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The Planned Decentralization of Offices in Toronto: A Dissenting View

William R. Code

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Research Study 06

THE PLANNED DECENTRALIZATION OF OFFICES
IN TORONTO: A DISSENTING VIEW

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October, 1977

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1. INTRODUCTION

As the factory once replaced the warehouse as the mark of urban economic development, the office has now come to the fore as the functional symbol of many of the world's larger cities. As such, in those few large and controlling cities lying at major foci of communications, the concentrated towers and slabs of the office complex have attracted critical comment not only from those with purely nostalgic views and opponents of urbanism itself but also those concerned with the form structure and indeed livability of the large city. But since the "white collar revolution", which has filled these complexes, has been relatively recent, and since only a few of the world's, and even North American, cities have office communities as a major constituent of their economic foundation, the place of the office in the metropolis has been a most neglected facet of urban study. The city, as one of man's most complex systems, is, at the best of times, a difficult arena in which to formulate even adequate policy. In the office community, these difficulties are compounded by a very limited amount of adequate research and a general lack of awareness of the peculiarities of the functions which inhabit these communities. The result is a particularly treacherous (although intellectually challenging) area in which to formulate policy with even minimal positive effects.

Despite the difficulties of the task, the City of Toronto, in an unprecedented effort within North America, has created a comprehensive plan for the core of the city, whose main purpose is that of deconcentrating
the city's office community through the mechanism of physical containment.\(^1\)
As such, this city provides a novel opportunity to examine both the
theoretical logic and practical implications of a containment policy on
a sizable agglomeration of quaternary functions.\(^2\)

Given the complexity of the problem it is understandable that the
City's plan should raise a large number of questions, ranging from the
nature of the problem definition itself and the character of basic
assumptions through the derivation of data to the net costs and benefits
of the plan, and ultimately its desirability over alternative strategies.
The questions regarding the wisdom of the adopted plan are serious, for
there is a possibility that the plan could negatively affect not only
the office community concentrated in the core area, but also the ability
to properly preserve structures and communities of historic, aesthetic
and social value, the transportation efficiency of the metropolis, and
the economic well-being of the province and the country.\(^3\)

\(^1\)See: City of Toronto Planning Board, Central Area Plan Review
Proposals, Part I: General Plan and Part II: Area Plan for the Downtown
(Toronto, 1975).

\(^2\)The term quaternary activity is an extension of the standard
functional terminology of primary, secondary, and tertiary (usually
associated with A.G.B. Fisher and Colin Clark). The term quaternary,
initially used by John Gottmann in Megalopolis, refers to services that
involve transactions, analyses, research, or decision-making and also
education and government which require considerable intellectual training
and responsibility. These "white collar" functions are thus distinct
from the more traditional tertiary services of transportation, trade (in
the simpler sense of direct sales), maintenance and personal services.

\(^3\)For a review of the broader problems, see the author's earlier
Controlling the Physical Growth of the Urban Core: A Study on the
Implications of Restrictive Zoning in the Central Business District of
Toronto (Toronto: Mayor's Industry and Labour Advisory Committee, 1975).
Many of the problems of the City's strategy can be seen as a consequence of the Plan's effect on the structure and economy of the office community, and it is on this impact which the present study is focused. More specifically, this research investigates the following general questions.

1. **To what extent can functions now existing in a central office community like Toronto's be decentralized?**

   In effect, does Toronto's core contain activities whose locational demands are sufficiently distinct to separate them from other activities which have readily deconcentrated within the metropolitan area?

2. **To what degree is Toronto's Central Area Plan "Containing"?**

   The city, in its Official Plan, has maintained that the "down-zoning" inherent in its containment strategy is not severe and that it permits an increase in floor space of between 60-100% over what currently exists. This increment is founded on a number of contentious assumptions which warrants an examination of what quantity of office floor space the Plan can be expected to produce.

3. **What are the costs and benefits of decentralization for the firms of various office types presently in the Toronto Core?**

   The strategy of containment is based on the idea that a sizable number of firms in the core of the city are locationally footloose. This assumption has not been adequately analysed in preparing the City of Toronto Plan despite the fact that Toronto is in the unusual position of now having an adequate data base with which to undertake this analysis.
4. What level of core/suburban rent differences would be required for firms of varying types to move to proposed suburban centers?

By restricting supply, the decentralization strategy is designed to raise core area office rents to higher than normal levels, thereby increasing the core/suburban office rent difference to a degree which would make it rational for a firm to relocate. The relationship between rent difference and the incentive for offices to relocate is crucial for any appreciation of the effects of this Plan, and yet has been largely ignored.

5. What will be the total costs to core office users, and indirectly for the consumer, of these induced rent increases? What groups are likely to benefit from or be harmed by containment and the elevation of rent levels?

In the published research of the City of Toronto it is apparent that no calculation was made of the aggregate rental and other costs for the core office community implied by the containment strategy. Nor has the City considered the equity of the policy.

6. Is decentralization justified by gains in the productivity of the office function?

The new Official Plan is based on the premise that there will be costs to the offices in the core which are driven to decentralize, but that the benefits in productivity to the overall metropolitan system of office functions is greater than the costs to those firms. Thus, it is suggested that in the core, increments in productivity through the addition of new firms approximates zero, and that a diversion of those new firms would lead to an increase in efficiency in the office community of the overall metropolitan area. This argument is logically inadequate on several grounds and a dangerous foundation for a policy of such widespread potential impact.
7. What alternative policy courses exist to attain the underlying objectives of the City?

Within the Central Area Plan are several worthwhile objectives, such as that of preserving a structural reflection of the city's evolution, and the promotion of a varied and exciting streetscape. There is serious question, however, as to whether the strategy adopted by the City would lead to the desired ends, or in fact work in a direction opposite to that intended. This study concludes by considering the implications of this and other research for policy, and by sketching the nature of an alternative planning strategy which could achieve the worthwhile objectives with more moderate costs.

The methodology utilized in investigating these questions vary with each case, but of particular importance is a program which is the basis of Sections 4 and 5 of this study. In its fundamentals, it calculates the cost and benefit implications of hypothesized moves by firms of varying office types to each of three suburban sub-centers. Incorporating a number of complex variables, this program calculates, among other things, the cost to the firm of maintaining existing face-to-face communications linkages within the core and the rent savings resulting from a move to the suburbs under varying assumptions of floor space ratios, wage rates, transportation times, etc. It translates this relationship into various forms in which the net cost or benefit can be expressed, including monetary costs to the firm, the employee, the non-clerical staff, and the number of existing linkages which would have to be discarded upon a suburban move.

The data made it possible to approximate the minimum core to suburban rent differences necessary to make a suburban move economic for firms of
various types (assuming economic rationality) and the necessary level to which core area rents would have to be raised to displace various amounts of core office employment. When combined with existing data on core area floor space, it was thus possible to suggest a range of implied aggregate costs to the core office community of the rent increases necessary for various levels of core office displacement. Any model of the relative advantages of a suburban move for the types of firms found in the core of a city like Toronto will, of course, involve a large number of variables. However, many of these variables (such as the key one of the relative quality of information, and the potentially high costs involved in missing key pieces of information, when the information still has operational meaning) cannot at present be quantified. In the analysis these non-quantifiable variables are assumed to be counterbalancing in the aggregate, even though it is likely that differences in the quality and timing of information acquisition and the potentially high costs to the firm of delayed acquisition, would result in the measured costs of a suburban move being less than indicated.

In investigating the extent to which the Toronto core area plan is "containing" of the office function (Section Three), a further program was utilized which could analyze the block and sub-block density data file of the City of Toronto Planning Department under varying assumptions of redevelopment potential, rates of acceptance of bonusing provisions and assumptions of deferrals for future development. From this it was possible to assess the probable development potential within the city's core and its sub-areas.

In addition, an analysis was undertaken of the implications for productivity of decentralization of core office activities. In general, this involved summing the aggregate losses and gains in information linkages
with progressive relocation of firms to proposed suburban sub-centres.

Three general conclusions are reached as a result of these investigations:

1. The core area plan of Toronto will probably generate less office space than is anticipated by the City's planners. All other things being equal, it will be containing to the extent of inducing a supply shortage and generating increases in rents to the levels necessary for displacement or termination of some core area activities at a period sooner than appears to be anticipated in the planning analysis.

2. The aggregate costs of this containment will be considerable and they will be borne not only by renters of core area office space, but also by the general public. Moreover these costs will be distributed in an inequitable manner.

3. The creation of a deconcentrated distribution of those particular types of office activities found in the core of Toronto (which are unusually dependent upon face-to-face information exchange) would result in reduced productivity within these functions, particularly if several sub-centres all developed, and if business-day automobile utilization continues to be impeded.
2. THE CONCENTRATION AND CONTAINMENT OF THE OFFICE SECTOR: A PERSPECTIVE

The City of Toronto's new plan is premised on the assumption that the majority of types of office activities found in the core are locationally footloose. This assumption underlies the assertion that core offices can be induced to relocate in the suburbs with relatively minor increases in the difference between core and suburban rents. Yet despite the central importance of the locational demand of offices to this entire issue, the City has devoted surprisingly little research effort to the subject--and that tending to be after the fact.

Offices and Their Locational Criteria

The assumption that office activities in the core would be easily mobile may have been adopted because a sizable number of office functions occur in suburban locations already. This, however, involves making the assumption that there are no differences in the locational demands of offices. There are, however, wide divergencies in such demands and as such it would be more realistic to conceive of offices as being of five basic types:

1. Those whose main objectives was marketing goods or services or managing activities in a local, metropolitan, or broader area and which require access to those areas.

It is very common to assume that urban offices are basically of the first type, that their main locational criterion is accessibility to the market for their particular services, and they are therefore a phenomenon appropriately examined within the framework of marketing-based location theory. To an extent, within towns, small cities, and even some large ones, this is a reasonable assumption. Within this frame, it
is thus logical to argue that the reason for a central location of offices is because the center of the city is the most accessible point within the urban region. But with the advent of the automobile and the development of a freeway system this accessibility advantage has been reduced. As a consequence, offices of this type may well find a suburban location adequate to their needs, unless their particular marketing area is concentrated near the center of the city.

2. Those which are tightly linked to a non-office activity such as an industrial plant or a warehouse.

The equalization of accessibility as between the center and the periphery has led to a major deconcentration of other types of activities in the metropolis (after all, only approximately 30% of total Metropolitan Toronto employment is in the core). Many of these activities such as manufacturing plants and distribution centers have offices associated with them, either because of the necessity for some office workers to be close to a production or other facility in order to control the process, or because it is convenient for corporations to locate their marketing branches (of the first type, above) close to their manufacturing or distribution centers.

3. Those which are largely self-contained, which have limited links to other activities, and are dealing with routine information.

The largely self-contained office, dealing with routine information is relatively footloose within the metropolis and even within broader regions. While a considerable amount of such activity has been absorbed by data-processing machinery there are still sizable offices which could fit at least in part under this type (in particular, some governmental
4. Those which are information dependent, deal with non-routine information, and with subjects where relatively high levels of uncertainty exist. For these types of office functions the main locational criteria is access to those with whom they exchange information.

The fourth class in the above typology is the crucial one for understanding the core of metropolitan areas, such as Toronto, which are control centers in a complex communication system. These types of office activities are not primarily located to maximize access to markets, but instead are oriented to an information environment. Typically, the inhabitants of these offices are involved in areas of great uncertainty, and are dependent not only on sizable quantities of information but also on information of particular qualities.

First, given the rapid manner in which business opportunities rise and fall, receiving information through published sources, even on a daily basis, is frequently inadequate in that by the time the potentially valuable information is received the opportunity for acting upon it has been lost. Secondly, much of the information exchange is based on trust; entering into the exchange of information are impressions as to the trustworthiness of the information source, which in turn is based on frequent personal contact with individuals relaying the information. Thirdly, the type of information exchanged often tends to be of a specialized nature. Where specialists are located in more than one firm, and close contact is required (as with specialists in the money markets), there is an essential need to cluster.

5. Those offices which are tightly linked to the fourth type.

Associated with the fourth type of office activity is another group.
These activities are not intimately involved with intensive information exchange but are closely linked on an ongoing basis with those offices which are, and are usually within the same firm. They constitute what have been described as the "back room" functions which, although largely independent of direct contact outside their firm, have a close relation with those directing the firm, who, in turn, are tightly linked.

It is the fourth and the fifth classes that have come to dominate the cores of cities like Toronto. Over a number of years, offices of the other types have generally dispersed particularly to the areas served by freeways. Most of the academic literature on the office function in the core of the city, and the Toronto Planning Board study conducted by Dr. Gad, show that the dominant theme in the locational demands of the core area office is the need for intensive linkages, especially those involving face-to-face contact.⁴

In attempting to further decentralize the office community of the core of Toronto, the city is confronting highly information dependent activities which one could describe as being "residual". As the city progressively pushes against the types of office activity found in the core, they will rapidly encounter greater resistance, because for the vast majority, there are very real informational and other reasons for their clustering.

⁴A study conducted by the Department of Planning and Civic Development of Vancouver indicates that between 5.2% and 16.3% of the space in downtown Vancouver meets all the criteria for relocation to sub-centres. These low figures for a much smaller city, and one which is not a major financial or administrative center would indicate that the amount divertable in Toronto is even lower than their estimates. City of Vancouver, Department of Planning and Civic Development, Office Space Demand in Downtown Vancouver, 1961-1980, Summary Report (Vancouver, 1973).
Electronic Communications as a Substitute for Agglomeration

In a pioneering work within North America, done for the respected New York Metropolitan Region Study, Robbins and Terleckyj write of the financial community as follows:

The primary protection against the hazards of doing business in this taut and fickle environment is knowledge...of the play forcer affecting money flows, of impending changes, of the attitudes of regulatory authorities, of clients buying and selling dispositions, and of a host of other possible influences. This knowledge is, in part, the product of a counter-play of ideas among specialists. The benefits of this exchange are derived through continuing relations rather than by the sporadic transfer of information. There is more than psychological comfort...although perhaps this too is a factor...in the intimacy that permits brokers and dealers to expose their views to the accumulated wisdom of their compatriots through frequent personal meetings and lengthy conversations.

In short, the participants in the money market are clustered together because the "costs" of buying and selling can be minimized by maintaining direct and continual contact with the market.

This principle of clustering to facilitate information exchange and thereby modify risks in an uncertain business environment pertains to most other office activities found in the core, although finance is an archtypical case.

Invariably, when the importance of this demand for face-to-face communication is raised it is suggested that in an electronic community proximity would be unnecessary for transactions. But electronic communication is a two edged sword, and in regard to the organization of the major decision-making elements of business, it has tended to work in a manner contrary to what is usually expected. Despite the long-standing

presence of electronic communications in Canada, if one observes the changing distribution of the type of decision-making which occurs in the financial and related communities in Toronto, one witnesses a pronounced tendency to concentrate.

The telephone and other electronic forms of communications are complementary to face-to-face interaction and not a replacement for them. In fact, in a business environment of high uncertainty, it could be argued that by accelerating the pace with which decisions need to be made, electronic communications have increased the need for ongoing personal contact. It is also probable that the per capita demand for face-to-face contact among core area office workers has increased over the past decades as those office workers dealing with more routine activities have been replaced by data processing equipment or displaced to outlying locations.

It is possible that adequate substitutes for face-to-face communications may be developed in the future. The closest approximation to face-to-face contact, though a pale substitute, are systems such as "Picturephone" and Videophone", coupled with fast reproduction systems for the transmission of documents. These require expensive wide-band circuits and massive investment to produce even a limited public network. A much more serious problem with this technology is that, despite its expense, it involves the loss of social amenities such as handshakes, and "there would be no possibility of being invited for lunch."\(^6\)

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Physical Containment as a Planning Strategy

Patrick Abercrombie once described the purpose of planning as being to guide the evolution of natural trends. With urban functions and in most urban circumstances, Abercrombie's idea is attainable and quite worthwhile because it can reduce land-use conflict without major cost. But at some scales and with some types of activities, which are locationally fixed, an attempt to guide the flow of land-uses amounts to using zoning, not as a means of diverting growth, but as a means of preventing it. To those activities, zoning constraints amount to more than a mere redirection of land-use; they are, in fact, a growth control mechanism, and as such a crude, costly and regressive mechanism.

Tightly restrictive land-use controls are an inadequate and inequitable means of restricting urban size. The effect of limiting the supply of land and the density with which it can be developed is that of increasing crowding and accelerating land and floor space costs, and a transfer of wealth from those not in possession of property to those that are so blessed (in general, a transfer from the young to the old, and the poor to the rich).

\footnote{Portions of this section are extracted from my Containing the Physical Growth of the Urban Core (Toronto: Mayor's Industry and Labour Physical Committee, 1975).}

\footnote{For a discussion of these issues, see Daniel Mandelker, "The role of Zoning in Housing and Metropolitan Development," in David Listokin, Land Use Controls: Present Problems and Future Reform (New Brunswick, N.J.: Center for Urban Policy Research, Rutgers University, 1974); James W. Hughes, New Dimensions of Urban Planning: Growth Controls (New Brunswick, N.J.: Center for Urban Policy Research, Rutgers University, 1974); Lynne B. Sagalyn and George Sternlieb, Zoning and Housing Costs (New Brunswick, N.J.: Center for Urban Policy Research, Rutgers University, 1972); Research on Development Controls and Housing Costs}
Cases of the application of tightly restrictive zoning at scales which are unjustified and to activities which are inappropriate have unfortunately been common in the history of urbanism and range from Elizabethan England to modern Toronto. Invariably, serious questions have arisen as to whether the costs were worth the benefits.

Toronto (and some other large Canadian cities like Vancouver, Ottawa and, more recently, Calgary and Edmonton) have been witnessing the repercussions in the land and housing markets of using zoning, subdivision control, and servicing, as a means of restricting urban growth. This experience in the Toronto area should give rise to concern over how parallel policies will affect relatively immobile activities in the city's core. The Ontario Economic Council in its evaluation of the impact of planning in Ontario stated: "Unreasonable land prices for uses of any kind in all of the active development areas of the province are perhaps the most significant economic consequence of 25 years of municipal planning experience". The Council's report goes on to say that "The major reasons for high land costs in most of Ontario's developing areas can be linked to the very successful containment of urban sprawl."9 This "successful" policy of physical containment of rapid increment in demand

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was bought at the cost of placing Toronto's housing prices at the highest level in North America by 1971.\textsuperscript{10} The tragedy of this type of planning is that its costs were directed primarily at the poor and the young. Even when facing the consequences of this containment at the metropolitan scale, Toronto is considering implementing the necessary if not sufficient conditions for a repeat of this error in its core.

Peter Hall in his recent two-volume work, The Containment of Urban England, traces in minute detail the impact of containment policies growing out of the planning system originating in the 1947 British Planning Act. In reaching a verdict, he stated that "the most important single factor resulting from—and in turn reinforcing—containment has been soaring land prices."\textsuperscript{11}

Britain has pioneered in the application of containment strategies to office communities, particularly in the heart of London. The evolution of this policy is long and complex, ranging from construction bans, through severe downzoning, to a system of "Office Development Permits", and is too involved to reasonably describe in this study. A few of the apparent results are worth comment, however.

1. There is clear evidence of massive increases in office rents in central London. An Economists Advisory Group study indicates that between 1960 and 1973 rents in the Banking Area of the City of London increased from between £1.25 - £2.00 to between £18.00 and £22.00

\textsuperscript{10} Rapidly growing Vancouver may now have acquired this "status", partly because controls on rural to urban land conversion have recently been instituted without compensating policies designed to open lands of little value for rural purposes, and partly because of the natural physical limitations of the city.


2. These rent levels in the Center of London became markedly higher in 1973 than in the financial centers of other cities within the E.E.C. (Paris, £8.50 - £10.20; Brussels, £3.15 - £3.40; Zurich,  
and Geneva, £4.80; Frankfurt, £4.25 - £4.85; Amsterdam, £2.35).

3. The outmigration of offices as a consequence of these unparalleled rent levels was much less than one would expect. Even with the huge rent increases between 1961 and 1971, there was an increase of 241,000 employees in certain "growth services", such as insurance, banking, finance, professional and scientific services, and the public service, with a further increase of 97,000 between 1971 and 1974. At the same time there were marked drops in employment in manufacturing and other industries and services. Manufacturing employment dropped by 336,000 from 1961 to 1971 with a further drop of 153,000 in the next three years. Moreover, for all categories of employment there was a significant increase in the ratio of office workers to operatives between 1961 and 1971.  

4. In those offices which did decentralize, a major shift in the transportation modal split occurred towards a dominant use of the car (the average per cent of office workers using the car for commuting to offices in central London in 1967 was 11.6%; the average for workers in decentralized offices in the outer metropolitan region was 52%). There is indeed a great deal of question whether the immense economic cost incurred by London was worth the benefits.

As an ultimate paradox in the evolution of London's restrictions on office growth, the Greater London Council has now been forced to reverse its attempts to decentralize office employment. The GLC has now declared that they will no longer acquiesce in the planned movement of jobs, of whatever kind, out of the city and have been forced to include the relatively healthy office sector under this declaration in order to

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14 Greater London Council, Report (No. 2) of the Policy and Resources Committee and the Planning Committee (March 15, 1975).
maintain the economic viability of the city. 15

One senior planning official in the GLC, in contemplating the experience of that city with forced decentralization recently commented that: "I think (so easy with hindsight) a wiser policy here would have been--in a nutshell--to try and 'steer' those people and employers bent on leaving the city (the annual gross outflow) to selected locations (not necessarily new towns) indicated as growth areas." Thus, he is suggesting returning to Abercrombie's admonition that planning should concentrate on the guiding of natural trends.

Given the record of containment as a planning strategy, it is rather startling to see what is fundamentally an identical policy applied to the core of Toronto. For judging from the historical record of containment, the results are not only economically questionable but are also often socially unjust.

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15 For elaboration on this recent policy reversal, see Greater London Council, Planned Growth Outside London--Consultations (Report 21.5.76 by the Director General), especially pp. 3-4; Greater London Council, Policy and Resources Committee, Report No. 1 (7.1.76) of the Strategic Policy Board, Planned Growth Outside London (20.7.76).
3. MEASURING THE DEVELOPMENT POTENTIAL PERMITTED IN THE CENTRAL AREA PLAN AND ZONING BY-LAW

Any strategy of growth control which relies upon space restrictions requires assessment of the degree to which the supply of development potential is limited as well as the anticipated demand for space. This section focuses on the first problem, namely the development potential for office space permitted in the core of Toronto under the proposed Official Plan and associated By-law. In doing so, it examines the range in the quantity of permitted office space which occurs with the adoption of a small number of quite realistic assumptions.

The City's contention that the Plan permits a 60% to 100% increase in office floor space and that this is sufficient to provide adequate competition to act as a damper on rental increases is weak in two fundamental ways. Firstly, the proposed Plan likely will provide considerably less development potential than is indicated by the 60% to 100% figures suggested. Secondly, there is no evidence that a potential 60% to 100% increase in area (if achieved) is sufficient to permit the working of a free market. Indeed, if it was sufficient to maintain a damper on rents, the deconcentration objective of the City's Plan would fail for, as is indicated in Sections 4 and 5 of this study, the minimum rent increases necessary to justify a move out of the core for even the most mobile functions are likely to be sizable.

Possible Versus Probable Development Rates

The 60% to 100% measure of development potential originates from

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measures of the upper and lower ranges of the perceived transportation
capacity to the core area south of Charles Street, where most development
pressure is projected as taking place, plus an allotment for the portion
of the core north of Charles Street. The City's analysis determines from
this range that office employment for the core is to be restricted through
space controls to between 94,000 and 142,500 additional employees. This
in turn implies a permissible level of core area office growth between
26.5 and 44.0 million square feet. Given the City's measurement of
existing office space of 44.0 million square feet, this "permitted"
range indeed implies an increase of core area floor space from 60.2%
to 100%. 

But a statement that the Plan really provides for such an increase
is possible only if one makes several liberal assumptions. Indeed, the
probable increase in capacity is much less than the 60% to 100% figures
suggested.

In the first place, stating that the proposed Plan provides for
such an increase in office floor space is misleading for it includes
the 11 million square feet which was under construction and committed
prior to the introduction of the Plan. The actual amount of floor space
which might be developed under the Plan itself is therefore between
15.5 and 33.0 million square feet which constitutes a 35.2% to 75%
increase.

Another important issue to recognize is that only a part of the
permitted growth—between 23.5 and 40.0 million square feet—is to occur


south of Charles Street. Since the 11 million square feet under construction and committed is indicated by the City to be in that area, and with growth targets there ranging between 23.5 and 40.0 million square feet, this leaves only 12.5 to 29.0 million square feet, to be constructed in that area over the life of the Plan.

Apart from these issues, the probabilities of office floor space expanding to the possible levels suggested by the City are conditional on a number of assumptions being correct, among which are the following:

1. That all of the 88 million square feet allocated to the core as development potential can be realized by the establishment in the Plan of an 8 times commercial density in the Financial District, a 4.5 times density in the medium density commercial areas, and a 2.0 times density in the low density commercial areas (all shown on Figure 3-1).

2. That it would be economical to redevelop the difficult site of the railway lands with only 5.5 million square feet of office space.

3. That Council's permission would indeed be granted for such redevelopment.

4. That bonusing for historic buildings would proceed to levels allocated.

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21 The City's proposed Official Plan and Zoning densities as indicated in Proposals, Part I: General Plan are shown in Figure 3-1. Since publication of that document the maximum Official Plan densities for office construction in the commercial areas have been reduced by 0.3 times which is restricted to street-related retail uses. This means that the results expressed in this study for the maximum construction under the Official Plan are overstated. The zoning maximums have also been altered to net figures of 7.7, 2.7 and 0.5 in the High, Medium, and part of the Low Density areas, respectively. The writer is advised that the City intended to balance the changes in the Medium and Low Density areas, but this would still leave a small understatement in this study of office space construction capacity under the zoning by-law.
FIGURE 3-1
MAXIMUM PERMITTED COMMERCIAL DENSITIES IN THE CORE OF TORONTO BY SUB-AREAS

- HIGH DENSITY COMMERCIAL
- MEDIUM
- LOW
- CENTRAL CORE AREA BOUNDARY

MAXIMUM PERMITTED THROUGH REZONINGS UNDER THE OFFICIAL PLAN
PERMITTED AS-OF-RIGHT

OF THE MAXIMUM PERMISSIBLE DENSITY IN AREAS 1 AND 2, 0.5 X COVERAGE MAY ONLY BE APPLIED TO RETAIL USES LOCATED AT GRADE

NOTE:
AREAS NUMBERED 1-2 ON THIS DIAGRAM ARE THOSE WHICH ARE REFERRED TO IN THE TEXT AS "PRIORITY AREAS"

From:
City of Toronto Planning Board,
CENTRAL AREA PLAN REVIEW, PART I
GENERAL PLAN (1975), Figure B1.2.
5. That any development site with structures on it with up to 70% of the floor space that is permitted under the new Plan's revised designations would be redeveloped if more than five years old.

6. That with small and unusual development sites it would be possible to use the maximum commercial density, and that it is possible, with a number of different restrictions such as setbacks, to use the full allotted commercial density.

7. That there would be no speculative withholding of land under the established contained conditions.

Examination of these issues indicates that attainment of the Official Plan capacity is strongly dependent upon the viability of redeveloping the railway lands, the allocation of historical bonusing, and the exercise of Council's discretion to permit rezonings.

First, dealing with the railway lands, given the costs of relocating track, disrupting rail traffic, developing air rights and so forth, and the delays which inevitably would ensue with this politically contentious issue, it is unlikely that 5.5 million square feet of office space over the whole site would justify the expenditure, at least until rental rates are driven much higher. Moreover, there is no assurance that Council would permit this redevelopment in any event.

Second, the 6 million square feet allocated for historic building preservation is problematic. The Plan provides that when an historic building is retained with the redevelopment of its site, floor space may be exempted from density calculations in an amount equal to the lesser of that contained in the historic building or 25% of the maximum otherwise permitted on the site. On this ground alone, and assuming that absolutely ideal circumstances prevail, it may be seen that in order to take advantage of the 6 million square foot reserve, it would require that 24 million square feet of new office development occur just on sites
containing historic buildings, resulting in a total of 30 million square feet on those sites. The total office development permitted by the Plan, other than that under construction or committed or reserved for the railway lands, is 27.5 million square feet. The notion that 30 million square feet will be accommodated on historic sites is therefore unrealistic.

Third, even assuming that Council did permit rezonings in the Medium Density areas to the full limits of the Plan, there is a significant overestimation of the total potential developable space under the proposed density constraints.

The reasons for adopting the view that the potentially developable office floor space has been overestimated involves analyzing the methodology utilized in determining the potential. In estimating the residual capacity of the core, the City initially determined the likely size of development sites within the core area, and quite reasonably concluded on the basis of recent evidence and the space demands of mixed use buildings, that the likely scale of future redevelopment would be at levels comprising considerable portions of blocks. In consequence they established as the basis for analysis sub-block and block areas as the likely development sites as opposed to the usually very small surveyed lots. 21a It is important to note that where a block had an area with clear development potential on one part and little or none on another part, the block was subdivided for purposes of the analysis. Quite reasonably they also eliminated any development sites with structures under construction or committed for development and those which were both publicly owned and historic. Less reasonably, they assumed that all

21a Considerable confusion can arise over the use of the word "sites". It can mean "development sites" of generally a larger scale or sites at the scale of the lot reflecting the historic cadastral pattern of the Toronto core area. In both the City's plan and this analysis site is interpreted as indicating development sites.
development sites with structures built up to five years prior to the analysis would be redeveloped. The City's most significant assumption, however, in determining the quantity of office development which could take place under the proposed Official Plan and Zoning restrictions, is that any existing buildings on a site collectively constituting a density of 70% or less of that permitted in the Plan would be fully redeveloped within the life of the Plan with no significant rental increases. This assumption has significant implications for the quantity of office space which could be developed within the core and yet is based on tenuous evidence.

The City Planning Department, in attempting to determine what ratio would be realistic, undertook a survey of 21 large commercial developments completed in the last five years or under construction in the central core area, noting the ratio of the density of the previously existing structure to the density of the redeveloped structure. The results of the City's survey are shown in Figure 3-2. It can be observed that all of the projects, except one, which was primarily a restoration project, had a ratio of previous density to existing density of less than 40% and that the average ratio was 16% if the restoration project is included and 12% if it is not.

There are many problems with the City's survey. The sample was small, although it was described "as fairly representative of recent commercial construction". A number of the project sites had parking lots
Figure 3-2

Frequency distribution of ratios of prior gross floor area to redeveloped gross floor area for sample of Toronto core area commercial developments

Source: City of Toronto Planning Department, unpublished mimeograph, 1975.

1 See text for cautionary notes.
on them at the time of redevelopment. With some large project sites being constructed in phases, it was difficult to arrive at a precise site area, so undoubtedly the extremely low average ratios are not indicative of probable ratios warranting demolition. But even if one eliminates all sites with an aggregate previous density of less than one (which would presumably delete the case where demolition had occurred earlier and an interim parking lot was placed on the site), the average ratio is still only 36% with the restoration site included and 20% with it excluded.

In any event, it is difficult to see justification in this survey for the City assuming 70% as the redevelopment ratio for determining whether sites will be redeveloped under the new Plan. From these data, even a 30% or 40% estimate would seem high allowing for weaknesses in the City's data.

Moreover, it is difficult to find evidence that this ratio is higher in Toronto than that suggested by Figure 3-2. For example, the present ratio of the floor space involved in recent and imminent demolitions in the core area to the floor space under construction or committed is a scant 2.3%. Nor does this high ratio appear justified by the experience of other cities. Calculations undertaken for the core of San Francisco indicate that the densities required for the economical replacement of existing buildings for sites of various land values range from a 1.9 to a 4.4 times increase in the density necessary for the economic replacement of existing buildings. The ratio of demolished office space in the compact, historic, and severely

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25. McCue, Boone, Tomsick, Tall Buildings and San Francisco: The Relationship Between Building Height and Traffic, Economic Vitality, and Environment Quality (San Francisco, 1971). The calculations of such figures are extremely complex, and McCue, Boone, Tomsick have ignored several variables which could affect these ratios, although probably not to a significant degree.
restricted City of London is only 34.9%. Even if one only considers the period from 1970 on, because of the possibility of distortion from the late rebuilding of bomb sites, the ratio of demolished to erected is only 54.5%, and this in a city where astronomical rental rates would make any increment in space much more valuable.\textsuperscript{26}

In consequence, a ratio of 40% or even less may be more realistic for Toronto. Even a 50% redevelopment ratio, which is analyzed in this study, significantly reduces the estimates of potential commercial floor space.

Of significance to the supply of office space in the core is the rate at which land will be developed for office usage under the contained conditions proposed in the Toronto plan. If, as appears likely, a supply-demand imbalance occurs and rents increase in consequence, land with a commercial designation will become a more desirable item which will be traded at increasing prices (ceteris paribus). In such a situation, some owners of core area land may conclude, rationally or irrationally, that a satisfactory return may be obtained by keeping land in its present use and withholding it from the development market. It can be argued that with downzoning of office potential within the Central Business District, the denial of the potential to develop a site at higher density will remove upon increases in demand, the risk of preemptation through earlier development at lower density.\textsuperscript{26a} In consequence, a landowner, no longer perceiving the potential

\textsuperscript{26}\textsuperscript{Economists Advisory Group, Office Rents in the City of London and their Effect on Invisible Earnings - Revised to 1974, (London: Committee on Invisible Earnings, 1974), p. 8.}

\textsuperscript{26a}It would be more than double if the existing site contained some proportion of office space.
of development at higher density may opt to construct a relatively low
density structure on which he could reap rental increases as the market and
leasing arrangements permitted. Thus, it is reasoned, a downzoning could
increase the rate of land development on the short term, even though it
would be reduced in the long term.

Unfortunately, even in theory, the possibility of redevelopment of a
site from a use generating a relatively low revenue (e.g., an older office
building) to a usage drawing a relatively higher revenue (e.g., a newer
office building) is exceedingly sensitive to the rate of change in revenue
of the old usage and the new usage. Even a one percentage point narrowing
of the annual rate of change in revenue between an existing use and a new
use can result in a cessation of even short term redevelopment. Moreover,
a significant discrepancy may exist between the theoretical argument for
short term increases in redevelopment and the actual rate at which office
space could be expanded in both the long and short term.

If the area designated for office functions within the CBD is fixed
(it has been reduced in Toronto) and that area is downzoned by 50% (it has,
on average been reduced by more than this in Toronto), then it would require
the redevelopment of at least double the number of sites in order to attain
even the same expansion of office floor space as was possible under the pre-
downzoned conditions. With such an expansion of site consumption there
would be a proportionate increase in the difficulty of land assembly.
Numerous variables, such as property being tied by litigation, rational
or irrational unwillingness to sell, public ownership, etc., restrict the
ability to actively redevelop sites. Thus one could realistically envision
this type of friction retarding the ability to expand the rate of land
consumption, either by increasing spot land prices beyond a price justified
by the permitted densities or by making the land unavailable at any price. A further factor involves the role of expectation in the theoretical case that downzoning will lead to accelerated rates of site development (if not office space development). If some landowners feel that their property will be upzoned in the future because of demand pressure, changes in political circumstances or for whatever reason, withholding of property and not preempting the opportunity to develop at higher density may be a rational decision.

A further consideration serving to widen the gap between what has been perceived as the development potential of the core and what might be expected is that sites do not always develop to their full potential. This may be caused by architectural difficulties within the constraints of the zoning by-law, the size and shape of sites, problems of assembly and ownership, the timing of development, and the expected marketability of the floor space produced. All of these factors and the probability that some sites will be deferred for future development purposes have been subsumed into the arbitrary 30% "retention" factor introduced below.

**Floor Space Data Analysis**

A computer program was used to analyze the updated Toronto Planning Department block density data file for the area south of Charles Street.²⁷

²⁷ The City's block density data file uses as its base records containing the developable area and existing density of each block of the downtown area south of Charles Street. The data are analyzed by a computer program in which the user has the option of either (i) assigning given values for the projected employment, redevelopment ratio, and floor space ratio in order to compute the required density of development for the given parameters, or (ii) assigning values for the development potential in terms of additional commercial floor space. This latter option is of concern here.
It was run with the City's zoning and Official Plan densities inserted, producing a measure of the gross floor space which could be developed under the planned restrictions. If one accepts all of the City's assumptions regarding redevelopment probabilities, this data and accompanying program produce 11.3 million square feet under the Zoning By-law designations and an additional 5.4 million square feet of office space potential under the Official Plan designations.\textsuperscript{28} Thus, it is possible that even if development did occur to the limits of the zoning provided, it would even then not provide the anticipated floor space.

Tables 3-1 and 3-2 set out the results of the computer analyses. Table 3-1 indicates the development potential for the core area south of Charles Street, with variations in the redevelopment ratio from 70% to 40%. In Table 3-2, for the first time, a factor for the retention of land from development is introduced.\textsuperscript{29} Figure 3-3 shows some of these results in graphic form.

In Table 3-1 it can be seen that if a redevelopment ratio of 70% is assumed, the total commercial floor space potential (including retailing) is 11.3 million square feet under the Zoning By-law and 16.7 million square feet under the Official Plan. However, if a more realistic 50% redevelopment ratio is assumed, the total potential drops to 8.9 million square feet under

\textsuperscript{28}See Part I: General Plan, p. B1-86 and Part II: Area Plan for the Downtown, pp. 113-114. The City of Toronto kindly provided the author with an updated copy of this file.

\textsuperscript{29}These figures were derived from the City of Toronto Planning Board's computerized data file of block and sub-block densities within the core area.
TABLE 3-1

POTENTIAL FLOOR SPACE* INCREASES IN TORONTO CORE AREA (SOUTH OF CHARLES STREET) PERMITTED BY OFFICIAL PLAN AND ZONING BY-LAW, WITH VARIATIONS IN REDEVELOPMENT RATIO**

<table>
<thead>
<tr>
<th>Redevelopment Ratio</th>
<th>High Density Area 8X</th>
<th>Low Density Area 2X</th>
<th>Medium Density Area 2.5X</th>
<th>Official Zoning Plan 4.5X</th>
<th>TOTALS Zoning By-law</th>
<th>Official Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>70%</td>
<td>5.5</td>
<td>1.3</td>
<td>4.5</td>
<td>9.8</td>
<td>11.3</td>
<td>16.7</td>
</tr>
<tr>
<td>50%</td>
<td>3.8</td>
<td>1.0</td>
<td>4.1</td>
<td>8.9</td>
<td>8.9</td>
<td>13.7</td>
</tr>
<tr>
<td>40%</td>
<td>3.3</td>
<td>.8</td>
<td>3.8</td>
<td>8.9</td>
<td>7.9</td>
<td>13.0</td>
</tr>
</tbody>
</table>

* Data shown is gross floor area in millions of square feet

** The Redevelopment Ratio is the ratio of existing density to permitted density above which redevelopment will not occur

TABLE 3-2
PERCENTAGE INCREASE IN FLOOR SPACE (SOUTHWEST CHARLES STREET) 
UNDER VARYING ASSUMPTIONS

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COLUM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>N 1</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>Potential Increment (total of high, low and medium density areas) as a % of 48 million square feet***</td>
<td>Potential Increment**** as a % of Existing Floor Space (37.3 million square feet)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Redevelopment Ratio**</th>
<th>MEDIUM DENSITY AREA</th>
<th>MEDIUM DENSITY AREA</th>
<th>MEDIUM DENSITY AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zoning By-law</td>
<td>Official Plan 2.5X</td>
<td>Zoning By-law</td>
</tr>
<tr>
<td></td>
<td>4.5X</td>
<td></td>
<td>4.5X</td>
</tr>
<tr>
<td>70%</td>
<td>23.6%</td>
<td>34.8%</td>
<td>58.9%</td>
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<tr>
<td>50%</td>
<td>18.6%</td>
<td>28.6%</td>
<td>52.5%</td>
</tr>
<tr>
<td>40%</td>
<td>16.5%</td>
<td>27.0%</td>
<td>49.8%</td>
</tr>
</tbody>
</table>

* Based on data contained in Table 3-1. This Table analyses the data in Table 3-1 on a percentage basis and also introduces a retention factor.

** The Redevelopment Ratio is the ratio of existing density to permitted density above which redevelopment will not occur.

*** Floor space figure from City of Toronto Planning Board, Central Area Plan Review Part II Plan for Downtown, (Toronto, 1975), p. 99, 48 million square feet includes 37.3 million square feet existing office space and 10.65 million square feet for committed and under construction.

**** Ibid. - Here increment also includes a net of 10.65 million square feet for committed and under construction.
FIGURE 3-3
POTENTIAL COMMERCIAL GROWTH
SOUTH OF CHARLES ST.

BASE FIGURE (48 MILLION SQ. FT.) EXISTING, UNDER CONSTRUCTION & COMMITTED.

ASSUMPTIONS

<table>
<thead>
<tr>
<th>Category</th>
<th>70 %</th>
<th>50 %</th>
<th>40 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redevelopment Ratio</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retention</td>
<td>-</td>
<td>30 %</td>
<td>30 %</td>
</tr>
<tr>
<td>Rezoning in Medium Density Areas</td>
<td>100%</td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td>Railway Lands</td>
<td>5.5 M sq.ft</td>
<td>5.5 M sq.ft</td>
<td>-</td>
</tr>
<tr>
<td>Historic Bonus</td>
<td>6.0 M sq.ft</td>
<td>6.0 M sq.ft</td>
<td>1.0 M sq.ft</td>
</tr>
</tbody>
</table>
the Zoning By-law and 13.7 million square feet under the Official Plan.

With a 70% redevelopment ratio, the potential increase in office floor space over the 37.3 million square feet existing in mid-1975 is approximately 58.9% under the Zoning By-law and 73.3% under the Official Plan. But, with a 50% redevelopment ratio, this drops to a 53% potential increase under the Zoning By-law and 65% under the Official Plan.

It is apparent that a large proportion of the development potential is not a direct function of the Zoning By-law, but is subject to a Council decision.

If one goes further and assumes that there would be at least a 30% retention of developable land as discussed above, Table 3-2 shows that the development potential is only 16.5% under the Zoning By-law and 24.4% under the Official Plan with a 70% redevelopment ratio. With a 50% ratio the permitted increment in commercial floor space drops to 13% under the Zoning By-law and 20% under the Official Plan.

In distributing the possible capacity to accommodate growth, the City's planners have attempted to make the allocations reflect demand. Envisioning a peak demand for space among those with the greatest need for face-to-face contact (notably concentrated in the Financial District), they designated this area at 8 times density. Using their 70% redevelopment ratio, Table 3-1 shows that this permits possible development of only 5.5 million square feet in the Financial District (shown as the High Density Commercial Sub-Area in Figure 3-1), 9.8 million square feet in the Medium Density Commercial areas and 1.3 million square feet in the Low Density Commercial areas. This represents a 33% increase in floor space within the Financial District (see Table 3-3). With the assumption of a 50%
# TABLE 3-3

**POTENTIAL PERCENT INCREASES OVER EXISTING FLOOR SPACE**

<table>
<thead>
<tr>
<th>Redevelopment Ratio</th>
<th>High Density Area 8X</th>
<th>Low Density Area 2X</th>
<th>Medium Density Area 2.5X</th>
<th>Zoning By-law 4.5X</th>
<th>Official Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>70%</td>
<td>33.3%</td>
<td>12.1%</td>
<td>42.0%</td>
<td></td>
<td>92.7%</td>
</tr>
<tr>
<td>50%</td>
<td>22.9%</td>
<td>8.9%</td>
<td>39.0%</td>
<td></td>
<td>84.1%</td>
</tr>
<tr>
<td>40%</td>
<td>19.7%</td>
<td>7.5%</td>
<td>35.8%</td>
<td></td>
<td>83.5%</td>
</tr>
</tbody>
</table>

Based on City of Toronto computerized data file on existing core area densities by block and sub-block areas (south of Charles Street).

- **High Density Area (Financial District)**: 16.618 million sq. ft.
- **Medium Density Areas**: 10.612 million sq. ft.
- **Low Density Areas**: 11.112 million sq. ft.
ratio, only a 23% increase is possible, without considering any retention factor, in the area where the City is anticipating the maximum development pressure. The City's assumption that additional space above this will be supplied within the core must rest on the uncertain assumption that 5.5 million square feet will be built on the railway lands.

In Figures 3-4 and 3-5 can be seen computer-drawn block diagrams of the existing commercial floor space and the potential increase under the new Official Plan for the core of Toronto. In these block diagrams, not only is the level of the containment apparent but also the relative degree of restriction on expansion within the various sub-areas of the core.

Conclusions

Even with the liberal assumptions the City has made regarding development potential, there can be little doubt that the proposed Plan will be containing in the medium to long term. With more realistic assumptions of development potential, it will markedly limit the maximum expansion of office space within the core and will allocate an unduly small amount of growth to the Financial District, which will probably be the area of peak demand.

Potential expansion in this Plan is dependent upon a number of imponderables. The incorporation of only the most liberal assumptions and provisions such as that of historic bonusing which are impossible to attain in determining the level of containment provided in this plan is an unwise strategy involving considerable dangers.
FIGURE 3-4
EXISTING FLOOR SPACE BY BLOCK FOR AREAS WITH COMMERCIAL ZONING IN THE CORE AREA OF TORONTO, SOUTH OF CHARLES STREET

*Floor space includes buildings under construction and committed for construction.
FIGURE 3-5

POTENTIAL INCREMENT IN COMMERCIAL FLOOR SPACE BY BLOCK FOR AREAS WITH COMMERCIAL ZONING IN THE CORE AREA OF TORONTO, SOUTH OF CHARLES STREET*

*Increment excludes buildings under construction and committed for construction.

Assuming a 50% cut-off ratio and that areas zoned for medium density are built at a 3.5 F.A.R.
In allocating density limits the City has made a fundamental error in defining these limits to precisely correspond to limits determined by the capacity of the transport system. Even if the transportation capacities are accepted as valid, Official Plan and Zoning By-law densities should be raised by a quantity sufficient to recognize that only a portion of the allocated densities could be used. As well, the development potential of the core should be distributed so as to reflect the distribution of demand for office space by the existing office communities. Such a course would at least tend to delay and modify the prospective rapid elevation in core area rents, and still limit growth to that defined by the core-oriented transportation capacity.

More justifiable definitions of development could be established (even within the City's basic assumptions) by incorporating the following:

1. The assumption that only sites with existing buildings having 50% or less of the space permitted by the Plan will be redeveloped.

2. The incorporation of the probability that development of some properties essential for the attainment of reasonable supply increments will be deterred.

3. The incorporation of the probability that a proportion of the sites in the medium density areas could not utilize the full commercial density allocated to mixed use development, because of site limitations and other problems.

4. Recognition that the reserve of 6 million square feet for bonusing for the preservation of buildings of historic and architectural merit, and 5.5 million square feet for development of all the railway lands may be unfounded.
4. THE LOCATIONAL FREEDOM OF THE CORE OFFICE COMMUNITY

Restricting the supply of space for particular urban activities is not necessarily damaging if those activities are relatively footloose and if ample alternative locations are provided. Thus, at issue in a planned restriction of the floor space supply in an urban core is not only the severity of the restriction but also the degree to which the functions occupying that space can remove themselves to other locations. If these functions are relatively immobile, expansion will result in demand pushing against a nearly fixed supply which, depending on the rate of growth of the demand, could result in rental increases of major proportions.

The degree to which office functions in the core of the city are tied to their compact and central location depends largely upon their communication linkages and particularly their need for face-to-face contact. This relationship is the recurrent theme of almost every scholarly work on office location.\(^30\) Thus, any discussion of the degree to which office functions in the core of a city are mobile must center on this issue.

In developing the strategy of core area containment, Toronto's planners have argued that, by generating relatively minor rent increases, they can induce a sizable outmigration of offices from the core. It has been asserted in the Plan that "only about one-quarter of the firms located

in the Central Core rely on face-to-face contact to conduct business”,\(^{31}\) and that the remaining 75% are relatively footloose and, if moved, would not have their efficiency significantly injured as a result of communications damage. This is an astounding figure, which is not only markedly divergent from the evidence of previous research, but also misinterprets the information on which it is purportedly based.\(^{32}\) Knowledge of the proportion of office functions and employment which could reasonably be considered mobile is an essential prerequisite to any intervention in the provision of core office space. Thus, the objective of this chapter is to closely analyse the locational economics of office functions in the core and to determine as accurately as possible that proportion of the core area office function which is indeed mobile in contemporary Toronto.

Before commencing this analysis, however, it is worthwhile to review some information which suggests the degree to which the city's 75% mobility figure is unreasonable. In Section 2 of this study the intensity of the planning restrictions on Central London was sketched. To a considerable extent, as a consequence of this containment, rent levels in the core of London soared to unparalleled levels.\(^{33}\) Yet, despite the


\(^{32}\)The excellent research of Dr. G. Gad, Central Toronto Offices: Observations on Location Patterns and Linkages (Toronto: City of Toronto Planning Board, 1975).

\(^{33}\)Between 1960 and 1973, rent levels in the "banking area" of the City of London rose approximately 1,135%, from an average of approximately £1.62 to an average of £20.00. (If one takes the 1973 value of the pound to be $2.50, this approximates $50.00 p.s.f.) Between 1965 and 1970 in the same area they rose 575%. (Economists Advisory Group, Office Rents in the City of London and their Effect on Invisible Earnings (London: Committee on Invisible Earnings, 1974), p. 4.)
Draconian disincentives to be there, according to Robert Hall's calculations, during the period 1963 to 1969 the total number on non-government office jobs, including complete moves and all partial moves, which moved from Central London was between 11.2% and 16.9% of the total 1966 office employment in Central London. Moreover, during this period, the number of office employees in Central London increased; the jobs which moved out being replaced by endogenous growth, the birth of new firms demanding central office space and the movement of offices into London from other regions and countries. If a high proportion of the offices in London considered the communication and other advantages of Central London as unimportant, it is unlikely that such large proportions would absorb the extremely high additional costs of a Central London location.

A second set of information is also suggestive of the unreasonable nature of the City's conclusions. John Goddard and D.M. Morris in 1975 measured the frequency of contacts of those firms about to decentralize from Central London and, as well, those that "have rejected decentralization specifically on communication grounds" (the non-movers). They observed over a three-day period that the "non-movers" had an average of 1.6 external face-to-face meetings per respondent (the London average is 2.2) and 9.0 external telephone calls per respondent. If the face-to-face contact rates are transformed to represent a rate per business week to be comparable with Dr. Gad's findings for Toronto (on which the city

34 R.K. Hall, "The Movement of Offices from Central London", Regional Studies, Vol. 6 (1972), Table 2, p. 389.

is basing its 75% mobility figure), they become 2.66. If one compares this rate for those specifically rejecting decentralization on communication grounds in London (with its immense costs) with Toronto's data\textsuperscript{36} one finds that there is no office functional type in Toronto which has fewer face-to-face linkages a week than Goddard's average "non-mover" figure of 2.66 (the lowest in Toronto being 2.9 face-to-face meetings per week per communicator). Even allowing for differences in definitions and the details of the diaries completed by respondents and other methodological variations, the possibility that communication factors are unimportant to 75% of Toronto's core office community is untenable.

The City's assumption on the mobility of core office functions points to an obvious need to calculate the communications costs that would be incurred by a move to a suburban location, and the relationship of these costs to the rent savings resulting from such a move. By calculating these costs, it is possible to gain a fairly realistic picture of the locational mobility of these functions. Also, such calculations provide a basis for projecting what differences between core and suburban rents would be necessary to induce firms of varying types to undertake a migration. These calculations also make possible the analysis contained in Section 5 of this study where a determination is made of the aggregate costs to occupants of core office space of inducing increases in rents to the levels necessary to displace firms of varying types.

The following analysis is thus geared to calculating the economic

\textsuperscript{36} G. Gad, Central Toronto Offices, p. 91. Since Goddard data were distributed to "a selection of senior personnel in key positions", Gad's "communicator" data are the most appropriate as they eliminate clerical staff. (See J.B. Goddard, "Office Communications and Office Location", pp. 268-269).
value of communication linkages and their relationship to the rent savings that would result from a deconcentrating move. The costs involved can be viewed as a minimum, for only the costs of the firm's face-to-face communication pattern are considered and not a potential array of further costs which could be incurred by a firm departing from the core, such as:

1. Loss of agglomeration economies not related to information exchange.
2. Problems of acquiring skilled staff in suburban locations.
3. Problems of staff turnover with a move.  
4. Loss of prestige.
5. Loss of social contact, with indirect benefits to the firm.
6. Increased commuting difficulty of staff.
7. The direct moving costs.
8. Costs of courier services.

There are also some benefits of the suburban move, not directly subsumed under rents, which have not been incorporated in the ensuing

37 For most companies, a move to the suburb has its most drastic impact on non-management employees. For example, when Pepsico Corp. moved to its new headquarters in Purchase, N.Y., it lost one-third of its secretarial and clerical help.

38 For many firms, a suburban move may actually lengthen commuting distances of employees. Employees may have rationalized their location in terms of proximity to the core, or located in all sectors of the city. In such a case, a move may lengthen the journey to work for more employees than those who have it shortened. As well, it may force some employees to change their mode of travel to the automobile which they may not be willing or able to accept. See J.F. Sussams, "The London Office Problem", Business Management (London) (April, 1970), p. 5; and P.W. Daniels, "Transport Changes Generated by Decentralized Offices", Regional Studies, Vol. 6 (1972).
analysis including:

1. The availability in the suburban areas of large floor areas on a single floor which some firms consider to be desirable.

2. The greater ease of automobile parking.

3. Possibly lower rates of staff turnover (in the long-term). 39

4. Decreased commuting costs for staff of new firms entering Toronto where rationalizations of the journey-to-work can be immediate.

5. Reduced single family housing costs for staff of new firms entering Toronto without the substitution of journey-to-work costs.

The analysis is geared to the firm rather than public costs because the containment policy of the City ultimately involves adjusting costs and benefits accruing to the first firms of the various functional types which relocate. The costs to the firms relocating after a number have moved would be somewhat less because of agglomeration economies increasing in the suburban centers (although total system efficiency would decline, as is indicated in Section 6).

Methodology

The large number of calculations needed to determine the costs and benefits of migration to each of three proposed suburban sub-centers was accomplished by means of a simple computer program. This program was run for 30 different office functional types, with varying intensities of communications links and differing degrees of orientation to the central office community, and under assumptions of two different

39 This is probably because of fewer opportunities for alternative employment. In the British literature, lower rates of wages and salaries are a frequently-mentioned benefit. However, there is no information upon which to determine whether this is true in the Toronto area. Moreover, with unionization of office personnel, geographical variation in wage rates is normally reduced. For a review of the advantages and disadvantages of suburban migration, see John Rhodes and Arnold Kan, Office Dispersal and Regional Policy (Cambridge, Mass.: Cambridge University Press, 1971).
firm sizes, different floor space ratios, various travel times to the core, and differing employee salary levels, in order to establish cost ranges.

Input for the analysis was derived from a variety of sources, including:

1. The important and excellent consultant's report prepared for the City of Toronto Planning Board by Dr. Gunter Gad.  

2. Mass transit isochrones for projected suburban sub-centers assuming the advent of "light rail transit" and subway extensions, from the Urban Transportation Development Corporation.


4. Office floor space rental rates from A. E. LePage Ltd.  

5. Average Toronto salaries and bonuses for relevant personnel from the most recent available H.V. Chapman and Associates publication, Management Compensation in Canada.  


7. Existing office floor space, office floor space under construction, and committed floor space from the City and Metropolitan Toronto Planning Departments.

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40 Gunter Gad, Central Toronto Offices: Observations on Location Patterns and Linkages (Toronto: City of Toronto Planning Board, 1975). Toronto is in the fortuitous and unusual position of having such excellent data available.


42 A.E. LePage Ltd., Real Estate Market Survey Toronto 1976. These figures were confirmed by personal communication with William B. Moore, Senior Vice-President and Manager, Office Leasing Division, A.E. LePage (Ontario) Ltd.

The main assumption was that a typical firm within the various functional types would move to a suburban sub-center and in doing so would maintain its existing communication linkages. In addition, it was assumed that the firm moving away from the large agglomeration would be responsible for absorbing the travel costs for meetings. Firms in the large core agglomeration, having a variety of substitutes for the decentralized firm, would generally be unlikely to absorb the costs of travel to the suburban firm. Furthermore, even if some centrally located firms did send men to the suburbs for meetings, the costs are still real and should properly be discounted from the value of business done with the suburban firm.

As a starting point, it was first necessary to determine what proportion of the linkages of the varying core area office functional types were with meeting partners located in the central office community. This was necessary because upon decentralization of the firm, the greatest additional costs would be incurred in maintaining linkages to the core agglomeration. It was assumed that upon decentralization there would be no increase in the travel times incurred in meeting with partners which were not located in the core. This was done by taking Gad's distribution of the location of meeting partners, converting to absolute terms,

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44 If these contacts were not maintained, it was realistically assumed that the costs resulting from uninformed decisions and the loss of business to the firm would be greater than the costs of maintaining communications. Also, if there should be unnecessary communications occurring which could be dispensed with upon a move, that these would be less than information received through social contacts within the core (such as that exchanged within private clubs), which are not included in the linkage data.

45 There is a possibility that there may be a net increment, in travel times necessary to maintain these non-core links, especially with the proposed Scarborough office sub-center.
totalling the figures and allocating Gad's "Metro Not Specified" figures according to the same ratio of those existing inside the "central corridor" to those in Metro outside the "central corridor". 46 Metro outside the "central corridor" and the Metro fringe categories were then added to give three categories of the location of meeting partners of present core area firms: (1) central corridor, (2) Census Metropolitan Area outside the central corridor, and (3) Outside the C.M.A. Finally, "those not specified" were distributed among the three categories according to the proportions existing within those categories.

As a result of these calculations, the average number of meeting links which take place in the central office areas of Toronto, per week per firm, per functional type was determined. For ten functional types, data were not available on the geographical distribution of meeting partners. It was necessary to assume that these functional types had the same ratio of meeting partners from the central corridor as the average of the other functional types. These functional types in subsequent tables are indicated by an asterisk.

The next step was to compute the cost of a move to each of three proposed sub-centers, Scarborough Town Center (assuming the construction of a L.R.T. line), the Yonge-Finch-Sheppard area, and the Mississauga City Center under two assumptions, that a L.R.T. line is constructed and that it is not constructed. 47 Since the maintenance of face-to-face contact linkages involves travel by office management and personnel, it represents

46 Gad has used the term "central corridor" to describe the agglomeration of offices in the downtown and midtown extending to the Yonge-Eglinton area of Toronto.

47 So-called "light rail transit" (basically a street car on an exclusive or semi-exclusive right-of-way).
a cost to the firm. In determining these costs, travel times and salary scales were of particular importance.

The following transportation assumptions were made:

1. Travel would be made by mass transit. This assumption was made for two reasons:
   a) It has been the recent policy of the City of Toronto, Metropolitan Toronto and the Province of Ontario to discourage automobile usage within the metropolis and to cease construction of the freeways which would be necessary to maintain interaction with the core at speeds less than is possible with improved rapid transit facilities, even in off peak hours.
   b) An assumption of automobile usage would necessitate allocating to the firm either the costs of company cars, and their operating expenses, or the costs of providing mileage costs to staff for the operation of their vehicles and in addition the considerable costs of parking within the core area. The addition of these costs would markedly increase the costs to the firm of decentralization. Moreover, demanding employee utilization of automobiles for interaction between the sub-centres and the core would also necessitate the utilization of the car for the journey-to-work—a pattern which contravines the objective of developing sub-centres.

2. New high speed, rail lines would be in place and proposed subway extensions would be made.

3. Travel was to the corner of King and Bay and that intra-core travel time would be the same before and after the move to the suburbs.

4. A fare of 40¢ one way or 80¢ round trip was applied to cover the direct costs of travel.

5. It was assumed that the "traveller" from the decentralized firm makes a return trip with each meeting. This assumption was made for the following reason. It is unlikely that a communicator could schedule his meetings to a perfect time-table and that, as a consequence, the non-productive delays between meetings times the cost to the firm of the time wasted would, in the aggregate, be greater than if the assumption of a return trip were made.

6. Most importantly, no account was taken of disruption to office operations of the absence of key personnel during travel time or periods of readjustment to normal operating efficiency from the business day travel demands. On the other hand, no account was taken of work being accomplished during travel time. It is suggested that the former cost far outweighs the latter benefit.
7. Thus, the following projected round trip travel times derived from Urban Transportation Development Corporation isochrone data were utilized. 48

i) Scarborough Town Center with an L.R.T. line and Subway Extension - 98 minutes.

ii) Yonge-Finch-Sheppard - 55 minutes (times to Finch and Sheppard were averaged).

iii) Mississauga City Center with an L.R.T. line - 102 minutes.

iv) Mississauga with Subway Extension but no L.R.T. line - 138 minutes.

The cost to the firm of the wages of those employees engaged in maintaining company communications was derived as follows. From Management Compensation in Canada in 1975, one overall average was calculated from the average Toronto salaries of 47 low to middle management positions 49 giving a 1975 salary figure of $21,334.00, which was felt to be representative of the salary of those likely to be engaged in face-to-face communications.

As well, the average rate of salary increase in Toronto for the 47 positions between 1974 and 1975 was calculated for this group giving a 1976 Toronto salary average of $24,364.00. In addition, the average level of bonuses indicated by Chapman Associates was added and an average of 15% of base salary was allocated to cover the cost incurred by the

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48 These transportation times and resulting costs are probably low in that the projected travel times are for peak hours. In off-peak hours, travel times will be somewhat longer because of greater headways between vehicles, and therefore greater station waiting time. As mentioned above the UTDC data are to the intersection of King and Bay, which is the point most accessible to the core office space. Since the main direction of access on mass transit from the proposed sub-centres is from the North a small proportion of office space within the northern portion of the core area south of Charles Street may be reached in less time than is indicated. In the aggregate this difference will be slight, and partially compensated by the considerable space south of King Street.

49 H.V. Chapman and Associates, Management Compensation in Canada (Toronto, 1975), Table R-7. Top management remuneration was not included.
company for pension plans and a wide variety of other benefits.\(^{50}\) The average total annual remuneration of $33,140.00 was allocated over 50 weeks (assuming two weeks holidays)\(^{51}\) and a 40-hour week, giving an average hourly total remuneration of $16.55 per hour.

With these data, it was then possible for the program to measure face-to-face communications costs per firm for each functional type for each of the four centers (Mississauga times 2) and, as well, the costs per employee and costs per communicator.

The rent savings accruing to a firm are the product of the net rentable floor space consumed by the firm and the differences between core rent levels and suburban rent levels. In this analysis the rent difference was taken as the difference between the current average full-floor rates of between $10.00 and $11.00 ($10.50) in the downtown area of Toronto and the current average full-floor rates of $8.00 in the suburbs.\(^{52}\) These rates produce a current downtown-suburban rent spread of $2.50. The current full-floor rates for the "midtown" area of Toronto (containing 32% of Central Toronto's net rental office space) are $8.50 which gives a midtown/suburban rent difference of .50¢. These figures are not used but it is worth remembering that if the midtown/suburban rent difference or a representative amalgam of the downtown and midtown/suburban rent differences

\(^{50}\) Even though the cost to the firm is the relevant variable, no account was taken of the average contribution per employee to the corporation above that allocated in remuneration. Therefore, these figures may be slight underestimation of the cost to the firm of employees' travel time.

\(^{51}\) Taking 50 weeks was again tending to err on the downside.

\(^{52}\) A.E. LePage Ltd., Real estate Market Survey, Toronto 1976 (Toronto, 1976), p. 11. These figures were confirmed by personal communication with William B. Moore, Senior Vice-President and Manager, Office Leasing Division, A.E. LePage (Ontario) Ltd.
were taken, there would be an immense reduction in the savings accruing to a firm that moved. Thus, in taking the $2.50 difference, these calculations deliberately err on the side of increasing the existing benefits of a suburban move.

There exists considerable uncertainty regarding the floor area consumed per employee. Estimates of average floor space per worker generally fall within a range from approximately 155 to approximately 208 net square feet per employee in the core of Toronto. The most recent detailed survey, undertaken by David Arscott for the Metropolitan Toronto Planning Department, has determined that for the Metropolitan Toronto "Inner Core Employment Area", which is roughly the City of Toronto Inner Core Area, the net rentable floor area per employee is 152. On the other hand, the Peat-Marwick-I.B.I. group has estimated an average of 208 square feet per employee. Due to the uncertainty of appropriate floor space ratios, the program was run with several alternatives, Metro Toronto's and the Building Owners and Managers Association figure of 155, Peat Marwick's 208 and Gad's ratios per functional type averaging 209. It was also felt that to be realistic the floor space per worker would increase by 25% upon a suburban move. This increase is not only what is empirically evident but would also appear to be necessary for early decentralizing firms because of a need to increase staff services and amenities such as cafeterias which were readily available in the

53 David Arscott, "Sample of Office Floor Space, Employment Density for the Inner Core Employment Area", mimeographed, 1976. Peat-Marwick and Partners, I.B.I., Trends and Influences on Floor Area Ratios for Downtown Office Workers (Toronto, 1975), pp. 1-7. The 155 figure tends to be supported by the Building Owners and Managers Association (Office Building Experience Exchange Report). Gad, in conjunction with his overall research, requested occupants to state floor space occupied and his results are comparable to the Peat-Marwick conclusions, his results are averaging 209 square feet per employee.
Thus, the program was run both with and without this variable. It was thus possible to compute a realistic range of savings which would accrue to a firm moving from the downtown office agglomeration to the suburbs and thereby the relative cost and savings implications of a core/suburban move within contemporary Toronto.

These calculations were undertaken for two firm sizes. The first was the "model" establishment size as used by Dr. Gad which is an approximation of the "modal" size of firm for each functional type (although usually slightly larger). In an attempt to approximate what relation existed with firm size in the relative economics of a core and decentralized location, an average size was also used. This was determined by taking the mean number of employees per firm of the various functional types. It was necessary to assume that the average number of links per week per employee would be the same regardless of the size of the firm, which may or may not be so. By making this assumption, it was thus possible to approximate the links per firm of the average size of establishment, as well as for the "model" establishment size.

An Assessment of Assumptions and Non-Quantifiable Variables

A comprehensive modelling of the cost-benefit relationship of contact linkages and rent savings for the firm under various locational alternatives appropriately encompasses a very wide range of variables. Unfortunately, in

54 As indicated by the Peat-Marwick Core-Suburban F.S.R. ratios. As mentioned earlier, the difficulty of acquiring and retaining staff is cited as a significant problem in decentralizing firms.

55 There is considerable theoretical basis for assuming that they would be greater in smaller firms, which would tend to accent the attractiveness of the core agglomeration for these smaller firms. However, because there is no firm measure of this relationship, it was assumed that the linkage rates were the same as with the larger "model" establishments.
that this study is dealing with an almost totally untapped area of urban research in Canada, few of the variables are now capable of being meaningfully quantified. Necessarily, this research has focused on those variables where data do exist and is limited to these restricted data in measuring the value to the firm of contact linkages and rent savings and the balance of costs and benefits to the firms of removal from the core agglomeration. However it is possible to judge the direction in which the non-quantifiable variables would work and the degree to which they may tilt the cost-benefit relationship. It is the view of the author that these other factors at a minimum maintain the balance and probably tilt it to a degree which results in a slight underestimation of the net costs of decentralization.

Following is a listing of the non-quantifiable variables categorized by the direction of the effect on the ensuing results. The first list comprises those which will tend to result in an underestimation of the core-suburban rent differences necessary to justify a location in a suburban sub-centre.

Assumptions and Non-Quantifiable Variables Leading to Underestimation

1. Qualitative differences in information between core and sub-centre.

This variable although almost impossible to quantify likely is one of major significance in a total assessment of the comparative information advantages of the core and remote sub-centres. It has been argued (albeit arbitrarily) that if an agglomeration of quaternary activities surpasses the present size of Toronto's core minimal information advantages accrue with marginal growth in that centre. This assumption not only entails some startling implications, suggesting its lack of validity (see Chapter 6) but also ignores the quality of obtainable information. In the present analysis
it has been assumed that an early decentralizing firm will maintain its links with the core. This is reasonable in that during the early stages of the development of the suburban sub-centre there will be (by definition) no alternatives. However, it can be argued that with expansion of the sub-centre and the immigration of those activities to which a given function is linked, substitution will occur, lowering the transport costs of the suburban location. However, even with such substitution, costs relating to information quality still remain. For a firm in a large agglomeration requiring periodic information in a given subject area there would likely exist several sources of that information, while in a smaller sub-centre there may be only one. In the larger centre, therefore, the possibility exists of "shopping" for information sources over time and selecting that information source most appropriate to the particular needs. Such "shopping" behavior is not possible in the smaller sub-centre without the reinstitution of core-sub-centre travel. Thus even during the later stages of sub-centre development substitution of core information sources may involve a sacrifice of information quality equal to or greater than the costs of maintaining the core linkage.

2. The ignoring in the analysis of the element of prestige.

The literature is replete with instances of this variable playing an attractive role for a long established core district.

3. The ignoring of accessibility advantages.

While the accessibility advantages of the core in most automobile-oriented cities has been markedly declining, in Toronto, and in other cities which have maintained a high level of mass transit utilization, the core still possesses some accessibility advantages for the labour force, and
clients.

4. The nature of the linkage data.

These data ignores after hour and quasi-social meetings where the exchange of useful information may occur, and where the basis for ongoing contacts can be established.

5. The assumption of mass transit utilization rather than the car.

In total the use of the car for linkage maintenance constitutes a greater cost than mass transit utilization.

6. The elimination of all meetings which do not occur in the "central corridor".

In the analysis, all meetings occurring outside the central corridor were eliminated assuming that there would be no difference in the costs of maintaining these linkages between the core and a given sub-centre. For certain sub-centres such as Scarborough, there may indeed a cost increment in maintaining these links.

7. The elimination of travel time to vehicle within sub-centers.

This would marginally increase travel times utilized in the analysis.

8. Elimination of disruptive effects on firm efficiency of the lengthened absence of key individuals.

Such absences could result in decision making delays, and the missing of valuable contracts, etc. This cost, while not quantifiable, could be considerable.

9. The limitation of costs to the firm to employee salary and benefits.

Presumably the value of the employee to the firm is greater than the
direct costs, and the costs of his absence greater than the measured costs.

10. The use of downtown rent data, as opposed to an amalgam of downtown and midtown rent levels.

The use of lower midtown rental rates in the analysis would shift upward the relative utility of maintaining core information linkages.

11. The use of Metropolitan Toronto opposed to City of Toronto floor space data.

Two independent sources of floor space data for the Toronto core were available, the Metro statistics being lower. These lower figures were adopted which, for example, lowers the curve in Figure 5-2.

12. The elimination of the variable of "inertia" and costs of a move.

13. The elimination of the possibility of sympathetic suburban rent increases with core rent increases.

Assumptions and Non-Quantified Variables Leading to Overestimation

1. Multiple meeting partners.

In the analysis, meetings in the core are assumed to be with a single meeting partner. However, a proportion of meetings take place with more than one contact simultaneously. To the extent that this occurs, there is an overestimation of the costs of maintaining links to the core from a sub-centre. The frequency of multiple meetings appears to be slight, however. A comparison of the data on the number of meeting partners and the number of meeting places for that proportion of activities where data are available in Gad's study for the City of Toronto Planning Board suggests that the number of meeting places averages only 12% less than the number
of meeting places.\textsuperscript{55a} The similar variation for the most mobile function of Life Insurance is 4.8%.

2. The increased possibility of linkage substitution during the latter stages of sub-centre growth (see item one in the previous list).

It can be argued that with the increasing size of the sub-centre demand for core linkages will decline. This for example would swing the upper limits of the curve in Figure 5-2 downward. This argument however ignores the qualitative variable associated with information "shopping" behavior and also ignore the reverse effect of continued growth of the core agglomeration, which could more than compensate in the upper limbs of the curve. The lower limbs are, of course, unaffected.

3. The assumption of a Bay-King destination (see footnote 48).

4. Accessibility to lower costs housing.

This non-quantified variable can be a significant for new or immigrant office activity. The strength of this factor, of course, varies with the absolute and relative cost structure of new and existing housing. For existing office activity in the core the advantages for staff gained by a firm's move to a relatively low cost residential location would be at least partially counter-balanced by an increased length of the journey to work for those employees who had established residence in another sector of the city. This variable would also be affected by demand and supply of professional and skilled labour.

5. Irrational location behavior.

The calculations are, of necessity, premised on assumptions of firm rationality. Of course, offices may relocate in an ill-considered manner, for

\footnote{G. Gad, \textit{op. cit.}, pp. 125 and 135.}
such purposes as being closer to the president's home. Such relocation may result in a redress in an office supply-demand imbalance within the core. However, irrationality is double-edged. Firms such as those in the Life Insurance sector where it may be economic to relocate with relatively small increases in the core-suburban rent dichotomy, may irrationally decide to remain even though with ensuing calculations it is assumed that they would all go.

Results

The characteristics of "model" firms of the 20 functional types located in the core of Toronto are summarized in Table 4-1. (The detailed data are reproduced in Appendix B).\textsuperscript{56} It can be seen that there is considerable variable in the number of links per firm, ranging from a high of approximately 1,730 face-to-face links per week for banks to a low of 31 per week for manufacturing branch offices. Of even greater significance in determining the locational economics of deconcentration is the variation in the number of links per week which are located in the core. Here the range for "model" establishments ranges from 848 meetings per week for banks to 12 meetings per week for business finance. The average frequency of face-to-face links per week taking place in the core is 125.7 or 49\% of the total weekly face-to-face links among all 30 firms.

Table 4-2 summarizes the cost implications of maintaining communication linkages following a move to Scarborough Town Center (sub-center "A") for a "model" firm.\textsuperscript{57} The more detailed data for "model" and average

\textsuperscript{56} Available on request.

\textsuperscript{57} In the discussion of the results, Scarborough Town Center (Center A) will be used as the main example. In terms of travel times, at 98.0 the Scarborough Town Center falls precisely on the average travel times of the four alternative centers and thus is a good representative of average expected costs and benefits.
### Table 4-1

**Characteristics of "Model" Firms**

<table>
<thead>
<tr>
<th>Type of Firm</th>
<th>Total Firm Links/Week</th>
<th>Firm Links/Week in Core Number</th>
<th>% of Total</th>
<th>Avg. no. of Employees/Firm</th>
<th>Avg. no. of Communicators/Firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining</td>
<td>136</td>
<td>80</td>
<td>58.8%</td>
<td>40</td>
<td>21</td>
</tr>
<tr>
<td>Int. Oil</td>
<td>1271</td>
<td>422</td>
<td>33.2%</td>
<td>540</td>
<td>357</td>
</tr>
<tr>
<td>Manu. H.</td>
<td>263</td>
<td>80</td>
<td>34.2%</td>
<td>110</td>
<td>62</td>
</tr>
<tr>
<td>Trust Co.</td>
<td>452</td>
<td>334</td>
<td>73.9%</td>
<td>260</td>
<td>70</td>
</tr>
<tr>
<td>Invest. D.</td>
<td>199</td>
<td>155</td>
<td>77.9%</td>
<td>80</td>
<td>42</td>
</tr>
<tr>
<td>Bus. Fin.</td>
<td>38</td>
<td>12</td>
<td>31.6%</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Life Ins.</td>
<td>567</td>
<td>316</td>
<td>55.7%</td>
<td>790</td>
<td>202</td>
</tr>
<tr>
<td>Gen. Ins.</td>
<td>226</td>
<td>69</td>
<td>30.5%</td>
<td>70</td>
<td>29</td>
</tr>
<tr>
<td>Real Estate</td>
<td>253</td>
<td>73</td>
<td>28.9%</td>
<td>36</td>
<td>19</td>
</tr>
<tr>
<td>Law Firm</td>
<td>270</td>
<td>230</td>
<td>85.2%</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>Account</td>
<td>66</td>
<td>21</td>
<td>31.8%</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>Acnt. Con.</td>
<td>216</td>
<td>111</td>
<td>51.3%</td>
<td>46</td>
<td>35</td>
</tr>
<tr>
<td>Market Res.</td>
<td>61</td>
<td>29</td>
<td>47.5%</td>
<td>30</td>
<td>14</td>
</tr>
<tr>
<td>Advert. A</td>
<td>206</td>
<td>121</td>
<td>58.7%</td>
<td>38</td>
<td>27</td>
</tr>
<tr>
<td>Pub. Rela.</td>
<td>121</td>
<td>83</td>
<td>68.6%</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Architect</td>
<td>145</td>
<td>51</td>
<td>35.2%</td>
<td>40</td>
<td>22</td>
</tr>
<tr>
<td>Town Pl.</td>
<td>43</td>
<td>15</td>
<td>34.9%</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>D Eng. Cn</td>
<td>134</td>
<td>51</td>
<td>38.1%</td>
<td>90</td>
<td>30</td>
</tr>
<tr>
<td>C Eng. Cn</td>
<td>161</td>
<td>53</td>
<td>32.9%</td>
<td>38</td>
<td>20</td>
</tr>
<tr>
<td>Mining S.</td>
<td>35</td>
<td>25</td>
<td>71.4%</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Manu. B*</td>
<td>31</td>
<td>15</td>
<td>48.4%</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Ship Ag*</td>
<td>66</td>
<td>32</td>
<td>48.5%</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Cust. Br*</td>
<td>98</td>
<td>48</td>
<td>49.0%</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td>Banks*</td>
<td>1729</td>
<td>848</td>
<td>49.1%</td>
<td>830</td>
<td>250</td>
</tr>
<tr>
<td>Con. Fin*</td>
<td>118</td>
<td>58</td>
<td>49.2%</td>
<td>62</td>
<td>21</td>
</tr>
<tr>
<td>Ins. Agn*</td>
<td>253</td>
<td>124</td>
<td>49.0%</td>
<td>100</td>
<td>43</td>
</tr>
<tr>
<td>Exec. Cn*</td>
<td>86</td>
<td>42</td>
<td>48.8%</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Act. Con*</td>
<td>162</td>
<td>79</td>
<td>48.8%</td>
<td>55</td>
<td>25</td>
</tr>
<tr>
<td>Cty Ass*</td>
<td>198</td>
<td>97</td>
<td>49.0%</td>
<td>65</td>
<td>27</td>
</tr>
<tr>
<td>Bus Ass*</td>
<td>175</td>
<td>86</td>
<td>49.1%</td>
<td>68</td>
<td>37</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>259</strong></td>
<td><strong>125</strong></td>
<td><strong>49.0%</strong></td>
<td><strong>118</strong></td>
<td><strong>48</strong></td>
</tr>
</tbody>
</table>

**Average = Average of all Thirty Firms**

* = Number of Links per Week Located in Core Area based on Average Per Cent of First Twenty Firms

Based on data contained in G. Gad's *Central Toronto Offices: Observations on Location Patterns and Linkages.* (Toronto: City of Toronto Planning Board, October 1975).
TABLE 4-2
COST IMPLICATIONS OF A MOVE TO SCARBOROUGH TOWN CENTER FOR A "MODEL" FIRM

<table>
<thead>
<tr>
<th>Type of Firm</th>
<th>HOURS TRAVELLING TO CORE</th>
<th>ANNUAL COSTS OF TRAVELLING TO CORE*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Firm /Week /Year</td>
<td>Communicator /Week % Week</td>
</tr>
<tr>
<td>Mining</td>
<td>130.7 6794.7</td>
<td>6.2 15.6%</td>
</tr>
<tr>
<td>Int Oil</td>
<td>689.3 35841.9</td>
<td>1.9 4.8%</td>
</tr>
<tr>
<td>Manu. H</td>
<td>147.0 7644.0</td>
<td>2.4 5.9%</td>
</tr>
<tr>
<td>Trust Co.</td>
<td>545.5 28367.7</td>
<td>7.8 19.5%</td>
</tr>
<tr>
<td>Invest D</td>
<td>253.2 13164.7</td>
<td>6.0 15.1%</td>
</tr>
<tr>
<td>Bus Fin</td>
<td>19.6 1019.2</td>
<td>3.3 8.2%</td>
</tr>
<tr>
<td>Life Ins</td>
<td>516.1 26838.9</td>
<td>2.6 6.4%</td>
</tr>
<tr>
<td>Gen Ins</td>
<td>112.7 5860.4</td>
<td>3.9 9.7%</td>
</tr>
<tr>
<td>Real Est</td>
<td>119.2 6200.1</td>
<td>6.3 15.7%</td>
</tr>
<tr>
<td>Law Firm</td>
<td>375.7 19534.7</td>
<td>18.8 47.0%</td>
</tr>
<tr>
<td>Account</td>
<td>34.3 1783.6</td>
<td>2.9 7.2%</td>
</tr>
<tr>
<td>Acnt Con</td>
<td>181.3 9427.6</td>
<td>5.2 13.0%</td>
</tr>
<tr>
<td>Market R</td>
<td>47.4 2463.1</td>
<td>3.4 8.5%</td>
</tr>
<tr>
<td>Advert A</td>
<td>197.6 10276.9</td>
<td>7.3 18.3%</td>
</tr>
<tr>
<td>Pub Rela</td>
<td>135.6 7049.5</td>
<td>13.6 33.9%</td>
</tr>
<tr>
<td>Architect</td>
<td>83.3 4331.6</td>
<td>3.8 9.5%</td>
</tr>
<tr>
<td>Town Pln</td>
<td>24.5 1274.0</td>
<td>2.5 6.1%</td>
</tr>
<tr>
<td>D Eng Cn</td>
<td>83.3 4331.6</td>
<td>2.8 6.9%</td>
</tr>
<tr>
<td>C Eng Cn</td>
<td>86.6 4501.5</td>
<td>4.3 10.8%</td>
</tr>
<tr>
<td>Mining S</td>
<td>40.8 2123.3</td>
<td>8.2 20.4%</td>
</tr>
<tr>
<td>Manu B*</td>
<td>24.5 1274.0</td>
<td>4.1 10.2%</td>
</tr>
<tr>
<td>Ship Ag*</td>
<td>52.3 2717.9</td>
<td>8.7 21.8%</td>
</tr>
<tr>
<td>Cust Br*</td>
<td>78.4 4076.8</td>
<td>7.1 17.8%</td>
</tr>
<tr>
<td>Banks*</td>
<td>1385.1 72023.5</td>
<td>5.5 13.9%</td>
</tr>
<tr>
<td>Con Fin*</td>
<td>94.7 4926.1</td>
<td>4.5 11.3%</td>
</tr>
<tr>
<td>Ins Agn*</td>
<td>202.5 10531.7</td>
<td>4.7 11.8%</td>
</tr>
<tr>
<td>Exec Cn*</td>
<td>68.6 3567.2</td>
<td>7.6 19.1%</td>
</tr>
<tr>
<td>Act Con*</td>
<td>129.0 6709.7</td>
<td>5.2 12.9%</td>
</tr>
<tr>
<td>Ctv Ass*</td>
<td>158.4 8238.5</td>
<td>5.9 14.7%</td>
</tr>
<tr>
<td>Bus Ass*</td>
<td>140.5 7304.3</td>
<td>3.8 9.5%</td>
</tr>
</tbody>
</table>

Average = Average of all Thirty Firms
* = Costs in $
firms following a move to Scarborough Town Center (Center A), to the Yonge-Finch-Sheppard Area (Center B), and to Mississauga City Center under assumptions that an L.R.T. line is built or is not built (Center C and C') are reproduced in Appendix B.

For a move to Scarborough Town Center, Table 4-2 shows that for a "model" establishment the hours spent travelling to the core agglomeration per week, per firm, averages over 190 hours a week. The time consumed per firm per week ranges from a high of 1385 hours for banks to a low of 19 hours for firms engaged in business finance. The annual costs to the average firm of maintaining their communication linkages average $182,000 per year and range from over $1.2 million for banks to roughly $17,000 for business finance.

In terms of cost per employee, and cost per "communicator" (primarily non-clerical staff), the average annual cost for firms of all functional types is over $2,700 and $5,000 per annum respectively. The range in cost per employee goes from a high $8,322 for law firms to a low $579 for life insurance companies. In terms of annual cost per "communicator", the range is from $16,643 for law firms to $1,711 for integrated oil companies. For each such "communicator" a move to Scarborough Town Center would necessitate an average expenditure of over 14% of the work week in travel to and from the core. Among the different functional types, this varies from a high of 47% for core area law firms to a low of less than 5% for integrated oil companies.

The next phase of the analysis was to weigh these additional costs against potential savings in rent achieved by a move to a sub-center. The results of a cost-savings analysis for a move to the Scarborough Town Center for "model" establishments are presented in Table 4-3 with a floor space ratio of 155 square feet per employee. More detailed data for this
### TABLE 4-3

COST-SAVINGS ANALYSIS OF A MOVE TO SCARBOROUGH TOWN CENTER FOR A "MODEL" FIRM

<table>
<thead>
<tr>
<th>Type of Firm</th>
<th>Minimum Core/Suburban Rent Difference</th>
<th>Minimum % Increase in Core Rent</th>
<th>Annual Rent Savings*</th>
<th>ANNUAL NET COST Per To Firm*</th>
<th>Employee</th>
<th>Communicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining</td>
<td>20.7</td>
<td>173.1%</td>
<td>3.1</td>
<td>112.7</td>
<td>2817</td>
<td>5366</td>
</tr>
<tr>
<td>Int Oil</td>
<td>9.3</td>
<td>64.7%</td>
<td>41.9</td>
<td>568.9</td>
<td>1054</td>
<td>1594</td>
</tr>
<tr>
<td>Manu. H</td>
<td>9.6</td>
<td>68.0%</td>
<td>8.5</td>
<td>121.7</td>
<td>1107</td>
<td>1963</td>
</tr>
<tr>
<td>Trust Co.</td>
<td>14.0</td>
<td>109.5%</td>
<td>20.2</td>
<td>463.2</td>
<td>1782</td>
<td>6618</td>
</tr>
<tr>
<td>Invest D</td>
<td>20.1</td>
<td>167.5%</td>
<td>6.2</td>
<td>218.1</td>
<td>2727</td>
<td>5193</td>
</tr>
<tr>
<td>Bus Fin</td>
<td>14.4</td>
<td>113.8%</td>
<td>.7</td>
<td>16.7</td>
<td>1852</td>
<td>2778</td>
</tr>
<tr>
<td>Life Ins</td>
<td>5.7</td>
<td>30.1%</td>
<td>61.2</td>
<td>366.1</td>
<td>501</td>
<td>1961</td>
</tr>
<tr>
<td>Gen Ins</td>
<td>11.2</td>
<td>82.9%</td>
<td>5.4</td>
<td>94.4</td>
<td>1349</td>
<td>3256</td>
</tr>
<tr>
<td>Real Est</td>
<td>20.9</td>
<td>175.6%</td>
<td>2.8</td>
<td>102.9</td>
<td>2857</td>
<td>5414</td>
</tr>
<tr>
<td>Law Firm</td>
<td>55.7</td>
<td>506.6%</td>
<td>3.1</td>
<td>329.8</td>
<td>8244</td>
<td>16488</td>
</tr>
<tr>
<td>Account</td>
<td>12.9</td>
<td>99.0%</td>
<td>1.4</td>
<td>29.0</td>
<td>1611</td>
<td>2416</td>
</tr>
<tr>
<td>Acnt Con</td>
<td>24.5</td>
<td>209.8%</td>
<td>3.6</td>
<td>157.1</td>
<td>3415</td>
<td>4488</td>
</tr>
<tr>
<td>Market R</td>
<td>11.0</td>
<td>81.2%</td>
<td>2.3</td>
<td>39.6</td>
<td>1322</td>
<td>2832</td>
</tr>
<tr>
<td>Advert A</td>
<td>31.7</td>
<td>278.4%</td>
<td>2.9</td>
<td>17.2</td>
<td>4531</td>
<td>6377</td>
</tr>
<tr>
<td>Pub Rela</td>
<td>53.7</td>
<td>489.3%</td>
<td>1.2</td>
<td>119.0</td>
<td>7931</td>
<td>11896</td>
</tr>
<tr>
<td>Architect</td>
<td>13.9</td>
<td>108.6%</td>
<td>3.1</td>
<td>70.7</td>
<td>1768</td>
<td>3214</td>
</tr>
<tr>
<td>Town Pln</td>
<td>10.8</td>
<td>78.6%</td>
<td>1.2</td>
<td>20.5</td>
<td>1279</td>
<td>2047</td>
</tr>
<tr>
<td>D Eng Cn</td>
<td>7.3</td>
<td>45.6%</td>
<td>7.0</td>
<td>66.8</td>
<td>742</td>
<td>2228</td>
</tr>
<tr>
<td>C Eng Cn</td>
<td>15.0</td>
<td>119.3%</td>
<td>2.9</td>
<td>73.8</td>
<td>1941</td>
<td>3688</td>
</tr>
<tr>
<td>Mining S</td>
<td>35.4</td>
<td>312.8%</td>
<td>.5</td>
<td>35.6</td>
<td>5091</td>
<td>7128</td>
</tr>
<tr>
<td>Manu. B*</td>
<td>10.7</td>
<td>78.6%</td>
<td>1.2</td>
<td>20.5</td>
<td>1279</td>
<td>3411</td>
</tr>
<tr>
<td>Ship Ag*</td>
<td>44.7</td>
<td>401.8%</td>
<td>.5</td>
<td>45.8</td>
<td>6538</td>
<td>7628</td>
</tr>
<tr>
<td>Cust Br*</td>
<td>19.9</td>
<td>166.0%</td>
<td>1.9</td>
<td>67.5</td>
<td>2701</td>
<td>6193</td>
</tr>
<tr>
<td>Banks*</td>
<td>11.5</td>
<td>86.1%</td>
<td>64.3</td>
<td>1162.9</td>
<td>1401</td>
<td>4652</td>
</tr>
<tr>
<td>Con Fin*</td>
<td>10.7</td>
<td>78.4%</td>
<td>4.8</td>
<td>79.1</td>
<td>1276</td>
<td>3768</td>
</tr>
<tr>
<td>Ins Agn*</td>
<td>13.6</td>
<td>105.5%</td>
<td>7.8</td>
<td>171.7</td>
<td>1717</td>
<td>3993</td>
</tr>
<tr>
<td>Exec Cn*</td>
<td>34.7</td>
<td>306.5%</td>
<td>.9</td>
<td>59.9</td>
<td>4988</td>
<td>6650</td>
</tr>
<tr>
<td>Act Con*</td>
<td>15.4</td>
<td>123.0%</td>
<td>4.3</td>
<td>110.1</td>
<td>2001</td>
<td>4403</td>
</tr>
<tr>
<td>Ctv Ass*</td>
<td>15.9</td>
<td>127.9%</td>
<td>5.0</td>
<td>135.3</td>
<td>2082</td>
<td>5013</td>
</tr>
<tr>
<td>Bus Ass*</td>
<td>13.8</td>
<td>107.7%</td>
<td>5.3</td>
<td>119.2</td>
<td>1753</td>
<td>3221</td>
</tr>
<tr>
<td>Average</td>
<td>19.6</td>
<td>163.2%</td>
<td>9.2</td>
<td>172.7</td>
<td>2655</td>
<td>4861</td>
</tr>
</tbody>
</table>

* = Expressed in Thousands of Dollars

Minimum Core/Suburban Rent Differences - indicates the rent difference necessary to justify a move

Minimum Per Cent Increase in Core Rent - indicates per cent increase in core rent necessary to justify move (assuming suburban rent constant)

Annual Rent Savings - arises from decrease in rents resulting from move

Annual Net Cost - indicates the net cost to the firm arising from the move (linkage costs minus savings and rent)
and sub-centers B, C and C', the relationships for average, as well as model firm size, and with alternative floor space consumption functions are presented in Appendix B. From Table 4-3 it can be seen that:

1. For a move to Scarborough Town Center on average for all firms of all functional types, the cost of maintaining communications alone exceeds the savings incurred by the move by an average of $172,692.

2. There are no functions for which the savings exceed the costs of maintaining communications.

3. The average annual cost per employee and per "communicator" (or non-clerical staff) for all firms of all functional types are, $2,655 and $4,861 respectively (see Figure 4-1).

4. Significantly, for the argument over decentralization, the minimal annual net cost per employee and per communicator of a move for the most mobile functional type (life insurance) is $501 and $1,960 respectively.

5. The maximum annual net cost per employee and per communicator among the various functional types is $8,244 and $16,488 respectively (law firms).

Also contained in the tables in Appendix B are indications of the core/suburban rent differences necessary to compensate for the costs of maintaining communication linkages, or alternatively, the amount of linkages which would need to be dropped by a deconcentrating firm in order to reduce costs to a point where they equalled savings. While the implications of this information are the subject of Section 5 of this study, it is worth pointing out here that:

1. As a description of the overall data, the minimum average core/suburban rent difference necessary to justify a move in terms of the relationship between only communication costs and rent savings for the three centres is: (percent increase over existing downtown/suburban rent difference in brackets)\(^{58}\)

\(^{58}\)(The existing downtown/suburban rent difference is $2.50 p.f.s. and the existing midtown/suburban rent difference is 506 p.s.f.)
FIGURE 4-1
NET COST OF A MOVE TO SCARBOROUGH TOWN CENTER PER EMPLOYEE BY TYPE OF FIRM

1 CENTER "A"—SCARBOROUGH TOWN CENTER UNDER MASS TRANSIT TRAVEL TIME ASSUMPTIONS (INCLUDING DEVELOPMENT OF A "LIGHT RAPID TRANSIT" LINE).

* STRUCTURE OF DOWNTOWN FACE-TO-FACE COMMUNICATION PATTERNS BASED ON THE AVERAGE OF THE OTHER FUNCTIONAL TYPES (INCLUDING THE REMAINING NINE FUNCTIONAL TYPES WITH A COST PER EMPLOYEE GREATER THAN $3,000.)
Center A -- $19.63 p.s.f. (685%)
Center B -- $12.12 p.s.f. (385%)
Center C -- $20.33 p.s.f. (713%)
Center C' -- $26.62 p.s.f. (965%)

2. Significant to the effect of the containment strategy, the minimum core/suburban rent difference necessary to induce a move to each of the three sub-centers, by affirm of the most mobile functional type is:

   Center A -- $5.73
   Center B -- $4.14
   Center C -- $5.88
   Center C' -- $7.22

Conclusions

From this analysis of costs and benefits, communications costs appear to be of major importance for all the office functions in the core. Even if the likely other net locational advantages of the core agglomeration are ignored, the costs to the firm of maintaining their contact linkages after a move to any of the three proposed office sub-centers in Toronto are more than sufficient to overcome the rent savings which would accrue. On the average, the difference in downtown to suburban rents would have to be greatly increased in order to compensate for the communication damage and the midtown to suburban rent difference would have to experience still larger increases.

Of particular significance to the strategy of containment is the indication that, for firms displaying the least demand for communications linkages, these links are of sufficient importance by themselves to make a suburban move unwarranted. Of course, in this analysis we are dealing with average firms and in the very lowest ranks of those functional types
with relatively low communications demand and high space consumption, such as life insurance and diversified engineering consultants, there are undoubtedly some firms or divisions where rent savings could exceed the costs of communications damage, especially if they are located in the Yonge-Finch-Sheppard area. However, it is probable that the many other advantages to the firm of the core agglomeration plus normal locational inertia would deter such a move. These data lends little support to the view that meaningful deconcentration can be generated without inducing significant contracts between the core and suburban rent levels.
5. IMPLIED COSTS TO THE CORE AREA OFFICE COMMUNITY OF A DECENTRALIZATION STRATEGY BASED ON CONTAINMENT

The strategy of core containment proposed by the City of Toronto relies upon rent increases in the core to induce a portion of existing and anticipated office activity to relocate. Yet, virtually no research was undertaken to determine what levels of core/suburban rent differences would be necessary to induce various levels of decentralization. In addition, there appears to be an absence in the planning research of serious concern for the inequity of using rent levies as a form of negative tax inducement, or the regressive nature of these levies. While it is not possible to estimate the total costs to the core and the precise extent of the inequity, the calculations that were undertaken in Section 4 of this study provide a basis for estimating what minimum costs would be involved.

Thus, this section has the following four objectives:

1. Estimating the minimum levels of core/suburban rent differences required to induce varying levels of decentralization.

2. Estimating the minimum total costs to occupants of core office space and indirectly the general public of Toronto and elsewhere.

3. Estimating probable trends in the minimum rent levels necessary to induce decentralization and the implications of these trends to policy.

4. Assessing this office containment strategy in terms of equity.

It should be reemphasized that the ensuing measures of cost to the core represent probable minimum annual levels. These are viewed as minimal for a variety of reasons. Of particular significance is the fact that the communications measures utilized in the analysis are only concerned with quantity (and a portion of that), and not the quality of the
information exchanged. Inevitably an early decentralizing firm would have to forego some portion of its contact linkages for logistical purposes. The ensuing loss of information which, on occasion, could be of immense importance to the firm, would, it is suggested, be far more costly than the aggregate costs of travel accruing to the firm. For most firms dealing in areas of moderate to high uncertainty even very sizable increases in core/suburban rent differences would not justify the reduced probability of encountering information of potentially great value to the firm.

As well, the measures of linkages are not a total measure of information exchange occurring in the core in that they do not consider the informal and often afterhours exchange of information which can occur in a social context. In addition, the measures of the cost to the firm of decentralization have, of necessity, ignored the sundry other agglomeration advantages which a firm would have to forego, as well as related factors such as prestige and the costs of disruption involved in a long-range move. The net effect, of course, is that a firm may well be prepared to absorb rent levels in excess of those indicated in the ensuing tables, and thus imply even greater aggregate costs to the overall office community and indirectly the general public. Moreover, the surprising resistance of the London office community to relocation in the face of core/suburban rent differences soaring far above what is indicated in the following pages as necessary to induce significant decentralization in Toronto also suggests that the measured costs to the core of Toronto are probably low (see Table 5-1).

In undertaking the calculations, where uncertainty existed as to size of variables (such as, for example, the quantity of core area floor
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<tbody>
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<td>Banking Area</td>
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<td>2.00-3.00</td>
<td>4.25-5.00</td>
<td>9.00-14.00</td>
<td>18.00-22.00</td>
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<tr>
<td>Insurance Area</td>
<td>1.25-2.00</td>
<td>2.00-3.00</td>
<td>3.50-4.50</td>
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<td>16.00-18.00</td>
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<table>
<thead>
<tr>
<th>SUBURBAN RENTS</th>
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</thead>
<tbody>
<tr>
<td>Croydon</td>
<td>0.62-0.75</td>
<td>1.25-1.50</td>
<td>1.12-1.62</td>
<td>2.12- 3.00</td>
<td>3.40- 6.00</td>
</tr>
<tr>
<td>Ealing</td>
<td>0.62-0.75</td>
<td>1.00-1.25</td>
<td>1.00-1.50</td>
<td>2.00</td>
<td>2.50- 3.00</td>
</tr>
</tbody>
</table>

space), an effort was made to err on the conservative side and thus tend to reduce the resulting cost to the core figures.

The Minimum Levels of Core/Suburban Rent Differences Necessary to Induce Varying Levels of Decentralization

The accompanying figures and tables present the results of calculating the minimum necessary rent differences needed to induce various levels of office employment to Scarborough Town Center, (which falls on the mean of the proposed centers, using several firm size and floor space assumptions.)

As can be seen from Figure 5-1 and Table 5-2, which represent an analysis of the minimum rent differences, it would not be economically justified for any of the functional types to move to Scarborough Town Center until the downtown-suburban rent difference increased by 1.3 times to $5.73 per square foot. For the midtown area, this increase would have to be considerably greater. Further data based on other assumptions is contained in Tables C-1 to C-4 in Appendix C.

Moreover, at a minimum, the diversion of the second, third and fourth functional types would require respectively, increasing the difference by 1.92, 2.72 and 2.86 times to levels of $7.29, $9.30 and $9.64 per square foot. If one makes the doubtful assumption that suburban rents will stay constant, the rents in the downtown would need to be artificially raised by a minimum of 31% to compensate for what is probably a low measure of communications damage. As well, the midtown rents would

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59 Of course, these tables are only realistic for the lower end of the spectrum, and have not been calculated further than a hypothetical displacement of 75%. As more functions are removed, the communications damage would be reduced by increased suburban interaction.

60 Available on request.
**Figure 5-1**

**Minimum Increase in Rent Difference Required for Displacement of Downtown Office Employment to Scarborough Town Center**

1 Assuming existing downtown-suburban rent difference of $2.50 cited in A.E. Lepage Ltd. Real Estate Market Research Survey: Toronto, 1976, p. 11.

Center "A"—Scarborough Town Center under mass transit travel time assumptions including development of a "Light Rapid Transit" line and Case One assumptions as noted on Table 5-2.

* Structure of downtown face-to-face communication patterns based on the average of the other functional types including the remaining nine functional types which are not diverted prior to a downtown-suburban rent difference of $20.00 necessary to divert at least 75% of the total office employment from the downtown.
### Table 5-2

**The Relationship Between Downtown/Suburban Rent Differences and the Diversion of Office Employment from Downtown to Scarborough Town Center**

<table>
<thead>
<tr>
<th>Type of Firm</th>
<th>Minimum Downtown/Suburban Rent Differences$</th>
<th>Minimum % Increase in Downtown Rent</th>
<th>Downtown Office Employment Type of Firm</th>
<th>Cumulative</th>
<th>Percent Diverted$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Insurance</td>
<td>5.73</td>
<td>129.4</td>
<td>30.8</td>
<td>10,254</td>
<td>10,254</td>
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<tr>
<td>Div. Eng. Consult.</td>
<td>7.29</td>
<td>191.6</td>
<td>45.6</td>
<td>1,174</td>
<td>11,428</td>
</tr>
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<td>Int. Oil Comp.</td>
<td>9.30</td>
<td>271.9</td>
<td>64.3</td>
<td>3,230</td>
<td>14,658</td>
</tr>
<tr>
<td>Manufact., Head</td>
<td>9.64</td>
<td>285.6</td>
<td>68.0</td>
<td>6,965</td>
<td>21,623</td>
</tr>
<tr>
<td>Cons. &amp; Bus. Fin.*</td>
<td>10.73</td>
<td>329.4</td>
<td>78.4</td>
<td>788</td>
<td>22,411</td>
</tr>
<tr>
<td>Manufact., Branch*</td>
<td>10.75</td>
<td>330.1</td>
<td>78.6</td>
<td>1,041</td>
<td>23,452</td>
</tr>
<tr>
<td>Town Planners</td>
<td>10.75</td>
<td>330.1</td>
<td>78.6</td>
<td>69</td>
<td>23,521</td>
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<tr>
<td>Market Research</td>
<td>11.03</td>
<td>341.0</td>
<td>81.2</td>
<td>312</td>
<td>23,833</td>
</tr>
<tr>
<td>General Insurance</td>
<td>11.20</td>
<td>348.2</td>
<td>82.9</td>
<td>4,540</td>
<td>28,373</td>
</tr>
<tr>
<td>Banks*</td>
<td>11.54</td>
<td>361.6</td>
<td>86.1</td>
<td>8,557</td>
<td>36,930</td>
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<tr>
<td>Accountants</td>
<td>12.89</td>
<td>415.7</td>
<td>99.0</td>
<td>1,053</td>
<td>37,983</td>
</tr>
<tr>
<td>Insurance Ag.*</td>
<td>13.58</td>
<td>443.1</td>
<td>105.5</td>
<td>2,458</td>
<td>40,441</td>
</tr>
<tr>
<td>Business Assoc.*</td>
<td>13.81</td>
<td>452.4</td>
<td>107.7</td>
<td>1,422</td>
<td>41,863</td>
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<tr>
<td>Architects</td>
<td>13.90</td>
<td>456.2</td>
<td>108.6</td>
<td>1,022</td>
<td>42,885</td>
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<tr>
<td>Trust Companies</td>
<td>13.99</td>
<td>459.8</td>
<td>109.5</td>
<td>2,802</td>
<td>45,687</td>
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<tr>
<td>Business Finance</td>
<td>14.45</td>
<td>478.0</td>
<td>113.8</td>
<td>445</td>
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<td>Const. Eng. Consilt.</td>
<td>15.02</td>
<td>500.9</td>
<td>119.3</td>
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<td>Actuary Consult.*</td>
<td>15.41</td>
<td>516.5</td>
<td>123.0</td>
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<td>47,364</td>
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<tr>
<td>Civic Assoc.*</td>
<td>15.93</td>
<td>537.4</td>
<td>127.9</td>
<td>2,441</td>
<td>49,805</td>
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<tr>
<td>Customs Brokers*</td>
<td>19.93</td>
<td>697.1</td>
<td>166.0</td>
<td>932</td>
<td>50,737</td>
</tr>
<tr>
<td>Invest. Dealers</td>
<td>20.09</td>
<td>703.6</td>
<td>167.5</td>
<td>6,721</td>
<td>57,458</td>
</tr>
</tbody>
</table>

1. Case One - Calculations based on 'Model' establishment data and on FSR of 155 net rentable square feet per employee and assuming a 25% increase in the net FSR with a move to the suburbs. Center "A" - Scarborough Town Center under mass transit travel time assumptions (including development of a "light rapid transit" line).

2. Necessary to economically justify move to suburbs.

3. Assuming $2.50 existing dichotomy between downtown and suburban rents. The corresponding minimum per cent increase in the midtown-suburban rent dichotomy necessary to economically justify a move to the suburbs would be considerably greater because of the lower rent dichotomy with the suburbs than that of the downtown.

4. Assuming suburban rent remains constant at an average of $8.00 per square foot (from A.E. LePage, Real Estate Market Survey: Toronto, 1976, p. 11).


6. Taken as a per cent of the total cumulative office employment of 74,026 for 30 sampled 'Central Corridor' functional types in G. Gad's office enumeration. This sample is taken to be representative of Toronto's downtown office community.

* Structure of downtown face-to-face office communication patterns based on the average of the other functional types, (including the remaining 9 functional types which are not diverted prior to the downtown-suburban rent dichotomy of $20.00 necessary to divert at least 75% of the total office employment from the downtown).
need to increase at a much higher rate. If supply was to meet the mean 1985 projected demand for office space, to maintain what the City has suggested is the optimal size for the core (see Section 6 below), it would necessitate the redirection of between 18% and 19% of the mean total projected 1985 Central Area office floor space. Even if this level of diversion was not enforced during the next decade, at least this level would be necessary in the following periods if the core is to be restricted by the transportation limits defined by the City. If the City were to attain this objective, considering the value of information exchange alone, the minimum necessary core/suburban rent difference required to attain its ends would be at least $7.30 per square foot.

**Estimated Minimum Costs to Occupants of Core Office Space**

It has been traditional in planning to concentrate attention on such public things as road costs and servicing costs that can be affected by planning. For example, land use controls may generate some savings in servicing and other costs, but may also generate significant increases in land and housing costs.

What will the planned increase in core/suburban rent differences mean to the broader urban economy? When these increases are expressed in

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61 See Figure B1.3, "Central Area Office Space Requirement and Proposed Office Space Capacities", Central Area Plan Review, Part I: General Plan Proposals (Toronto: City of Toronto Planning Board, 1975), p. B1-89. The mean 1985 demand of 77.1 million square feet is calculated from the High and Low Projections of 83.1 and 71.1 million square feet, respectively; the maximum anticipated under the Official Plan is 63.0 million square feet, which requires that if the diversion of the excess up to the mean takes place, 14.1 million square feet, or approximately 22.3% of the floor space expected to be built in 1985, (or 18.2% of the mean of 77.1 million square feet) must be diverted.
per square foot terms, they may seem rather minor but when applied, as they must be, over the entire floor space of central Toronto, they assume very different proportions. When examined in this way, the magnitude of the probable costs of the containment strategy become apparent and troubling.

In Figure 5-2 and Table 5-3 can be seen an example of the minimum per annum costs which can be expected to accrue to occupants of core office space and indirectly the public, as a consequence of raising rent differences by a containment strategy sufficient to induce moves to Scarborough Town Center. Data for the cost implications of induced moves to other centers are presented in Tables C-5 to C-7 in Appendix C.

The variables were calculated in the following manner. The central core (south of Davenport) was divided into two sections, the downtown and the midtown. A.E. LePage statistics, which are based on comparable buildings, were assumed. These indicate rent levels of $10.50 for the downtown and $8.00 for the suburbs. Since the costs to the core computed in this section only includes the central core as defined by the City of Toronto, which roughly approximates Metropolitan Toronto's "Inner Core Employment Study Area", the A.E. LePage office rental rates for the broader midtown area of $8.50 were adjusted upwards to $9.00. The average rates in the Bloor-Yonge-Bay area of the midtown are slightly higher than exists in the northern extremities of this sector, such as the Yonge-St. Clair and Yonge-Eglinton areas. Thus, a downtown/suburban rent difference of $2.50 and a midtown/suburban rent difference of $1.00 were assumed. From these existing differences and the calculated ranges of minimum differences needed to justify a move for various functional types, it was possible to derive what rent increases in the core would
FIGURE 5-2

RANGE OF MINIMUM AGGREGATE COSTS TO
TORONTO'S CENTRAL CORE OFFICE COMMUNITY
OF INDUCED DECONCENTRATION TO
SCARBOROUGH TOWN CENTER

1 Center "A"—Scarborough Town Center under mass transit travel time
assumptions (including development of a "Light Rapid Transit" line).
### Table 5-3
**Additional Annual Costs to the Core Area of the Minimum Induced Rent Dichotomies Necessary to Displace Various Proportions of Core Area Office Employment, for Case One and Center A**

<table>
<thead>
<tr>
<th>'Model' Establishment Type</th>
<th>Percent of Downtown Office Employment Diverted</th>
<th>Minimum Downtown Suburban Rent Increase</th>
<th>Minimum Increase in Midtown Rent</th>
<th>Total Additional Annual Rental Cost to Downtown ($ x million)</th>
<th>Total Additional Annual Rental Cost to Midtown ($ x million)</th>
<th>Total Additional Annual Rental Cost to Core Area ($ x million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Insurance</td>
<td>13.9</td>
<td>5.73</td>
<td>3.23</td>
<td>107.02</td>
<td>38.86</td>
<td>145.88</td>
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<td>Div. Eng. Consult.</td>
<td>15.4</td>
<td>7.29</td>
<td>4.79</td>
<td>158.70</td>
<td>51.67</td>
<td>210.37</td>
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<td>Int. Oil Comp.</td>
<td>19.8</td>
<td>9.30</td>
<td>6.80</td>
<td>225.30</td>
<td>68.18</td>
<td>303.48</td>
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<tr>
<td>Manufact., Head</td>
<td>29.2</td>
<td>9.64</td>
<td>8.64</td>
<td>236.57</td>
<td>70.98</td>
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<td>Cons. &amp; Bus. Fin.*</td>
<td>30.3</td>
<td>10.73</td>
<td>8.23</td>
<td>272.68</td>
<td>79.93</td>
<td>352.61</td>
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<tr>
<td>Manufact., Branch*</td>
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<td>8.25</td>
<td>273.34</td>
<td>80.10</td>
<td>353.44</td>
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<td>General Insurance</td>
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<td>8.73</td>
<td>289.25</td>
<td>83.79</td>
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<tr>
<td>Banks*</td>
<td>49.9</td>
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<td>58.0</td>
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<td>380.69</td>
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<td>Business Finance</td>
<td>62.3</td>
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<td>Actuary Consult.*</td>
<td>64.0</td>
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<td>427.74</td>
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<td>Civic Assoc.*</td>
<td>67.3</td>
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<td>Customs Brokers*</td>
<td>68.5</td>
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<td>155.50</td>
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<td>Invest. Dealers</td>
<td>77.6</td>
<td>20.09</td>
<td>17.59</td>
<td>582.00</td>
<td>196.82</td>
<td>778.82</td>
</tr>
</tbody>
</table>

1. Case One - Calculations based on 'Model' establishment data and on FSR of 155 net rentable square feet per employee and assuming a 25% increase in the net FSR with a move to the suburbs.

Center "A" - Scarborough Town Center under mass transit travel time assumptions (including development of a Light Rapid Transit line).

2. Taken as a per cent of the total cumulative office employment of 74,026 for 30 sampled 'Central Corridor' functional types in G. Gad, Central Toronto Offices: Observations on Location Patterns and Linkages (Toronto: City of Toronto Planning Board, 1975), p. 17. This sample is taken to be representative of Toronto's Core Area office community.

3. Necessary to economically justify a move to the suburbs.


5. Midtown is taken as the A.E. LePage Bloor-Davenport office district. A rent level of $9.00 per square foot has been assumed based on the over-all average of $8.50 of the three A.E. LePage Midtown districts (Bloor-Davenport, St. Clair and Davisville/Eglinton) cited in A.E. LePage Real Estate Market Survey: Toronto, 1976, p. 11.

6. Additional rent based on floor space in existing office buildings and those under construction and committed.

* Structure of downtown face-to-face office communication patterns based on the average of the other functional types, (including the remaining 9 functional types which are not diverted prior to the downtown-suburban rent dichotomy of 50.00 necessary to divert at least 75% of the total office employment from the downtown).
be required to displace a particular functional type. For example, if a firm required a rent spread of $6.00 to justify a move, the rent, if the firm was downtown, would have to increase by ($6.00 - $2.50) or $3.50 and if located in the midtown area by ($6.00 - $1.00) or $5.00. A rank ordering of additional rent increases for the downtown and midtown areas could then be formed.

Using A.E. LePage data for existing net rentable floor space for downtown areas and the Bloor-Davenport portion of the midtown, and Metropolitan Toronto Planning Board data on floor space under construction and committed, a projected 1981 net rentable floor space of 33,125,000 and 8,215,000 for the downtown and midtown areas respectively was derived (see Table 5-4). It was thus possible to calculate a realistic cost to the core of the rent increases necessary to displace various proportions of the core area agglomeration. It is important to note that these figures for the aggregate net rentable floor space in the core of Toronto, over which necessary rental increases must be applied, is a more conservative figure than that calculated by the City of Toronto. If the City of Toronto's figures are used, the cost to the core becomes much higher. (By way of illustration, Table C-9 in Appendix C has been calculated using these higher floor space figures.) However, in this analysis, the lower figures have been used.

As is illustrated in Figure 5-2, the mean cost which the occupants of core office space would have to assume if the City were to be successful in diverting between 20% and 25% of projected core area demand to the average proposed sub-center (Scarborough) is approximately $250,000,000 per annum. Moreover, this is the mean of the calculations using a variety
### TABLE 5-4

1981 PROJECTED OFFICE SPACE

(EXISTING, UNDER CONSTRUCTION, AND APPROVED BUT NOT UNDER CONSTRUCTION IN TORONTO CORE AREA, DECEMBER 31, 1975)

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<td>748,000</td>
<td></td>
<td>2,755,500</td>
</tr>
<tr>
<td>City Hall</td>
<td>984,000</td>
<td>1,129,000</td>
<td></td>
<td>2,113,000</td>
</tr>
<tr>
<td>Queens Park (South)</td>
<td>206,000</td>
<td>-</td>
<td></td>
<td>206,000</td>
</tr>
<tr>
<td>Downtown</td>
<td>26,710,000</td>
<td>3,197,500</td>
<td>3,225,000</td>
<td>33,132,500</td>
</tr>
<tr>
<td>Bloor</td>
<td>245,500</td>
<td>1,075,000</td>
<td></td>
<td>1,320,500</td>
</tr>
<tr>
<td>Midtown</td>
<td>6,894,500</td>
<td>245,500</td>
<td>1,075,000</td>
<td>8,215,000</td>
</tr>
</tbody>
</table>

1. Midtown is taken as the A.E. LePage Bloor-Davenport office district.
4. Source: Metropolitan Toronto Planning Department mimeograph, "Office Space Approved, Not Under Construction, December 31, 1975".
of floor space ratios and firm size assumptions. It is possible, in fact, that the aggregate cost per annum could surpass $300,000,000 per year, especially if the additional costs to the decentralizing firms are considered in the equation, as they justifiably should. With even the most liberal of assumptions, this aggregate cost would surpass $180,000,000 per annum. Even with the limited objective of displacing the most mobile of the functional types, the expenditure involved would be over $140,000,000 per year.

Since the rent differences would have to be maintained over a number of years to have the effect of forcing out around a quarter of projected demand, the total costs to occupants of core office floor space could easily surpass one billion dollars.

Probable Trends in Rental Costs

Within this analysis of the requisite increases in rent within the core are two important variables: the relationship of rents in different parts of the City, and the remuneration of those involved in the exchange of information. Any rise in the latter relative to the former increases the necessary rent difference between the core and the suburbs. It is therefore worthwhile to examine the relationship between the wages of those engaged in communicating and the expenditure for rent.

As can be seen from Table 5-5, derived from the Report of the Superintendent of Insurance for Canada on Canadian life insurance companies headquartered in Toronto, rent as a proportion of head office employees' salaries and wages (not including benefits), for all firms constitutes only 15.4% and for the largest firms 13.9%. Moreover, head office rents constitute only 5.5% of total general operating expenses in all firms.
TABLE 5-5
HEAD OFFICE RENTS AS A PROPORTION OF EXPENDITURES FOR
CANADIAN LIFE INSURANCE COMPANIES HEADQUARTERED IN TORONTO

<table>
<thead>
<tr>
<th>Head Office Rents as a % of:</th>
<th>Total Expenditure on Head Office Employees' Salaries and Wages (benefits not included)</th>
<th>Total Company Expenditure on Employees' Salaries, Wages and Benefits</th>
<th>Total General Operating Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Firms</td>
<td>15.4%</td>
<td>6.4%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Firms With Over 20 Million Dollars in Total General Operating Expenses</td>
<td>13.9%</td>
<td></td>
<td>4.6%</td>
</tr>
</tbody>
</table>

Calculated from data contained in:
and 4.6% of this figure for the largest. Therefore, any percentage increase in both salaries and rents should disproportionately increase the value of the working time of the employees over the value accruing to rent. Thus, even with equal rates of increase in salaries and rent differences, the relative cost of decentralization for information-dependent firms is going to increase more rapidly than the prospective savings resulting from the rent difference.

Compounding this problem is the fact that salaries have been increasing at a more rapid rate than rents. In Table 5-6 it can be seen that between 1967 and 1976 middle management salaries have increased by 123% while rents have increased by 68%. This would indicate that in order to decentralize around a quarter of projected demand, the City would have to impose even more severe levies than the $250 million already indicated.

A second variable which could result in increased costs to the office community in the core, and in this case throughout Metropolitan Toronto (as well as the general public), is the possibility that increased rents in the core could diffuse to suburban locations. By raising the expectations of owners of suburban space, there could be a reduction in the size of core/suburban differences from those which would otherwise be expected.\(^{62}\) The result of course could be still more containing pressure, and still more costs to the city and beyond.

A further possibility exists which could increase the total costs

\(^{62}\)Plots of the movement of office rentals in London, its suburbs and the provincial cities of the southeast, midlands and northern Britain tend to support, although not prove, the hypothesis that office rental increases in the London core have induced a sympathetic reaction in the London suburbs.
TABLE 5-6

COMPARISON OF INCREASES IN MIDDLE MANAGEMENT SALARIES WITH INCREASES IN DOWNTOWN RENT LEVELS IN TORONTO 1961-1976

<table>
<thead>
<tr>
<th>Year</th>
<th>Middle Management Salary</th>
<th>Annual Per Cent Increase</th>
<th>Per Cent Salary Increase</th>
<th>Average Downtown Rent</th>
<th>Per Cent Rent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>9,254</td>
<td></td>
<td></td>
<td>5.50</td>
<td></td>
</tr>
<tr>
<td>1962</td>
<td>9,837</td>
<td></td>
<td></td>
<td>13.6</td>
<td></td>
</tr>
<tr>
<td>1963</td>
<td>10,683</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1964</td>
<td>11,506</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1965</td>
<td>12,438</td>
<td>6.3</td>
<td>34.7</td>
<td>6.25</td>
<td>10.00</td>
</tr>
<tr>
<td>1966</td>
<td>13,495</td>
<td>8.1</td>
<td>60.0</td>
<td></td>
<td>68.0</td>
</tr>
<tr>
<td>1967</td>
<td>14,386</td>
<td>8.5</td>
<td>122.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1968</td>
<td>15,436</td>
<td>6.6</td>
<td></td>
<td>10.50</td>
<td></td>
</tr>
<tr>
<td>1969</td>
<td>16,702</td>
<td>8.2</td>
<td>65.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>18,389</td>
<td>10.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1971</td>
<td>20,927</td>
<td>13.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>23,815</td>
<td>13.8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


2. Not including benefits and bonuses.

3. Increases for time period indicated.

4. Based on statistics of A.E. LePage Ltd.
to the core office community. If that point is reached where core rent levels justify a move by the most mobile firm, it may opt instead to direct all or part of its operations to less expensive space within the core area, and in doing so displace firms with less ability to relocate in the suburbs. That firm would in turn be justified in acquiring more expensive core area space and in making more efficient use of its space. The net result, of course, will be more pressure on rents and crowding within the core area.  

The Containment Strategy in Terms of Equity

Like most containment policies, restrictions on the supply of office space can be faulted on the grounds of equity. First of all, it works to the disadvantage of those who are renting space, particularly on short-term leases, and to the advantage of those who own sizable quantities of space in the core with a long-term renting potential. Secondly, the burden of increased rents are to be borne by every renter of core space, including those functions with no possibility at all of relocating. Thirdly, the levy is to be paid equally by firms with an unequal ability to pay. Fourthly, there is both theoretical justification and empirically-based evidence to indicate that smaller firms have a greater need for

63 Such rationalization has not been evident in London, on the other hand, there is some indication from Oslo that floor space ratios have been declining with rent increases. See "Growing Space Needs in the Urbanized Region", Proceedings of the Conference of the International Federation for Housing and Planning (Orebro, Sweden, 1965), p. 40.

64 With smaller buildings it could be argued that the increased rents would not compensate for the capital loss through possible decreases in land value resulting from downzoning.
agglomeration economies than larger firms which may dominate their field of endeavour. Yet, these small firms have to absorb the same additional rents as the larger firms, who may be in a position to absorb the burden of even very high induced rent increases.  

A fifth consideration relates to a firm's employees. If the induced core/suburban rent difference should induce some firms to move, the greatest disruption may actually accrue to the lower paid clerical staff of the firm. If one accepts most traditional theory, lower income workers would be more likely to have rationalized their journey to work. With relocation, the length of their journey to work may be lengthened to a greater extent than those of higher incomes and may necessitate a change of residence. Moreover, if major improvements in mass transit are not provided to the suburban sub-centers, these individuals may find it necessary to purchase and operate an automobile which they may be unwilling or unable to do.

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65 From Table 5-5 it would appear that in the aggregate the largest insurance companies spend a smaller proportion of their expenditure on head office rents and presumably would be willing to absorb greater rent increases.
6. DOES THE GENERATION OF A DECENTRALIZED OFFICE STRUCTURE RESULT IN A MORE EFFICIENT CITY?

The costs of the city's containment strategy are potentially large. Not only must those core area firms which rank near the bottom in their need for a location in the core area agglomeration absorb the costs of either the increased rent levels or the diseconomies of decentralization but the entire core office community must absorb similar costs. The city, in its argumentation over the impact of the plan has only considered the potential costs accruing to the firm which is decentralized to a suburban center and dismisses these costs as being more than compensated for by first of all a hypothesized increase in agglomeration economies within these centers and secondly by a short- and long-term increase in the productivity of the total system of offices in Toronto. Unfortunately, in doing so, they may be predating their plan on a misconception.

The city is arguing:

1. That both average and marginal costs decline, up to a point, with increases in agglomeration size and thereafter increase with the size of the agglomeration.

2. That the office agglomeration in the core of Toronto has reached a point where these average and marginal costs are increasing as that agglomeration increases in size;

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66 Productivity is defined as the amount produced by a factor of production in a given period of time or alternatively as the efficiency with which productive resources are used. In the case of the activities under consideration, these productive resources are primarily the "white collar" work force.


68 In the city's reasoning there can be no doubt that the assumption is made that Toronto has reached this point, and also that the core office community has reached, or is about to reach, the point where the
3. That the productivity of an agglomeration increases with increasing size, but that after a point the rate of increase in productivity progressively declines until a point is reached where there are no further increases in productivity with increases in agglomeration size;

4. That Toronto's core office agglomeration has reached a point where the rate of increase is declining or even approximates zero; 69

5. That firms locate according to levels of average costs and productivity, not marginal costs and productivity;

6. That if firms were diverted to a smaller center, while they may sacrifice some advantages because of the lower level of agglomeration economies in the small center, because the rate of productivity increase is greater in the smaller center, the net gain (after a point) in overall productivity would be greater than the loss to the firm, and thus the efficiency of the total system would have benefited both in the short-term and the long-term.

This logic is utilized as a conceptual foundation of the city's Plan, with its immense implications for the structure, economy, and social welfare for the entire Toronto region and beyond and, as such, demands careful scrutiny.

Costs in Relation to Agglomeration Size

It is apparent that the city has made the assumption that the office agglomeration in the core of Toronto has now reached a size where costs are increasing with growth of the agglomeration. Thus, the city is arguing that the core of Toronto has reached a size greater than the Point Pa, in Figure 6-1, and that therefore any further growth would result in increments in the average cost.

There is no evidence, however, to indicate that Toronto's core office community has even reached this point. First of all, the calculations of an average cost curve for an agglomeration is a notoriously difficult rate of productivity increase is declining or has reached zero. If these assumptions were not made by the city, their argument would not be a justification for the plan, which it is clearly intended to be.

69 Ibid.
FIGURE 6-1
COST AND PRODUCT CURVES WITH AGGLOMERATION SIZE

task. To be accurate, the calculations must involve not only the
determination of municipal costs, such as those accruing to infra-
structure and municipal operations but also producers' and consumers' 
costs. Most research has been undertaken on the relationship (often 
ill defined) between municipal costs and agglomeration size and 
relatively little on producers' and consumers' costs, but even dealing 
with the municipal cost relationship there is difficulty in determining, 
for example, what are costs and how they should be allocated. Even the 
assumption that congestion necessarily increases with agglomeration size 
is subject to some question, because in certain circumstances an increase 
in the size and density of an agglomeration may result in significant 
changes in the modal split towards increased use of mass-transit which 
in turn may result in less road congestion and less negative effects on 
surrounding neighbourhoods and reduced total costs.

Even in considering the relatively simple relationship of agglomeration 
size with municipal costs, there is no clear evidence that an office 
agglomeration the size of the one in Toronto's core has reached a point 
where average costs are rising with growth. For example, an analysis of 
the equally large core of Boston by the respected Boston Municipal Research 
Bureau concluded "that the cost of providing municipal services to 
commercial areas generally declined as density increased"\textsuperscript{70} and, of 
course, density is normally correlated with agglomeration size. Moreover, 
in Toronto, there is some serious question that, even in regard to the 
transportation cost component of municipal costs, the decentralization 

\textsuperscript{70} Boston Municipal Research Bureau, \textit{The Effect of High Density 
Development on Municipal Finances in the City of Boston} (Boston, 1974).
of the marginal increase in the core agglomeration would result in lower
municipal costs. As can be seen from Table 6-1, according to the
Metropolitan Toronto Transportation Plan Review calculations, the annual
public cost of the centralized alternative actually tends to be less
than is the case with the dispersed and multi-centered alternatives.

In terms of total annual public cost, the two preferred decentralizing
alternatives, the "multi-center" strategy and the "Metro-dispersion"
strategy, involve 73 and 130 million dollars more annual public expenditure
than does the centralized alternative.71

There is scant research on producers' and consumers' costs in
relationship to city size, let alone C.B.D. size and what does exist does
not support the argument of increasing costs with agglomeration size.
Morse, for example, found no substantial variation (and possibly a
small decline) in producers' costs between very small cities and large
cities in India, and Alonso and Fajans discovered no decline in consumers'
costs with increasing size.72

Unfortunately, there is little evidence to support the view that
Toronto's core area or any core of equivalent size has even passed the

71 These higher costs in Toronto may be attributed to the provisioning
of intensified transit facilities in the suburbs in the ambitious attempt
to modify the virtually inevitable change in modal split towards the
automobile, upon decentralization of employment. This should also be
considered in terms of a relative decline in tax revenue from commercial
office structures which would emanate from a restriction on new offices
in the core without compensatory office growth in other areas. It is not
at all certain that, while core office space is being highly restricted,
there would be equivalent construction in regional sub-centers.

72 W. Alonso and M. Fajans, "Cost of Living and Income by Urban
Size, Working Paper No. 128, Center for Planning and Development
Research, University of California (Berkeley, 1970). For a summary of
related research on costs in relationship to agglomeration size, see
William Alonso, "The Economics of Urban Size", Papers of the Regional
<table>
<thead>
<tr>
<th>Land-Use Classification</th>
<th>Preferred Combination</th>
<th>Transit Operating Costs*</th>
<th>Transit Revenue*</th>
<th>Equivalent Annual Operating Cost*</th>
<th>Road Public Operating Cost*</th>
<th>Road Tax at 20%</th>
<th>Roads Equivalent Annual Capital Cost*</th>
<th>Transit Total Annual Cost* (Operating &amp; Capital)</th>
<th>Roads Total Public Annual Cost* (Operating &amp; Capital)</th>
<th>Total System Annual Public Cost*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralization</td>
<td>M3</td>
<td>438</td>
<td>399</td>
<td>213</td>
<td>236</td>
<td>249</td>
<td>84</td>
<td>252</td>
<td>71</td>
<td>323</td>
</tr>
<tr>
<td>Multi-Center</td>
<td>D3</td>
<td>518</td>
<td>447</td>
<td>238</td>
<td>231</td>
<td>228</td>
<td>84</td>
<td>309</td>
<td>87</td>
<td>396</td>
</tr>
<tr>
<td>Metro-Dispersion</td>
<td>C3</td>
<td>528</td>
<td>374</td>
<td>237</td>
<td>240</td>
<td>262</td>
<td>84</td>
<td>391</td>
<td>62</td>
<td>453</td>
</tr>
</tbody>
</table>

KEY: M3 (Centralized), D3 (Multi-centered), C3 (Dispersed).

*$ Million (1974)

point where average costs begin to increase with growth in the agglomeration. However, even if it has, it would mean little, for viewing the desirability of continued growth of an agglomeration solely in terms of minimizing costs, whether to the municipality or some perceived totality, is logically inadequate in its own terms, and can only attempt to be meaningful if considered in concert with the relation between productivity and the size of an agglomeration. Even if the costs of a centralized alternative were greater than for the decentralized one, these additional costs could be more than compensated for by the higher productivity of a larger agglomeration.

The Relationship of Productivity to Agglomeration Size

A more reasonable proposition than determining whether an agglomeration is "too big", in terms of some sort of cost minimization measure, is to determine the difference between the average costs and the average productivity (see Fig. 6-1). From the viewpoint of the inhabitants of the city, a more rational optimum is the point where the rate of increase of AP and AC is equal which, to the extent that average productivity increases with agglomeration size, means that the optimal size must be greater than that of the minimum costs. Moreover, there is little evidence to even indicate that this point is smaller than the largest agglomeration yet existing in the world.

In Figure 6-1 the average productivity curve is shown rising monotonically because, as William Alonso, one of the world's most eminent urban economists and planners, states: "This is what most of the empirical evidence suggests".

However, it can be argued, as the city has done, that the productivity curve may stop rising and reach a point where further increases
in the size of the agglomeration will result in no further increases in the benefits of agglomeration and will basically follow the pattern plotted in Figure 6-2. While this hypothesized decrease in the rate at which productivity increases with the size of an agglomeration is a highly contentious one, which within the range of existing world cities, is questioned not only by Alonso but also by other eminent urban and regional economists of the stature of Harry W. Richardson. 73

Even if one accepts the city's premise that the rate of increase in productivity begins to decline after a point and eventually reaches a position where there is zero increment with further growth, and not only assumes that this occurs within the size range of office agglomerations existing in the world today, but makes the extremely tenuous assumption that Toronto's core has reached that point, one is still left with some disconcerting problems. Among other things, the acceptance of the hypothesis that Toronto's core is near that size where productivity ceases to increase with further growth (Point "A" in Fig. 6-2), has startling implications for other cities which have larger Central Business Districts than does Toronto.

The amount of office space in the Manhattan C.B.D. (south of Central Park) surpassed that presently existing in the core area of Toronto in the 1890's. 74 The quantity in the core of Chicago became greater than


FIGURE 6-2
HYPOTHESIS OF TORONTO CENTRAL AREA PLAN REGARDING SYSTEM PRODUCTIVITY OF OFFICE COMMUNITY

a Position of Toronto Core office community as suggested by The Central Area Plan studies
b Position of proposed subcenters as suggested by The Central Area Plan studies
that in Toronto's core around 1930. Even in a tiny square mile of the
historic City of London in 1939 there was considerably more office space
than exists in Toronto's core area today. If Toronto's central office
community is at that point where further increases in size yields no
additional agglomeration economies, it means that all growth in all centers
larger than Toronto's core added nothing to make those centers more
attractive as office locations. Thus, one could then assume, for example,
that any gross floor space existing in Manhattan's C.B.D. in excess of
what is in the core area of Toronto adds nothing to the average productivity
of that area and, in effect, its attractiveness as a financial or other
center. Thus, one could demolish 88% of the offices in Manhattan, and
presumably remove approximately 88% of the functions which are there, and
it would still be as attractive a center for quaternary activities as it
was! In Chicago you could reduce the size of the loop by over 52% with
the same negligible effect.

If central London should ever suffer the horror of strategic
bombing again, by Toronto's logic, at least it does not need to concern
itself about the effect of the devastation on the average productivity
of its office community for 83.6% of its gross office floor space could
be reduced to rubble without any loss in average productivity. Moreover,
if one assumes that average costs for these large centers are greater
than those in the relatively small office core of Toronto, any financial
or other office function which located in London or New York since the
latter part of the Nineteenth Century, and after the existence of alternative
office communities of the size of Toronto's, was behaving irrationally for,
by definition, average productivity could be no higher than Toronto's
and average costs must be higher. This is highly unlikely.
A second minor problem in the theory on which the City Planning Department is predicated its new official plan is the following: the city is arguing that if it diverts an office function to a smaller center from the core agglomeration—where the benefits of its presence to the agglomeration is approaching zero—it is justified because, while the firm being displaced loses in going to the center where average productivity is less, the gains to the smaller agglomeration are greater than the firm's losses. In making such an argument one must make the assumption that the new firm being decentralized has the same demands for agglomeration economies as those which are already located in the smaller center. But, almost by definition, those firms which locate outside the large center have less demand for agglomeration economies than those which do not. Moreover, any attempt to displace functions from the core is going to first affect those with relatively less demand than those affected later.

Thus, those firms being uprooted from the core would have greater demand for agglomeration economies than those which are already in an outlying area and therefore those firms decentralizing later would experience disproportionately greater costs and not improve the agglomeration economies in the sub-center to a degree disproportionately less than would be expected. For example, to take an extreme case, if the city uproots a financial house operating in some fickle market or other and forces it to relocate in a office sub-center dominated by dental offices, inventory control departments, and keypunch operations, the financial house would probably go bankrupt and the net gain to the existing office functions in the sub-center would be negligible.

However, even if one overlooks these problems, the logic of the city's argument that they are improving average productivity and presumably
efficiency (and an argument on which they predicated so much) is logically insufficient in its own terms.

The Impact of Planned Decentralization on Total Systems Efficiency

In its fundamentals, the argument that planned decentralization results in greater short- and long-term increases in efficiency is as follows: where average productivity follows an S curve (such as in Fig. 6-2) and a large central agglomeration is at a point where further increments in size result in no additional agglomeration economies to those activities already in the center, it is worthwhile in terms of total systems efficiency to divert activities to a smaller center where the rate of increase in average productivity is greater with increases in the size of the agglomeration. But, because the average productivity is higher in the larger center, individual firms in attempting to maximize the return to the firm, continue to locate in the larger center, resulting in a distribution which is less efficient in total systems terms than if the firm located in the smaller center. Therefore, if the marginal firm had located in the smaller center, the interests of the individual firm would have suffered only in the short-term, whereas the efficiency of the total system would have increased in both the short- and the long-term.

The logic of the argument errs, however, in only summing the benefits to smaller agglomeration and not summing the costs to the firms which have been induced to locate in that center. Addition to a sub-center is, of course, going to increase, to some extent, the agglomeration economies of the center, but equally important, since each firm locating in the smaller center has had, by definition, to locate in a center with lower average productivity and thereby has had to forego some agglomeration
economies, it is logically mandatory that this loss be summed as well. Moreover, since the rate at which changes in agglomeration economies occur with growth in agglomeration size is, with office activity, a function of the level of information exchange, and particularly, a function of face-to-face interaction, it would be necessary to evaluate changes in total systems efficiency in terms of the interaction level which does exist in Toronto's core office community.

**Methodology**

In deriving an aggregate and more accurate view of the total systems efficiency of the Toronto office community with forced decentralization, the following methodology was adopted:

1. It was assumed that variations in productivity in quaternary office activity among office agglomerations of differing size is a function of information exchange, as reflected in the frequency of face-to-face contacts.\(^{75}\)

2. A hypothetical office sub-community in Toronto was taken as the basis of analysis. The number of firms in this office sub-community comprises 1% of the total number of firms within the central corridor of Toronto, (50) and each firm has the average number of weekly face-to-face meetings for all office functions in the Central Toronto office community, (243).\(^{76}\) Also, it was assumed that each firm's face-to-face contacts were distributed equally among all other firms in the sub-community.

3. It was assumed that this sub-community would expand incrementally over time to eventually double in size to a total of 100 firms.

4. It was assumed that this increment would be diverted to, in one case, one new office center and in a second, to three

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\(^{75}\)There are other variables which are components of agglomeration economies, such as the facility of paper movements, but it is generally viewed that face-to-face information exchange is the crucial variable.

\(^{76}\)These figures are from G. Gad, Central Toronto Offices, Observations on Location Patterns and Linkages (Toronto: City of Toronto Planning Board, 1975).
new office centers. In turn, the following were calculated for the case of decentralization to one center and the case of decentralization to three centers.

5. The number of links which would be unfulfilled in the new office center for each marginal firm subjected to forced decentralization; the amount by which each decentralizing firm filled the linkage demand existing in the new office center; the net quantity of linkage demand unfulfilled, with each increment in the size of the office community; the net change in unfulfilled linkages in the system; the total demand for information linkages in the total (in both the existing core and the new center) system; the ratio of unfulfilled linkages to total demand; and the degree to which the new distribution satisfies the demand for links, or the per cent reduction in total systems productivity if one assumes no variation in average productivity independent of agglomeration economies.

Results

The City is correct in assuming that with the decentralization of each firm there is an improvement in the agglomeration economies of the new center and at a point these aggregate gains to firms in the sub-center may be greater than the loss to the marginal decentralizing firm. These conclusions are overly simplistic, however, for they overlook the point that even with improvements in the agglomeration economies of the sub-center, every decentralized firm has still incurred losses in such economies, even though they may be sequentially improved by each subsequent migration to the sub-center.

The change in the aggregate productivity with sequential decentralization of the marginal increase in firms in the system to one sub-center can be seen in Table 6-2 and Figure 6-3. As firms are progressively decentralized up to a level doubling that existing in the core, the number of links unfulfilled per each marginal firm decreases from 198 links per firm when 10 are decentralized, to 50 links when 40 are decentralized. This is the point at which the city's analysis stopped, and it shouldn't, for each decentralized firm is lacking an
### TABLE 6-2

CHANGE IN OFFICE COMMUNITY AVERAGE PRODUCTIVITY, WHERE
THE MARGINAL INCREASE OF LINKED FIRMS CONSTITUTING ONE
PER CENT OF THE TORONTO CORE AND HAVING AVERAGE TORONTO
LINKAGE FREQUENCY IS DIVERTED TO ONE SUBCENTER

<table>
<thead>
<tr>
<th>Number of firms decentralized</th>
<th>Number of links unfulfilled per marginal firm per week</th>
<th>Number of unfulfilled links in subcenter and total systems per week</th>
<th>Net change in weekly unfulfilled links for total system</th>
<th>Total demand for links in total system</th>
<th>% of unfulfilled links to total demand for links</th>
<th>% of total existing system efficiency</th>
</tr>
</thead>
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<tr>
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<td>+1,963.6</td>
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<td>0</td>
<td>0</td>
<td>24,300</td>
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<td>100</td>
</tr>
</tbody>
</table>

1. With a marginal increment to a limit of 100% of existing agglomeration. One per cent of total firms in central corridor = 50 firms. Average number of links per week is 243 or 4.96 per firm per week.

2. With a decentralization of 21 firms (42% of existing core agglomeration) system efficiency ceases to decline with decentralization.

3. With a decentralization of 34 firms (68% of existing core agglomeration) the loss to the decentralizing firm becomes less than the net increase in system efficiency.
FIGURE 6-3

TOTAL OFFICE SYSTEM PRODUCTIVITY WHERE ADDITIONAL OFFICES ARE DIVERTED TO ONE SUB-CENTER

Percent of total system efficiency

Number of marginal firms diverted to one sub-center

a  Point where total system efficiency ceases to decline with deconcentration

b  Point where net loss to marginal, deconcentrating firm is less than net increase in system efficiency
equivalent number of links and therefore while for each firm they are decreasing for the new agglomeration as a whole they are increasing up to a point where 21 new firms or 42% of the existing core agglomeration have been driven to the new center. After this point, with increasing growth of the agglomeration, the total unfulfilled links in the new center declines. But, at no time up to the new agglomeration becoming the size of what originally existed in the core is the total linkage demand filled. Thus, average productivity would not reach the levels which originally existed in the core and which would have continued to have existed if this marginal increase had not been diverted. Moreover, it is apparent in Table 6-2 that, given the average levels of face-to-face linkage intensity existing in the core of Toronto, at no point prior to the new agglomeration having a size which is 68% (34 firms) of that of the original center, does the loss to the decentralizing firm become less than the net gain in the new office center. Thus, in general, what one witnesses with the cessation of growth of the core office community and the diversion of the net increment to even one new center is a reduction in total systems productivity.

If, instead of locating the marginal increase in offices in one sub-center, it was deemed desirable to divert growth in the core office community to three centers as appears likely in the Toronto area, one has even greater negative effects on the productivity of the office community. In Table 6-3 and Figure 6-4 it can be seen that the ratio of unfulfilled links to demand continues to decline at least up to that point where the number of firms decentralized equals that already existing in the core and, as a consequence, average productivity continues to decline with decentralization. Moreover, at no point does the loss to the marginal decentralizing firm become less than the net increase in agglomeration
TABLE 6-3

CHANGE IN OFFICE COMMUNITY AVERAGE PRODUCTIVITY, WHERE THE MARGINAL INCREASE OF LINKED FIRMS CONSTITUTING ONE PER CENT OF THE TORONTO CORE TOTAL AND HAVING AVERAGE TORONTO LINKAGE FREQUENCY IS DIVERTED TO THREE SUBCENTERS

<table>
<thead>
<tr>
<th>Number of firms decentralized</th>
<th>Number of links unfulfilled per marginal firm per week</th>
<th>Number of unfulfilled links in subcenters and total systems per week</th>
<th>Net change in weekly unfulfilled links for total system</th>
<th>Total demand for links in total system</th>
<th>% of unfulfilled links to total demand for links</th>
<th>% of total existing system efficiency</th>
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</thead>
<tbody>
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<td>24,300</td>
<td>33.3</td>
<td>66.7</td>
<td></td>
</tr>
</tbody>
</table>

1. With a marginal increment to a limit of 100% of existing agglomeration. One per cent of total firms in central corridor = 50 firms. Average number of links per week is 243 or 4.96 per firm per week.

2. At no point prior to a decentralization of a quantity of firms equal to those in the existing agglomeration does system efficiency cease to decline with decentralization. Moreover, at no point is the net increase in average system productivity more than the loss to the decentralizing firm.
FIGURE 6-4
TOTAL OFFICE SYSTEM PRODUCTIVITY WHERE ADDITIONAL OFFICES ARE DIVERTED TO THREE SUB-CENTERS

Percent of total system efficiency

Number of marginal firms diverted to three sub-centers
economies and presumably average productivity. Furthermore, if the decentralization policies are so strict as to demand not only decentralization of the marginal growth in the existing core community but also an absolute decline in the number of firms in the core, the rate at which average productivity declines is still greater.

The City has suggested that with decentralization of the core office community, "the interests of the individual firm would have suffered only in the short-term, whereas the efficiency of the total system would have increased in both the short- and the long-term". 77 However, with a more complete accounting, it is apparent that:

1. If the decentralization is directed to one sub-center, the firm suffers until the sub-center reaches the size of original core office concentration, although these costs decrease through time.

2. If the decentralization is directed to three centers, the costs to the firm in lost productivity are greater than is the case with decentralization to one center. Moreover, even with a decentralization of a number of offices equal to that originally existing in the core agglomeration, the productivity loss is of major proportions.

3. The productivity of the total system decreases in the short-term (until a number of offices approximating 42% of what presently exists is decentralized to the new center) and does not reach a level equal to that existing in the core, except where decentralization is oriented to one center and where the size of the sub-center equals that of the original center. With decentralization to three centers, efficiency continues to decrease throughout any meaningful time range.

4. The loss to the decentralizing firm continues to be greater than the increase in average systems productivity until the number of offices decentralized equals 68% of what exists in the core agglomeration where decentralization is to one center. With decentralization to three centers, it does not reach this point within a meaningful range.

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The Alternative of Allowing Marginal Growth to Occur in the Core Office Agglomeration

Even if one makes the assumption that further increases in the number of activities within the core office agglomeration will yield no additional agglomeration economies to the existing office community, locating the marginal increase in the core would be superior in average productivity terms than locating them in even one remote sub-center, let alone three. If instead of placing these firms in an area where it is very difficult to maintain face-to-face communications, they were placed within or very near the existing core community, the demand for links for the marginal firm could be met, even though there may be redundancy in the core which adds little to the average production of the existing firms. Thus, the loss in productivity for the marginal firm is eliminated by sharing in the existing agglomeration economies of the core. Moreover, as the new firms grow they meet each others demand for linkages, such as they would have if forced to decentralize. In effect, by putting the "sub-center" in the "center", losses in productivity can be minimized. Even assuming that average costs are increasing with growth in the core (for which there is virtually no evidence anyway), these would have to increase by a considerable amount in order to compensate for the losses in average productivity which would be incurred if the marginal firms in the core were forced to decentralize.

Not only will the particular strategy of containing the supply of space result in great costs to occupants of core area space but also, if the City should succeed in accomplishing their goal, they run the risk of reducing the average productivity of the office function in
Toronto. There are several implications for the general public. First of all, a "successful" program of induced decentralization of the particular type of office functions found in the core of Toronto could further fuel inflation as higher rental costs, or reduced productivity, is diffused to goods and services. Secondly, reduced productivity would, all other things being equal, imply either a reduction in employment or a reduction in real wage rates. Thirdly, the decline in the competitive advantage of Toronto, and the implied shift of employment opportunities to other cities, most of them outside Canada, could entail national costs far in excess of any local benefits.  

7. SUMMARY, CONCLUSIONS AND SUGGESTIONS FOR AN ALTERNATIVE POLICY

The strategy of containing the physical growth of the urban core will probably have a number of direct repercussions and an even greater number of indirect ones which could affect areas far beyond the boundaries of Toronto. Only a few of these have been considered in the preceding pages, and these have focused exclusively on the various office communities which are the prime subject of the containment strategy. Even so, the negative effects on the particular types of office activities occurring in Toronto's core should significantly change the cost-benefit equation underlying the City's decentralization plan.

Summary of the Plan's Impact on Toronto's Office Sector

In the first section of this study a number of questions were raised, and in subsequent chapters a number of conclusions proffered. In summary, these were:

A. How "containing" is the Central Area Plan?

While it is impossible to precisely determine the quantity of the potentially developable space within the core area under this plan, because of its dependence on imprecise assumptions and the future whims of the City Council, the following conclusions are felt to be realistic.

1. The City's assumption that the plan provides for a 60 to 100% increase in floor space seems overly optimistic for the following reasons:

(a) The assumption that all development sites in the core which have less than 70% of the density permitted by the Official Plan, will be redeveloped during the life of the plan is unrealistic. It is not supported by available evidence from Toronto and other cities. A more reasonable assumption would be that those sites with a commercial density of 50% or less of that permitted in the plan would be redeveloped. It is possible that even this may be optimistic.
(b) The assumption that those structures built more than six years ago (and which have less than 70% of the commercial density permitted under the plan) will be redeveloped, places the age threshold too high.

(c) The projection is dependent, not on the actual direct provisions of the plan, but on release of a reserve held for bonusing and railway land redevelopment, the release of which is problematic at the levels indicated in the plan.

(d) The prognosis ignores the difficulty of dramatically increasing the rate of core land consumption necessary to maintain even a constant rate of office floor space increase.

(e) The plan does not give sufficient recognition to the size and shape of sites, and the difficulties of development in a mixed use format.

2. The possible increment in floor space permitted by the plan over what is existing, under construction and approved, within the core area can possibly be as low as 17%.

3. A very high proportion of the total possible floor space increase is dependent on the imponderables of railway land redevelopment and historical bonusing which are not directly allocated in the plan. In fact, with realistic assumptions over 56% of the development potential is not included in the Official Plan density allocations, but in this reserve. If it is assumed that all of the 11.5 million square feet held in reserve for future allocation by Council are released, then the potential increase in core area commercial space is 40%.

4. Under the plan, that area with the largest existing quantity of office space and the greatest need for expansion—the financial community, is allocated the least amount of development potential. Of the possible developable space in the core (not including the reserve), a total of approximately 30% is allocated to the financial community. Only if the railway land can be redeveloped would the financial community and the nearby railway lands have 48% of the core development potential. Thus, the Plan appears to be the most containing at the point of maximum demand.

5. Even if the City's suggestion that the Plan provides for a 60 to 100% increase in core office floor space over existing floor space (not including under construction and committed) is valid, the containment could be severe enough to disrupt the competitive land and floor space market by the middle years of the Plan (of course, depending upon the dynamics of the overall economy).
B. What are the Costs and Benefits of Decentralization for Firms of Varicous Office Types Presently in the Toronto Core?

1. Communications costs are of major importance to all analysed office functional types in the core. Of the various agglomeration economies existing in the core, they are of sufficient importance by themselves to make a suburban move unwarranted for even those offices with the least intensive linkages.

C. What Level of Core/Suburban Rent Differences Would be Required for Firms of Varying Types to Move to Proposed Suburban Centers?

1. The core/suburban rent difference would have to be driven to significantly higher levels that presently exists or is anticipated as likely to occur by the City, for a meaningful decentralization to occur.

2. The likely minimum core/suburban rent difference necessary to induce a move to each of the three sub-centers, by a firm in the most mobile functional type is:

   Scarborough Town Center $5.73
   Yonge-Finch-Sheppard $4.14
   Mississauga City Center $5.88
   with L.R.T.
   Mississauga City Center $7.22
   without L.R.T.

D. What are the Implied Total Costs in Rents for all Core Area Office Functions, and Indirectly for the Consumer, of Induced Rent Increase? What Groups are likely to Benefit From or be Harmed by Containment?

1. If the City were to divert one quarter of projected core area office space demand (or this ratio of demand at any time period) to the average suburban sub-center (Scarborough), the minimum annual costs to occupants of core area office space would be over $250,000,000. This is the mean of the calculations using a variety of floor space ratios, and firm size assumptions, and does not include a variety of other costs. It is possible, in fact, that the aggregate costs could exceed $300,000,000 per annum. Even with liberal assumptions, the aggregate minimum costs could exceed $180,000,000 per annum.

2. Since the necessary rent differences would have to be maintained over a number of years, in order to have the effect of deconcentrating approximately one-quarter of projected demand, the total costs to occupants of core area office floor space could easily surpass one billion dollars.
3. In order to displace the functional type with the least linkages within the core, it would be necessary to raise core area rents to a level where the aggregate cost to core area renters would be $140,000,000 per annum.

4. The trends in such factors as wage rates indicate that the equilibrium point between agglomeration savings and rent savings may be forced upward resulting in still greater costs to the core.

5. The levies of increased rental costs are inequitable. They work to the disadvantage of the many renting space, especially on short term leases, and to the advantage of the few owning space or renting on long term fixed leases. The higher rents are to be paid by every renter of core area space, including those functions where relocation is impossible, a group disproportionately populated by small firms. Moreover, they are to be paid equally by firms with an unequal ability to pay. As well, if a firm was relocated, costs would disproportionately accrue to lower income clerical staff.

6. The cost of the necessary rent increases are of considerable magnitude and yet were not entered into the social cost and benefit equation leading to the decision to utilize containment as a decentralization strategy. If this sum is entered, it should decisively tip the balance away from containment.

E. Is Decentralization Justified in Terms of the Productivity of the Office Function?

Contrary to the view of the City that with decentralization of the core office community the interests of the individual firm would suffer only in the short-term, and would be compensated for by both short- and long-term increases in total system efficiency, it is apparent that:

1. When decentralization is directed to one sub-center (which is the most efficient deconcentration alternative):

   (a) a firm removed to this center suffers until the sub-center reaches the size of the original office concentration in the core of the city;
   
   (b) the productivity of the total system decreases in the short- to medium-term, and at no time reaches a level equal to that existing in the core except where the size of the sub-center equals that of the original center;
   
   (c) the loss to the decentralizing firm continues to be greater than the increase in average systems productivity until the number of offices decentralized equals almost 70% of what exists in the core agglomeration.
2. When decentralization is directed to three sub-centers:

(a) the costs to the firm in lost productivity are greater than with decentralization to one sub-center. Even with a deconcentration of a quantity of offices equal to that originally existing in the core agglomeration, there is a significant loss;

(b) systems efficiency continues to decrease throughout any meaningful time range; and

(c) the loss to the decentralizing firm continues to be greater than the increase in average systems productivity.

Thus, the "successful" decentralization of tightly linked core office functions through physical containment would not only involve increased costs to the core area office community, and indirectly the broader community, but would also reduce the average productivity of the total office industry in the Toronto area.

Conclusions

Fundamentally, the conclusions of this research consist of three basic elements. Firstly, the Plan for Toronto's core will be containing to a greater extent than is anticipated by Toronto's planners, and this containment will induce rental increases in all core office rents. These rental increases will occur sooner if the Canadian economy is buoyant and later if it is not. (Of course, containment becomes largely irrelevant with stagnant economic conditions.) Assuming ongoing growth, these costs will be sufficient to cause the sequential displacement of core area office activities or alternatively cessation of business by some firms. Secondly, the costs to all occupants of core area office space, and indirectly the general public, or inducing rents to the levels necessary to generate dislocation of core office functions are sizeable. Thirdly, the creation of a decentralized pattern of those office types presently characterizing the Toronto core would result in reduced productivity in
the overall system of Metropolitan Toronto offices.

The failure by the City to incorporate these costs in creating the Plan places the rationale of that document in serious question, for the Plan, even without these costs included, is weakly founded. There is, for example, no clear evidence that it is justified in terms of transportation efficiency. The decentralization of core office activity would entail either greater costs for transportation expansion than would be the case with an accommodation of core office expansion, or would involve the acceptance of greater use of the automobile for commuting. There is no clear evidence that the decentralization of core area offices would result in reduction of the length of the journey to work at least in the short- to medium-term (especially for low income workers). Moreover, there is no evidence that the decentralized alternative would result in less disruption of urban communities.

When the costs calculated in this research are considered in the context of this already questionable strategy, it is difficult to escape the conclusion that on the basis of available evidence the containment strategy being adopted by the City of Toronto involves greater costs than benefits. What is particularly unfortunate is that the City and metropolitan area could attain many of their objectives by other means, which do not incur the severe costs inherent in the strategy of containment.

Alternatives

There are alternative ways than the physical containment of the urban core for attaining the ends of a downtown which has variety and vitality, which does not possess more offices than those which have a significant need for a core location, which has a significant resident
population within easy pedestrian range, and which maintains a structural reflection of its history. As well, there are alternative ways of generating a polynucleate metropolitan structure, where suburban offices and other employment opportunities are concentrated in such a way as to provide identifiable centers, and the nodes necessary for the relatively efficient functioning of suburban mass transit systems. Moreover, these alternatives hold out the promise of avoiding the immense costs inherent in a strategy of displacing highly linked core functions through a strategy of inducing rent increases resulting from the generation of shortages in the supply of space.

In principle, a planning strategy having the basic objectives of the proposed Official Plan of the City of Toronto should have the following components:

1. **Pull Rather than Push**
   Emphasis should be placed on attracting those office functions which are normally suburban and those core office functions with limited linkages to attractive and accessible mixed use sub-centers. Thus, the strategy should be positive rather than punitive and should "pull" rather than "push" office activities. In so doing the sizable and inequitable induced rent increases could be avoided, as would the social costs emanating from the forced decentralization of functions with intensive core area linkages but limited ability to pay sizable increases in rents.

2. **Limitations on the Number of Suburban Sub-centers**
The number of outlying centers designed to concentrate office functions in the suburbs should be relatively few in number, probably no greater than three. On the whole, they should be designed to attract those office functions which are normally
suburban. One sub-center should be much larger than the others with the intention of attracting relatively weakly linked core office functions. This center should be as close as possible in terms of time distance, to the central core (Yonge-Sheppard-Finch of the analyzed centers is superior). The remaining suburban centers should have the more limited objective of structuring those office functions which are footloose, or whose pattern of linkages display a heavy suburban orientation.

3. "Overzoning" for a Competitive Land and Office Market

In order to maintain a competitive space market in the core, the quantity of potentially developable office space should be well in excess of anticipated demand. Given the existence of a relatively free market, under no circumstances should the quantity of space possible under planning restrictions be interpreted as what is probable under those constraints. Increases in the permitted densities would compensate for some amount of withholding for whatever reason; the probability that only a portion of the sites designated for mixed use development could be developed at the full commercial density allocated in the City's proposed Official Plan, the impossibility that all the reserve floor space could be developed, and the scant probability that development sites which have an existing density of up to 70% of that designated in the City's proposed Official Plan would in fact be redeveloped. Moreover, increased allocations would permit expansion in office space demand in the Financial District and the surrounding areas zoned for mixed use and would encourage a more concentrated and efficient distribution of offices within the core.
4. Preservation of Sites and Areas of Historic, Architectural and Social Merit

Emphasis should be placed on protecting whatever needs protection, rather than containing what potentially could displace such sites and areas. Even with a liberal definition of sites and areas with historical, architectural or social merit, sizable interstices remain where redevelopment is not damaging and is even desirable. In such areas, density constraints on development, particularly office development should not be repressive. Such a course leaves the supply of office space open-ended and leaves competitive pressure on developers, and owners of land and office space, intact. Moreover, the continued efficient operation of the core area commercial communities provides the public with the resources necessary for proper preservation and restoration of areas with valuable historic, social and aesthetic appeal and as well provides the markets for appropriate retailing and services activity which would provide an economic base for some of the protected sites and areas.
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