# The new city

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Broadly speaking, the image of the medieval city persisted until the turn of the century. It was, to use Lynch's phrase, "highly imageable" and it was self-contained, homogeneous and had a clear hierarchy. The containment was set by defense purposes. The homogeneity was a result of limitations in the supply of building materials, of construction methods, of space demands and of individual power. The social hierarchy reinforced this, the predominance of church and state as a controlling cultural mechanism also provided social and physical focus.

The horse and carriage extended the size of the city, but it remained selfcontained. It also remained concentric until the turn of the century, even if the cathedral was supplanted by the market place and later by the railroad station as the focal point. The component parts retained their concentration. Activities clustered close to one another. This was still a city of social cohesion, of neighbourhoods and neighbouring.

The next change caused by the electric streetcar and commuter train greatly extended the size and population of the city. Surrounding towns were drawn into its orbit, and the metropolis emerged, containing the major commercial activities and greatest job opportunities. The mother city also had a brood of dormitory towns or suburbs on the periphery. While the structure of the city had altered, the distinction between city and country remained clear, and the focus was still at the centre.

Since World War II, both traditional images have faded. While there is still a strong centripetal force drawing the population to urban areas, this is accompanied by a centrifugal force moving the inhabitants out to the periphery. The population of old city centres is decreasing, while the range of activities in the outer zones is increasing to include all the traditional downtown facilities, such as wholesale establishments, manufacturing and service industries, as well as the activities necessary for personal fulfillment. The movement of traffic is no longer between suburbs and centre only, in radial fashion, but it also has a much more complex lateral pattern. All this is aided by the mobility provided through the private automobile and trucking systems, which further enlarge the territorial extent of location options, especially if leisure activities, an increasingly important function, are taken into account. For example, the city of Toronto thirty-five years ago encompassed less than 100 square miles. In the mid 1950's it was found necessary to form a metropolitan area whose administrative boundaries covered 230 sq.m. and an area of planning jurisdiction which covered 700 sq.m. Today Metro Toronto's regional Transportation Study covers 4000 sq.m. to include journeys of goods and people that have relevance to the urban agglomeration. If you include cottages in the Muskokas and Kawarthas, the area of interaction covers about 15,000 sq.m.

As long as there was a close correlation between a set of ordering forces and their physical manifestations at comprehensive scales, there was no necessity to plan ahead.

But once the forces became diffuse and increased in power and scale, the empirical process at the level of collaboration between maker and user, no longer operated. No organic forces and constraints exist to produce cohesive comprehensible forms and patterns.

There is now the conflict of amazingly heterogeneous institutions and individuals who have far more effective power than their medieval counterparts; who are not bound by autocratic degree or traditional conformity. No particular building mode or scale is generally acceptable. The exhibition at the Art Gallery is ample proof of this. It is no longer possible to visualize urban form as the Romans did, or to expect clear hierarchies to emerge. What we have now are both independent and interdependent variables in a rapidly expanding series.

As at all times of crisis and chaos, man's propensity and desire to produce order becomes heightened. Thomas More's "Utopia" is a good example of this. It is therefore not surprising that coincident with the industrial revolution and its impact on the city, there emerged the utopian city planner. As the complexity and chaos grew, so the "ideal" plans proliferated; from Unwin and Howard to Le Corbusier and Hilbersheimer. We have had about 100 years of these utopian schemes. The minute impact they have made should surely lead us to hold them suspect, CIAM and contemporary planning notwithstanding. We cannot neatly color areas of a map green and expect them to stay so, nor can we have hierarchical theories implicit in all we design.

The automobile has put the city into a state of flux, and made possible, if not imperative, discontinuity. Rather than retain a nostalgia for the tight continuity of totally pedestrian-oriented cities, the option to be exploited here is of a constellation of focal centres, discontinuous in space and each, perhaps, with varying degrees of mixed use.

Our problem is, therefore, do we have; a) the methodology to cope with complexity?

b) A capacity to use the results of such a methodology?

c) An adequate spatial language to create and organize strategic programs for area development?

Historically, architectural theories have, in the main, been concerned with one issue: how to perfect single buildings. There are no coherent theories beyond the single building. We have so long accustomed ourselves to conceiving buildings as separate entities that today we suffer from an inadequacy of spatial languages to make meaningful environments.

It is not surprising, therefore, that architects, when dealing with a complex of buildings, use the same process as in designing an individual building; that is, assembling components in a carefully composed manner. It is what I term the Hilton Hotel syndrome. I do not have to describe it in detail: it is a slab building with a regular texture, in front of which is placed, by contrast, a restaurant, conference room or ball-room in the form of a conch shell. It is a static approach, for composition itself has a tendency to formal statement. It is much more the method of the sculptor, placing one element in space against another in a visually or aesthetically satisfactory way. Most contemporary large scale urban designs fall into this category — Chandigarh, Brazilia and Lincoln Centre. Like the utopian city plans, they are preconceived and imposed with a limited set of priorities.

A second method of controlling diverse functions is also an extension of the single building: the megastructure, such as Tange's Tokyo Bay scheme. This is a large frame within which are housed discrete elements. You only have to look at architectural exhibitions of so called "Visionary Architecture" to see the attraction of this concept for the architect. Technologically it is possible to erect these artificial land and building bases, but there are serious defects in this concept. The obvious one is that it would require heavy public investment with no assurance that there would be adequate utilization. The preformed spaces blanket variety and leave no room for a market response. And technology has a habit of improving, making such massive skeletons a great weight of debt about urban society's neck.

Both these examples of collective form are in effect acting in the opposite direction to that which historically, has provided organic controls of relationship. They have not evolved, they are designed. In the design process, the satisfaction of the complexities of many sets of needs are ignored for the sake of visual conformity.

The towns in the Greek islands, the villages in Mexico and North Africa or Italian hill towns are rich examples of past group form. They were organized

by a few determining factors:

1) the consistent use of materials and construction methods, which allowed minor variations:

2) the use of the natural characteristics of the site:

3) limited means which restricted scale to human proportions:

4) the sequential development of the small range of basic elements in an open-ended, non-axial way.

While on the one hand we admire the homogeneity of group form, to use Maki's term, the forces ensuring this result no longer obtain — you only have to look at any street in any city on this continent to have evidence of this. Michigan Boulevard in Chicago is a dramatic example, each building jostling the other in an assertion of individuality.

Urban design is ever concerned with the question of making comprehensible links between discrete elements and, as a corollary, it is concerned with making an extremely large entity comprehensible by articulating its parts. What then becomes critical are the linkages that make this entity, and provide the articulation.

There are five important basic linking acts:

1) to mediate — an interesting point about mediation is that it can transcend its first function of connection —the arcades of Bologna while providing shelter also provide visual unity for the street; or the pedestrian system at Simon Fraser, while providing access, acts as a social catalyst:

2) to define — the walls of a medieval town, or the Chicago loop are examples:

3) to repeat — this provides the grain of the city:

4) to make a sequential path — the logic of the flow diagram:

5) to select—for example, to establish unity by the choice of site, or the provision of a service, such as water supply or a sewer system.

While we might understand these principles of linkage, we have not marshalled the forces to release their possible interaction. We have fallen into the trap of saying that if only we could design it all, we could create the order we all desire. I have tried to show that the imposition of form by a designer who not only holds superficial visual conformity as a priority, but will invariably impose his set of socio-cultural values for the whole community, will not satisfy the complexities of the contemporary situation. I believe, in fact, that the amount of construction that architects design today is in the order of 10% or 12%, and if present practices persist, there is no likelihood of increasing this share. I believe those cities and group forms we admire are a result of the forces and circumstances that shaped them, rather than of master plans.

Now I am not advocating an abdication from the task of improving the physical environment. On the contrary, I believe we can be much more effective than we are. I believe our approach is misconceived.

The form of intervention we take, or rather the mass intervention we completely desire is, realistically, ineffective. I still believe we need intervention, but of the stimulating rather than the soothing kind. We accept intervention in the economic arena, and we tolerate legal controls for the common good. These are frameworks appropriate to their modes. What are the most effective forms of strategic intervention we might take in the design of the physical environment, and is it possible that these forms of intervention can transcend their immediate function to provide larger public benefits?

A simple analogy might be helpful, before suggesting an organizational concept of the city which will change the parts into significant relationships, and potentially generate the linkages outlined.

The elements of a house have varying rates of decay; the plumbing might be replaced once or twice, and the electric wiring more frequently during the life of the building, while the basic structure remains undisturbed. Different elements in cities also have different rates of decay.

While knowledge of these life spans is far from complete, it is demonstrable that the channels of movement and their gateways, in the form of stations and terminals, are among the most permanent. It is also demonstrable that transportation has a profound effect on land use, and there is a desire for proximity to transportation mode exchange and access points. This determinant of city form also exercises a varying degree of magnetic pull for component activities of the city. Commercial and industrial units are more dependent, for example, on transit lines for goods and services than, say, residential areas. Investigation would reveal a series of potent correlates, and their varying degrees of permanence.

There are a number of other determinants that lie in the hands of the city builders — all those buildings and quasi-buildings and services that lie in the public sector — schools, libraries, clinics, power and service lines, water, gas, electricity and many other public works, as well as the legal and tax systems that act as powerful form deterrents and determinants.

This suggests a city structure that is composed of several systems, that expand or contract, according to the demand placed on each. If we devise a system in which each element can expand or contract with the least disturbance to others, we would have a system which is far superior in effectiveness to a system dependent on a set of heirarchical relationships.

In other words, each factor in the system which makes the whole, maintains its identity and longevity while at the same time engaging in dynamic contact with others. The best way to visualize this is by imagining a number of wire meshes of varying gauge and spacing. When superimposed in layers one upon the other, certain intersections will coincide in a vertical line.

The particular composition of each intersection will, as it were, contain the chromosomes that determine the characteristics of the subsequent growth. When optimum relationship has been formed, an environmental control system is in effect; the ingredients of mix at contact points as well as along lines determine the adjacent use and relationships. This system permits the greatest efficiency and flexibility with the simplest organizational structure.

For the sake of explanation, let us say that brown barnacles, such as those found on the sea shore, are attracted to woodplanks; that blue barnacles will only attach themselves to lengths of steel rod; that green barnacles only fix to lengths of plastic, and string will repel all barnacles. Arranging the wood planks, the steel rods, the lengths of plastic and the string in some particular interrelationship we can pre-determine where each colour group of barnacles will be, or will be prevented from being. To extend this idea, let us say that only certain combinations of these colours will cluster around the ioints between the elements fixed by bronze clamps, and other combinations will fix around joints glued together. The intersections then can also be prepared in such a way as to predetermine the colour combinations of the barnacles we wish to have.

We have here satisfied a number of the conditions that encourage linking acts. The rods mediate between the barnacles and provide the medium for sequential paths as well as define their location. The repetition of one colour provides a consistent grain, and the joints satisfy the most potent linking act, the fifth one mentioned, the pre-selection of site.

Once upon a time, without intervention, these conditions were powerfully present and directly manifested in form. What I have indicated is that instead of devoting our energies to form, we must now, in our complex world, shape the conditions and forces which were once naturally prevalent, and thereby create the strategic elements of the environment by which ordered form will once again be generated. We have, in effect, to prepare the site.

Two basic operations are necessary to establish this optimum control mechanism. One is to select proper independent functional systems, and the other is to give them optimum interdependency through the provision of physical joints at critical points.

The selection of these factors will depend on circumstance. A spectrum of elements is at hand in the public sector that guide the private response. If their layout is not decided with this in mind, the result will be chaos. If they are designed with this in mind they could bring order without detailed design. While the concept here outlined is a master program, rather than a master plan, the master program includes a time dimension. The addition of activities to physical qualities in a search for form determinants in the city, suggest a new union between physical design and planning. Corresponding to the master program, and its time dimension, is the possibility of capital design.

By this I mean generative works, as a system of deploying public works in time and space for maximum encouragement and creative control of private development. Both the lines and joints of the abstract system described could be given a form potent in its stimulation of desirable response, if they are planned in a comprehensive, strategic way. These public works are the agents to ensure the coincidence of private gain and public welfare. They may transcend their prime function. An historical example will clarify this: the market place existed before the architect made the agora and its colonnades beautiful.

Channels of movement in medieval cities were closely interwoven with buildings — the Ponte Vecchio, for example. From the 15th. century until

the present time there has been a strong separation between the two. The possibility now arises of using both options — there are times, such as with limited access expressways, when the barnacles will not adhere. At other times, such as at highway interchanges, it becomes very desirable to have buildings in close proximity. Any supermarket investor knows this value. Therefore the critical, physical joints in the armature have the possibility of new forms of integration between buildings and movement paths. These could provide public spaces, built by the city as a byproduct of linking systems, and have direct connection to commercial and residential spaces. They would also perform the important function of providing modality, or rhythm, for orientation in an otherwise unpunctuated physical grammar. This program of public action would have short, medium and long range physical and fiscal strategies. The short run, physical implementation of co-ordination of capital works of new urban form could be used to test long-range master programs, in order to modulate growth. By use of this unitary concept, physical in the short run, organizational in the long run, an adaptive method to economic, social and physical circumstances can be employed. In the field of cybernetics, feedback is required in micro-seconds. While we do not need quite so rapid a response, the monitoring of the system over time is, for optimum results, necessary.

An example of a biological process emphasizes that we have the power to achieve a higher order of physical environment, if we manipulate strategic elements within it in a correlated way. Take, for instance, a colony of about a hundred million flatworms of the genus planaria. Each of these creatures I am told has about 100 nerve cells, Thus, altogether they have about ten billion nerve cells. Now, the human brain also has about ten billion nerve cells. Why is it, then, these hundred million planariae do not represent the intelligence of a human brain? It is because brain cells are in a state of perpetual interaction, constantly coordinating, abstracting, and sifting pertinent information for the system as a whole. The poor planaria cannot do this. Add a couple of million planaria to our colony and nothing changes in the structure of the colony; they do not interact. Are we then going to allow our cities to be the equivalents of colonies of planariae, or approximate more closely the confluent operation of the brain?5

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### OPINION

# Toronto used to be a metropolis model. So what happened?

JACK DIAMOND CONTRIBUTED TO THE GLOBE AND MAIL PUBLISHED 19 HOURS AGO



The Toronto skyline in January, 1976. JOHN MCNEILL/THE GLOBE AND MAIL

Jack Diamond was one of the five commissioners who produced the Golden Report, which addressed the land use, governance, taxation and movement systems of Toronto. He is the founding principal of Diamond Schmitt Architects.

There was a time when Toronto worked as an exemplar of city building and municipal governance.

Through much of the 20th century, the municipality adroitly made the

necessary governance and infrastructure changes to manage growth and facilitate its operation. There was a city council, with a single tier of councillors. The wards consisted of reasonably homogeneous socioeconomic demographics, and the ward boundaries were well understood. This led to political accountability, as the mores of the constituents were clear.

Subsequently, to accommodate a complex metropolis, rather than a provincial city, a two-tier council was instituted. This still allowed the local councillor to represent his or her ward with fidelity to the values of its constituents. A second, metro councillor, however, had a metropolitan scale of responsibility – those factors that were of wider concern than those of a single ward, transportation being an obvious example. With that form of municipal government, the city, with foresight, began mid-century to construct a subway system to augment streetcars, buses and private automobiles.

But now a shortsighted, buck-a-beer outlook has replaced its breadth of vision.

Perhaps those who have lived through this change may not see it, but 21stcentury Toronto is no longer the mid-sized provincial, let alone metropolitan, city it once was.

In the 18th century, Lieutenant-Governor John Graves Simcoe laid out a farming grid in the area, based upon concessions bounded by roads at about two-kilometre intervals. As the town grew, the concession roads became the arterial streets, while the farms became low-scale residential hinterlands with correspondingly narrower streets than those of the arterial boundaries. These divisions created the building blocks, or superblocks, that formed the urban structure of the city.

Conveniently, the arterial streets of the superblock became the carriers of the city's surface transit system: buses, streetcars and automobiles. Such a transit system is one suited to frequent stops, with several along the length of each superblock. To accommodate higher carrying capacity, the subway system was added, with stops essentially only at the intersection of the arterial streets – i.e. at the four corners of adjoining superblocks.

The land use and density symbiosis followed in lockstep – mostly low-rise residential uses within the superblock; mid-density, with mixed uses along the arterial boundaries, accommodating local services and convenience retail; and high density de

An aerial view of downtown Toronto, including the construction of the Toronto-Dominion Centre, Aug. 2, 1968.

FRED ROSS/THE GLOBE AND MAIL

convenience retail; and high-density developed appropriately at the junction

of four superblocks, intersections with high transit accessibility.

This arrangement had several advantages. By distributing regional or specialized functions to the many centres, traffic congestion at one major city centre was avoided. It also permitted the natural clustering of specialized functions, whether mass retail, high-end fashion, financial services or company headquarters. These higher-density centres were perfectly served by the higher carrying capacity of the subway.

STORY CONTINUES BELOW ADVERTISEMENT

The city was not as wealthy then as it is now. Nevertheless, city council was not afraid to borrow, as it understood that such debt was an investment in building capacity, just as good health and education systems build capacity.

Toronto was looked to as a model of metropolitan government and urban planning.

The city now has to be seen in national and international contexts, as it is in global competition for human and financial capital investment. Given the stability of Canadian society, its accommodation of multiculturalism and its highly attractive public-education and health systems, Canada has been a choice of immigrants. Here they find formal and informal support systems and job opportunities. The Greater Toronto Area, for example, gets about 80,000 immigrants a year. Clearly, this is one of the reasons for the current prosperity of the city. Indeed, the growth has been explosive. Toronto now ranks fourth in population in North America, after Mexico City, New York and Los Angeles.

At the beginning of this new growth spurt, a little more than two decades ago, the political boundary of the city clearly did not coincide with its economic contour. Equally apparent was that the governance of the city, together with its taxing powers, land use and transportation, required comprehensive overhaul. provincial government policies ... the potential for substantial social and economic benefits still exists.

Bob Rae, the premier of the province at that time, set up a commission (the Golden Commission) to undertake such a review. Previous provincial governments, sensitive to the needs of Toronto, had modified the original metropolitan governance structure as the city grew. However, those modifications were only ones of degree, not kind. The Golden Report recognized that Toronto had grown from a city to a metropolis and in 1996 was on the cusp of becoming a city region, encompassing adjacent cities from Hamilton to Oshawa.

Unfortunately, there was a change of government just as the Golden Commission published its report. Its recommendations would have set Toronto on the correct course to once again be a model for a city region, as it had been for a metropolitan one. The new provincial government, the base of which was suburban and rural, instituted changes in contradiction to those recommended in the report.

It downloaded social services to the city without commensurate funding and ignored the dynamics and potentials of a city region. With the city's very limited taxing powers, restricted to real estate taxes (inelastic in terms of the business cycle) plus some licensing authority, as well as a small share of the gas tax, the city is simply unable to cover the maintenance costs of its infrastructure, let alone plan long-term investment in new hard and soft services. What's more, the planned Eglinton subway was cancelled. The notion that so-called efficiencies at city hall could be achieved commensurate with the necessary funding is patently absurd. Essentially, you get what you pay for. I believe Canadians want tax value, not tax cuts.

While the private sector has prospered since then, despite fluctuations of the business cycle, the public sector has declined precipitously. It is simply not congruent with private growth and is significantly behind in the maintenance of existing public housing and investment in transit. High-density development is being approved without a foundation of appropriately sized utilities and transit, nor are there adequate parks and other amenities that contribute to the quality of life that is Toronto's competitive edge in its global contest with other cities. The close relationship that once existed between land use, density and transportation is now largely absent. The strategic location of public housing is no longer a consideration. The installation of the subway was once done in a manner that reinforced planned urban development and the opportunity to guide development via a well-calibrated transit system, but this is no longer the case.

The observation gallery on the 57th floor of Commerce Court West, Sept. 10, 1973. ERIK CHRISTENSEN/THE GLOBE AND MAIL

A measure of this can be seen in a comparison with other cities. In the first decade of the 21st century, London invested \$1,112, Berlin \$831, New York \$703 and Toronto \$337 per capita per annum on public transit.

Unlike the courage of earlier city councils, which borrowed money to build the subway and expand other forms of transit, city council and the province over the past decade failed to make the decisions on which Toronto's future depends. Debt timidity in this instance has a colossal opportunity cost. Ironically, it was also a time when the cost of borrowing was at its lowest.

Part of the impediment to effective decision-making is the assumed artificial split between the central city (416 area code) and the suburbs (the 905). The lack of leadership that would show that the one benefits from the other is profoundly disappointing.

There is another dynamic at work. David Hulchanski, a professor at the University of Toronto's Centre for Urban and Community Studies, has mapped the socioeconomic geography of the city, comparing the 1970s with the current demographic distribution of Toronto. He has found a disturbing shift: Where once a modicum of integration, or at least proximity, between low-, middle- and high-income groups existed across the city, sharper segregation has since occurred. The lowest-income cohort has expanded and has been displaced by economics to the urban periphery, where social services and transportation are least available; the highest-income cohort has increased and is consolidated primarily in the city centre; and the middleincome group has shrunk and now lies between the highest- and lowestincome groups.

In effect, three fairly distinct, segregated cities. This does not help alleviate the sense of alienation, nor does it make entry-level employment or low-skilled jobs accessible or improve mobility for access to social, health or employment services. This general tendency is also exacerbated by the growing income gap in Canada.

What is perhaps not understood is that this is damaging in unexpected ways. As noted, Toronto's economic competitive edge is its quality of life. Paradoxically, it is business-minded provincial governments that blunt that economic edge.

Despite the negative impact of current provincial government policies, which rank mythical or counterproductive cost reductions over real effectiveness, the potential for substantial social and economic benefits still exists. Such an endowment indeed has the capacity to create one of the best cities in the world in a co-ordinated Greater Toronto Region. Irrelevant provincial proposals won't return the city to greatness – Ferris wheels on the waterfront just won't cut it.