and taller over the years, which again reflects rising demand for office space and diminishing investment risk in each centre as it grows. Of the three centres, the Scarborough office buildings were the largest ones erected at all times between the early 1970s and the mid-1980s, and the Consumers' Road ones the smallest. This may be due to the types of large and routine office functions in Scarborough's branch plant offices, and the more diverse space needs of the various smaller offices in the other two centres (see Section 5.1.1). However, recent construction in the North York centre has produced buildings even larger than those in the Scarborough centre.

4.6.3 Building Intensity

Figure 8 illustrates that the overall ratio of total floorspace of all activities to the total developed land area in each centre has increased steadily in all three cases. The North York centre has



Source: Author's data.

Figure 7: Average Size and Height of Office Buildings: 1966-1989

been the most intensive while the Scarborough centre has been the least intensive. But even the North York centre's overall floor area ratio of 1.1 in 1986 has not approached a density that would be typical of the CBD in a city of half a million people.

When the total of only office building floorspace is related to only the sites on which those offices are located, a more rapid increase in density is evident. The steepest increase has occurred in the North York centre, which is surrounded by stable residential areas and contains little vacant land, so that horizontal expansion is constrained. Consumers' also is surrounded by housing but the rise in office building intensity has been more gradual. This has probably been due to the substantial amount of vacant land, the need for large parking areas for the office buildings because of the lack of rapid transit, and the lower zoned density limit. Scarborough, with the most vacant land and heavy reliance upon cars, had the least intensive office building development until the mid-1980s.

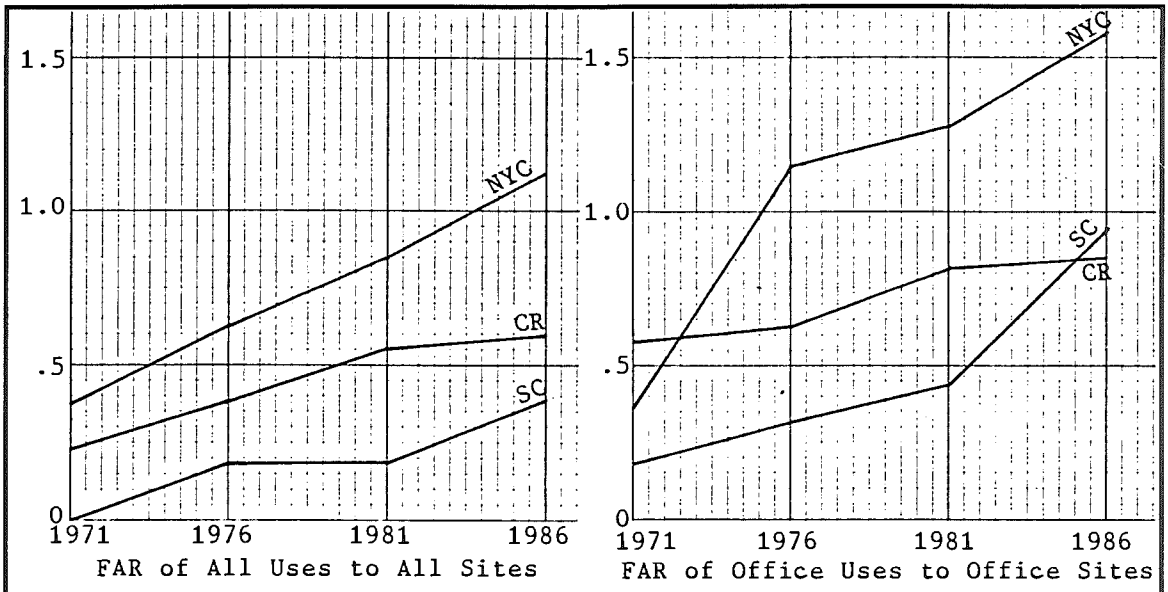
4.6.4 Land and Building Use

Figure 9 confirms the proportions of vacant land referred to above: 44 percent in Scarborough, 20 percent in Consumers' Road and only nine percent in the North York centre in 1986. This figure also confirms the increasing relative significance of office buildings as users of land and floorspace in all three areas between 1976 and 1986.

Figure 9 highlights another major difference between the centres. In 1986, the Scarborough centre contained only office and commercial activities, North York had the most varied mix, and Consumers' Road appeared to be varied but the increasing dominance of offices is obvious. The 1986 floorspace mix in North York's centre—50 percent residential, 40 percent office and 10 percent commercial and miscellaneous—is particularly interesting. During the preparation of North York's "downtown" plan, three existing mixed-use centres were examined and the proportions of the activities in them were found to be very similar (North York, 1977). Those proportions were translated into targets and the plan was designed to achieve 50 percent residential, 44 percent office and six percent commercial floorspace. The 1986 proportions indicate either that there has been a remarkable consistency in implementing the plan (an unlikely circumstance in municipal affairs) or that these proportions approximate a "natural" mix for multi-use centres.

4.6.5 Planning and Other Municipal Initiatives

Both the Scarborough and North York centres have been "planned" and both municipalities installed the infrastructure to accommodate the anticipated development. But in terms of growth rate, consistency of growth, committed future growth and the range of activities attracted, the North York



Source: Author's data.

Figure 8: Cumulative Intensity: Floorspace to Sites Area Ratio (FAR)

centre has performed more successfully. This may simply mean that North York's "downtown" was the right idea for its time and place whereas the Scarborough Centre's time has yet to come. But it is clear that North York committed itself strongly, in terms of not only planning and infrastructure but also publicity and other strategies, to attracting development and in seeking a mix of activities that is unusual in suburban centres. While North York fully committed itself to creating a diverse "downtown" Scarborough has been more cautious in its commitment, and less clear about what type of centre it is trying to create.

Despite North York's commitment to planning and developing its downtown, there has been virtually no proactive municipal planning for the Consumers' Road office park. What planning has been done for this area has reacted to perceived problems, with scant acknowledgement of the effect that office building intrusion has on land prices in industrial areas. Nor has the municipality actively promoted this office park to business interests. Thus the area provides adequate office space in a highly car-accessible location but has little in the way of amenities.

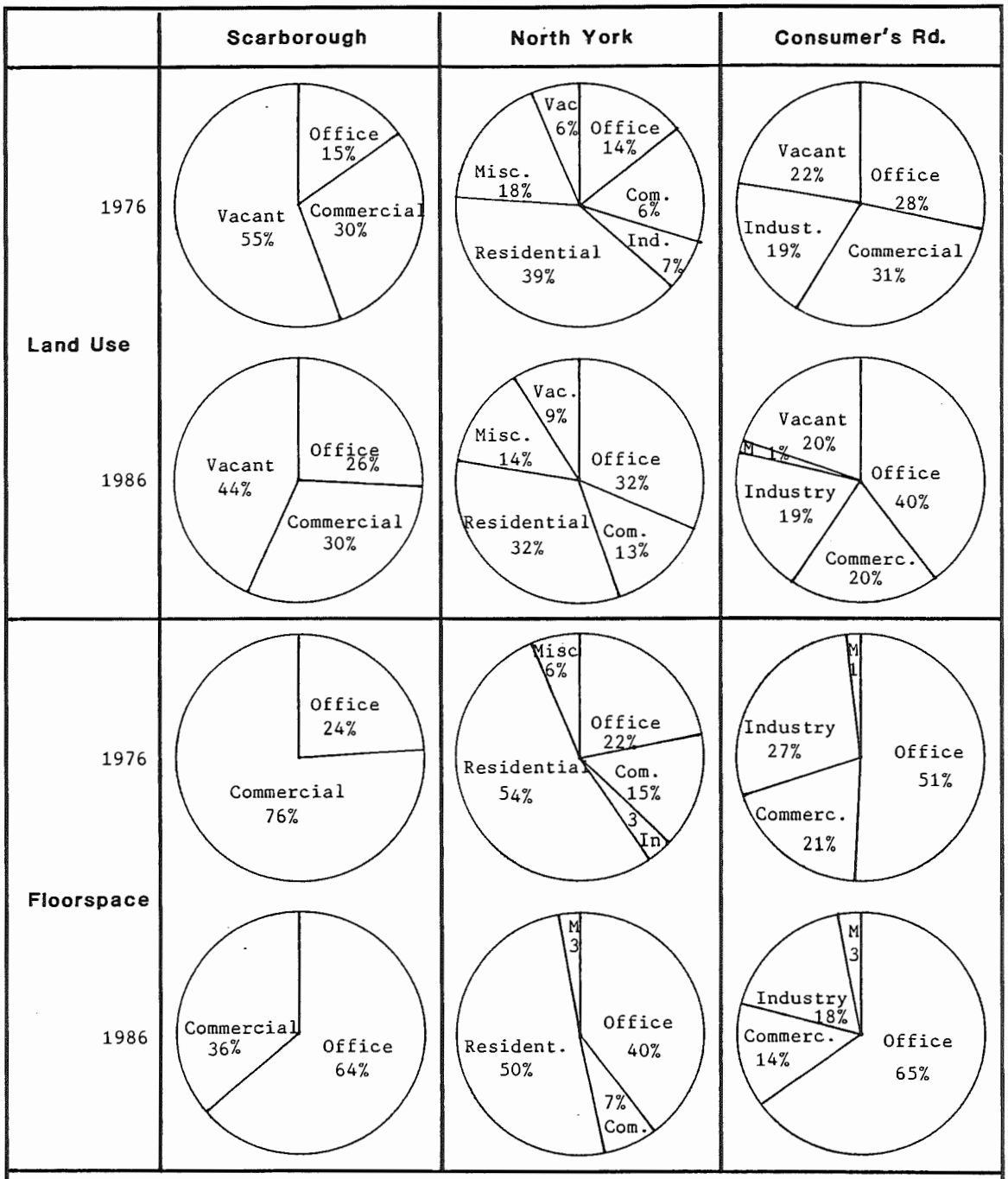
4.6.6 Some Practical Implications

The analysis also points to some practical implications for the planning of mixed-use centres and office parks, and for the survival of industrial areas.

Firstly, the way in which most of the office development has clustered in a limited portion of North York's elongated "centre," its relation to the Sheppard subway station and the surge of construction related to a new station all reinforce the planner's notion that 400 metres is the maximum distance that people will walk readily. Thus a *pedestrian-oriented* centre focused on rapid transit stations should be limited to areas within 400 metres of such stations, and if a centre is to include more than one station they should not be more than 600 or 700 metres apart.

Secondly, recent attempts to improve pedestrian environments in Scarborough's centre, and the need for shuttle buses to move people between the offices and the mall, illustrate the real difficulty in creating acceptable pedestrian conditions in any centre focused on a shopping mall whose parking areas predate the offices.

Thirdly, the diminishing rate of increase in office building intensity in the Consumers' Road area confirms a development maxim that, in a *car-oriented* office centre, there is a limit to the density of building that can be served economically by surface parking. While the limit may well approximate FAR = 1.5 for individual buildings, Figure 8 implies that the maximum *average* density in a centre might be appreciably lower than that.



Source: Author's data.

Figure 9: Use of Land and Floorspace: 1976 and 1986.

Fourthly, the different ranges of activities in the centres may well be related to the presence (or absence) of a substantial resident clientele in and around each centre to support and be served by the economic functions in the centre, and not to employment levels alone.

And finally, the evidence in the North York and Consumers' Road areas, where industrial and low-order commercial activities have been forced out or constrained from expanding, clearly illustrates the bid-rent process. Only luxury apartments and hotels can compete with offices for sites, so that when a cluster of office buildings invades an area other users of land can no longer compete for the available sites. This is particularly significant in the case of industrially zoned areas adjacent to highway interchanges, where developers often apply strong pressure on municipalities to permit office buildings. Allowing the erection of those buildings may be very tempting but would probably be the death knell for industrial use of land in such areas.

Table 12: Office Establishments in Office Buildings in the Study Areas

	Scarboro	Nor. Yk.	Cons. Rd.	Total
1966	1	1	0	2
1971	1	2	113	116
1976	3	26	288	317
1981	4	125	298	427
1988	83	230	647	960

Sources: Might's Directories for 1966-1981.
Author's survey data for 1988.

5.0 OFFICE ESTABLISHMENTS IN THE OFFICE BUILDINGS

Examining the physical evolution of the study areas was only part of this study. As essential was an analysis of the office establishments in the centres, and their reasons for being there. Thus all office establishments, in the office buildings, were visited to obtain objective data, and executives from a 10 percent sample of the offices were interviewed regarding their location decisions and contact behaviour.

5.1 SURVEY OF OFFICE ESTABLISHMENTS

In the spring of 1988, an attempt was made to visit the front office staffs of 947 establishments in 59 buildings, that were built by mid-1986, to administer a short questionnaire on objective characteristics of each establishment. Preliminary examination of the responses showed that 13 of the buildings were occupied mainly by establishments other than offices and those buildings were eliminated. Complete, or almost complete, information was gathered from 735 (83.4%) of the remaining 881 establishments (see also Appendix A.2.1).

5.1.1 Office Functions in the Study Areas

One objective of this study was to identify cross-sections of office establishments by functional type for each study area in each datum year, in order to identify changes in those compositions over time and similarities or differences between the compositions of the three areas. *Might's* and *Yellow Page* directories were used to classify about 85 percent of the office establishments into 37 functional categories for 1971, 1976 and 1981. The 1986 classification was replaced by the 1988 survey of office establishments. Appendix Tables 1, 2 and 3 show the complete functional composition of offices in the three centres.

There were very few office establishments in any of the areas in 1966, in the North York and Scarborough centres in 1971, and in the Scarborough centre in 1976 and 1981 (Table 12). In addition, from 1966 to 1973 the main office node in the North York centre had only municipal government offices in its office buildings; while the Scarborough centre had only an insurance company from 1966 to 1972, plus municipal offices in 1976, and a major utility company office in 1981. Nonetheless, some generalizations can be made on changes in the office composition of the Consumers' area from 1971 to 1988 and the North York centre from 1976 to 1988, and on the differences between the three areas in 1988.

Table 13 shows, for each centre in each datum year, the five most frequently occurring office functions and the percentage that they comprised of the total office establishments in that centre. In

Table 13: Most Numerous Office Functions in the Study Areas (%)

	Scar.	North York			Consumers' Road			
Function	1988	1976	1981	1988	1971	1976	1981	1988
Manufacture	(5.9)				9.6	9.5	8.2	6.8
Con/Bus Fin		9.1						
Insurance Co	13.2		8.2	8.4	9.6	7.9	8.2	
Insur Agent			10.0		8.5		8.2	8.5
RE/Developer		9.1	9.1	7.9		10.0	10.6	
Lawyer	(5.9)		9.1	8.9				
Accountant		22.7	9.1	8.4				6.0
Personnel	8.8			9.4				
Computer rel.	7.4				(6.4)	6.6	9.0	13.4
Other B.Serv.								7.9
Engineer					(6.4)			
Association		9.1						
Munici p Govt.		9.1						
Construction					(6.4)			
Ret/Wh Trade						8.7		
Health Care	10.3							
Top function	13.2	22.7	10.0	9.4	9.6	10.0	10.6	13.4
5 Top funct.	45.6	59.1	45.5	43.0	40.5	42.7	44.2	42.6
Total estab.	68	22	110	202	94	241	245	530

Source: Author's data

1988, the Scarborough centre was dominated by insurance companies, health care services, personnel agencies and computer related offices, with lawyers and manufacturing companies also having a strong presence. In the North York centre accountants, municipal government, consumer/business finance, real estate/land development and business/trade/civic associations dominated in 1976. Of these, accounting and real estate/land development remained relatively important throughout. After 1981, law offices and insurance offices were well represented, with personnel agencies also moving into the top five in 1988. In the Consumers' Road area, computer-related offices and manufacturing company offices remained dominant throughout, with real estate/land development being important after 1976, and insurance agencies also being well represented. However, the early significance of insurance companies, engineering offices, wholesale/retail trade and construction offices diminished quite consistently over time. In 1988, accountants and other business services showed strongly.

In 1988, there was no one office function which appeared in the top three of all the centres. In the Scarborough centre insurance companies, health care offices and personnel agencies together were 32 percent of all establishments. However, the latter two categories were generally such small offices that they made little contribution to overall employment. In the North York centre, there was no obviously dominant function. Its three most numerous types were personnel agencies, lawyers and either accountants or insurance companies, the top three being 27 percent of all establishments. Of these, all but insurance companies were generally very small offices. In Consumers' Road the most numerous establishments were the computer related ones, while insurance agencies and other business services also showed strongly. These three types made up 30 percent of all establishments but were almost all small offices.

The three study areas were much less specialized than the Airport office buildings, where Bennett (1980) found that manufacturing offices alone accounted for a quarter of all office establishments, with transportation and various technical services also being strongly represented. In the central corridor, Gad (1975) found that law offices were 17 percent of all establishments, which was much higher than the next most common categories (associations at 9% and manufacturing company offices at 5%), the three most common functions accounting for 31 percent of the central offices. The degree of specialization indicated by the combined proportion of the three most numerous functions is very similar for the central corridor and the suburban centres. Also, although the corridor had a greater overall diversity of functions than the three suburban centres, those centres, apart from Scarborough, contained a wider range of office types than has generally been recognized, a finding strongly supported by Huang's (1989) conclusion that Toronto's suburban office nodes are highly diversified.

Table 14: Length of Occupancy of Current Premises by Establishments

Period	Scarb.	N.Y.	C.R.	Total
Under 1 year	22.0	23.5	15.8	18.2
1-3 years	64.4	24.0	27.0	29.3
Over 3 years	13.6	52.5	57.3	52.5
Total	100.0%	100.0%	100.0%	100.0%
n	=59	=179	=482	=720

Source: Author's data.

Table 15: Organizational Status and Nationality of Office Establishments

STATUS	Scarb.	N.Y.	C.R.	Total
Only office	26.7	48.1	56.2	51.8
Head office	8.3	12.1	14.3	13.3
Branch Office	65.0	39.8	29.5	34.9
Total	100.0%	100.0%	100.0%	100.0%
	=60	=181	=495	=736
NATIONALITY				
Canadian	64.4	80.9	78.5	77.9
Foreign	35.6	19.1	21.5	22.1
Total	100.0%	100.0%	100.0%	100.0%
n	=59	=178	=493	=730

Source: Author's data.

It was rather problematic to draw comparisons with Code's findings, since his "downtown" seems to have been only the financial district. In addition, he emphasized the effect of moving on offices which originated downtown, and ignored the strong influence of the suburban centres in providing alternative locations for new office establishments which might have gone downtown if those alternatives had not existed. Nevertheless, this study supported Code's (1983) finding that Consumers' Road was a strong magnet for the linked group of functions including real estate, land development, city planning and engineering. It also reinforced his conclusion that investment dealers, trust companies, mining companies and banks would be closely tied to downtown, in terms of information potential, while manufacturing offices would be relatively footloose. However, this study did not support Code's theory that insurance companies and agencies should be tied to downtown locations, while oil companies, advertising agencies and public relations offices should be well represented in suburban centres.

5.1.2 Length of Occupancy and Previous Location

The length of time establishments have occupied premises is a measure of the stability and maturity of an office area (Table 14). The patterns in the North York Centre and the Consumers' Road area were quite similar: just over half had been at their 1988 address for over three years, about a quarter had been there for one to three years, and 16 to 23 percent had moved in the previous year. However, the data indicated that offices in Consumers' Road, where there had been a lull in construction, were slightly more static than those in the North York centre, where construction had continued apace. In Scarborough's centre, where leasable office space was not available until the 1980s, only 14 percent had been in the same premises for over three years and two thirds had been there for one to three years. It is possible that the Scarborough centre's pattern will approximate the other two centres when it has had more time to expand and mature.

Overall, one third of all establishments either did not exist before opening at their current addresses or else had moved from outside the Toronto CMA. Just over a third had moved outwards (15% from downtown Toronto and 22% from other locations), a quarter had made lateral moves, either within the same general suburban areas or from other locations about the same distance from the CBD; and four percent had moved inwards from more widespread locations in the CMA. These data support Muller's (1976) thesis that the suburbs are becoming self generators of offices, but run counter to Code's finding that a large proportion of the offices in suburban centres have moved outwards, via intermediate locations, from the CBD.

Table 16: Size of Office Establishments

Number of employees	Scarb.	N.Y.	C.R.	Total
1- 2	15.2	14.0	14.9	14.7
3- 5	17.0	30.7	30.5	29.5
6- 10	20.3	19.6	21.4	20.8
11- 20	11.9	15.1	15.3	15.0
21-100	15.2	15.6	14.9	15.1
101-500	10.2	2.8	2.8	3.4
500+	10.2	2.2	0.2	1.5
Total	100.0%	100.0%	100.0%	100.0%
n	=59	=179	=491	=729

Source: Author's data.

In this respect, the North York and Consumers' Road centres were generally similar. The main differences were that the North York centre attracted fewer offices from outside the CMA than did Consumers' Road (4% *v.* 12%), but had more moves within the centre itself (17% *v.* 6%). Scarborough centre had the highest proportions of new offices (32%) and moves outward from non-CBD locations (27%), but the proportions of offices attracted from the CBD (10%), lateral moves (10%) and offices from outside the CMA (2%) were all below average.

5.1.3 Organizational Status and Nationality

An establishment's organizational status can influence how its location decisions are made. An autonomous office is likely to consider mainly local conditions of service access, space availability and personnel convenience. A branch office may have its location determined by a head office unconcerned about local service availability, since a large company often internalizes its service inputs (Daniels, 1984), or about convenience for its staff.

Table 15 shows that there was a close parallel between the North York and Consumers' areas in terms of nationality and similarity between them in the organizational status of their offices. Scarborough centre was very different: Canadian control, only offices and head offices were all much lower, while branch offices were far more prevalent than in the other two centres.

The North York and Consumers' areas resembled Gad's (1975) central corridor in that 47 percent of the corridor's establishments were only offices. However, Gad found 27 percent of the office establishments in the corridor to be head offices, and Huang (1989) found 22 percent to be head offices, compared to an average of only 13 percent in the centres described here. Thus it is clear that these suburban centres, and particularly the Scarborough one, have been less attractive to the head offices of multi-site firms than has Toronto's central office district. In fact, the Scarborough centre differed markedly from the corridor on all three counts—relatively half as many only offices, one-third the head offices and 2.5 times the branch offices.

Almost all single offices were Canadian owned and half of the branch offices were subsidiary to Canadian companies. Offices in the Scarborough and Consumers' areas approximated this pattern, but in the North York centre over two thirds of the branch offices were Canadian controlled. As was noted in Chapter 2, clusters of corporate head offices attract specialized services to the same areas. Thus the elite services such as large law firms with specialized departments have been loath to move to suburban centres, although such firms have opened branches there.

Table 17: Functional Types of the Largest Office Establishments

Function	Scarb.	N.Y.	C.R.	Total
Oil/gas company			1+0	1+0=1
Manufacturing		0+1	2+0	2+1=3
Transportation			1+0	1+0=1
Utility company	0+1		1+1	1+2=3
Insurance co.	4+1		1+0	5+1=6
R.Est./Developer			2+0	2+0=2
Security		1+0		1+0=1
Computer related	0+1		2+0	2+1=3
Engineers		1+0	1+0	2+0=2
Publishing	0+1			0+1=1
Other communics.			2+0	2+0=2
Fed./Prov. govt.	0+1	0+2		0+3=3
Municipal govt.	2+1	2+1		4+2=6
Retail/Wh. trade			1+0	1+0=1
Health care		1+0		1+0=1
Total	6+6	5+4	14+1	25+11=36
% of estabs. in centre	20.3% of 59	5.0% of 179	3.1% of 492	4.9% of 730

Note: 2+1 is 2 establishments with >100 employees plus 1 with >500 employees.

Source: Author's data.

5.1.4 Size of Office Establishments

Although it is generally accepted that large corporate head offices select their location and that business service offices then congregate around them, a number of studies have found that most office establishments are small. Yet it is the large offices which play a significant role in controlling the economy, and they have a disproportionate influence on total employment and space use. For instance, in Toronto's central corridor, 36 percent of the offices had 1-3 employees and 27 percent had 4-7. Thus offices with 1-7 employees were 63 percent of the establishments, yet they contributed only 7.6 percent to total office employment in the central corridor (Gad, 1975). In the study areas, also, a very large proportion of the offices were small. Overall, 44 percent of the establishments had five or fewer employees (including executives) and a further 21 percent had 6 to 10, while only about five percent had more than 100 employees.

Table 16 shows a very high degree of correspondence between the North York and Consumers' areas in terms of establishment size. Once again Scarborough was clearly different. It had only half the overall percentage of 3-5 person offices, and had four times the overall proportion of establishments with over 100 employees. In absolute terms, this centre had attracted more establishments with over 500 employees than the two larger centres combined had.

Overall, about 62 percent of the only office establishments had five or fewer employees and less than one percent had more than 100. Meanwhile, 29 percent of branch offices had five or fewer employees and eight percent had over 100, while only 18 percent of head offices had five or fewer employees and 13 percent had over 100. The North York and Consumers' centres both approximated this pattern, except that North York had a higher proportion of head offices with over 100 employees, while Consumers' Road had lower proportions of large branch and head offices. Scarborough again was clearly different, with much higher proportions of large head and particularly branch offices than the overall figure.

Table 17 shows the functions of the 36 establishments with over 100 employees. These were most likely to be insurance or municipal government (6 each). The very largest offices, with over 500 employees, were most likely to be federal/provincial government (3 out of 11), utilities or municipal government (2 each). In the North York and Consumers' centres the large offices represented a range of functions. However, the Scarborough centre not only had a disproportionate share of the large offices, but also five of its 12 largest ones were in insurance. Gad and Holdsworth (1987) showed that the "standardized product" of life insurance suits this function to locating outside the CBD, and in cities such as Hartford insurance companies have led office decentralization. Now, large insurance offices may be clustering in the Scarborough centre.

Some functions, characterized by very large establishments, made disproportionate contributions to employment levels. Overall, the federal/provincial and municipal government offices were only 2.8 percent of the establishments but had 32.2 percent of employment. Insurance companies, computer offices, utilities and manufacturing offices together were 22.5 percent of the establishments with 36 percent of employment, so that just six functions accounted for over two thirds of the total employment (Appendix Table 4). In the North York centre, the federal/provincial and municipal government offices were only 7.8 percent of the establishments but had over 63 percent of the employment. In the Scarborough centre, insurance and the government offices were 20 percent of the establishments, with almost 64 percent of the employment. But in Consumers' Road, computer related, utility and manufacturing offices were 20.8 percent of the establishments and only 42 percent of total employment. Thus, in the Consumers' area, there was significantly less domination of the employment structure by a very few functions than in the other two centres (Appendix Table 5).

Not surprisingly, the average establishment size was largest in the Scarborough centre at 122 (median 9), second largest in the North York centre at 52 (median 7), and lowest in Consumers' Road at 21 (median 6). While these medians were comparable to the median of six that Gad found in the central corridor, the average size there was only 28. He also found far less concentration of employment in a few categories: government had 21.6 percent of employment, and insurance 10.7 percent, followed by utilities, banks and manufacturing (each with about 6%).

5.1.5 "Umbrella" Offices

One unexpected finding was the importance of a few "umbrella" office companies, which provide office space, meeting rooms, equipment and secretarial services to very small office establishments. Only seven of these self-styled "office centres," each renting part or all of a single floor in an office building, accommodated 195 establishments: the Consumers' area had five containing 131 establishments, and each of the other two centres had one. Many of the tenant establishments were one-person offices, often involving activities taking that person out of the office for much of each day, which resulted in a low response rate in the initial survey. However, the 100 percent response to requests for interviews left an impression, confirmed by one interviewee, that this is such a lonely way to do business that any visitors are welcomed.

Although "umbrella" offices do not appear to be described in the office literature, a study currently underway in Detroit has identified a similar phenomenon there. Further study of the role of such offices will be undertaken.

5.1.6 Some Conclusions about the Office Establishments

The survey of office establishments suggests some rather obvious general conclusions regarding the characteristics of the office establishments in the three suburban centres.

Where a municipality seeks to create a "downtown" it is likely to use municipal government offices to attract other office development. However, since the absolute strength of the government presence remains quite constant, its relative strength will diminish gradually as other types of office are attracted.

A few office types, particularly government offices, accounted for a very large proportion of the total employment in the North York and Scarborough centres, but not in the Consumers' Road area. The largest office establishments were insurance companies, all levels of government, manufacturing companies, utilities or computer related companies. As in the CBD, however, an overwhelming majority of offices were small; two thirds had 10 or fewer employees and almost half had five or fewer. But, despite their large majority, these establishments make a minimal contribution to total employment or office space demand.

Each of the three centres has developed some degree of functional specialization, and these specialties differ from centre to centre. A degree of functional clustering may be occurring, since each centre's 1988 strengths generally were functions that had been well represented since the early years of that centre. However, although none of the centres had the range of activities to be found in the central office corridor, all of them contained a wider range of office functions than had been anticipated. The North York centre was more diversified than either of the other two centres, particularly the Scarborough one, which may have stemmed from its evolution by succession in an existing community, or may have been partly due to its subway link to other activities, including those in the CBD.

In a mature centre over half the office establishments remain relatively static in the same premises, while about 45 percent of them will have moved within the previous three years. While certain functions seemed to be more static than others, and large offices (particularly those occupying their own buildings) do not move readily, stability did not seem to be related to the organizational status or nationality of the office. A quarter of all moves were due to the births of new offices, a third were moves outward from the CBD or some intermediate location, and a third were moves within the suburban orbit, while very few moves originated outside the Toronto CMA. Thus the suburbs are now strong self-generators of office activity and establishments.

About half of all the office establishments were Canadian controlled "only" offices, up to two thirds of them having five or fewer employees, while half to two thirds of branch offices were

Table 18: Reasons for Location Selection

WHY A CBD LOCATION WAS NOT SELECTED				
Reasons cited	Scarb.	N.Y.	C.R.	Total
Executive commute	11	38	32	29
Traffic congestion	28	17	37	29
High rental costs	28	25	27	27
Client access	11	29	20	20
Have CBD office	33	13	2	12
Poor hwy. access	11	4	17	12
No suitable space	11	13	-	6
Staff commuting	-	8	5	5
Other	6	13	20	14
Total	139%	158%	159%	154%

WHY A SUBURBAN CENTRE LOCATION WAS SOUGHT				
Executive commute	11	29	46	34
Client access	33	29	37	34
Low rental costs	17	29	27	25
Good hwy. access	28	17	22	22
Appropriate space	28	25	15	20
Min. traffic congest.	28	-	24	18
Staff commuting	11	21	10	13
Need suburban branch	17	8	-	6
Good subway access	-	13	-	4
Other	22	25	17	20
Total cited	194%	196%	198%	196%
Respondents	18	24	41	83

Note: Data are percentages of respondents, in each centre, who cited the items.

Source: Author's data.

Canadian controlled. The Scarborough centre exhibited a stronger tendency to branch offices and foreign control than did the other two areas, but none of the suburban centres could match the central corridor as a locus for corporate head offices.

And finally, "umbrella" offices, which provide space and support services for very small office establishments, seem to be an essential part of suburban office centres and particularly of diversified, car-oriented office parks.

5.2 FACTORS INFLUENCING LOCATION CHOICES—A SAMPLE

A major objective of this research was to determine what factors are considered seriously in decisions to locate office establishments in suburban office centres. Thus 83 executives from the respondent offices were interviewed regarding the attributes which they sought in selecting their particular locations, and their subsequent rating of the utility of certain attributes that they found in the centres after they had located there. (Appendix A.2.2 describes the sample selection).

5.2.1 Why Offices Prefer Suburban Centres to the CBD

Two related questions explored the basic issue of why a CBD location was not chosen and why a suburban centre was chosen. The second question had been intended to probe why they chose a *centre* rather than one of the scattered office buildings, but almost all respondents indicated that the latter option had never even been considered. Thus the second question served more to confirm (or vary) responses to the CBD question than to shed any new light on the subject.

Overall, problems of executive commuting, traffic congestion, high leasing costs and poor access to the firms' clienteles were cited most often as reasons for avoiding the CBD. This was confirmed when ease of executive commuting, good clientele access, moderate leasing costs, good highway access, the availability of appropriate office space and minimal traffic congestion were cited most often as reasons favouring a suburban centre (Table 18).

Among Scarborough centre executives the main reason given for a non-CBD location was that the company already had a downtown office, while good client access was cited as the main reason for selecting a suburban centre. Traffic conditions were cited next in answer to both questions, followed by downtown leasing costs, or by suburban centre space availability and good highway access. Convenient executive commuting was not important for those respondents. In the North York centre, executive commuting, client access and leasing costs were the three main reasons given in answer to both questions. In the Consumers' area executive commuting and leasing costs were the most and third-most important reasons cited for both questions. However, the respondents ranked

Table 19: Specific Attributes Sought in the Location Decision

Attributes cited	Scarb.	N.Y.	C.R.	Total
Good hwy. access	61	58	88	73
Low operating cost	39	21	39	34
Good public transit	39	46	15	29
Appropriate space	39	38	10	24
Good/cheap parking	6	17	24	18
Good image	22	25	2	13
Client access	11	17	2	8
Good hosp. services	6	8	2	5
Building security	-	13	2	5
Airport access	-	-	7	4
Other	17	8	5	8
Total cited	239%	250%	198%	222%
Respondents	18	24	41	83

Note: Data are percentages of respondents, in each centre, who cited the items.

Source: Author's data.

traffic congestion second and client access fourth as reasons for avoiding downtown, but reversed these rankings as reasons for choosing a suburban centre.

The variations in stated importance of the executives' commute reinforced the earlier finding that the Scarborough centre has a disproportionate share of branch offices. The responses also reflected the proximity of large residential communities to the North York and Consumers' centres, while the Scarborough centre is more separate from such areas.

Some of the "other" responses were illuminating. Respondents mentioned various aspects of automobile accessibility: access to the whole CMA, access to construction projects across Southern Ontario, access to the airport, nationwide access and easy access to the CBD outside rush hours. Three respondents felt either that there was too much competition downtown or that there was no competitive advantage in being located there, and a fourth said that his firm had no need for access to the financial community. One extremely harassed-looking executive claimed that he had to be in the same building as The Fitness Institute, to combat stress.

5.2.2 Desired Attributes, Facilities and Services

It was thought that decision makers would consider certain facilities or services to be essential to the effective operation of their offices; that the presence or absence of such attributes in various centres would be identified by companies considering relocation; and that this would influence their choice.

The interviews elicited an average of slightly more than two features that were sought per establishment. Overall, three quarters cited good highway access, which far outweighed the one third who cited low operating costs, while good public transit, the availability of appropriate office space and plentiful/cheap parking were also mentioned quite frequently (Table 19). The need for good highway access was cited by from 58 percent of respondents in the North York centre (which has subway and good bus service) to 88 percent in the Consumers' area (which has no rapid transit but is at the intersection of two highways). Good public transit was cited as the second most important attribute sought by establishments in the North York centre (46%) and the Scarborough centre (39%), both of which have rapid transit service, and third most important for Consumers' offices. Low operating costs ranked second in Consumers' and joint second in the Scarborough centre, while availability of suitable office space was the third most important attribute for North York offices and joint second for Scarborough ones. Parking was ranked third for Consumers' Road offices. The centre's image was rated as being important by about a quarter of the offices in the North York and

Table 20: Advantages Found in the Centre Chosen

Advantages cited	Scarb.	N.Y.	C.R.	Total
Good car/hwy. access	78	50	95	78
Good client access	44	46	44	45
Executive commuting	11	42	44	36
Staff commuting	17	42	34	33
Suitable space/bldg.	33	25	27	28
Good public transit	39	42	15	28
Low rental cost	17	17	34	25
Good/cheap parking	6	12	34	22
Good hosp. services	6	33	12	17
Car access to CBD	17	4	22	16
Access related bus.	17	12	12	13
Public transit to CBD	11	33	-	12
Good shopping	28	21	-	12
Min. traffic congest.	11	4	12	10
Good image/atmosphere	17	21	-	10
Other	39	42	7	24
Total cited	389%	446%	393%	407%
Respondents	18	24	41	83

Note: Data are percentages of respondents, in each centre, who cited the items.

Source: Author's data.

Scarborough centres, which are the foci of municipal publicity efforts, but was considered to be irrelevant in the Consumers' area, which does not have the benefit of any municipal advertising.

5.2.3 Advantages and Disadvantages in the Chosen Centre

An attempt was made to also identify the perceived advantages and disadvantages actually found in each centre after moving there. As in the case of features considered before locating, three quarters of the respondents expressed satisfaction with the actual level of highway access. Good client access, easy access to executives' homes, convenient access to the homes of staff, suitable office space or buildings, satisfactory public transit service and moderate leasing costs were all mentioned as benefits by over a quarter of the respondents. Yet there was some variation in the rankings generated by the three centres (Table 20).

Half the North York centre respondents identified convenient highway access as an advantage found in their centre and over one third cited ease of clientele access, executive and staff commuting, good transportation, a variety of good hospitality services and good public transit to the CBD. In the Consumers' area, convenient highway access was identified as a benefit in 95 percent of the interviews, while over a third of the respondents cited good client access, convenient executive commuting, staff commuting, plentiful or cheap parking and moderate leasing costs as advantages. The main differences between these two centres related to the level of importance accorded highway access, public transportation (including the direct link to the CBD), leasing costs and the availability of parking and the hospitality amenities. In the Scarborough centre, good highway access again was cited most often as an advantage (78%), followed by convenient access to clients. However, the next most commonly cited advantages were public transit service, appropriate office space or buildings and good shopping. Scarborough resembled Consumers' Road in perception of the utility of its highway access but approximated North York in the reaction to public transit service. The Scarborough responses also reflected the high quality of the centre's office buildings and its location immediately adjacent to a regional shopping mall.

The only disadvantage that was identified by 20 percent of the whole sample was the inadequacy of the hospitality services, particularly in the Consumers' Road and Scarborough centres, although 18 percent mentioned one or other defect related to parking (Table 21). In Scarborough, the scarcity or layout of parking was the most commonly perceived disadvantage, cited by a third of the respondents, while in the North York centre 25 percent identified the shortage or cost of parking as a drawback.

Table 21: Disadvantages Found in the Centre Chosen

Disadvantages	Scarb.	N.Y.	C.R.	Total
Poor hosp. services	22	4	29	20
Parking shortage/cost	33	25	7	18
Traffic congestion	6	13	17	13
Poor shopping	6	4	12	8
Poor car acc. to CBD	17	4	2	6
Poor bldg./maint'nce	6	17	-	6
Poor peer access	11	8	2	6
High rent	-	8	2	4
Poor public transit	-	-	7	4
Poor transit to CBD	6	-	5	4
Other	33	21	29	28
Total cited	139%	104%	115%	117%
Respondents	18	24	41	83

Note: Data are percentages of respondents, in each centre, who cited the items.

Source: Author's data.

Table 22: Percentage of Meetings by Car (% of Sample)

% by Car	Scarb.	N.Y.	C.R.	Total
0	--	--	--	--
1-25	--	13.0	--	3.7
26-50	--	4.3	4.9	3.7
51-75	5.9	13.0	2.4	6.2
76-99	23.5	56.5	2.4	22.2
100	70.6	13.0	90.2	64.2
Respondents	100.0% =17	100.0% =23	100.0% =41	100.0% =81

Source: Author's data.

The most commonly noted "other" advantage was some aspect of centrality—centrality to the suburban municipalities, "Yonge Street is the central spine of Toronto," or centrality to a company's operations. The "other" perceived disadvantages covered a broader spectrum. Traffic problems were mentioned: poor street layout in the Scarborough centre; future traffic congestion in the North York centre; and in Consumers' Road, rush hour traffic to the CBD, truck traffic during construction projects and the need to use a car within the centre. Two Consumers' Road respondents felt that they were too far from the airport, one that he was "five minutes too far from the CBD," and one felt cut off from the CBD "action." One in the North York centre and one in Scarborough felt that their suburban locations had resulted in lost clients, and another in Scarborough found it "difficult to get people to come to meetings."

5.2.4 Access to Appropriate Labour Skills

Various studies (e.g., Daniels, 1975; Nelson, 1986) have identified access to specific types of labour as influencing some office relocations. Hence, the study explored the importance accorded specifically to labour access.

Many firms considered access to the homes of their executives in choosing a location (see Table 18), but there was a strong perception that "senior" employees would remain with an office which relocated, regardless of its new location, as the metropolitan area is seen as a single pool of skilled personnel who will travel from wherever they live in the CMA to wherever a suitable job exists in the CMA. Thus, two thirds of the respondents stated that access to an appropriate labour pool played little or no part in their location decisions (Appendix Table 6). The main difference between the centres was that an even higher proportion of establishments in Consumers' Road than in the other two centres considered labour access to be unimportant in their location decisions. This contradicted the finding that convenience of commuting, for both executives and staff, was considered least important by the Scarborough respondents (Table 18). It was in the North York centre that labour access was considered most important, which reflects the greater concern expressed there for staff commuting. Those respondents who had paid some attention to labour considered access to secretarial staff to be more important than access to all the other employee categories combined, as they perceived difficulties in inducing experienced secretaries to commute any great distance.

5.2.5 The Adequacy of Hospitality Services in a Centre

The author had observed that leasing out office space in a new suburban building was slow until a range of restaurants and pubs opened nearby. Also "amenities" have been identified as a factor

influencing location decisions for various establishments (e.g., Ihlanfeldt and Raper, 1990). Thus, it was postulated that office executives, in comparing the merits of various office centres, might be swayed by the range and quality of the hospitality services available in each one. However, the respondents claimed that this was virtually never an important consideration, and in less than a quarter of the cases was it considered at all (Appendix Table 7). Nevertheless, a number of respondents expressed disappointment in the quality or choice of the luncheon options that they found in their centres when once they had located there, which confirms their earlier identification of the disadvantages of the centres in which they had located (see Table 21).

The main difference between the centres was that 42 percent of the establishments in the North York centre considered this factor to be of at least some importance, which was three or more times as high as in the other centres. Also one third of the North York centre respondents considered the good hospitality services there to be an advantage, compared to only six and 12 percent in the Scarborough and Consumers' areas respectively (Table 20). Similarly, almost none of the respondents in the North York centre, but a quarter in the other two, commented on the poor quality of restaurants and pubs (Table 21). It seems that the better the quality and range of such services in a centre the more aware business people become of their utility.

5.2.6 The Role of Municipal Planning and Advertising

Planning policies are of real importance both to developers and to companies that erect their own office buildings. Suitable plans, zoning and services make it possible to build in a centre, but, since no municipality can force private land owners to build, those who actually build will be influenced by their perceptions of future demand for space in that centre. Therefore, this study sought to determine the influence that the municipal planning and promotion policies for the centres had in attracting the establishments that had located in the office buildings.

Overall, over 80 percent of the respondents claimed that local planning policies and publicity strategies had no influence on their location decisions (Appendix Table 8). The disinterest was virtually unanimous in the Consumers' area, which was not unexpected since this office park has not been promoted in any way by the municipality. However, even in the North York centre, which has been the subject of a clear planning strategy and the most visible publicity campaign of any suburban office centre in the Toronto CMA, less than a quarter of the respondents felt that the municipality's strategies were important or very important in their location decisions.

These responses may be a little misleading as no office centre can be built without some municipal support. Consumers' Road, being at the intersection of Ontario's major east-west highway

and Toronto's main radial expressway, could attract highway-oriented office establishments despite North York's unwillingness to promote the centre actively. Yet even there the city did raise the density limits and did make road improvements. In the Scarborough and North York centres the municipalities have actively sought to attract large offices which, in turn, attracted business service firms. The large offices, together with the service offices, then provided the custom needed to support new or improved public transit facilities, restaurants and shops. Thus, whether or not the interviewees realized it, municipal actions have influenced some of the *conditions* that they considered in their location decisions. Also, many of the respondents recognized the political leaders involved in "creating" their centres, indicating that the active promotion of a centre brings it to the attention, at least subliminally, of office executives.

5.2.7 General *Level* of Satisfaction in the Centres

Finally, respondents were asked to rate the extent to which their centres had met their particular offices' overall needs. Although the question could only be a rough indication of how each respondent reacted to his/her working context, if the responses are taken in conjunction with the perceived advantages and disadvantages of the centres (Tables 20 and 21), they indicated that most respondents were well satisfied with what their centres provided.

Overall, three quarters rated their centres as good or excellent while only four percent rated them as poor or unsatisfactory. The positive rating ranged from 67 percent in the Scarborough centre to 88 percent in the North York centre, while the critics ranged from nil in the North York centre to five or six percent in the Consumers' and Scarborough areas. The most frequent complaints about the Scarborough centre were that it was unfinished or did not contain enough clients, while the complaints about Consumers' Road concerned transportation: traffic congestion, distance from the airport, or the need to rely on cars for all trips.

5.2.8 A Summary of Factors Influencing Location Choices

Downtown traffic congestion, suburban highway access, the CBD/suburban rent differential, operating costs and convenient access to clients were the main reasons cited for preferring a suburban location to a CBD one. However, it is access that makes or breaks a suburban office centre. A huge majority of establishments considering a suburban location sought good highway access, good public transit access and plentiful or cheap parking, in that order. In all three centres accessibility to a variety of specific destinations, such as the CBD, the airport or research facilities also influenced location decisions. Differentials in operating costs or the availability of suitable office space might sway the

choice between centres of similar accessibility, but only if the office's perceived access needs can be met. By far the most commonly perceived *post facto* advantage in the three centres was good highway access, followed by convenient access to the firms' clients and to the homes of executives and staff.

In the North York and Consumers' areas, where smaller and more autonomous offices were prevalent, convenient access to executives' homes was a significant factor in the location decision. In location decisions for Scarborough's offices, which were generally larger and more likely to be branches, executive commuting was hardly considered. In Scarborough the existence of a downtown office or the availability of high quality office space played a much larger role in the location decision than in the other centres.

Perceptions of public transit generally reflected whether or not a respondent's centre had rapid transit service; it seems reasonable to assume that a decision to locate in a particular centre would take into account an establishment's anticipated dependence upon public transit, and thus the level of service it should seek. For many offices, public transit was much less important than good highway access.

Three factors that had been posited to influence office location decisions were judged to be irrelevant by the respondents. First, a strong majority of the establishments did not consider ready access to an appropriate labour pool in their location decisions, since they considered the entire CMA to be a single pool of highly mobile labour. Second, the range and quality of hospitality services available in a centre was seldom considered in actual location decisions, although any *post facto* perception of their inadequacy could cause dissatisfaction with the centre. And third, municipal planning and publicity policies were almost never considered directly in the location decisions, although there probably was an indirect influence since municipal actions might have produced the *conditions* that were considered.

Although the three centres contained different ranges and types of business and personal services and other infrastructure, in general the offices had located in centres which satisfied their needs. That satisfaction was highest in the centre which was most diverse and lowest in the centre which was least developed.

5.3 LINKAGES AND CONTACT CHARACTERISTICS

The linkages between office establishments, and the degree to which face-to-face meetings are essential to maintaining those links, can influence where offices locate and the extent to which they seek proximity to other offices. Thus the interviews sought to identify some aspects of the

contact behaviour of offices in the study areas. This was not intended to be a rigorous examination of contact patterns for classes of office establishment but sought only to identify the differences or similarities between the study areas in terms of: the frequency of meetings, the importance of downtown linkages and the preferred mode of transportation to meetings.

5.3.1 Frequency, Location and Transportation for Meetings

In each study area, about one third of the respondents stated that they had one to five face-to-face meetings per week. A further one eighth (North York centre) to one third (Consumers' Road) reported six to 10 meetings weekly and about 20 percent reported 11 to 15 a week. In the Consumers' and Scarborough areas, about one sixth of the respondents reported 16 or more meetings weekly, but in the North York centre almost one third made this claim. Although the highest frequency of meetings generally applied to small offices, in activities which might require frequent meetings with a large number of clients, three or more meetings per day is exceptionally high. In Gad's central corridor only law firms, shipping agents and public relations consultants reported more than 10 meetings per communicator weekly, and none exceeded 13.5 per week.

Typically, about a quarter of the respondents' meeting partners were from offices in the same municipality, about a quarter from CBD offices and about half from offices elsewhere. This pattern also applied to the establishments in the Scarborough and Consumers' centres, except that the latter reported a slightly lower proportion of downtown meeting partners and commensurately more scattered partners. North York centre responses were significantly different: almost half the meeting partners were from the same municipality and only a quarter were from scattered offices. This may be a reflection of the lower reliance on car transportation that differentiated the North York centre from the other two, and/or its evolution by succession in an area which has long contained some businesses.

Virtually all the reported meetings took place in offices and two thirds or more of them were in the offices of the meeting partners. Only about one third of the respondents, from each of the centres, estimated that over half of their meetings were in their own offices, which seems to confirm that it is "difficult to get people to come to meetings" in suburban centres.

Clearly the respondents in these centres do not walk to their meetings, using either cars or public transit. Overall, 93 percent reported use of a car for travel to at least half of their meetings, ranging from 83 percent in the North York centre to 100 percent in the Scarborough centre. But the most striking difference was in the proportions who used a car to travel to *all* their meetings: 90 percent in Consumers' Road and 71 percent in the Scarborough centre, but only 13 percent in the North York centre (Table 22). It is not rational to postulate that this huge difference resulted wholly

Table 23: Percentage of Downtown Meetings by Car

% of Mtgs	Scarb.	N.Y.	C.R.	Total
0	7.1	52.5	--	19.4
1-25	--	17.4	--	6.0
26-50	14.3	17.4	6.7	11.9
51-75	21.4	13.0	--	9.0
76-99	7.1	--	--	1.5
100	50.0	--	93.3	52.2
	100.0%	100.0%	100.0%	100.0%
Respondents	=14	=23	=30	=67

Source: Author's data.

from any characteristic of the office establishments. It must also have stemmed from the very different levels, and convenience, of both the public transit service and highway links between each of the centres and other business venues, a conclusion that is supported by the travel patterns for meetings with people from downtown offices.

5.3.2 Downtown Meeting Partners

Finally, the study examined the respondents' face-to-face contacts with meeting partners based in the core office district. One unexpected finding was the extent to which the suburban offices used direct contact to maintain their links to the CBD. About a third of the respondents reported that over a quarter of their meetings involved persons from central offices. Furthermore, all respondents in the North York centre, 82 percent in the Scarborough centre and 73 percent in the Consumers' Road area reported at least one meeting per week with downtown people.

Table 23 shows that there was a wide difference between the centres in the mode of transportation used for downtown meetings. Only 13 percent of the North York centre respondents used cars for more than half of their downtown trips, compared to 79 percent in the Scarborough centre and 93 percent in the Consumers' area. In fact, almost all Consumers' respondents and half of the Scarborough ones travelled to all CBD meetings by car, while none from the North York centre did. Conversely, over half of the North York respondents rode the subway to all their downtown meetings.

It has been shown that 46 percent of respondents in the North York centre, 39 percent in the Scarborough centre and only 15 percent in Consumers' Road claimed to have sought good public transit access in selecting a centre (Table 19). The difference between these North York and Consumers' data reflect the actual choice made in the mode of travel to downtown meetings. However, although there was very little difference between the North York and Scarborough data on the perceived importance of public transit in the location decision, the actual behaviour of executives in their travel to CBD meetings was clearly different. The Scarborough executives seem to have overestimated the utility that their rapid transit line would provide, using it less frequently when they realized the level of service that it actually provided, while the North York centre executives underestimated the actual utility of their much more convenient line.

5.3.3 Contact Characteristics in Summary

About a third of all the executives had low meeting frequencies. However, in the North York centre almost a third reported over 15 meetings per week, which is twice as high as in the other two centres and which exceeds anything reported in Toronto's central corridor.

About a quarter of all meetings involved downtown contacts and almost all the executives reported at least one meeting per week with downtown people. This varied from all the North York centre respondents to three quarters in Consumers' Road. In the Scarborough and Consumers' areas, another quarter of all meetings involved contacts from the same municipality and half were scattered further afield, while for the North York centre these proportions were reversed. Executives from all three centres reported that only a third of their meetings took place in their own offices, possibly because CBD personnel are reluctant to attend meetings in the suburbs.

More than five sixths of the respondents used cars to travel to over half their meetings. Because of the far better level of public transit service to the North York centre and the excellent highway access to the Consumers' and Scarborough areas, a car was used for *all* meetings by 90 percent of executives in Consumers' Road and 71 percent in Scarborough centre, but only 13 percent in the North York centre. Meanwhile the different levels of transit service to the CBD allowed over half the North York centre executives to use public transit to all their downtown meetings, but only seven percent from the Scarborough centre and none from Consumers' Road. The equally distinct levels of automobile access to downtown induced 93 percent of Consumers' Road executives to travel to all their CBD meetings by car, half from Scarborough centre and none from the North York centre. Clearly, the perceived convenience of the transportation links between various office centres and the CBD is a significant consideration in location decisions, but the mode used in practice is determined by the relative convenience actually experienced.

6.0 SUBURBAN OFFICES: CONCLUSIONS, MODELS AND APPLICATIONS

The impetus for this research was a realization that the processes involved in both the organic growth and the planned creation of suburban office centres had not been described completely by the early 1980s. Therefore, the central tasks were to determine the extent of office activity in suburban centres, to identify which offices function successfully in those centres, and to investigate the factors which influence the suburban office pattern. To do this, it was necessary to construct a record of the development patterns of office uses, and related factors such as the growth of other functions and the evolution of major transportation links, in three study areas between 1966 and 1986; and then to identify the factors that the locators of office establishments seek in office centres. A secondary objective was to examine whether or not the face-to-face contact patterns of such establishments merited further study. Moreover this study, allied with the work of other researchers, would contribute to an unusually comprehensive record of Toronto's office complex and, it was hoped, to a more complete theoretical understanding of suburban office morphology. Finally, because the suburban office centre is an element of urban structure that is becoming increasingly important in any metropolitan area expanding beyond convenient travelling range of a single CBD, the results of this study might be useful to planners and location analysts.

6.1 OVERALL OFFICE PATTERNS AND DYNAMICS

The current pattern of offices in Toronto indicates that high order or "orientation" offices *have tended* to congregate so as to facilitate inter-establishment contacts, and that this occurs at the point of minimum aggregate travel where their personnel also have ready access to the CBD's personal and retail services. Middle-order branch or "planning" offices *have tended* to locate centrally to their territories, relying on telecommunications and mail for much of the contact with their headquarters. Routine or "programmed" office functions, and those dealing with a standardized product (e.g., insurance), *have been able* to locate wherever suitable space could be provided, as long as their clerical staffing needs could be met. Low-order consumer service offices resemble retailing in that they *have tended* to locate centrally to limited market areas and in some proportion to local populations.

The fact is that offices now exhibit tendencies in their location choices, rather than being bound almost absolutely by the constraints that applied in the first half of this century. This change in office patterns has stemmed largely from changing corporate organization, births and deaths of firms, the improving quality and cost of telecommunications, and mass car ownership. And as more office functions standardize their operations and outputs, they will be able to move out of the "nerve centres" of major cities, as has been the case in insurance.

Recent trends indicate that, although scattered office buildings provide needed accommodation for a few offices serving a localized market or for back office "data mills," the proportion of office space that is in such buildings is steadily decreasing. This study also revealed that, after a period of locational experimentation with scattered office buildings in the 1950s and 1960s, by 1986 a clear majority of Toronto's non-central office building space had become concentrated into 19 centres, with three quarters of that office space being in just eight of them. These trends indicate a strong tendency for offices to cluster and a preference for the larger agglomerations.

In fact, the Toronto experience has conformed almost exactly to Daniels' (1985) four-stage model of suburban office growth; viz.,

- Pre-1960: Business service offices were highly centralized in the CBD.
- 1960s: CBD disbenefits and the steady growth and diversification of business services led to a dispersed pattern of exploratory office locations.
- 1970s: Suburban concentrations of offices began to appear at freeway interchanges or at the junctions of public and private transportation routes.
- 1980s: Suburban office centres are being consolidated and diversified, and they are attracting some of the offices from the initial scattered buildings.

Of course the CBD, with the greatest range and concentration of offices in the metropolitan area, remains the highest order office centre in the metropolitan field. However, it appears that Daniels' concern about office parks not fitting the model may be resolved by distinguishing between two orders of non-CBD office centres, one of which is able to attract some of the elite offices. In Toronto, there is now a strong tendency for the continually growing proportion of office buildings and establishments in the suburbs to agglomerate in one (or maybe two) mixed-use "downtowns" and a larger number of single-use office parks. However, the U.S. tendency for offices, hotels and apartment buildings to congregate in "mini cities" or "suburban downtowns" around regional shopping malls in the "outer city" (Muller, 1976; Hartshorn and Muller, 1989) is not as widespread in the major Canadian metropolitan areas. Hutton and Ley (1987) have concluded that in Vancouver, Canada's third largest metropolis, there is the potential for no more than one or two "primary receptor" office centres to develop, and Metrotown appears to be the only one approaching the dimensions of a "suburban downtown." In fact, it is possible that Canada's three largest metropolitan areas are just entering the fourth stage of the Hartshorn/Muller model. They do have numerous office centres, but only now are a few of those centres showing signs of evolving into "suburban downtowns."

It must be recognized that a small proportion of offices, serving localized areas, need space in scattered office buildings and do not necessarily gravitate to office parks or "downtowns." The

offices in these scattered buildings, together with consumer service offices in some shopping centres or strips, represent the lowest order in a hierarchy of office locations. In addition, some "back offices" to the headquarters of large corporations are being located in scattered buildings. Section 6.6 considers in more detail the overall pattern of offices in metropolitan areas implicit in recent models, and offers speculations on the possible existence of a four-level hierarchy of metropolitan office locations.

The basic tenet of office location theory, that the high cost of travel to meetings by those whose time is most valuable forces proximity of meeting partners, did not seem to be borne out by the behaviour of executives in the three suburban centres studied here. Nor did they seem to feel that they were deprived by not having face-to-face access to a wide range of information sources within the centres they had chosen. Either the office personnel were highly mobile, supporting Muller's (1976) claim that car travel to suburban meetings can be as quick as walking to them within the CBD, or else the telecommunication of information satisfies their needs, and allows them to function effectively in their own "urban villages."

The findings of this study indicate that Gad's (1975) conclusion—that most types of offices need not be geographically clustered but can survive in a wide range of locations *within* the central office district—must now be extended. In Toronto it appears that, except for some high order functions that still resist decentralization (such as banking and very large law firms), most types of office can survive in a wide range of locations *beyond* the central office district. Also, there seemed to be little difficulty in assembling staff with diverse skills for offices in the suburban centres. Nonetheless, the executives reported unexpectedly frequent meetings with business colleagues, including ones located in the core office district, indicating that fast and convenient transportation links between any centre and the CBD are critical to the centre's success in attracting most types of office.

The evidence in this study also has not supported Code's contention that the quality of information available in suburban office centres is so inferior that this creates a cost which prevents many types of offices from locating in them. Offices of all orders and most types can and do function in suburban centres regardless of their information needs, and it is worth noting Bennett's (1980) caution that an office's contact patterns may be adopted or adapted after it has started operating at a particular location, rather than determining that location. Tradition or inertia may be stronger centralizing factors for offices than any real functional need related to their contacts.

6.2 TYPES OF OFFICE IN TORONTO'S SUBURBAN CENTRES

Analysis of the types of office establishment in the case study areas has been less definitive than had been hoped. In terms of functions, size, organizational status and nationality the study identified a wide variety of office types that were operating successfully in the centres in 1988 and at five-year intervals since 1971, supporting Huang's (1989) conclusion that Toronto's suburban office nodes have become very diversified. Nonetheless, some generalizations can be drawn from the data.

About 60 percent of all the establishments had a suburban origin, having never existed at any other address—they had been "born" in their centre—or having moved laterally from some other suburban location. Only one third of the establishments had moved outward from more central locations. Therefore, it is time to recognize explicitly that the suburbs of large Canadian metropolitan areas have become very significant generators of office activities, and that actual moves from the central office district to the suburban office centres now play a minor role in the "suburbanization" of offices. This strongly supports Muller's (1976) finding that in the U.S. the "outer city" now generates its own office establishments. The study did not support Code's contention that most of the offices moving outwards from the core do so in a series of steps. While a few examples of such moves were identified, three quarters of the establishments that *had* moved outward had come directly from downtown addresses. Thus, we see that suburban centres not only contain offices generated in the suburbs, but that some of those centres can now also attract offices from anywhere in their metropolitan field, including the CBD.

Half the establishments in the three centres were Canadian controlled, unilocational firms that were predominantly small, two thirds of them having five or fewer employees, which closely resembled the office composition in the central corridor. A significant difference between the suburban and central office centres was that Gad (1975) found almost half of the multilocational establishments in the central corridor to be head offices, whereas only one tenth to one third of the multilocational offices in the three suburban centres were head offices. Clearly, although the suburban centres do contain head offices of multi-locational companies, they are not yet as attractive to such head offices as is the central corridor.

Overall, small establishments were the norm in the areas studied: two thirds of them had fewer than 10 employees, which was not much different from the finding that two thirds of the establishments in the central corridor had seven or fewer employees (Gad, 1975). However, a few functions accounted for a very large proportion of total employment in the suburban centres. In the North York and Scarborough centres, functions that were only seven and 19 percent respectively of the total number of establishments accounted for two thirds of the total employment. Most of the

largest establishments were offices of insurance companies, all three levels of government, manufacturing, utilities or computer related activities.

One discovery that does not seem to have been reported in the literature was the very substantial number, and proportion, of small establishments that depended on "umbrella" offices for their accommodation and day-to-day office services. It would have been illuminating to draw comparisons with Toronto's central office district and with suburban centres in other cities to determine whether this is a common or primarily suburban phenomenon. Although the absence of appropriately reported information prevented this comparison from being made, a study now under way in Detroit has encountered a similar situation. Thus it seems clear that "umbrella" offices are an important element of suburban office centres. Unlike branches of large integrated corporations that can draw upon their parent companies for most of the support services they require, small independent new business service firms must rely on external suppliers of such services. Thus the value of the umbrella offices in stimulating the formation and early growth of new firms might well be recognized by supportive public policies. Not only do they function as incubators for very small office establishments, but they probably also nurture new ones until such time as they are capable of expansion into their own larger premises.

In summary, this study's most significant findings related to the characteristics of offices in suburban centres are, firstly, that Toronto experience strongly supports the thesis that the suburbs have become self-generators of office enterprises, and that some suburban centres can attract offices from anywhere in their urban fields. Secondly, although the suburban centres have attracted a range of office types and sizes, each centre seems to have identifiable functional specializations, the seeds of which appeared quite early in the development of the centre. However, they have not been as successful as the CBD in attracting the head offices of multi-locational firms. And thirdly, a significant proportion of office establishments in the suburban centres depend on "umbrella" establishments to provide them with space and office support services. These findings generally support the hypothesis that, notwithstanding imperatives of face-to-face contact in the case of some high-order office functions, a large variety of office functions, including high-order ones, can and do exist at locations outside the central office district. They also indicate that municipal policies aimed at creating, or stimulating the growth of, suburban centres should be an integral part of metropolitan planning.

6.3 TRANSPORTATION AND ACCESSIBILITY NEEDS

Both the physical evidence and the survey responses examined in this study indicated that it is accessibility that makes or breaks a suburban office centre. A huge majority of establishments

considering a suburban location sought good highway access, good public transportation access and plentiful or cheap parking; while accessibility to a variety of destinations was important to a number of offices. It was only where these accessibility criteria could be met that other factors might be considered in deciding *between two* centres. A similar point was made in a recent consultant's study of office centres in Toronto's suburbs (Hempson, 1990). In addition, by far the most commonly cited of the advantages found in the three centres was good highway access, followed by convenient access to the firms' clients and to the homes of executives and staff. It is also clear that, in some cases of a choice between centres, an office establishment's perceived reliance upon public transit, and therefore the level of transit service it should seek, can influence the location decision. Where a rapid transit link to the CBD existed, it was well patronized for travel to and from meetings if it was found to be fast and convenient, but it was not used frequently where it failed to provide access times comparable to those for car travel.

The locational importance of spatial variations in transportation costs, in distances to both customers and suppliers, and in rapid transit service was indicated in Ihlanfeldt's and Raper's (1990) study of new office location in Atlanta. The Hempson (1990) study of ten suburban office centres in the Toronto CMA concluded that linkages between an organization, its employees and its business contacts are critical factors in location decisions. In that study the most frequently cited advantages sought were proximity to highways and good public transit service, while the disadvantages cited most often were lack or cost of parking, followed by traffic congestion. All of which supports the idea that transportation is the key location factor for most offices.

Therefore, municipal planning for office centres can influence urban form by encouraging inherent tendencies, but only at locations where the access needs of the offices will be satisfied. Concentrations of office buildings and office establishments generally can *not* be attracted to areas which do not have the accessibility sought by the office functions. This is exemplified by the development that occurred when major new transportation links were provided. In Consumers' Road, the rate of office building construction accelerated appreciably when the Don Valley Parkway was extended past the area. In the North York centre there was a wave of construction activity following the opening of the Yonge subway extension into the area in the mid-1970s, and again closely related to the opening of a new subway station in the mid-1980s. Thus transportation network planning is a critical component of any planning for office centres.

This study's brief exploration of contact behaviour indicated that, for offices in all three centres, face-to-face contact partners were widely scattered. However, the offices in all three, and particularly the North York Centre, maintained unexpectedly intensive face-to-face linkages with

downtown colleagues. About a quarter of all meetings, for executives from all three centres, involved downtown contacts, and five-sixths of all the respondents reported at least one such meeting per week. This strongly indicates that convenient and rapid access to the primate decision-making centre remains an important location criterion, so that if a centre is to attract a range of offices it must have a fast highway or rapid transit link (or both) to the CBD.

A car was used for *all* their meetings by over nine tenths of the respondents in Consumers' Road and by three quarters in the Scarborough centre, but by only one eighth in the North York centre. This probably was due to the very different levels of public transportation service available, and the clearly superior four-directional highway access to the Consumers' Road area. Furthermore, 93 percent of the Consumers' executives used cars for travel to all their downtown meetings, but only 50 percent from the Scarborough centre did so and none from the North York centre. This choice of travel mode clearly reflected the nature and relative quality of the highway and public transit links between the CBD and each of the centres.

Under these circumstances, it is justifiable to conclude that the quality of the public/private transportation links to the CBD is a very significant factor in many office location decisions. However, the actual mode used to travel to meetings does not always reflect the stated preferences that were apparently a part of the location decision. It seems that, in making location decisions, the potential utility of a particular mode of travel may be either over- or under-estimated, and that actual levels of convenience will be the arbiter of the mode used in reality. This expression of modal preference, in both the initial location decision and the subsequent travel patterns, should be noted by metropolitan planners intent on establishing office centres. The highest capacity commuter routes (whether highway or transit) almost always link large suburban concentrations of population to the CBD, to accommodate massive unidirectional peak travel volumes. The obvious solution is to locate a suburban centre adjacent to such a route, where it will have the fastest possible link to the CBD outside of rush hours, while being adjacent or central to a large resident population, for whom it will widen the range of both jobs and services nearby. And, if that centre were located where the commuter route intersects a crosstown highway, its accessibility would meet the needs of virtually all suburban offices.

6.4 LABOUR POOLS, SAFETY AND HOSPITALITY SERVICES

It seemed to be probable that firms, in evaluating alternative locations, would take into account the availability there of suitable labour and of appropriate personal services, particularly hospitality services. It has also been reported that security considerations can influence office location decisions. However, in all three centres a very strong majority of executives claimed that they

considered ready access to an appropriate labour pool to be irrelevant, since they regarded the entire CMA as a single pool of highly mobile labour.

Similarly, the range and quality of hospitality services available in office centres apparently was ignored in most of the office location decisions. This seems to contradict the findings in Atlanta, where new firms claimed to have been strongly attracted to locations offering "amenities" (Ihlanfeldt and Raper, 1990). Perhaps that explains why a number of the respondents expressed dissatisfaction at having found, after their office had moved into a centre, that luncheon and entertainment choices there were inferior to what they had assumed would be available. There is at least a *post facto* relationship between the quality of hospitality services and the level of satisfaction with the centre selected, which might influence whether an office remains there or moves again to another centre with better "amenities." The suburban Toronto office centre which is growing most rapidly is the one with the widest variety of hospitality, retail, personal and business services. It is also the centre for which the highest overall satisfaction and lowest dissatisfaction ratings were reported in the interviews. In addition, there is a dynamic of circular and cumulative causation in the relationship between office centre growth and the expansion of a wide variety of services: growth in the former attracts growth in the latter, which in turn improves the centre's ability to attract additional offices. And, of course, the range of hospitality and other personal services would be substantially broader in a centre that had a resident population to supplement the work-day clienteles of its restaurants, pubs, hotels and shops.

A desire by firms to control the security of their own buildings and hence the safety of their employees, particularly the night shift in data processing operations, had been identified as a factor in some location decisions (City of Toronto, 1978). This study found no evidence to support that conclusion; the respondents claimed that they did not consider building security or the personal safety of their night shift employees when selecting a location. In fact, a number of very security conscious "data mills" (mainly in finance or insurance) occupied only a portion of the space in various buildings, imposing strict security measures on that space rather than seeking control of an entire building and its surroundings. One exception was the head office of a national chemical company (that also manufactures explosives and ammunition) which occupied its own custom designed building, protected by security measures that would have been the envy of Fort Knox.

6.5 INVESTMENT SECURITY AND RENT

Building sizes in the three suburban centres have been increasing as those centres have proved to be capable of attracting sufficient growth to produce a rising demand for office space and to reduce investment uncertainty. Thus as a centre grows, so does the size of the individual new

office buildings erected in it, and generally this is accompanied by a commensurate improvement in the quality of the space within the buildings. A corollary is that as building size in the centres has increased, so also has the intensity of the land use, and hence the market value of that land. The evidence from the North York and Consumers' areas clearly illustrated the operation of a competitive bid-rent process: as the intensity of land use increased, only hotels and luxury apartment buildings were able to compete with office buildings for sites. Other functions were either forced out or constrained from expansion when office buildings started to concentrate in those areas. The operation of this process must be recognized clearly by any municipal planner or council faced with a decision on whether or not to permit office buildings in industrial areas. One office building in such an area might well fill a real need for space to house offices serving the nearby industries. Two or more might equally well be the thin end of a wedge of rising land prices that prevent any new industry from coming into the area.

The study produced some evidence that in car-oriented centres there is a limit to the density of building that can be served economically by surface parking. While the limit appears to approximate FAR = 1.5 for individual buildings, the maximum *average* density for any car-oriented centre as a whole may well be appreciably lower than that.

The study indicated that it is time to re-examine traditional notions of the importance of rents in location theory. In 1973, asking rents for vacant office building space in the financial district were clearly higher than rents for vacant space elsewhere, but the rent curve for vacant office building space in the rest of the CBD became virtually horizontal, and barely higher than the peaks at the non-CBD centres. In 1986, the differential between the financial district and all other locations again was clearly evident, but asking rents for vacant office building space in most of the central office district had become virtually identical to rents for vacant space in two of the study areas. A recent study by Morrison (1990) reported similar findings in Detroit, except that there the rents in even the financial district are lower than those in some of its suburban centres, a situation similar to what Hartshorn and Muller (1989) found in Atlanta. It seems that some of Toronto's elite office establishments are still willing to pay a substantial premium for the most "central" locations, but that this is no longer the case in some U.S. cities. However, in terms of office rents, the rest of Toronto's central office district is now competing with at least a few other major centres on even terms. In Toronto and other large metropolitan areas many office establishments considering relocation may judge the availability of suitable, modern office space to be more important than its absolute location.

6.6 TOWARDS AN HIERARCHICAL THEORY OF OFFICE CENTRES

It is now appropriate to highlight some milestones in the evolution of suburban office location theory, and to attempt to link them into a coherent sequence. We start at the conjunction of Haig's (1926) description of the critical role that face-to-face linkages play in the clustering of high-order offices within the CBD, and Burgess' (1925) concentric zone model that depended on a strong CBD to provide the dynamic thrust needed for the growth and structuring of the city. Hoyt's (1939) sectoral model provided an alternative interpretation of the urban pattern, but confirmed the dynamic role of a strong CBD in city structuring. The interplay of transportation costs and accessibility economies with land prices to determine the "highest and best" uses for various locations, regardless of which pattern prevailed, determined the relative distances of particular activities from the city centre.

But when mass car ownership enabled people to satisfy their desire to escape from the congested central city to suburban green fields, the distances involved in dealing through a single significant centre rapidly increased, as did the peak hours congestion on all commuter routes. The effect of this deconcentration was recognized by Harris and Ullman (1945) in their model of the multinuclear city, whose growth and servicing depended not only on a dominant CBD, but also on a variety of other nuclei.

These theoretical models of city form and growth largely ignored the specifics of office location but, when taken in concert with Haig's ideas, created frameworks which did much to explain the central city's dominance in office functions. However, little was added in terms of a general office theory until the 1980s. Various studies on linkages and functional clustering, observations on the suburbanization of large offices, comments on elements of the urban structure of New York in the 1950s, and Thorngren's typology of the functional process involved in office work all added valuable elemental understanding. One of the very few attempts to construct a general theory of office location was Armstrong's (1972) attempt to place all offices in office buildings within a hierarchy of three levels that had successively lower communications and hinterland requirements. Another exception was Vance's (1966) seven-stage model of the evolution of "downtown," which made a very worthwhile contribution to later office-model building. His fifth stage, involving replication of "central" functions in outlying areas, can be seen as the initiation of the multinuclear metropolis, and his final stage, the emergence of a "city of realms," in which each realm is virtually self-sufficient in terms of employment and service opportunities, was the clarion announcement of a very significant new morphology that was barely nascent at that time.

A decade later, Muller (1976) could amplify this notion in his description of "mini-cities" within an "outer city" that was not only self-sufficient, but even somewhat suspicious of the central city, whose CBD would attract a diminishing share of overall metropolitan growth in office activities. Erickson (1983) constructed a three-stage model incorporating ideas from Muller's model (and hence Vance's). His model was based on the notion that the pattern of suburban employment evolved in response to the sequential influences of three pairs of coincident spatial and structural processes, which produced periods of "spillover and specialization" (1920-1940), "dispersal and diversification" (1940-1960), and "infill and multinucleation" (1960 - ?). Daniels' (1985) model of office suburbanization posited four stages, with three stages of about a decade each since 1960, in the shift from a highly centralized office pattern to one in which true agglomerations of suburban offices emerged. It was at that point that this study was started.

The study commenced with a few tentative assumptions about urban form in general, office patterns in particular, and the dynamic forces affecting both. A major assumption was that the modern metropolis can no longer be explained in terms of either a simple mononuclear model or the traditional polynuclear one. It certainly is multinuclear, but not all the nuclei have equal size, variety or vitality. A second assumption was that office patterns are explicable by some variation of central place theory and its notions of range and threshold. This assumption had to be modified substantially. In Toronto, the CBD remains the overwhelmingly dominant centre for specialised services and shopping, for the highest order of medical care and entertainment, and for elite office activities. Beneath it are clear hierarchies of retailing centres, medical care facilities and entertainment, but a central place hierarchy of corporate headquarter and business service offices could not be identified.

Elite offices, whether or not they are consistently involved in orientation processes, seek strong concentration. After a period of experimentation with scattered locations outside the central office core, offices have shown a growing tendency to congregate in a very few suburban or outer-central-city locations. This tendency, despite the deficiencies in shopping and hospitality services in some of the centres, seems to indicate a desire for proximity, and hence interaction, between at least some of the establishments. This, in turn, may indicate that some of those establishments are fairly high order ones.

It seems that in the suburbs of a Canadian metropolis of 1.5 to 4 million people there will be a few centres that are capable of attracting high-order offices. Those major centres will be located at points which have outstanding accessibility in two respects: either four-way expressway access (one of those ways leading to the CBD), or direct and highly effective rapid transit access to the CBD with expressway or arterial road access in the cross direction. Unless this accessibility criterion can

be met, any other locational factors seem to be virtually irrelevant. Thus, there appears to be a very small group of one or two second-order nuclei, a long step down the office-centre hierarchy from the CBD. Centres with very convenient rapid transit access to the CBD might attract those offices which depend on frequent face-to-face linkages to offices or institutions in the core office district. These secondary centres might be expected to be compact enough to rely on pedestrian movement internally so as to provide convenient business access to the rapid transit station(s). Such a centre could also provide a lifestyle more varied than that in a typical subdivision, particularly if it contained a mixture of retail outlets, personal services and apartments in addition to its offices.

Beyond the very few second-order agglomerations, there appears to be a larger group of third-order office sub-centres. Although this postulate has not been examined specifically, such centres probably attract offices that, while seeking some agglomeration economies, are seldom closely linked. The offices in such a centre might be quite similar (such as the large insurance offices in the Scarborough centre and the computer-related offices in the Consumers' office park), or they might be routine process back offices (such as data mills for banks headquartered downtown), or they might be offices providing business services to the production enterprises in adjacent industrial areas. Therefore, these offices might be ones dealing in a standardized product, or programmed sub-functions of a large corporation, or planning functions with hinterlands of varying extent. The offices in these centres, often serving a widespread clientele, generally would rely heavily on automobile use. Thus, each centre might have a minimal level of personal services, but good shopping would be unlikely.

Each of the centres in this group may be locationally or functionally specialized to some degree. Offices relying on frequent use of car travel to serve widespread hinterlands would be attracted to a centre with four-way highway access, and would rely almost exclusively on car travel for essential trips to the CBD. Establishments using relatively frequent air transportation would still seek highway access, and/or a good route to the CBD, but might tend to locate in a centre within the shortest possible driving distance of a scheduled service airport. Offices which are closely linked to extensive facilities (such as factories or research installations) would probably be biased, in their choice between the centres, by the location of those facilities.

Beyond that third order of centres there is a scattering of office buildings generally within, or alongside, large industrial areas. They might contain offices providing business services to the enterprises surrounding them, or providing consumer services to the population at large. Some of them might house the "back offices" of large corporations with head offices elsewhere.

This hierarchy of office locations differs from the retail structure in that (except for the relatively minor portion that consists of consumer service offices) its elements would be located

relative to business, industry or employees rather than to population. Since businesses and industries are not spread homogenously across the metropolitan landscape there would likely be geographic areas not served by such centres, whose market areas would not necessarily be nested either. Nor would higher order office centres necessarily contain all the services available in all centres of lower orders. Consumer service offices, which do serve the population directly, might be located in any of the centres, in scattered office buildings or in shopping areas, in keeping with the range and threshold principles of central place theory. The degree to which the second order, and particularly the third order, centres are products of a search for agglomeration economies is not clear. It is quite possible that they are more a product of competition for space in the few locations that meet stringent accessibility criteria than of a desire for agglomeration.

Except for Vance's urban realms model, after World War II, "researchers inexplicably avoided . . . designing descriptive models to keep pace with the rapidly transforming metropolis" (Hartshorn and Muller, 1989, p. 377). In the final stage of Vance's model, a number of mixed-use commercial centres each act as downtowns for their particular metropolitan realms, enabling each realm to be largely independent. However, not much was added to the realms notion and its relevance to office locations until the mid-1980s, and that void was the main impetus for this study. It was only after the research for this analysis had been completed that Hartshorn and Muller (1989) explicitly carried the city of realms concept one step further. They noted that, since the 1970s, the deconcentration of urban activities has been marked increasingly by high-order functions that formerly were tightly bound locationally to the CBDs of large cities. The emergence of large, multi-functional clusters of high-order activities since the 1980s, which the authors called "suburban downtowns," has accelerated the transformation of suburbia into a fully developed outer city. While these "downtowns" are more loosely knit than traditional CBDs and are more car oriented, they serve as corporate headquarter locations and the nexus for high-order support services housed in quality office space. According to Hartshorn and Muller, such first-order centres should have:

1. at least one regional mall containing more than one million square feet of retail space;
2. at least five million square feet of office space, including three or more high-rise office buildings housing at least one Fortune 1,000 head office;
3. at least two major hotels of over 400 rooms each; and
4. total employment of over 50,000.

Building on Vance's urban realms and Erickson's three-stage model, Hartshorn and Muller posited a model in which suburban spatio-economic development is seen as having evolved through four stages: bedroom community, independent community, catalytic growth and high-rise/

high-technology. (For a more complete description, see pp. 17-18). Their case studies in Atlanta revealed that suburban downtowns serve as primary activity nodes for suburban residents and have given the outer city a character it lacked; specialization and high-order economic and cultural institutions have replaced sprawl and dependency. Truly, "the suburban downtown ranks as one of the most significant developments of the 20th century . . . [and] all large urban regions (over one million population) in the United States with growing service economies are participating in their formation" (ibid., p. 394).

Hartshorn and Muller envision a further stage as the centres mature. Although infilling will occur and transit services will improve, the economic function and physical form of the suburban downtowns will not change significantly. The main changes they predict are that these centres will become centres for the arts and entertainment, and that a form of governance will be created, probably out of the private associations and special districts that are now appearing to finance transportation and infrastructure improvements.

Toronto experience indicates that at least one of Canada's largest metropolitan areas is moving towards the creation of a very few "suburban downtowns." However, its central office district is so robust that it is unlikely to be eclipsed by any single suburban centre in the predictable future. Also, Toronto has not been plagued by the problem, reported in the Atlanta case, of centres straddling the boundaries between political jurisdictions. Furthermore, Canadian provincial governments have characteristically responded to the issues stemming from metropolitan urban sprawl by creating "upper tier regional governments" (e.g., Winnipeg, Vancouver, Edmonton, Toronto). These regional governments may be empowered to draw on a region-wide tax base to finance region-wide services and, in some cases, to over-ride local planning measures which might impede the provision of those services. Since the regional mandate generally includes responsibility for the major arterial road network and for operation of the public transit system, there has been no need to create special purpose districts to finance improvements to these services. (In British Columbia, this has been taken one step further—to a provincial transit authority). In fact, it has been in the economic interest of the regional (and even provincial) governments to improve the accessibility of the main suburban centres, particularly when that has encouraged an increase in reverse commuting on existing transportation networks.

Nonetheless, the findings in the Atlanta and Toronto suburban centre studies reinforce each other. It is clear that suburban downtowns are not only a feature of the metropolitan landscape today, but that they also seem to be at a higher level of economic and social importance than any of the many

office parks and specialty centres in the outer city. These conclusions indicate that there is a hierarchical order, if not a Chrystallerian neatness, to the places where offices locate.

However, a difference between the U.S. and Canadian research on suburban office centres has been in the form of the centres studied, and hence on the implied definition of terms such as "centre," "nucleus" and "suburban downtown." Erickson defined entire municipalities as "nuclei" provided that they contained a certain level of employment. Hartshorn and Muller regarded the employment in their "suburban downtowns" as including jobs both in research and development and in secondary industries that were functionally linked to the office/commercial/entertainment cluster, but which might be geographically separate from it. In Canada, on the other hand, Bennett, Huang, Hutton and Ley, Ley, Matthew and others have reported on suburban centres that are spatially concentrated. Mercer (1979) and Goldberg and Mercer (1980) presented a persuasive description of the differences between U.S. and Canadian metropolises, one of the most significant being the far more compact urban form in Canada's large urban areas. To this Canadian researcher, it seems rather unsatisfactory to classify geographically separate entities as part of a single "centre." Thus, it is appropriate to evaluate Hartshorn's and Muller's suggested minimum conditions, for a centre to be classified as a "suburban downtown," in a Canadian context.

The requirement that there be at least 5,000,000 square feet (464,500 square metres) of office space, including three or more high-rise office buildings, seems to be a reasonable one if an agglomeration is to function as a "downtown." Such an agglomeration would require at least two substantial hotels to accommodate visiting businesspeople, as well as other visitors, and provide them with some choice between competing facilities. The offices, their workers and the residents in and around a "downtown" would require a range of commercial services at least equivalent to those in a modern regional mall, so that a minimum of 1,000,000 square feet (92,900 square metres) of retail space is also a reasonable standard. The requirement that the centre house the head office of at least one *Fortune 1000* company can readily be related to a Canadian equivalent, such as the *Financial Post's* annual rankings (see Table 2).

However, to expect total employment of at least 50,000 in the "downtown" is highly questionable. Surely downtowns are concentrated agglomerations of business offices, retailing, personal services, government and entertainment (and sometimes also medical and educational activities). They certainly are linked functionally to research and development facilities and to secondary production plants. But those facilities and plants generally are not regarded as being integral to the CBD or the "downtown" when they are located some distance from it. The same definitional approach should be applied to "suburban downtowns." Under Canadian conditions, 464,500 square

metres of office space and 92,900 square metres of retail space together might be expected to accommodate about 18,000 to 23,000 jobs, depending on the average space per worker in the office and other commercial establishments. Since a downtown would generally contain some employment that is in neither office nor retail space, the total employment in a downtown of this size might be about 20,000 to 25,000.

Therefore, if the notion of "suburban downtown" is to be applied in Canadian metropolitan research, I suggest that a centre should only be so classified if it contains:

- at least 465,000 (or 500,000 ?) square metres of office space, including three or more high-rise office buildings, and housing the head office of at least one company in the *Financial Post's* list of the country's 500 largest industrial corporations, 100 largest financial institutions, 100 largest private companies or 40 largest insurance companies;
- at least 93,000 (or 100,000?) square metres of retail space;
- at least two hotels, each having 400 or more guest rooms; and
- total employment of at least 25,000;
- all within a contiguous area whose radius does not exceed the distance that most businesspeople would be willing to walk to meetings (perhaps 400 metres).

This definition recognizes differences between Canadian and U.S. urban centres, yet, since it retains approximately the floorspace and hotel dimensions suggested by Hartshorn and Muller for U.S. cities, would allow comparisons between suburban downtowns of either nationality.

6.7 SOME PRACTICAL PLANNING IMPLICATIONS

In exploring the factors which induce office establishments to locate in specific suburban concentrations, this study's findings seem to support some established planning standards, as well as to indicate some useful guidelines for future attempts to create suburban office centres.

It is of paramount importance to select a location which either has four-directional highway access (including a route to the CBD), or has a direct rapid transit link to the CBD as well as highway or major road access in the cross direction. The study also has indicated the importance of locating office centres so as to capitalize on the advantages of good highway links to other key destinations, such as the airport, wherever possible. If a city attempts to create office centres in locations that do not satisfy these access criteria, "...it might build infrastructure for a project for which there is no short-term market" (Dowall, 1987, p. 132).

Travel patterns in large metropolitan areas exhibit massive unidirectional peaking, inbound to the CBD in the morning peak and outbound in the evening. Hence, the creation of suburban office

centres at points of high accessibility on the *existing* transportation network will improve the operational efficiency of that network significantly, and at minimal public cost for facility improvements. In addition, such centres usually could be located within or close to large suburban resident populations, providing them with a wider choice of job and service opportunities. This would reduce the absolute *need* for long distance commuting for a substantial number of suburban residents, although any reduction in *actual* travel would depend on individual choices and cannot be guaranteed.

The way in which virtually all of the office development in North York's three kilometre long "centre" clustered around the two older subway stations, and the surge of construction in anticipation of the additional station, and then around it, all support the planning maxim that people do not readily walk more than 400 metres. Therefore, if pedestrian convenience is sought, as would be the case in major mixed-use centres intended to attract high order offices, the centre should be designed so as to keep walking distances to no more than about 400 metres, e.g., in the radius of a centre around a rapid transit station. If a centre is to be focused on more than one station, then those stations should be no more than about 700 metres apart. The North York experience also indicated that there is a finite limit to the geographical extent of a centre. Despite good subway service to three subway stations within it, a "centre" that is three kilometres long clearly was not functioning as a single entity.

Closely related to the second point, surface car parking should be peripheral and not internal to a mixed-use centre, since the presence of large parking lots creates discouraging pedestrian conditions. Attempts to improve pedestrian comfort in the Scarborough centre, and the need for buses to move people even short distances within that centre, show how difficult it can be to create an acceptable pedestrian environment in any centre focused on a large shopping mall with huge parking lots that predate the office buildings. Thus, it is not appropriate to use a large shopping mall as an initial, *central* magnet for mixed-use development since the huge parking areas, once they have been established, cannot be removed as more intensive types of development occur. However, it seems to be quite in order to use a large new government office building (such as a city hall), where car parking can be carefully designed and controlled so as not to affect pedestrian conditions adversely. An alternative may be to locate a shopping mall at one edge of a planned centre, with its parking lots sited so as not to create a barrier between the mall and the office buildings.

There seems to be two distinct levels of suburban centres, and they have different morphologies. While it may be possible to create a substantial selection of "office parks" for lower order office activities and routine back offices, high-order functions are unlikely to be attracted to more than one "downtown" in any single suburban municipality. Targets of about 50 percent residential, 40 percent office and 10 percent retail/service/miscellaneous floorspace may be appropriate if a centre

is to be truly mixed-use. Such a mixture permits the development of a centre that is not merely a concentration of office employment, but that is also a service and entertainment centre for both the office workers and the surrounding suburban residents. In time, it may even come to function as a "suburban downtown," reducing the need for some portion of the trips previously bound for the CBD. However, it must also be recognized that offices, hotels and luxury apartments can outbid all other activities for prime locations, and will eventually drive out or keep out other functions unless the use of the land in such a centre is carefully planned and regulated. An extension of this point is that a mixed-use centre (or even an office park) should be central to an extensive residential district containing housing in a wide range of types, sizes and costs so as to provide a choice of nearby housing for the office workers.

The success of such a venture will certainly depend upon having the necessary planning instruments and municipal infrastructure in place prior to development. But success may also depend on perceptions of the municipality's commitment to making the centre a "good investment" for enterprises moving into it. This perception can be influenced by the level and quality of information that is made readily available; or even by sheer publicity. Publicity does influence perceptions, which in turn can lead to expectations of success or otherwise.

Finally, there is a need for some scattered office buildings (generally smaller than those in the centres) to house offices serving clients in adjacent industrial areas. There will probably also be pressure to allow isolated back office buildings to house routine functions related to downtown head offices. Since the prime consideration in such cases is the acquisition of moderately priced accommodation that is accessible to clerical personnel, it is doubtful whether scattered buildings are often more effective than ones in the lower order office parks. Since back office buildings tend to be rather large, while functional necessity dictates that office centres will be in locations with good car access and possibly good public transit service as well, back offices in the centres should generally be more accessible to clerical staff than would scattered office buildings.

6.8 FINAL CAVEAT

The tertiary, quaternary and quinary sectors (particularly the latter two) are the growth sectors of the economies of developed nations, and most of the establishments involved in these sectors are housed in office buildings, more than half of which are now being built in non-CBD locations. These non-CBD office buildings are showing a growing tendency to agglomerate in a few locations. The effective functioning of those suburban agglomerations, and the office establishments in them, demands a clear understanding of the access and contact imperatives of the modern non-CBD

office, the hierarchy of office centres accommodating office establishments with different operating requirements, and the principles to be applied in the location and planning of such centres. Lack of such understanding would continue to leave urban planning susceptible to questions regarding its theoretical basis (Cowan and Fine, 1969, p. 23).

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APPENDIX A:

SOME METHODOLOGICAL NOTES

A.0 APPENDIX A: SOME METHODOLOGICAL NOTES

A.1 THE CASE STUDY APPROACH

Eight centres contain three quarters of the office building space in the Toronto CMA's 19 non-CBD office clusters, and three case studies were chosen from those eight. The mixed-use centres at the St. Clair and Eglinton stations on the radial Yonge subway line were not chosen, as they were examined by Gad (1975). Both the North York and Scarborough "downtowns" were selected as they differ in a variety of ways. Three of the four largest office parks are in the radial Don Valley Parkway corridor and the one at Consumers' Road was selected, since it is the median of the three in age, size and distance from the CBD.

A.1.1 Land-Use, Buildings and Transportation

Land-use and building changes in the study areas were mapped and tabulated at five-year intervals between 1966 and 1986 from aerial photographs, assessment and other municipal records, directories and field surveys. These maps also show highway improvements and evolving street patterns, and thus changes in the nature and quality of transportation links between the centres and the CBD. For each centre the rate of growth in office building space was determined from the tabulated data. These data and the interview responses were analyzed to determine whether the approval or completion of major transportation improvements, particularly in the link to the CBD, appeared to have influenced the rate of office development in the study areas significantly.

A.1.2 Office Functions

Mights Directories were used to identify the establishments in the office buildings. The functions of about 85 percent of the establishments was also derived from these directories and from *Yellow Page* directories. However, a problem emerged: there was no *Mights Directory* reflecting the 1986 position, and the 1985/86 directory did not include several office buildings that were completed in 1985 and 1986. To resolve this problem, a survey of office establishments, in office buildings completed by mid-1986, was carried out in 1988.

The office functions were classified into 37 categories adapted from the classifications, derived from the Standard Industrial Classification, that were applied by Gad and Code in their Toronto office studies. This yielded tabulations of office establishments by office function within each centre for each of the datum years, and these tabulations were used to construct cross-sections of the office establishments in each centre at each datum year (Tables 24-26).

A.1.3 Employment

The Metropolitan Toronto Planning Department maintains a field survey of employment, by establishment and street address. The author does not completely agree with the Planning Department's classification of certain buildings and activities as office buildings and functions. Thus Metro's data were used only in describing general office patterns, and hence the decentralization phenomenon, in the Toronto CMA. In the case studies the author relied on primary data wherever that could be assembled.

A.2 QUESTIONNAIRES AND INTERVIEWS

Analysis of the establishments occupying the office buildings in the centres was crucial. To achieve the most complete data possible all office establishments, in office buildings in the study areas, were visited to obtain objective data. As well, executives from a sample of the offices were interviewed regarding their location decisions and contact behaviour.

A.2.1 Questionnaire Survey of Office Establishments

During 1988, an attempt was made to survey 947 establishments in 59 buildings by asking the front office staff to assist in completing a short questionnaire to determine each establishment's:

- type of function (classified into 37 categories);
- length of occupancy of current premises (under 1 year, 1-3 years, over 3 years);
- organizational status (single, head, branch office);
- nationality (Canadian, multinational);
- number of employees at that address; and
- amount of floorspace occupied.

Preliminary examination of the responses showed that 11 one-storey buildings east of the Scarborough centre and two in the Consumers' area were occupied mainly by establishments which were not primarily offices. These buildings were eliminated, leaving 881 establishments in 46 buildings. Of these, 692 (78.5%) provided the information requested. In 189 cases, where offices were closed at the time of the visit or the front office staff declined to co-operate, a questionnaire was left. Of these, 43 were returned. As a result complete, or almost complete, information was gathered from 735 (83.4%) of the 881 establishments. In 66 further cases (7.5%) it was possible to determine the establishment's functional type from other sources.

Some months later, it was discovered that two "umbrella" offices, which provided office space and support services to 79 very small establishments in the Consumers' area, had been missed.

However, five similar umbrella offices and their 116 tenant establishments had been surveyed, three being in the Consumers' area, and those establishments accounted for a minimal proportion of total office space and employment. Therefore, it was considered that omission of these offices would not introduce a significant bias, particularly since 23 of them were classified by function from directories and found to be representative of the ones already surveyed.

The response rate on the amount of space occupied by each office was very low, as few front desk staff had this information. Consequently the number of employees was used as a surrogate for space occupied and the floorspace data were not used in any of the analyses.

A.2.2 Questionnaire Sampling

A 10 percent sample of office executives was interviewed to ascertain factors that they considered to have been significant in the location decisions for their offices and to explore their contact behaviour, particularly their CBD linkages.

The sample was structured to select establishments in proportion to each centre's functional composition; otherwise selection was random (e.g., if there were 36 law offices in a centre and 4 were to be selected, 5 random numbers between 1 and 36 were generated and matched with the numerical order in which that centre's lawyers appeared in the data file. The first 4 were contacted to arrange interviews. If any refused to participate, the fifth establishment was substituted). Of the 11 establishments with over 500 employees, 6 were selected randomly. Given the disproportionate demands that large offices have for space and their contribution to total employment, the other five very large establishments were also included.

Of the establishments contacted, 18 refused to co-operate and 16 substitutions were made, but there could be no replacements for the two large offices that refused interviews. Health care establishments were not represented, as all that were contacted declined interviews. In all, 83 interviews of principals or titular executives of the establishments were conducted.

A.3 METHODOLOGICAL TRIALS

In addition to examining suburban office morphology, the case studies were designed to test two methodological ideas. First, the interpretation of *series* of aerial photographs, to identify and quantify *changes* in urban form, does not appear to be in general use by geographers despite the availability of such photographs for many cities. And second, very short front office interviews, in place of mailed questionnaires, have generally not been used in geographical research of populations

approaching a thousand. Both of these approaches proved to be very worthwhile in creating an extensive and highly reliable database.

A.4 SIMILARITIES AND DIFFERENCES OF AREAS

Statistical comparisons of the establishments in the three study areas did not produce any startling revelations, serving more to clarify and confirm what might have been deduced from the tabulated data, which clearly indicate similarities and differences between the areas in relation to the factors examined. Nonetheless, a series of chi-square tests of the centres, taken in pairs for various factors, was performed. This analysis showed that the three study areas resemble each other to a significant degree in terms of reasons for not locating downtown, and for choosing a suburban centre. The North York and Consumers' areas are similar in the size cross-sections of their establishments and the length of occupancy of premises by establishments. The North York and Scarborough centres are similar in the main features sought in the centre and in the advantages found there. For the other factors tested, the centres (including the central corridor in the case of establishment functions and status), are clearly different.

APPENDIX B:

ADDITIONAL DATA TABULATIONS

APPENDIX B: ADDITIONAL DATA TABULATIONS

Table 1: Office Functions in the Scarborough Centre: 1971-1988 (%)

Function	1971	1976	1981	1988
Mining	---	---	---	---
Oil and Gas	---	---	---	---
Manufacturing	---	---	---	5.9
Transport/Shipping	---	---	---	1.5
Utilities	---	---	25.0	1.5
Bank/Trust company	---	---	---	4.4
Investment dealer	---	---	---	4.4
Consumer/Bus. finance	---	---	---	1.5
Insurance company	100.0	33.3	25.0	13.2
Insurance agency	---	---	---	2.9
Real estate/Developer	---	---	---	2.9
Branch bank/trust co.	---	---	---	2.9
Other F.I.R.E.	---	---	---	---
Lawyer	---	---	---	5.9
Accountant	---	---	---	1.5
Management consultant	---	---	---	2.9
Security/Investigator	---	---	---	---
Advt./P.R./Graphic des.	---	---	---	---
Personnel agent	---	---	---	8.8
Computer consult/sales	---	---	---	7.4
Other business servs.	---	---	---	1.5
Architect/Planner	---	---	---	---
Engineer	---	---	---	1.5
Other tech. services	---	---	---	---
Publishing	---	---	---	1.5
Other communications	---	---	---	2.9
Civic/Bus./Trade assoc.	---	---	---	1.5
Charitable association	---	---	---	---
Federal/Prov. govt.	---	---	---	1.5
Municipal government	---	66.7	50.0	4.4
Construction	---	---	---	1.5
Retail/Wholesale trade	---	---	---	2.9
Import/Export	---	---	---	---
Health care	---	---	---	10.3
Accom./Food/Recreation	---	---	---	---
Travel agent	---	---	---	1.5
Other offices	---	---	---	1.5
Establishments	1	3	4	68

Source: Author's data.

Table 2: Office Functions in the North York Centre: 1971-1988 (%)

Function	1971	1976	1981	1988
Mining	---	---	---	0.5
Oil and Gas	---	---	---	0.5
Manufacturing	---	4.5	7.3	3.0
Transport/Shipping	---	---	---	1.0
Utilities	---	---	---	---
Bank/Trust company	---	4.5	1.8	3.0
Investment dealer	---	---	3.6	1.0
Consumer/Bus. finance	---	9.1	0.9	4.0
Insurance company	---	---	8.2	8.4
Insurance agency	---	4.5	10.0	3.0
Real estate/Developer	---	9.1	9.1	7.9
Branch bank/trust co.	---	4.5	---	1.5
Other F.I.R.E.	---	---	2.7	1.0
Lawyer	---	4.5	9.1	8.9
Accountant	---	22.7	9.1	8.4
Management consultant	---	---	2.7	3.5
Security/Investigator	---	---	2.7	1.5
Advt./P.R./Graphic des.	---	---	---	1.5
Personnel agent	---	4.5	1.8	9.4
Computer consult/sales	---	---	3.6	5.0
Other business servs.	---	---	2.7	2.0
Architect/Planner	---	---	---	---
Engineer	---	---	2.7	1.5
Other tech. services	---	---	0.9	1.5
Publishing	---	---	---	---
Other communications	---	---	---	0.5
Civic/Bus./Trade assoc.	---	9.1	3.6	1.5
Charitable association	---	---	---	1.5
Federal/Prov. govt.	---	4.5	3.7	5.4
Municipal government	100.0	9.1	1.8	2.0
Construction	---	4.5	1.8	0.5
Retail/Wholesale trade	---	---	1.8	4.0
Import/Export	---	---	0.9	1.0
Health care	---	---	3.6	3.0
Accom./Food/Recreation	---	---	---	---
Travel agent	---	---	0.9	0.5
Other offices	---	4.5	2.7	2.5
Establishments	2	22	110	202

Source: Author's data.

Table 3: Office Functions in Consumers' Road Area: 1971-1988 (%)

Function	1971	1976	1981	1988
Mining	---	---	---	---
Oil and Gas	1.1	---	0.4	0.4
Manufacturing	9.6	9.5	8.2	6.8
Transport/Shipping	---	1.2	0.4	1.3
Utilities	2.1	1.2	1.6	0.9
Bank/Trust company	---	---	---	0.4
Investment dealer	2.1	0.4	0.8	0.8
Consumer/Bus. finance	5.3	1.2	1.6	1.5
Insurance company	9.6	7.9	8.2	2.6
Insurance agency	8.5	6.2	8.2	8.5
Real estate/Developer	4.3	10.0	10.6	5.7
Branch bank/trust co.	2.1	2.1	2.0	0.6
Other F.I.R.E.	---	0.8	1.6	1.3
Lawyer	3.2	2.1	3.3	2.5
Accountant	3.2	4.1	2.0	6.0
Management consultant	---	0.4	0.8	1.5
Security/Investigator	1.1	---	0.8	0.8
Advt./P.R./Graphic des.	1.1	3.3	4.1	3.0
Personnel agent	2.1	1.7	1.6	4.2
Computer consult/sales	6.4	6.6	9.0	13.4
Other business servs.	2.1	2.9	1.2	7.9
Architect/Planner	2.1	2.1	0.8	2.1
Engineer	6.4	3.3	2.9	3.0
Other tech. services	2.1	1.7	0.4	1.1
Publishing	1.1	1.7	1.2	1.3
Other communications	2.1	3.3	2.4	1.9
Civic/Bus./Trade assoc.	2.1	4.1	6.5	3.0
Charitable association	---	0.4	---	1.7
Federal/Prov. govt.	1.1	1.2	1.2	0.6
Municipal government	---	---	---	---
Construction	6.4	5.0	5.7	2.3
Retail/Wholesale trade	5.3	8.7	4.9	2.5
Import/Export	1.1	0.4	---	2.5
Health care	2.1	0.8	1.2	1.7
Accom./Food/Recreation	2.1	2.1	1.6	1.7
Travel agent	---	0.8	1.6	1.7
Other offices	2.1	2.5	2.9	3.0
Establishments	94	241	245	530

Source: Author's data.

Table 4: Employment in the Six Top Employment Functions

Function	Scarb.	N.Y.	C.R.	Total
Fed./Prov. govt.	1400	4267		5708
Municipal govt.	1250	1601		2851
Insurance company	2004	299	634	2937
Computer related	641		1778	2549
Utilities	900		1612	2512
Manufacturing		879	920	1836
R.Est./Developer			801	
Publishing	640			
Trade			533	
Accountants		409		
Health Care		316		
Employees: Top 6	6835	7771	6278	18393
% of Total Emps.	93.4	84.1	60.6	68.3
Establishments	19	54	161	180
% of Total Ests.	31.7	30.2	32.5	24.5
Avge - all Ests.	122.0	51.6	20.9	36.6
Median - all Ests.	9	7	6	7

Source: Author's data.

Table 5: The Top Six Employers Related to Establishments

Function	Employ.	Cumul.%	Estabs.	Cumul.%
SCARBOROUGH CENTRE				
Insurance Company	2,004	27.4	8	13.3
Fed./Prov. Government	1,400	46.5	1	15.0
Municipal Government	1,250	63.6	3	20.0
Utilities	900	75.9	1	21.7
Computer Related	641	84.7	5	30.0
Publishing	640	93.4	1	31.7
Total in centre	7,320	100.0	60	100.0
NORTH YORK CENTRE				
Fed./Prov. Government	4,267	46.2	10	5.6
Municipal Government	1,601	63.5	4	7.8
Manufacturing	879	73.0	4	10.1
Accounting	409	77.5	18	20.1
Health Care	316	80.9	6	23.5
Insurance Company	299	84.1	12	30.2
Total in centre	9,240	100.0	179	100.0
CONSUMERS' ROAD				
Computer Related	1,778	17.2	62	12.5
Utilities	1,612	32.7	5	13.5
Manufacturing	920	41.6	36	20.8
Real Estate/Developer	801	49.4	29	26.7
Insurance Company	634	55.5	14	29.5
Trade	533	60.6	15	32.5
Total in centre	10,353	100.0	495	100.0

Source: Author's data.

Table 6: Labour Pool Access and the Location Decisions

LABOUR IMPORTANCE:	Scarb.	N.Y.	C.R.	Total
Not considered	44.4	33.3	68.3	53.0
Minimal importance	16.7	12.5	14.6	14.5
Some importance	16.7	25.0	4.9	13.3
Quite important	16.7	25.0	9.8	15.7
Very important	5.6	4.2	2.4	3.6
	100.0%	100.0%	100.0%	100.0%
Respondents	=18	=24	=41	=83
SKILLS SOUGHT:				
Managerial	18.2	12.5	38.5	22.5
Prof./special tech.	27.3	12.5	30.8	22.5
General technical	9.1	25.0	30.8	22.5
Clerical/secretarial	90.9	56.3	69.2	70.0
Total cited	145.5%	106.3%	169.2%	137.5%
Respondents	11	16	13	40

Note: Data are percentages of respondents, in each centre, who cited the items.

Source: Author's data.

Table 7: Hospitality Services and the Location Decisions

	Scarb.	N.Y.	C.R.	Total
Not considered	50.0	33.3	58.5	49.4
Minimal importance	38.9	25.0	26.8	28.9
Some importance	1.1	37.5	14.6	20.5
Quite important	--	4.2	--	1.2
Very Important	--	--	--	--
	100.0%	100.0%	100.0%	100.0%
Respondents	=18	=24	=41	=83

Note: Data are percentages of respondents, in each centre, who cited the items.

Source: Author's data.

Table 8: Municipal Policies and the Location Decisions

PLANNING POLICIES	Scarb.	N.Y.	C.R.	Total
Not considered	83.3	62.5	97.6	84.3
Minimal importance	5.6	16.7	2.4	7.2
Some importance	5.6	12.5	--	4.8
Quite important	--	4.2	--	1.2
Very important	5.6	4.2	--	2.4
	100.0%	100.0%	100.0%	100.0%
Respondents	=18	=24	=41	=83
DEVELOPMENT/ADVERTISING STRATEGY				
Not considered	66.7	58.3	100.0	80.7
Minimal importance	16.7	8.3	--	6.0
Moderate import	11.1	12.5	--	6.0
Quite important	--	16.7	--	4.8
Very important	5.6	4.2	--	2.4
	100.0%	100.0%	100.0%	100.0%
Respondents	=18	=24	=41	=83

Note: Data are percentages of respondents, in each centre, who cited the items.

Source: Author's data.