

The Perception of Downtown Winnipeg and Its Role in Shaping the City

by Ella Chmielewska

Using Hedonic Methods to Value Environment Damages to Residential Housing

by Lee Hillman

Student Paper No. 5

1993

The Institute of Urban Studies





THE UNIVERSITY OF
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**THE PERCEPTION OF DOWNTOWN WINNIPEG AND ITS ROLE IN SHAPING THE CITY;
USING HEDONIC METHODS TO VALUE ENVIRONMENT DAMAGES TO RESIDENTIAL HOUSING
Student Paper No. 5**

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THE PERCEPTION OF DOWNTOWN WINNIPEG AND ITS ROLE IN SHAPING THE CITY

Ella Chmielewska*

INTRODUCTION

The "heart of the matter"—this is how Lyon and Fenton refer to the city centre in their report *The Development of Downtown Winnipeg* (Lyon, 1984, p. 1). Indeed, a lively city must contain a functioning heart. Downtown, however, is also the city's *face*. It reflects the city's character, shows the emotions and pains of the entire "body." It describes the people we are and who we want to become (Hiss, 1990, p. xi). Downtown depicts the essence of the place; it is a concise history of the city, its present and its vision of the future.

It seems most appropriate to use the metaphor of the face when dealing with the perception of downtown. Downtown has a subjective identity. It is a perception of the city dwellers that defines it (Ley, 1991, p. 319). And it is the perceived environment that I would like to analyze by looking at the experience of place in downtown Winnipeg, how that experience shapes our approach to the entire city and how it shapes us. This requires a subjective approach.

DEFINING DOWNTOWN

In order to define downtown Winnipeg, and stay in the context of the subjective identity of the city's centre, I chose not to rely on any administrative or political description of the area but rather to ask people, a selected sample of 25 city dwellers, to define the area they would call downtown. Interestingly enough, the district described by all of them is the triangle depicted on the 1887 map of the Hudson's Bay Company's Reserve. It is the area encompassed by the two rivers at the south and east, Colony Creek on the west and Notre Dame Avenue and Water Street at the north edge. The only diversions made were inclusions of the University of Winnipeg campus west of Colony Creek and the Exchange District north of Notre Dame and Water Streets.

The urban development process usually results in downtown being located at the geographical center, in the oldest part of the city (Burgess' concentric model). Many links with the past and with the historical development of Winnipeg were severed by destructive redevelopment processes; however, not all historical continuity is lost if the original boundaries are intact in people's perception.

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HISTORY OF DOWNTOWN AND ITS REDEVELOPMENT

Downtown Winnipeg has had an interesting and rather a turbulent history since its beginning in 1862, when Mr. Henry McKenny opened his store on the crossroads of two trails that later became the corner of Main Street and Portage Avenue. After 1885, the area depicted on the 1887 map became the commercial focus of the region and continued its rapid growth until 1914.

The major factors that influenced the city's development over the decades following the boom of 1911-1913 were: suburbanization and the related dispersion of economic activity among suburban precincts; diffusion of central business district functions over extensively spread out core area; and, the failure of redevelopment processes in the downtown (Lyon, 1984, p. 4).

It is important to look at the major surges of redevelopment in downtown Winnipeg, since they physically shaped the area as it exists now, and could be held responsible for shaping its image, and perhaps the image of entire city that exists in the perception of city dwellers.

None of the three major renewals which occurred over the decades showed any consideration for continuity and cohesion, even though the need for this was identified as early as 1913 by the Winnipeg City Planning Commission (Lyon, 1984, p. 129):

The development of this City [. . .] is too haphazard—there is no comprehensive scheme for the City as a whole.

RENEWAL OF THE 1950s

By 1948, after bouts of rapid population increases, expanding city boundaries, the two World Wars and the Depression, Winnipeg was showing signs of decline typical for any North American city of the time. The legacy of the historical difficulties was quite evident when the Metropolitan Planning Committee and Winnipeg Town Planning Council introduced zoning controls. It is interesting to study the assessment of the downtown problems at the time:

In the Hudson's Bay Reserve area, residential, commercial, and light industrial uses have become so closely intermingled that the area cannot be used satisfactorily for residential use without complete, co-ordinated redevelopment (Lyon, 1984, p. 63).

The introduction and implementation of zoning might be considered a historical moment, since it set a trend for many a future decision. Some very insightful and wise recommendations were advocated, like the restrictions on suburban retail and on ribbon development on the CBD streets other than Portage and Main, but they were not implemented at the time. The recommendations for zoning out of residential uses in some of the blighted areas were adopted rather than efforts to conserve and rehabilitate their residential component.

RENEWAL OF THE 1960s/'70s

By the late 1960s, concerns over the deterioration of commercial and residential areas in downtown were not alleviated. The Urban Renewal and Rehabilitation Board appointed in 1958 by the Winnipeg City Council produced, by 1961, six studies on housing and potential areas of renewal. The report of the Metropolitan Corporation of Greater Winnipeg identified major problems in the area south of Portage and north of Broadway (Lyon, 1984). The report described this area as one of decline and abandonment. At that time, 36 percent of downtown buildings were classified as in poor condition and 30 percent of the land was vacant or devoted to surface parking, the legacy of the previous renewal. The city embarked on the major redevelopment project in the downtown area, and just as the first stages of renewal—namely, massive demolition—were underway, the federal support for the urban renewal projects was discontinued (1969). Demolition and reconstruction were not abandoned entirely but became selective. This formed the basis for the main feature, and the cardinal urban design problem, of downtown Winnipeg—lack of cohesion and continuity.

Redevelopment of 1960s and 1970s was characterized by blind and indiscriminate demolition of the downtown area in the name of progress and renewal. Regional treasures of commercial, public, religious and residential architecture were demolished and replaced with bland, pseudo-modern structures that had no connection to the fabric of the city. Examples abound: the City Hall and the Market building, St. John's College, St. Paul's College, the Royal Alexandra Hotel, St. Mary's Cathedral Rectory, and various gems of residential architecture along Broadway Avenue, Carlton, Assiniboine and Garry Streets. Again, like in the previous renewal era, many buildings were demolished to make room for surface parking, the most upsetting legacy of the progress. In the 1970s, some super-developments were also conceived to revitalize the economy of the stagnant downtown. The Trizec development is probably the biggest and the most infamous. It is also the most important historically; it created barricades at the Portage and Main intersection. These sent pedestrian life underground and left the street level to the automobile. It reflected the general perception of the City Council and a large part of a society influenced by the suburban life style, that the city is for the car, and the pedestrian, a necessary evil. The concrete barricades on Portage and Main won Winnipeg an honourable mention in the chapter on dullifying cities in William H. Whyte's *City: Rediscovering the Center*.

There are also many examples of sites developed during this period of renewal: the City Hall, the Museum of Man and Nature, the Centennial Concert Hall, the Winnipeg Art Gallery, the commercial development on Broadway Avenue and adjacent residential high-density structures, the University of Winnipeg campus. Many of the projects were architecturally successful and urbanistically sensitive.

The redevelopment as a whole, however, failed. The deterioration processes were accelerated rather than stopped by displacement resulting from the demolition and development.

RENEWAL OF THE 1980s

The level of deterioration in downtown Winnipeg and surrounding areas had reached such a state by 1980-81 that the three levels of government created the Core Area Initiative with a mandate and funding to revitalize the heart of the city. The focus was to rehabilitate and renew the aging infrastructure and to attract major new facilities to the core. In this new surge of redevelopment activities, the city had a chance to learn from previous mistakes and create a plan that would truly help the core regain its vitality and re-establish its once vibrant commercial area.

Again, the city gained a few quite successful sites: Chinatown, the Law Courts Building, the Royal Winnipeg Ballet Building, the NRC Building on Ellice, the partially rehabilitated Exchange District (Market Square, Artspace, Ashdown Warehouse, Juba Park, Children's Museum), the Downtown YMCA, and the Forks.

The major focus of redevelopment was on Portage Avenue and its showpiece—the Portage Place complex with its skywalks, the Promenade, One Canada Place and the vision of further development. Despite the large investment and the glossy stretch of the Wall-of-the-Mall, the main commercial strip in the city, Portage Avenue, presents in 1992 vacant store fronts, improvised short-term occupancies, deserted street corners, wind blowing old newspapers around entrances to arcades, poverty, a sense of rejection and abandonment—hardly an improvement over the site I experienced in 1982 upon my arrival to the city; hardly a reason to visit the area, especially in the evening when the nine-to-five life disappears, and what remains is a pervasive feeling of decay. This is undeniable proof of the failure of the redevelopment process in the downtown Winnipeg.

Redevelopment occurred each time as a result of deterioration—in Stage 5, according to Hoover and Vernon's (1959) model of urban development. This type of development is usually characterized by changes in land use, complete change in the neighbourhood, and displacement of original inhabitants (Yeates, 1990, p. 219). This supply-driven type of development relies mostly on public expenditures, and public-private capital partnership in which the investment of public funds is deemed to make the private capital investment more viable. The outcome of this type of redevelopment process is also invariably displacement of the poorer segments of the population (i.e., smaller retailers and businesses along North Portage), creation of very few middle-income housing units, of sterile office buildings and suburban-style shopping centres. Of all types of urban developments, this one is the most severe in terms of damaged experience.

IMPORTANCE OF THE CITY CENTRE

The sense of place that can be derived from downtown is important both for those who live there and also for those who live beyond the city centre. A well-defined downtown can give coherence to the entire city. Every city is a constantly changing organism that "while it may be stable in general outlines for some time, it is ever changing in detail. Only partial control can be exercised over its growth and form" (Lynch, 1986, p. 2). Because of this ever-changing quality there is a need for an anchor, a reference point and some historical link. Downtown is the only area that can provide this very element of continuity in the image of a city. It is not only the oldest part of the city, the point from which any urban development started, but in the mental image of the city, it also represents a common element for people residing in different areas.

Downtown usually houses most of the major activities related to business, commerce, public administration, culture, transportation, education and health care. The larger the variety of functions, the more successful and vibrant the area. If those functions, and institutions that provide them, become dispersed over a large area and are no longer housed within downtown, the city loses its focus and identity.

Downtown functions in many ways to create a perception of the entire city and a perception of its inhabitants. First and foremost, it acts as the city's face by providing the first impression of the city. Downtown is the place where one gets acquainted with any new urban area. Most of the first impressions of a city are formed based on an experience in the central area. We look at the people there, examine how they dress, how they behave. We look at the streets and notice if they are busy, clean, exciting, inviting. We notice the shop windows, buildings, trees, flowers, garbage, we take account of smells, quality of air and light. We notice it all without looking for anything in particular. We notice all this without even being particularly perceptive, necessarily interested in architecture, landscape or aware of human interactions. We notice it all with our ability of simultaneous perception, and, based on the sensory experiences, we form a simple opinion about the life in the city.

Our perception of ourselves is strongly influenced by how others view us and how they view the place we live in. We take pride in anything positive associated with the city image, and feel hurt, personally offended, or at least on the defensive, if the place we live in is criticized. We are affected on personal level by the way our city is perceived by others. We are ready to defend it with all one hundred reasons to love Winnipeg. Defensive attitudes usually signify insecurity. By improving the image of the city, we could improve our own image and feel genuinely proud of living where we do. That sense of pride is often connected with the feeling of responsibility for the place and could result in what Hiss refers to as the "third skin"—a need to interact with the surroundings, a need to influence

the immediate neighborhood (Hiss, 1990, p. 90). Langton in his description of Portland and "its thriving civil core" talks about an attitude of "we are all in this together" and argues that this very attitude "implies a right—and even a responsibility—to intervene when individuals threaten to tear at the carefully woven fabric of public life" (Langton, 1992). Jacobs, when describing successful neighbourhoods, refers to the "watchful eye of the street" and the sense of safety and sense of belonging resulting from interactions with the surroundings (Jacobs, 1961, pp. 34-54).

The status of downtown defines the status of the city itself, and the demise of downtown signifies the demise of the city. The low status of the city centre is a typical North American phenomenon derived from the culture of obsolescence, the orthodoxy of "newer is better," the religion of the dream-house-in-the-suburbs, and the reigning supremacy of the automobile. Nonetheless, the most exciting cities in the world have vibrant, well-functioning centres.

Dwellers of Winnipeg suburbs, *en route* to the Central Business District or on their sporadic visits to the Concert Hall or the Theatre Centre, rarely acknowledge the importance of downtown. They tend to perceive this area as a necessary evil, since certain functions do not transplant well to the nearest community shopping mall to create the ultimate convenience. Downtown is also considered a fiscal and social burden, since the taxes would be of more benefit to their residential areas than the core, with its problems and "undesirable" inhabitants. Downtown, however, cannot be treated as a separate entity, since it not only connects the city with its past but also reflects its present health, its attitudes and character:

Nothing is experienced by itself, but always in its relation to its surroundings, the sequences of events leading up to it, the memory of past experiences (Lynch, 1986, p. 1).

SENSE OF PLACE

What we experience in a place is both a serious environmental issue and a deeply personal one (Hiss, 1990, p. xi).

We all react directly or indirectly to the physical environment that surrounds us. Places where we spend our time, whether we live there, work there, or merely pass by, have an impact on our sense of self, on our sense of belonging to the community. Places determine our sense of safety, and our behavioural patterns.

Our surroundings have a profound effect on the way we feel and act. There is a proven connection between the beauty of the environment, both natural and built, and our health and mental functioning. As the physical environment of the communities that shelter us evolves, we all change too. Whenever we make changes to our surroundings, we run a risk of cutting ourselves off from the

information and experience we need to live or to prosper, from behavioural cues required for functioning of civilized society, from information that has shaped our understanding of self and the world.

When people talk about a place that affected them profoundly, they speak not so much about architectural beauty but rather of the character of the place, its charm, its spirit. The harmony, the individuality of a place, its scenic quality, all these reflect an impact that a set of elements of place has on our perception. Variety of elements of place includes elements of the built environment—like paths, edges, districts, nodes and landmarks—and the more elusive elements, like light, colour, smells, sensations of touch and balance, as well as thoughts and feelings evoked by the surroundings. We can design places that stimulate or suppress certain experiences. We can create surroundings that will encourage people to engage in purposeful behaviour, that will encourage a healthy mixture of people. Organization of space organizes people's behaviour, including whether they will feel they can interact with their surroundings, and whether they will assume responsibility for maintaining some parts of the places they use (Hiss, 1990, p. 90).

Environmental behavioural research (Rapoport, 1992) confirms a strong linkage between the beauty of human surroundings and our behaviour and performance. The paramount factor in this linkage is a stimulating effect of enriched environment on our intellectual development:

We are the only species that [. . .] has deliberately transformed our surroundings in order to stretch our capacity for understanding (Hiss, 1990, p. xvi).

Winnipeg downtown: How does it reflect the essence and the spirit of the city? How does it reflect the attitudes and character of its inhabitants? How does it affect us, willing or resigned dwellers in this place of "muddy waters"?

In order to survey how the Winnipeg downtown is perceived, I conducted 25 interviews with a selected group of citizens. The sample group reflected a variety of professions, ages, incomes, places of residence, family status, ethnic origins and varied urban experiences. Education was the only unifying factor since all members of the sample group had at least an undergraduate degree. The sample was admittedly too small to draw conclusions on significant trends and to produce a meaningful analytical study. Rather than producing statistics, however, my goal was to get *a sense* of the type of experience people have downtown.

The unstructured interviews focused on the sense of place. I asked about places that were important, places that evoked a sense of belonging, pride, special feeling worth repeating, places that were in themselves reasons for visiting downtown. I was also interested in the places considered meaningful regarding local or national history, any landmarks of Canadian development and progress,

and how the people felt about them, places that, if lost, would be lamented either as a profound loss to the community as a whole or a private damaged experience.

There were six sites downtown with which the sense of place was associated: The Forks with the Riverwalk, Broadway Avenue, the Exchange District, Juba Park, the Legislature Grounds and the Air Canada Park. Broadway with its elms was mentioned most often as a city treasure, a regional landmark and a personal experience worth preserving. The most popular place was also the only one that functions outside regular office hours—The Forks, which is even busier on Sunday than during the week. All other places are deserted after five and on the weekends, with some activity around the Theatre District on weekend nights.

The common threads between the places identified in my survey can be described as follows:

1. Continuity of experience;
2. Variety of stimuli present. All of these places work as paths, they have elements of enclosed districts, with definite edges, landmarks and nodes. Basically all elements of the perceived environment are present in these spaces;
3. Environmental attractiveness, with water and trees present in most of them;
4. Pedestrian scale and pedestrian level of interaction with various elements;
5. Connection with the history of the city;
6. People, and the possibility of human interaction.

Air Canada Park does not quite fit the other places, both in terms of continuity and geographical location. This is the only space located in the middle of downtown. It works as the only relief, an oasis, of a successful urban space in an environment designed against people and against basic street-level interactions.

The outcome of my conversations prompted a closer analysis of two areas: Broadway and Portage Avenue. The first, because despite the intensive changes made to the street fabric during the second round of Downtown Redevelopment in Winnipeg, Broadway is still identified as a meaningful space. Obviously the experience of place continues to exist there. The latter was considered because it was not noted at all, as if what is supposed to be the main commercial street downtown does not exist in people's perception of the city.

BROADWAY AVENUE

Broadway Avenue referred to in my survey is a stretch of ten blocks between Osborne and Main Streets. The stately elms with their beauty, tranquillity and sense of history are the main feature of this boulevard, but it is not only this environmental attractiveness that evokes the special feeling in people.

This is the only street downtown with a sense of continuity created by factors other than moving traffic. The street is enclosed at both ends; by the CN Station on the east and by the Great-West Life Building on the west. At the western end, when the street funnels into its narrower stretch, we find a sense of interest created by a difference in street elevation over where Colony Creek used to run. The street flows. The landmarks at each end create a sense of district and a need to linger in the area. We are not propelled to move ahead along the street traffic.

There is a variety of buildings along the avenue with a very limited blank wall syndrome. Buildings are not lined up, but are placed at varying distances from the street. This not only creates some visual relief from the length of the street, but also breaks the wind and protects the pedestrians. There is significant protection from the traffic; the trees, visually and physically, give a sense of security. In addition to the elms planted at the beginning of this century, some landmarks can be encountered along the way that bring about a link with the city's past because they survived attempts of destruction: the Hotel Fort Garry, the CN Station, the old Law Courts buildings and the Princeton Apartments. The street exists in some historical context.

Broadway is one of the few places that could be enjoyed by both a driver and a pedestrian. This might be the reason so many people seem to relate to this street. It is also a vibrant street at lunch time on a summer week day. Food vendors, people strolling, street interactions; conversations, schmoozing, eating, sitting on benches, ledges and steps—street life at its best. And the elms with their shade, sunlight filtered through the leaves, the wind in the tree branches—the best of rural experiences in an urban setting. But come five o'clock life is gone. In evenings and on weekends there are no reasons to stop and stroll. Few come to contemplate or cherish the street after hours. The area zoning and the one type of activity that resulted seriously limits the enjoyment the city dwellers could have from Broadway Avenue. There is no reason to visit Broadway after five, no reason to go there on weekends.

PORTAGE AVENUE

Portage Avenue presents a different sight. It did not escape the major pitfalls of redevelopment. The blighted areas were emptied out and replaced with new megastructures, displacing many functions and many people, damaging the connections with the past, destroying older buildings considered economically obsolete, and damaging the environmental connection by destroying the trees. In the surrounding areas some of the megaprojects never came about and the city was left with swaths of empty spaces in limbo. The downtown mall was the main pitfall. This was what Whyte called "a

concrete manifestation of a deep misunderstanding of the function of the city." Like its suburban model, it is car oriented and does not have a pedestrian focus at the street level.

Cities are about interactions, connections and continuity. Damaging the fabric of the area by substantial demolition, de-mapping the streets to provide more space for development, splitting the street into the upper and inner city for pedestrians and the street level for the vehicles, enlarging the blank wall and wind-channel quotients are not the ingredients of successful space.

PERCEIVED ENVIRONMENT AND ITS ROLE IN SHAPING THE CITY

Much has been written on the economic and political forces that shaped downtown Winnipeg, that determined its development and its decline. Not so much attention, however, has been given to the perceived environment and its role in changing this city. Failure of the downtown redevelopment processes and resulting problems faced by the entire city have been identified and examined time and time again. The economic, political and architectural solutions were sought and attempts were made to implement them. Decades after the processes started, however, the same problems stare at us from vacant store windows on Portage Avenue, from deserted downtown street corners. The resolution of these problems requires a change in the basic perceptual and behavioural patterns. Until the urgency for such change is widely acknowledged, it is unlikely that downtown Winnipeg will be completely revitalized (Lyon, 1984). The required changes to the perceptual patterns could be linked to the major causes of repeated failures in the redevelopment process. They could be summarized as follows:

1. Understanding the effect (and our perception of) the urban surroundings on our behavioural patterns and our sense of self. Understanding the need to preserve and rebuild the sense of place with its various elements in order to create a healthy urban environment;
2. Appreciating the role and status of downtown. The realization that suburbs cannot survive without the city, suburbs exist only because of the urban centre and "cities for people who do not like cities are the worst of the two worlds" (Whyte, 1988, p. 7);
3. Changing the ominous assumption that progress demands squalid surroundings, that deteriorated landscapes, debased communities, derelict buildings, filth and "illth" (poverty + ill health) (Hiss, 1990, p. 179) are simply a given, something we all have to live with;
4. Changing the focus of urban revitalization to the major element of the city—people, since it is people and social interactions that shape a healthy urban environment:
 - a. Cities exist because of people. Cities could, conceivably, exist without cars; they will, however, perish without people.

- b. Healthy interactions are only possible when there is a balanced mixture of people and at least some elements of social justice. Any form of segregation, poverty, lack of economic security will adversely affect the urban environment.
5. This city has its limitations: Winnipeg is no longer—and never will be again—"the Chicago of the North."

ROLE OF PERCEPTION IN URBAN PROCESSES

Examining the perceptual aspect of urban processes is especially fascinating in the North American cities where, inasmuch as we recognize our ability to shape the environment, we generally tend to deny the environment the power to affect and transform our existence and experience. We are more likely to seek economic, political or social explanations of urban processes than acknowledge the most important formative aspect of urban life: human interactions with the perpetually changing environment. Politics, the economy and major social issues do not exist in a vacuum and each of them could be, and often is, easily influenced or altered by behavioral changes. A simple event—someone discovering an appealing place and spreading the word around and resulting in more people visiting and spending time in this place—can generate an avalanche of economic, social and even political processes. Hiss refers to it as a "language of connectedness" (Hiss, 1990, p. xx).

In analyzing a perceived environment of American cities Lynch states that:

[in America] beautiful and delightful city environment is an oddity, some would say an impossibility. It is hardly surprising that most Americans have little idea of what it can mean to live in such an environment . . . they are hardly aware of the potential value of harmonious surroundings, a world which they may have briefly glimpsed only as tourists or as escaped vacationers. They can have little sense of what a setting can mean in terms of daily delight, or as a continuous anchor for their lives, or as extension of the meaningfulness and richness of the world (Lynch, 1986, p. 2).

STATUS OF DOWNTOWN

There is an underlying assumption in the North American attitude towards cities that degradation of downtown is a natural urban process. This approach largely stems from certain myths related to status symbols in the American culture. A house in the suburbs is one of those symbols. Owning a car is considered both a necessity of life and a status symbol. Living downtown signifies a low social status. So does using public transportation. One just does not do that in certain social circles. Yet in cities with healthier downtown areas, urban lifestyle is quite acceptable. In most North American cities, raising children in urban (rather than suburban) surroundings equates with poverty, yet generations of middle-class children were brought up in downtown apartments in European cities

without suffering any damage to their emotional or intellectual development. One might even argue a case for healthier development through a variety of stimuli and social interactions, but this would exceed the scope of this paper.

Downtown needs a healthy social mixture in order to raise the status of its community. That mixture should comprise residents with a variety of backgrounds and social statuses, and a variety of visitors using downtown at different times of day, and for different reasons. The city centre requires a human-scale living environment and better public transport instead of more roads for cars. The public transport must work outside nine to five schedule if the city is to be accessible for pedestrians.

As argued earlier, good environment creates a sense of pride and can encourage purposeful behaviour. Human behaviour can be influenced, catalyzed, and positively determined by purposeful design of the environment.

PROGRESS VS. DESTRUCTION

The prevailing attitude that progress is not possible without destruction is the main culprit in the lack of sense of place in downtown Winnipeg. The photographs of Portage and Main taken at the beginning of the century show a thriving, attractive and vibrant city. Why could we not have held on to the city's assets and built on them, rather than destroying them continuously in the name of progress or through daily neglect and ignorance? Again, the main danger to the city lies in the attitude, the perception and the North American culture of obsolescence. This belief that the new is inherently better than the old succeeded in destroying the city's historical built environment and continuity, leaving only a few monuments to the past. The age of buildings was often regarded as the sufficient condition to warrant the arrival of a bulldozer and the onset of renewal process. In the name of progress and development, we let the city politicians and developers create a disjointed puzzle of places, puddles of livable space connected by deserts of architectural, social and visual poverty.

By doing so, we have unknowingly damaged ourselves and, until we understand the tenuous connections we have with our city through its history represented in the built environment, we will not be able to save the remnants of the city's character. A sense of place, an experience of the place can be derived from a sense of continuity, from the historical context.

The city needs old buildings. It is a criminal act to damage them (Jacobs, 1961, pp. 187-99). Downtown Winnipeg still has a plentiful supply of old housing despite the renewals and bulldozer approach of yesteryear. The Manitoba Historical Society is quite active in lobbying for the preservation of buildings threatened by destruction. What is needed most, however, is a change in attitude and the way we think about old buildings. Many of the old structures are more sound than the new ones.

They might be economically obsolete, but physically they are capable of surviving another hundred years. Unfortunately, "[North] Americans seem to be fatally attracted to the biggest, the brightest and the newest" (Kowinski, 1985, p. iii). Present building codes promote new construction. They are not only irrelevant, but often threatening to older structures. They tend to impose regulations that damage the old buildings without bringing much benefit to the future tenants or the city as a whole. Has anyone ever questioned the true benefits of many fire exit regulations? What is the economic viability of many building code regulations? How relevant are zoning bylaws to historical districts?

What our city needs the most is a wider variety of uses of the existing downtown infrastructure. Residential uses should not be confined to new high-rise developments. Decades of high-density developments have proven that the low-rise development is more suitable for people with families. Still, most of the low-rise buildings in residential areas of downtown were replaced with high-rise structures without any relevance to the neighbourhood. A few gems of residential buildings with the community feeling and historical importance are left to rot, despite the efforts of the tenants (the Chelsea Court). City Hall and the provincial government have the authority to implement rules and by-laws that would protect communities and buildings from destruction, neglect and abandonment. Alas, maintenance and upkeep seem to be concepts foreign to their policies. Decay and destruction are common. Yet it is possible to force the property owners to maintain their properties, to keep them clean and in good repair. The roller-coaster of renewal and decay does not substitute care and maintenance. Upgrading an area does not necessarily mean displacing the poor. It might in fact create a healthier social mixture. The poor are hurt the most, by landlords and owners who let the buildings go to rot, who walk away from properties. Rehabilitation programs can function well without displacement, as long as they *rehabilitate*, not *renew*.

Older building structures lend themselves beautifully to a variety of uses. This city has not, however, entered the era of building recycling. It is still an accepted view that a new building is less expensive. A short-term economic perspective cannot be treated as dominant in approaching urban issues because there are no tools for determining a market value of memories, connection with the past and symbolic powers of districts and places. There is a symbolic dimension to the urban form. Older buildings project economic and political relations, as well as values of the past, into contemporary urban landscapes.

FOCUS ON PEOPLE

The common feature of all renewal processes in Downtown Winnipeg was a total disregard for the most important element of the urban life—the people.

Many mistakes from the past make it difficult to attract people downtown. Most literature discusses the retail and business exodus to the suburbs as the most damaging. I think that allowing two major teaching institutions to locate outside the city was the most damaging factor. Unlike other major employers in the city, a university campus tends to attract a residential community. Both the academic community and the vast number of students seek accommodation and services around the campus. Allowing the dispersion of educational functions (both University of Manitoba and the Red River Community College) from the city centre constitutes irreparable damage to the vibrancy of the city core. Contrary to what Artibise suggests (Artibise, 1977, p. 133), the University moves were not significant steps in integration of the city with its surrounding municipalities, but rather consequential factors in damaging the downtown's status by depriving it of a very important function, and contributing to its decline by removing vital day and evening uses of downtown facilities.

A successful downtown is convenient and pleasurable for people on foot. Winnipeg downtown completely lacks pedestrian perspective. The omnipresent automobile is the focus of the area. The layout of Winnipeg streets was drawn shortly after the incorporation of the city. The four-lane streets downtown are not a result of the futuristic vision of the people in 1880s but rather the result of Red River cart and the need to give them ample room to manoeuvre on the muddy streets of Winnipeg. Not many downtown areas in the world have streets that wide. One would think that the car would have plenty of room in Winnipeg. Many larger European cities exist and thrive with parking along the narrow streets. North American society, alas, has been brainwashed to believe that cities have to be transformed to accommodate cars. In the zeal to woo the people downtown, or rather in the order to court the car, we have created a city dominated by parking lots. We also created an artificial civic issue of catastrophic lack of parking. If any more space is cleared away for parking, however, in some city centres, there will remain no reason to go there and park. The general disinclination to walk for more than two blocks creates a low supply of pedestrian space and usurps the city centre for the ubiquitous car. We have been conditioned to believe that the solution is more parking stalls downtown and more lanes leading to them. It is almost laughable if one relates this attitude to a small provincial city with a stagnant population of just over 600,000.

Building for more cars will not prompt more development and growth downtown. Building for pedestrians, however, might stimulate economies on a small, local level and provide city dwellers with a livable city. The Corydon Avenue success and growth, prompted by simply acknowledging the basic human need for street interaction, is the best recent example.

Cars are mere means of transportation, they should not dictate our lifestyle. Vehicles alone cannot make any city more vibrant, they only pass through. People in vehicles cannot make the city

more vibrant. To benefit from the occupants of the cars, you must get them out of their moving boxes and make them stay on the street, in a shop, in a park.

It seems that once the automobile is established at the heart of any populated encampment, it erodes people's sense of community (Duany, 1992).

There is "no sense of connectedness between the people on foot and the people in vehicles" (Hiss, 1990, p. 9). We cannot use the same senses to move in a crowd as we use to step onto a street. Human interaction with the built environment is only possible between a pedestrian and the city. People need the street to give them "human information" not "automotive information" (Duany, 1992). Enclosing the pedestrian traffic in overpasses and concourses is not going to make the city more livable. In Winnipeg, people are enclosed for prolonged periods of time because of our winters. During the other six months, citizens should be able to enjoy these long-awaited street interactions. Corydon Avenue is the best proof of the need for street experience: people strolling, sitting outside in cafés, people watching people, people talking, meeting. The Air Canada Park and Broadway, during lunch time, are other examples of meeting that basic need. In the city centre pedestrian traffic was sent underground, or up into overhead walkways and inside into sealed atriums and galleries. Everywhere except the street level. The street level received its fair share of blank wall treatment, vehicular traffic supremacy with the bulk of the right-of-way given to cars and a large number of prime downtown locations allocated for "daytime storage of vehicles" (Whyte, 1988, p. 314).

On Portage Avenue, there is no protection from the environment for someone on foot. The wind channels are created by tall, straight walls of buildings. There is no protection from rain or snow. There is no visual interest at street level and there is a resulting lack of street life. The only oasis in this urban desert is the tiny Air Canada Park, a surrogate city plaza.

It is not possible to enclose all streets and to create a controlled climate environment. Neither is it necessary. With the minimum of consideration for pedestrians, even Winnipeg can be livable in winter. Overpasses and concourses are not designed to protect pedestrians; they are designed to protect drivers who park their vehicles in an enclosed parkade. There is no consideration for the true pedestrian, someone who does not move around in private vehicle. Actually, everything possible, in terms of design of buildings in Winnipeg and the treatment of streets downtown to make the life more difficult for the pedestrian, has been done:

1. No relation to the climate of this city. The streets are wind tunnels. There are no physical barriers, shelters, no awnings, roofs for protection from weather. Sidewalks are poorly maintained;

2. Discouraging street-level pedestrian interaction with the built environment and with other people. Streets were built as corridors for moving traffic. There are no places for people to stop and linger. There is no reason for stopping, either;
3. Lack of continuity. The city is a compilation of sites. With a vehicle, one quickly moves from point A to B. Vast distances and ugly stretches in between the sites are quickly passed. The pedestrian is left to struggle through it all, not only covering the distance but also experiencing the blight.

Downtown works better when it is compact (Whyte, 1988, p. 312). If we let it spread, as has happened in Winnipeg, the only rescue is continuity, for continuity combats the linear distance. Negotiating vast stretches of ugly miscellaneous parking lots is the most unpleasant experience the pedestrian has in the city, even when it is not windy.

In most cases we discover a new city from a pedestrian perspective. Even if we drive to the city centre we would eventually park the car and stroll awhile to sense the people and life around us. It is a paradox that the well-to-do inhabitants of the suburbs who, in their travels abroad, soak in the sense of place in towns and villages of far-away lands and cherish the pedestrian experience there, too often deny themselves that type of interaction with their city.

GRANDIOSITY

Winnipeg will never become more than a provincial capital of a not-so-important province in a not-so-important country. And there is nothing pejorative or shameful in this statement of fact. Winnipeg can still be regarded as a wonderful place to live. Solutions to the city problems, however, should be related to its scale and its importance. They should be small and local. Grandiosity, so much liked by those with a provincial inferiority complex, has done enough damage in Winnipeg downtown and beyond. Suburban sprawl and the resulting decline of downtown could be related in large part to the false assumption that expansion means progress, that in order to prove its importance a city must "grow." For Winnipeg, considering its stagnant population, growth is neither healthy nor is it a necessity. Any improvements in livability of Winnipeg must relate to accepting this attitude. The city should concentrate its resources on preserving and improving its inventory of assets. This city should focus on using its small size, and its slow pace to its advantage. The success of Portland, Oregon, stems from a tradition of opposing sprawl and its motto—"We don't want to be like Los Angeles" (Langton, 1992, p. 139). Winnipeg does not have certain geographical assets that Portland enjoys, and no amount of wanting will give us the coastline or climate of Los Angeles. It is crucial to realize, however, that the only chance for any improvement lies in a realistic analysis of the city assets and

building on those. The city's problems cannot be changed in one giant step. In fact, it is the giant steps, and transplanting grandiose and generic big-city ideas into the context of Winnipeg's centre, that contributed to the downtown's slide into decline and decay.

CONCLUSION—A GLIMPSE OF OPTIMISM

In Winnipeg, downtown redevelopment, propelled by the past attitudes, moulded the present face of the city's centre and it indirectly affected our attitudes towards this area of town. When we have visitors from out of town, we drive them along Wellington Crescent or perhaps show them the Forks. Would we bring a visitor for a stroll along Portage Avenue, however? Would we walk to where our "muddy waters" city started its life—the corner of Portage and Main? Most of us would drive through the area mildly embarrassed, and mention the historical importance of the place with the 50 km per hour detachment.

No amount of talk about the Ballet or the Symphony, our friendliness, our summers and a hundred other reasons to love Winnipeg will change the basic fact: our downtown gives away the livability of our city. We might close ourselves in our suburbs and quickly drive through downtown if we really absolutely have to, but the truth still is that it is the city centre that forms, directly and indirectly, our—and others'—opinions of our city. Only a genuine civic pride derived from the city centre will change our attitude about the city as a whole. Because inasmuch as our self image is built on the way people around us react to our presence, the way we feel about our city is not immune to what other people think about it. Acknowledging the need for this pride will help shape the new downtown.

Downtown redevelopment, through the prevalence of piecemeal, short-sighted measures, not only failed to enhance, but also significantly contributed to damaging, the remnants of the sense of place in Winnipeg's core, and diminishing many experiences. The saddest loss for me is the sight of the Hotel Fort Garry with the city skyline in the background presented to the Winnipeggers driving North over the Midtown Bridge, one of the few true visual treasures in a city otherwise flat and not very generous with vistas. Alas, senseless development robbed the city of this experience. It inflicted a sense of painful loss, a helpless sense of damaged experience, an experience cherished by many.

In the recently released draft document, *Plan Winnipeg, Towards 2010*, there is a special emphasis on the renewal of downtown. The goal is to establish the inner city's image as a vital, efficient, attractive place providing opportunities for employment, shopping, entertainment, and—for some—living. Unlike the city's ten-year-old *Plan Winnipeg*, this new document is not just a land-use policy paper. There is a hope that the city will address its physical, social, economic and environmental

issues in a comprehensive and successful way. The emphasis is on quality of life, quality environment, quality planning and quality civic service. Many pages are devoted to social equity, managed urban development and improved urban image. The issue of environmental perception and the sense of place could be elusive and difficult to legislate. Fortunately, supply creates demand even in matters related to perception. A good new space builds its constituency. Assuming that quality urban planning means planning that is sensitive to the perceived environment and its role in urban interactions and processes, and assuming that the quality planning is truly one of the major goals for the next 20 years, perhaps there is hope for the sense of place in Winnipeg.

Perceptual processes that have already started form a basis for some optimism. The Forks and Corydon Avenue have created a new sense of awareness of the basic need for urban life. Environmental awareness creates a different approach to the vehicle supremacy. The range of people using public transit in Winnipeg has broadened dramatically in the last two years. More people walk and ride bicycles to work. Changing attitudes related to life cycles of products and recycling might eventually combat the culture of obsolescence, and we could extend that approach to houses, even area recycling.

In these trying economic times, it is difficult to be optimistic about Winnipeg's future. However, new generations are growing in the suburbs with a new way of understanding ecology and the environment. This will, I hope, set a trend for urban environment appreciation. That is why it is so necessary now to protect the existing experience and preserve it for the next generations to build upon.

The urban environment is now so fragile that it needs our intervention. The elms along Broadway will not survive without our awareness and action. Chelsea Court will crumble, leaving Winnipeg's artistic community, currently living there in some numbers, with a profound sense of loss. The new trees downtown will all die without our efforts to maintain them. Many landmarks of city architecture will be declared obsolete and will disappear. Downtown is a vital organ of the ecosystem we live in. It is also a measure of our health as an urban community. The city will not survive without it. Ignoring the sense of place and the importance of the perceived environment will not only deprive us personally of an enriching experience but also result in further "dullification" of our city. In his brilliant analysis of the city centre, Whyte said it all, and this passage is most relevant to Winnipeg and its tenuous urban experience:

The worst thing about dullification is the way people get used to it. They even get to like it. If there are no longer streets that are attractive to use, they will not use the streets. They will forget there ever were any and say that culturally street life is not suited for their city. So they take the choice that is given to them: concourses and

skyways. Like the blue cheese dressings of the salad bars, once you get used to them, you lose your taste for the real thing (Whyte, 1988, p. 205).

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USING HEDONIC METHODS TO VALUE ENVIRONMENTAL DAMAGES TO RESIDENTIAL HOUSING

Lee Hillman

DAMAGE TO THE ENVIRONMENT AND PROJECT FEASIBILITY ANALYSIS

There has been a growing concern in the last decade over the impacts of our economic system on the environment. Government, industry and the general public have realized that the well-being of the economy is contingent upon the well-being of environment. This awareness has created an increased interest in methods of valuing the impacts that our economic projects have on the environment. Although there is interest in valuing damages to the environment, deriving a monetary figure for a given amount of environmental damage is extremely difficult. This problem stems from our economic system and how values are determined within the system.

In a market based system values are determined through the interaction of demand and supply, buyers and sellers interacting in the market with the resulting prices for goods revealing the values placed on those goods by the society. This is the most efficient way of determining value for private goods, and will also determine what and how much of a good will be produced. Environmental goods are public goods and therefore lack markets to determine the real values placed on them by society. Due to this problem, other methods of valuing environmental damages or benefits have been developed. One of these methods uses existing markets indirectly to determine values for environmental commodities.

Hedonic methodology has been used when there exists a market for a differentiated product that has environmental goods as one of its attributes. Although still in the developmental stage, hedonics provides a solid theoretical base for which applications can be attempted. The main body of the existing work investigates the valuation of marginal changes in environmental characteristics (for example marginal improvements in air and water quality). Anderson and Crocker (1972) and Harrison and Rubinfeld (1978) provide good examples of investigations in marginal changes of environmental quality. Very little research has been done on non-marginal changes in environmental quality. For this reason, the techniques for investigating non-marginal changes are lagging behind hedonic methods that value marginal changes.

INTRODUCTION TO VALUATING NON MARGINAL CHANGES IN ENVIRONMENTAL QUALITY

Current hedonic theory provides the base for valuing characteristics that are continuous in nature, allowing for the derivation of values for marginal changes in environmental quality. What hedonic theory does is provide the link that describes implicit market interactions between buyers and sellers concerning a characteristic of a differentiated product. Thus, even though only the differentiated

product has a market, hedonic theory can allow the investigation of a characteristic of that product as though that characteristic has a market of its own. By assuming that a product can be described by its characteristics, it is possible to regress the price against the characteristics and obtain a descriptive equation that shows the impacts of the characteristics on the price of the product. Existing hedonic theory is lacking in development of the process of interactions between buyers and sellers concerning characteristics that are non-marginal (large changes, or characteristics that are either present or not present in the commodity).

The only existing technique of valuing a non-marginal change is a two period method of hedonic evaluation. This method uses two hedonic price functions (one before the change, one after the change) to trace the effects of the price of the characteristic in question. Accurate sets of data that contain all the relevant characteristics in periods before and after the non-marginal change are few and far between with a high probability that there will be gaps in essential observations. Therefore, another method for determining values of non-marginal changes is needed.

STUDY AND STUDY AREA

This paper will introduce a method for describing the implicit market for non-marginal characteristics in a differentiated product. As an extension of, and part of the existing hedonic theory, this method will describe the interactions of buyers and sellers in the hypothetical characteristic market. The theory presented explains what the implicit price (given by the hedonic price regression) for the characteristic represents. It will be shown that the implicit price will represent the upper limit of the average maximum willingness to pay for a non-marginal change in a characteristic. The model will be subjected to an empirical test using residences in the St. Vital area of Winnipeg, Manitoba that are proximate to the Bishop Grandin Boulevard and the two High Kilovolt (KVH) transmission lines that run beside the boulevard. This study attempts to value damages due to proximity to both the high KVH lines and the Bishop Grandin Boulevard.

THEORETICAL BASIS

The theoretical basis for this paper begins with Rosen's theory of a differentiated product and implicit prices. According to Rosen, a differentiated product, in this case residential housing, can be fully described by a vector of its characteristics. Thus, variations in the price of a differentiated product can be defined by the variations in the quantities of the characteristics of that product. For example, a house can be described by its square footage, number of bathrooms, lot size, age, area of the city; and other physical and locational characteristics. Differing amounts of these characteristics will

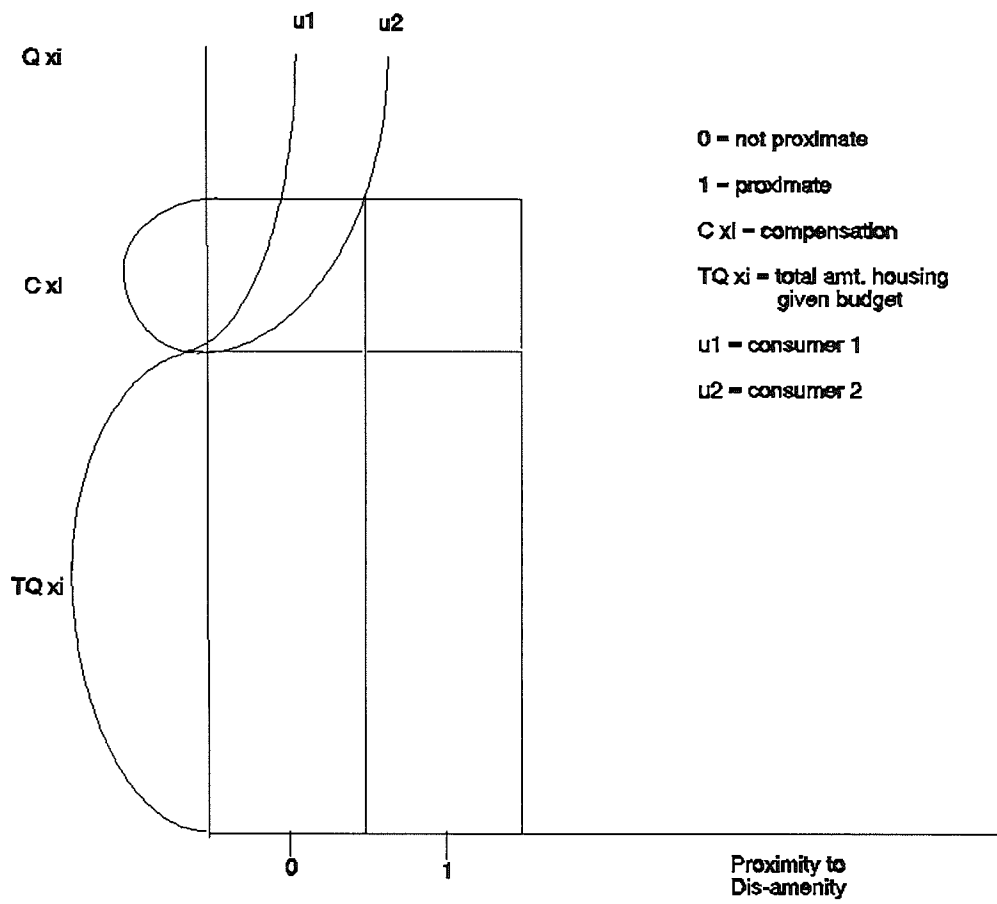
determine the market price of that house. As with Rosen's theory, the characteristics that explain the product price are those characteristics that provide the consumer with utility (or dis-utility). This allows the estimation of a hedonic price function using observation of housing prices and given utility bearing characteristics.¹ These implicit prices are the result from the interaction of buyer bid functions and supplier offer functions. The buyer's bid functions are derived from maximization of the utility functions with respect to all the characteristics and is constrained by each individual's budget. The supplier offer functions are derived from maximizing the profit function given the prices of inputs for each characteristic and a given technology level (as in standard economic theory, profits are maximized where marginal revenue equals marginal cost). The tangencies of the various bid and offer functions denote the implicit prices that are given in the hedonic price function. The rest of this section will develop a theoretical base for decisions concerning the movement of consumer in characteristic space that concern dis-utility.

Consumers who are entering the a market for residential housing will value the different characteristics based on the utility derived from consuming the various characteristics. Restricted by a budget, consumers will attempt to maximize the benefits derived from the housing commodity by choosing the combination of characteristics that will contribute most to the overall benefit. Some houses will contain characteristics that lower the overall benefits for certain consumers, resulting in these consumers placing a lower valuation upon the houses that contain the dis-amenity or utility lowering characteristic. For those consumers least affected by the characteristic providing dis-utility, maximization of the overall benefits derived given a fixed budget would cause them to include the dis-amenity in the bundle of housing characteristics.

The reasoning for this decision is based in the individual's utility function. By including the dis-amenity the consumer is able to obtain more utility bearing characteristics given the fixed amount that is allocated to be spent on a house. As always, it is the marginal buyer and seller who determine the market price. The quantity of extra utility bearing characteristics that can be obtained for including the dis-amenity will be determined by the interactions of the consumer and the seller in the market. Thus only those consumers least affected by the dis-amenity will engage in transactions with sellers of residences that have the dis-amenity characteristic. The consumers whose overall benefits are highly affected will demand more utility bearing characteristics for compensation that what suppliers are willing to give. This is because there are other consumers that demand less compensation.

The explanation can be given in a more specific algebraic and technical form and is presented below.

FIGURE 1



Let a hedonic price function be described by:

$$p = p(x_1, \dots, x_n) \quad i = 1, \dots, n \quad x_i = 1, 0 \quad (x_i \text{ is a dummy variable})$$

Where the characteristic that provides dis-utility is the characteristic x_j .

Assuming that housing is a weakly separable commodity a separate utility function can be stated that includes only housing characteristics:

$$U = u(x_1, \dots, x_n)$$

Assuming that the amount of a consumer's income that is allocated to residential housing is a predetermined fixed amount a budget share equation can be created using only housing characteristics.² Thus a budget share equation that includes the environmental characteristic and all other goods can be given as:

$$y^0 = \sum_i p_i x_i + p_e \quad i = 1, \dots, n \text{ except } e \text{ and } e \text{ is the environmental characteristic}$$

From the budget equation the total amount that can be spent on utility bearing characteristics can be specified:

$$\sum p_i x_i = y^0 - p_e \quad \text{and } p_e < 0$$

Thus p_e augments income that can be used on the other characteristics, (x_j) . The price of a characteristic that provides a dis-utility would be negative and only the price is included because the environmental characteristic is non-marginal and of a fixed amount (either proximate, $x_e = 1$, or not proximate, $x_e = 0$). From the budget equation, it can be seen that the negative price of the environmental dis-amenity would allow the consumer to purchase more utility bearing characteristics up to the maximum amount of p_e worth of utility bearing characteristics in excess of what could be purchased without the inclusion of the environmental characteristics.

The price of the dis-amenity is determined in the market as neither buyers or sellers exert control over prices.³ The price of the dis-amenity (as with all other characteristic prices) would be determined by the interaction of the consumers that are least affected (in terms of overall utility level) and sellers of those units which contain the environmental dis-amenity. Only those buyers that are least affected will engage in transactions on these properties because the other buyers would demand a higher price savings. Thus the market price gives the least amount of money (in the form of other characteristics) that a consumer will accept to have a residence that contains the environmental dis-amenity. This can be seen graphically in Figure 1.

The utility curves are not convex to the origin due to the dis-utility given from the proximity to the environmental dis-amenity. A graph showing two utility bearing characteristics would have utility curves that are convex to the origin, illuminating the consumer's preferred trade-off between the two utility bearing characteristics. With the graph showing the dis-amenity, the consumer is not willing to

exchange any utility bearing characteristics and is actually demanding more to include the dis-amenity in the consumption bundle.

It can be seen from Figure 1 that the consumer (utility curve U2) who includes the environmental characteristic in his/her housing commodity accepts the quantity of other characteristics, C_{xi} , as the compensation for proximity. The consumer who has a utility curve like U1 needs a higher compensation to purchase the residence that is proximate to the dis-amenity, and therefore it will be consumer U2 whose price will be reflected in the hedonic price function. The consumer who locates at the point where the environmental characteristic is included in the housing bundle has chosen this location in the characteristic space. By locating at a specific point the consumer has shown that he/she is not indifferent between the characteristic bundle that includes the dis-amenity and the maximum quantity of housing characteristics that can be purchased without inclusion of the dis-amenity. The quantity of characteristics needed to compensate for the inclusion of the dis-amenity can be determined from the implicit price given from the hedonic equation and is the upper boundary of the minimum amount the consumer would accept to be proximate to the environmental dis-amenity.

As was stated before, the implicit price is determined from the interaction of those consumers least affected by the dis-amenity. Therefore the compensation (in the form of more utility bearing characteristics given the budget constraint) derived from accepting a residence that is proximate to the dis-amenity is just enough so that the consumer preferred the residence over the next best alternative (a residence with less utility bearing characteristics, but which is not proximate). The given implicit price can also be described as the upper boundary of the maximum amount the consumer would be willing to pay not to be proximate to the environmental characteristic.

Given the functional form of the hedonic equation, the upper boundary will be set in terms of a price, or a ratio (which can be shown as a percentage difference). If the hedonic function is in a linear form, the coefficient that represents the upper boundary will be given as a price. For a logged linear form of hedonic equation, the coefficient represents a ratio of the difference of the mean prices. The log linear form the hedonic equation is expressed as:

$$\ln p = a + \sum_i \beta_i \ln(x_i) + \sum_j \beta_j (d_j) + \beta_e d_e$$

Where β_i are the coefficients for the continuous variables, β_j are the coefficients for the dummy variables, and β_e is the coefficient for the dummy variable that represents the characteristics for proximity to the environmental dis-amenity. The coefficient for the environmental characteristic, β_e , represents the difference between the log of the mean housing price proximate to the dis-amenity and the log of the mean housing price not proximate to the dis-amenity. This can be expressed as a ratio

by taking the anti-log of the equation. Thus the anti-log of the coefficient is the ratio of the mean price not proximate to the mean price proximate. The algebraic explanation is given below.

$\beta_e = p_p - p_{np}$, where p_p is the log of the mean housing price proximate to the dis-amenity and p_{np} is the log of the mean housing price not proximate, β_e is expected to be negative so multiply through by -1 and anti-log the equation.

$\beta_e' = p_{np}'/p_p'$ where ' denotes the anti-log of the various terms. β_e' is the ratio of the mean housing prices, not proximate and proximate. As with all ratios this can be easily expressed as a percentage difference. Given a house price a upper boundary in dollar terms can be obtained. The log linear form of the hedonic function was discussed in depth due to the fact that for this investigation it was determined to be the best fitting functional form.

DATA

The area that was used in this study is the St. Vital district in Winnipeg, Manitoba. The residential area has two high KVH transmission lines that run alongside the main thoroughfare, Bishop Grandin Boulevard. The price and physical characteristics were obtained from paper and electronic files from the Winnipeg Real Estate Board. The proximity, neighbourhood and locational characteristics were obtained via personal observations. Two hundred and forty residences were observed but only 152 were used due to missing data that were needed to complete the observations for each residence that was not used. The observations of the residential sales were taken from the years 1986 to 1991, with all prices normalized to 1990 prices. This was possible by using the housing price index for the St. Vital area and provided by the WREB. The characteristics used to describe a residential dwelling in the hedonic regression are a set of physical and locational characteristics with all continuous variables logged.

The continuous variables are Price (dependent variable), LNSQFT (log of the residence living space, LNWL (log of the lot size), and LNAGE (log of age) with living space and lot size measured in square feet. Various dummy variables are used to describe non-continuous characteristics ranging from the presence of an attached garage, GRAG, to a finished basement, BSMNT. The locational characteristics LOC1, proximate to the Bishop Grandin, and LOC2, north or south side of the Bishop Grandin (0 for south and 1 for north), and finally the proximity to the transmission lines given as the variable PROX with a 1 representing proximity and 0 being not proximate.

TABLE 1 FIRST RUN USING ALL VARIABLES						
Variable	Coef.	Std. Err.	Std. Coef.	Tolerance	T	P(2 Tail)
Constant	5.932	0.480	0.000	-	13.449	0.000
LNSQFT	0.495	0.056	0.452	0.349	7.953	0.000
LNWL	0.237	0.036	0.261	0.537	5.694	0.000
LNAGE	-0.095	0.020	-0.252	0.344	-4.395	0.000
GRAG	0.057	0.022	0.091	0.518	1.943	0.055
FIRE	0.014	0.022	0.031	0.496	0.656	0.513
EXT2	0.060	0.056	0.072	0.242	1.061	0.291
EXT1	0.069	0.052	0.094	0.219	1.314	0.192
DINE	0.005	0.020	0.009	0.688	0.227	0.821
DECK	0.031	0.018	0.057	0.762	1.697	0.093
CENT	0.026	0.018	0.056	0.772	1.327	0.098
BSMNT	0.037	0.020	0.076	0.673	2.553	0.066
BDRMS	0.018	0.020	0.039	0.623	0.911	0.365
BATH	0.015	0.015	0.048	0.531	1.031	0.305
LOC1	-0.083	0.045	-0.160	0.149	-1.838	0.069
LOC2	0.041	0.028	0.077	0.411	1.464	0.147
PROX	0.044	0.049	0.078	0.145	0.887	0.377
F-RATIO 49.749 ADJUSTED R ² .856 STD. ERR. EST.0.088						

EMPIRICAL ANALYSIS AND RESULTS

Three functional forms were run: linear, log-linear, and semi-log. Of these forms the log-linear provided the best fit, although the linear form was close. The probability plot outcomes, adjusted R² values, and the F test statistics all favoured the log-linear form. The next step was running a full regression that included all of the variables (Table 1) and a second regression based on only using variables that were statistically significant (Table 2). Variables were dropped only when there was a significant increase in the F-Ratio as well as the dropped variable being statistically insignificant. The proximity variable, PROX, was not significant and was highly correlated with the locational variable LOC1, therefore PROX was dropped from the regression. The high correlation is due to the fact that the transmission lines run along the north side of the boulevard, therefore, all the PROX observations are also over three quarters of the LOC 1 observations. Most of the observations for being next to the boulevard were on the north side and this problem could be easily corrected by obtaining more observations on the south side of the boulevard. Removing the proximity variable, PROX, from the regression results in the locational variable coefficient to decrease to (-0.048) from (-0.083) and increases the reliability of the coefficient for LOC1, the results can be seen in Table 2. Table 3 shows the regression using both PROX and LOC1. Although being highly correlated with each other, the dropping of the proximity variable PROX has little effect on the other variable coefficients (except for the coefficient for LOC1). The proximity variable PROX, is not statistically significant, neither when the locational variable is run or without the locational variable included. By dropping the variable PROX its effects become unexplained variance and its contributing effects to the locational variable LOC1 are dropped. Taking the coefficient for the locational variable LOC1 from Table 2, the percentage difference is 4.8 percent between houses that are next to Bishop Grandin Boulevard and those that are not. The main question is the removal of the PROX variable. Since it does affect (and is highly correlated with) the coefficient produced for the locational variable, should measures be taken to account for the collinearity and have the PROX variable included? Both have negative interactions on the dependent variable price with the locational variable having the largest effect. The close correlation of the two variables tends to inflate the negativity of the locational variable. Without the PROX variable, the locational variable coefficient will be closer to its true magnitude. Thus this study was unable to accomplish one of its objectives, determining the effect of transmission lines on residential property price. The only way to include both variables in a data set would be to expand the investigation to include the entire city, and thus there would be the possibility to encounter the proximity variable when not beside a thoroughfare.⁴

TABLE 2 FINAL RUN LOG-LINEAR HEDONIC FUNCTION (SHORTENED VERSION)						
Variable	Coef.	Std. Err.	Std. Coef.	Tolerance	T	P(2 Tail)
Constant	5.580	0.456	0.000	-	14.336	0.000
LNSQFT	0.571	0.049	0.579	0.588	12.427	0.000
LNWL	0.226	0.032	0.281	0.768	6.978	0.000
LNAGE	-0.089	0.018	-0.255	0.402	-4.854	0.000
GRAG	0.072	0.020	0.151	0.675	3.470	0.001
DECK	0.036	0.018	0.081	0.849	2.106	0.038
CENT	0.032	0.017	0.049	0.824	2.342	0.017
BSMNT	0.068	0.018	0.094	0.901	2.405	0.018
LOC1	-0.048	0.019	-0.086	0.820	-2.345	0.018
F-RATIO 76.227 ADJUSTED R ² .856 STD. ERR. ESTIMATE 0.085						

With a mean housing price of \$93,462 a 4.8 percent difference would mean that two houses with the same characteristics, but with one being next to Bishop Grandin Boulevard would result in the proximate house having a market price that is \$4,486.18 less than the house that is not proximate. The other variables show reasonable coefficients with the proper signs, for example, the presence of central air conditioning will contribute approximately \$3,000 to the price of a residence while a finished basement will add about 6.6 percent to the market price. After a discussion with Sandra Dagele of the Winnipeg Real Estate Board and Andy Arnot of RE-MAX it can be concluded that the coefficients are close representations of the actual impacts that the characteristics have on the housing price.

CONCLUSIONS

Although this study encountered problems in determining an implicit price for both the locational variable LOC1 and the proximity variable PROX, theoretically, hedonic methodology can be used to provide a benchmark number that can be used in project analysis. The implicit price of a non-marginal variable given by the hedonic regression represents the upper boundary of the maximum amount that consumers would be willing to pay not to be proximate to the dis-amenity. A percentage was given for the locational variable, and the percentage of 4.8 percent is likely a close approximation; a larger study is needed so that the results can be used with confidence. The reason for the failure of hedonic methods in this study were linked to the area from which the observations were gathered, and were not due to shortcomings in hedonic theory. What is needed is a larger study that incorporates the entire city and then the effects of the two environmental variables LOC1 and PROX may be able to be separated.

Another conclusion is that for Manitoba Hydro purposes, high KVH transmission lines should be located alongside major thoroughfares when cutting residential areas. It was shown that effects from the proximity to high KVH lines are outweighed by the effects from proximity to major thoroughfares. One note: as public knowledge of the potential health effect from electromagnetic radiation increases, one may find that the proximity to transmission lines may become the stronger variable, outweighing the effects of the thoroughfare.

TABLE 3 REGRESSION USING BOTH PROX AND LOC1 VARIABLES						
Variable	Coef.	Std. Err.	Std. Coef.	Tolerance	T	P(2 Tail)
Constant	6.452	0.472	0.000	-	13.676	0.000
LNSQFT	0.568	0.046	0.575	0.584	12.259	0.000
LNWL	0.238	0.036	0.260	0.557	6.718	0.000
LNAGE	-0.104	0.018	-0.309	0.411	-5.834	0.000
DECK	0.027	0.017	0.059	0.825	1.590	0.030
CENT	0.023	0.017	0.038	0.817	1.009	0.024
BSMNT	0.069	0.020	0.090	0.885	2.286	0.000
LOC1	-0.095	0.044	-0.184	0.155	-1.777	0.079
PROX	0.043	0.051	0.078	0.155	0.847	0.399
F-RATIO 68.476 ADJUSTED R ² .864 STD. ERR. OF ESTIMATE 0.085						

NOTES

1. For a detailed discussion on Rosen's theory, see Appendix A.
2. This assumption does not abstract from reality. Discussions with mortgage officers at three major Canadian banks demonstrate that major lending institutions allocate the maximum loanable amount at approximately 32.5 percent of the gross household income.
3. Buyers are assumed to purchase only one residence and most sellers are owners of a single residence, with no producers providing enough units to have an impact upon the market.
4. This study is being enlarged to include the entire city and should be completed in the near future.

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