HUMAN SCALE IN MEDIUM AND HIGH DENSITY MONTREAL NEIGHBOURHOODS

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ABSTRACT

Paying less attention to the human scale, which is the proportional relationship between buildings and streets to the human dimension, post-World War II residential planning has resulted in excessively wide roads and vast open public spaces. The realization that these planning designs and standards do not offer a comfortable built environment for people led contemporary designers to reconsider an approach to planning public spaces from a human scale perspective. To understand how the above-mentioned issues affected Montreal's residential developments and how they can be improved to become visually more attractive and livelier, this study focuses on the physical attributes that affect a pedestrian's perception of the human scale in residential developments.

The author reviews previous studies and investigates factors that influence human scale in medium and high density Montreal neighborhoods which differ in street patterns, buildings' types and the overall quality of the built environment. Through observation and spatial analysis of the carefully chosen routes in four selected settings, the work studies the ratio between width and heights of the streets and the buildings that enclose them in order to find out how these areas are perceived as a sequence of spaces based on walking pace.

The human scale attributes observed as a result of cross sectional analysis allowed to put forward guidelines which may be applied for planning pedestrian friendly residential developments. The set of design principles that underlined the guidelines proceeds from human dimension and respond to slow-paced pedestrian movement. The design of communities according to these guidelines will offer a good quality built environment with mixing of housing types and land uses, high level of mobility, optimal proportions of sidewalks, streets, buildings, and blocks, high complexity streetscape that sustains visual interest, supports walkability and helps to foster neighborhoods for active living.

RÉSUMÉ

L'échelle humaine, qui est la relation proportionnelle entre les bâtiments et les rues par rapport à l'humain, est l'une des principales caractéristiques absentes des villes aux larges avenues et espaces ouverts, conçus après la Deuxième Guerre mondiale. Il est compris aujourd'hui que les critères de design élaborés à cette époque n'ont pas permis aux urbanistes de créer des villes confortables et depuis, cette vision est remise en question pour une approche intimement liée à l'échelle humaine. Afin de comprendre les répercussions de cette problématique et comment nos lieux de vie peuvent être améliorés, cette étude s'est intéressée aux caractéristiques physiques reliées la perception du piéton sur l'échelle humaine dans les quartiers résidentiels.

Dans le cadre de cette recherche, l'auteur a revu de nombreux articles qui étudient l'influence de l'échelle humaine dans différents quartiers de moyennes et hautes densités, qui se distinguent par leurs trames de rue et par les types et qualité de leurs environnements bâtis. Dans un deuxième temps, les proportions entre les bâtiments et les rues ont été analysées à travers quatre différents parcours minutieusement sélectionnés à Montréal. L'objectif de cette investigation est de comprendre comment ces lieux sont perçus comme des séquences d'espaces traversées à la cadence du piéton.

Les fruits de cette recherche ont permis d'élaborer une série de recommandations qui peuvent être utilisées dans la conception des quartiers résidentiels adaptés aux déplacements pédestres. Ainsi, les lieux de vie conçus à l'aide de ces principes offriront des environnements physiques de qualités, composés de logements de types divers, et seront soutenus par une mixité d'usages et de services complémentaires. De plus, ces quartiers seront caractérisés par des trottoirs, rues et îlots soigneusement calibrés, et pourvus d'espaces complexes, visuellement stimulants et aussi d'un tissu urbain perméable, adapté à la marche et à un mode de vie basé sur l'activité physique.

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CHAPTER I

INTRODUCTION, METHODS AND GOALS

1.1 Introduction

This chapter introduces the subject of the study, and gives the definition and rationale of why human scale needs to be given particular attention in design practice. The theoretical framework offers various concepts and approaches the notion of human scale revealing its multi-dimensional nature. The chapter identifies the goals and objectives of this report that assist the author to answer the research question in particular. It also provides an overview of the study and explains the methodology in conducting the research.

1.2 Study Rationale

Human scale is the area of my interest since I came from where high-rise development dominates the cityscape and does not always create a comfortable walkable environment. Heavy bombardments used during World War II, has caused immense damage to Russian cities, which had to be rebuilt. The construction industry had found then an easy alternative to accommodate people. Large-scale tall housing construction had been widely adopted. Prefabricated homes were quick and easy to handle and construct. However, the aesthetic aspect of these buildings left much to be desired. The buildings of simple prismatic shape with flat facades and repetitive window patterns did not create comfortable visual and physical built environments. Meant to last for 15 years and long obsolete the manufactured "concrete jungles" are still a considerable part of Russia's residential developments' legacy (fig.1.1, fig.1.2)

Now living in Canada, I am interested in how human scale is represented in Montreal - as this city is thought to offer a high standard of living (Employment and Social Development Canada. Retrieved from http://www4.hrsdc.gc.ca/d.4m.1.3n@-eng.jsp?did=7) and many interpretations of the scale should be evident in the design and construction of its neighbourhoods.

Fig. 1.1 New residential district of Rostov-on-Don, Russia (Source: http://www.kommersant.ru/doc/2303842)

Fig. 1.2 Historic centre of the city of Rostov-on-Don, Russia (Source: http://history-foto.livejournal.com/192561.html)

"Fundamentally, a comfortable human scale environment is one which is related to the scale and pace of pedestrians" (Tibbalds 39). Designers take for granted that built environment is created for people, based on the human bodies size and eventually should respond to our esthetic, intellectual and emotional needs as well as support the social aspects of our lives. Alex Krieger notices: "Yet, creating exceptional places to serve human purpose has always been central to the design professions" (23). "In terms of buildings and sites, scale is crucial in providing the right setting physically and psychologically, for human encounter and well-being" add Gerald Adler and colleagues (1). Over time, "human scale" became a generally accepted term and was coined by design specialists, whether they were a practitioner of architecture or a scholar within the field.

Le Corbusier, who attempted to imply human scale in the city of Chandigarh, associated the various components of the city with the human body. The geometric elements, manufactured objects and other items which were used in constructing the city he identified as "either containers of man or extensions of man" (Evenson 36). Similarly, Jan Gehl stresses that human scale is an important consideration in successful city planning: "Basically, working with human scale means providing good city spaces for pedestrians that take into account the possibilities and limitations dictated by the human body" (33). Michael Benedikt defines human scale as "a crucial determinant of a comfortable and meaningful environment" (as cited in Adler 3). According to Pierre von Meiss, "Architecture and the human body meet each other in practical terms on an ergonomic level. The relation between size, form and gesture make up the essential of what is called the "human scale" (69).

1.3 Theoretical Framework

The Theoretical framework promotes a broader discussion in the subject of this report. The diversity of the approaches in the study of the scale of form and pattern of the built environment allows to expand the understanding of human scale's conception beyond physical parameters of buildings.

Jan Gehl - a former professor, practicing architect and expert with extensive experience in public-space design, in *Cities for People* connects human scale with urban quality. He argues that the traditional function of city space as a meeting place has been neglected due to urban growth, increased car traffic and the modern lifestyle. He stresses that well-designed public spaces that are human in scale encourage intensive pedestrian, cyclist traffic, and social exchanges and contribute to "sustainable, healthy, safe, and lively cities" (6).

In addition to the importance of good physical quality of the built environment, Gehl, in *Cities for People*, underscores a social aspect of human scale as a focus. He asserts that people's main attraction is people and stresses the importance of personal interaction distances while designing with human scale. Gehl believes that the "social field of vision" that allows to recognize "facial expression, well-articulated singing and conversation" facilitates casual social interaction (35-36). Likewise, William H. Whyte, an urbanist who extensively studied human behaviour in the urban environment by means of direct observation in *The Social Life of Public Spaces*, identifies "pedestrian volumes, and concentration and mixture of activities" and correlates this pedestrian pattern with urban settings (23).Whyte concludes "What attract people most, it would appear, is other people" (19). He assumes that welcoming open spaces with comfortable seating and opportunities to watch other people and interact with them ensure pedestrian flow, social contact and ultimately active life (fig.1.3).

Another work related to human scale is "*Responsive Environments*" – a collaborative study of five specialists in design, architecture and urban planning: Ian Bentley, Alan Alcock, Paul Murrain, Sue McGlynn, and Graham Smith. This visual narrative is a practical book addressed to socially-conscious designers and stresses the importance of design that respond to people's needs. This book raises the question "why modern architecture and urban design are so often criticized as

inhuman and repressive" and then gives insight into how outdoor places and buildings should be designed in order to intensify people's activity and usage of the built environment (9) (fig.1.4).

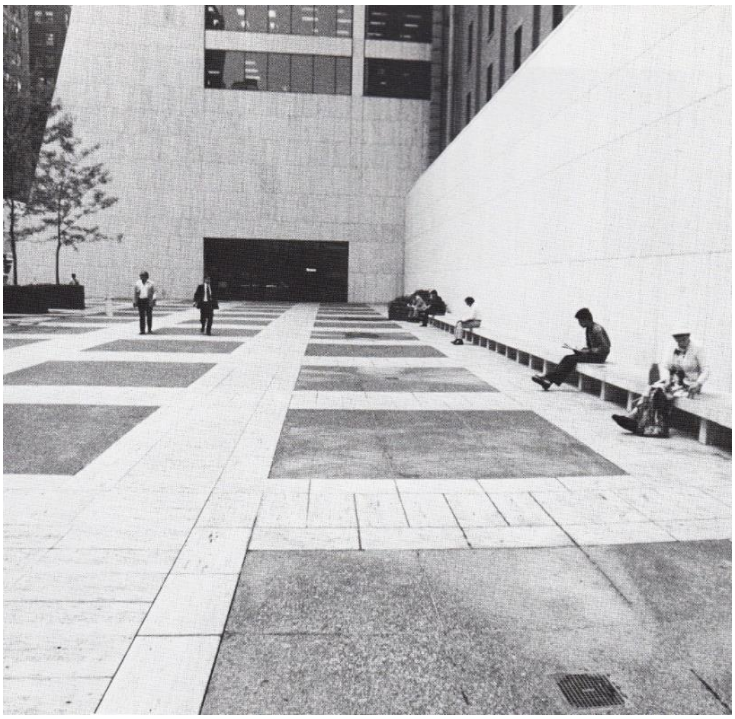


Fig. 1.3 Public space in New York city (Source: Whyte, 1980)

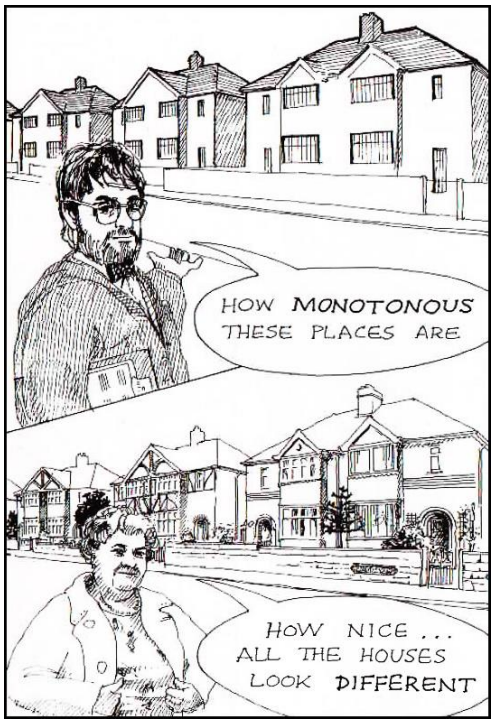


Fig. 1.4 Visual appropriateness (Source: Bentley, Alcock, Murrain, McGlynn & Smith, 2003)

Independent scholar, Kirkpatrick Sale, in his work *Human Scale*, devotes an entire chapter to reasoning on Winston Churchill's saying "We shape our buildings; thereafter they shape us" (165). The author believes that by shaping buildings with regard to human scale we can reach a comfortable living environment. Thinking broader about human scale, rather than merely focusing on buildings' size, Sale mentions challenges which modern society experiences and then offers solutions about how individuals can improve their lives by taking control of many spheres of activity.

One more aspect of human scale – human identity is represented in *A Pattern Language: Towns, Buildings, Construction* by Christopher Alexander, an architectural theoretician and practitioner. The author claims that patterns which people create are rooted in the nature of things, and they are part of human nature and human action. Therefore, the way people design their environments can be compared with languages that allow them to express themselves by means of built forms. The

author is convinced that everyone in the society knows well what buildings they need, and in fact regular people (non-professionals) are able to design and build according to their own preferences.

Among the other contributors to be found in the subject of scale, are a group of architects from the Kent School of Architecture: Gerald Adler, Timothy Brittain-Catlin, Girdana Fontana-Giusti and colleagues, who in *Scale: Imagination, Perception and Practice in Architecture,* explore diverse issues of scale which are linked with the humanities: human societies and human form. The book is a review of various authors' works interpreting scale from different perspectives whether it's the proportional relationship of buildings and their parts, or a socio-cultural indicator of the modern world. Such various approaches to scale put this term "under renewed scrutiny" (Adler, Brittain-Catlin, and Fontana-Giusti introduction, para. 1).

In *The Eyes of the Skin: Architecture and the Senses,* Juhani Pallasmaa identifies human scale in the view of people's interaction with their environments based on their sensory capabilities. "Understanding architectural scale implies the unconscious measuring of the object or the building with one's body, and of projecting one's body scheme into the space in question. We feel pleasure and protection when the body discovers its resonance in space" (67). The book focuses on characteristics of human perception and reveals how our bodies collaborate with our eyes and other senses in the experience and understanding of architecture.

Another key text on human's space perception, is *The Visual Perception of the Built Environment* by Niels Prak. According to the book, gestalt-laws of perception state that the human vision is well adapted to the perception of differences and changes in the environment. "Perception tends to focus on the different rather than on the similar, and on the new rather than on the familiar" (15). Gestalt-laws state that the human's eye is constantly seeking out stimulation. The built forms and patterns make the human visual system respond. Thus in order to attract and maintain people's attention, the built environment has to provide visual interest. Application of gestalt-laws principles to design practice helps to tackle visual design problems.

Human scale in relation with the patterns of pedestrian movement is articulated in another work – *Measuring the Unmeasurable: Urban Design Qualities Related to Walkability* by Reid Ewing and Susan Handy who investigate the role of perception between the physical features of the environment and walking behaviour. This work gives valuable insights on how to objectively

measure human scale as well as other urban design qualities such as imageability, enclosure, transparency, and complexity.

Various interpretations of human scale reveal a range of aspects of this complex notion whether it is related to physical proportions of the built forms to the size of the human body, the human perception of the urban environment, the walkable distances or the opportunities for social interactions. The theoretical framework helps to comprehend this concept from a number of different perspectives.

1.4 Research Question

The specific area explored in this work is the human scale as it applies to streets and buildings in medium and high density Montreal neighbourhoods. Based on the assumption that human scale is not merely a matter of dimensions but also senses and mobility, this study focuses on the following question:

When moving through open spaces, which physical attributes affect the pedestrian's perception of human scale within them?

1.5 Goals and Objectives

The goal of the study is to investigate human scale in Montreal's residential developments so that to understand how other neighbourhoods can be improved to become visually attractive and comfortable for living and recreation. The primary objectives of this work are:

- Study the relationship between mobility and human scale.
- Study the relationship between scale of built environment and human' slow paced movement.
- Document physical features of urban area which contribute to human scale.
- Develop guidelines for the integration of human scale in residential planning decisions.

The ultimate purpose of this research study is derived from the analysis of the streets and the buildings that enclose them, their attractiveness and convenience for pedestrians. Ideally, this study is designed to promote the rethinking and generation of a new understanding of human-scaled neighbourhoods that are safe and comfortable to live in.

1.6 Intended Audience

The intended audience of this report are planners who, owing to the data derived from this work, can identify issues that may arise and develop strategies for improving public spaces in neighbourhoods. Practitioners involved in designing or retrofitting residential developments may also discover some findings in this study and apply them in practice. Furthermore, this work may prove useful to researchers interested in human mobility, human scale, walkability, and other related issues.

1.7 Methodology

This work investigates factors that influence human scale in medium- and high-density Montreal neighbourhoods. The methodological approach in this study includes observing and conducting a spatial analysis of residential areas in order to understand what physical attributes of streetscape contribute to harmonious built environments. The study particularly examines the "dynamics" of streets taking into account the fact that speed of travel plays an important role in the perception of surrounding area. A network of streets is considered as a continuous space punctuated by intersection and squares. When we walk, there is plenty of time to assess and respond to the visual information we receive. Studying a streets' linear movement pattern helps to find out how they are perceived as a sequence of spaces based on walking pace, how they assist pedestrian mobility, and what factors make our sensory experience more varied and interesting along the way.

1.8 Scope of the work

The goal of this study is how to design new residential areas with attention to human scale while learning from above mentioned communities. Therefore this work reviews four different urban settings. Two of them are in the densely populated city centre: Ville Marie and the Plateau Mont-Royal and two more in a suburb of Montreal: Bois Franc and Dollard-Des Ormeaux. Each of these neighbourhoods has a number of distinguishing characteristics such as street layout, type of housing, spatial and physical quality of the development and thus represents an interesting case study.

1.9 Research Outline

Chapter 1 introduces the outline of the work, its premises, goals and objectives, methodology and expected results. It offers rationale of the necessity of rethinking design practice from a human scale perspective. The theoretical framework suggests the diverse approaches in the study of human scale and gives material for thought and further reflection.

Chapter 2 traces back the historical evolution of built forms in relation to human scale and represents background to the human scale study. A literature review allows for broadening the body of knowledge and to expand the definition of human scale. The chapter dwells on the dynamic aspect of human scale scrutinizing the human's perception of built environment on motion.

Chapter 3 develops analytical tools. It scrutinizes four neighbourhoods in urbanistically distinctive areas. A route that runs along highly walkable streets is identified in each case study so for further evaluation of its spatial quality. As a result of cross sectional analysis of the routes a number of physical features that contribute to human scale buildings and streets are worked out. This systematized data shows which spaces in the given communities are underutilized and which on the opposite attract people.

Chapter 4 develops the recommendations for design neighbourhoods with regard to human scale. The findings of cross sectional analysis of the routes allow to come up with/carry out a set of guidelines that take into account human dimension in perception of the built environment at low-speed movement. The conclusion is the essential and logical completion of the report.

1.10 Conclusion

A definition of human scale and the rationale for studying this issue followed by its various formulations and approaches creates awareness about different aspects of this concept. Guided by theoretical framework the author narrows down the broad subject to a specific topic and defines the goal of the study and the research question which are the baseline of this report. The research outline contained in the preceding pages provides an overview of the entire report and introduces the reader to the following chapters.

CHAPTER II

HUMAN SCALE; FROM ANCIENT TIMES TO THE PRESENT DAY

2.1 Introduction

The chapter traces the history of human scale back to antiquity when the human body was considered as a measuring module of all things, brings it through the Renaissance, when it was extensively studied and celebrated, to modern times when the attempts to make the human body a universal module were continued. It then explains why in the middle of the XX century the attention towards human scale in designing and planning cities was given less attention and how nowadays alternative movements appeal to reconsider design practice from a human scale prospective. The next section of the chapter dwells on human scale in respect to mobility, scrutinizing characteristics of a human's perception of built forms on the move. The final part of the chapter exemplifies the physical attributes of the urban area that relate in a positive way to the visual and physical experience of a pedestrian.

2.2 Human Body and Architecture

We do not understand true dimensions of buildings and streets unless we compare it to a human size. The human dimension has always been a starting point and the main focus for designers and builders. In ancient architecture, "the human body was taken as the central module by which all the built environment was measured" (Sale 167). The Ancient Greeks discovered correspondence between the Golden Section, a concept developed by Pythagoras, and the proportion of the human body. Consequently, they designed buildings based on the Golden Section System and "believed that human body and temples were related to Higher Universal Order" (M. Ferwati & M. Mandour 2-3).

Throughout history, architectural forms have been compared and described in compliance with parts of the human anatomy. Thus, "many measurements originated as the lengths of various parts of the human body (e.g., foot, palm, thumb, finger)" (Patt 33). One of the most well-known analogies between architectural elements and the human body is a column - a part of a classical order of antiquity. In accordance with their proportions the Doric column symbolizes man, and the Corinthian and the Ionic ones – woman (fig. 2.1, fig. 2.2).

Fig. 2.1 Caryatids of the Erechtheion on the Acropolis of Athens (421-405 BC) (Source: Pallasmaa, 2005)

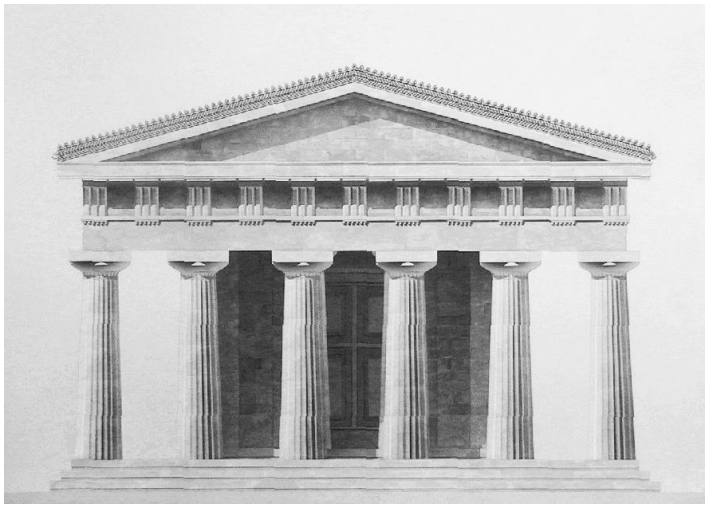


Fig. 2.2 Temple of Neptune, Paestum (Source: Meiss, 2013)

According to Meiss "From antiquity to the Renaissance, man sought to combine Euclidian geometry and the forms of nature into a unique and universal system. The human body considered as the peak of nature's perfection, it was "geometrized" (75). Renaissance theorist Leonardo da Vinci who extensively studied the human body drew the Vitruvian man in the 1480s declaring that a perfect building should be proportioned like this perfect geometric model (Rasmussen 115) (fig. 2.3).

In the middle of twentieth century Le Corbusier developed the Modulor, the system of proportions based on eleventh-century mathematician Fibonacci's series, which was "a harmonic measure to the human scale, universally applicable to architecture and mechanics" (Evenson 36). Applying the Modulor to design was supposed to produce well-proportioned and functional buildings "pleasing to the eye and body". Notwithstanding this "innovative and important system" (Meiss 77) had limited success (in the case of Chandigarh), it was one more endeavor to geometrize a human body and deduce the relation between architectural form and human size (fig.2.4).

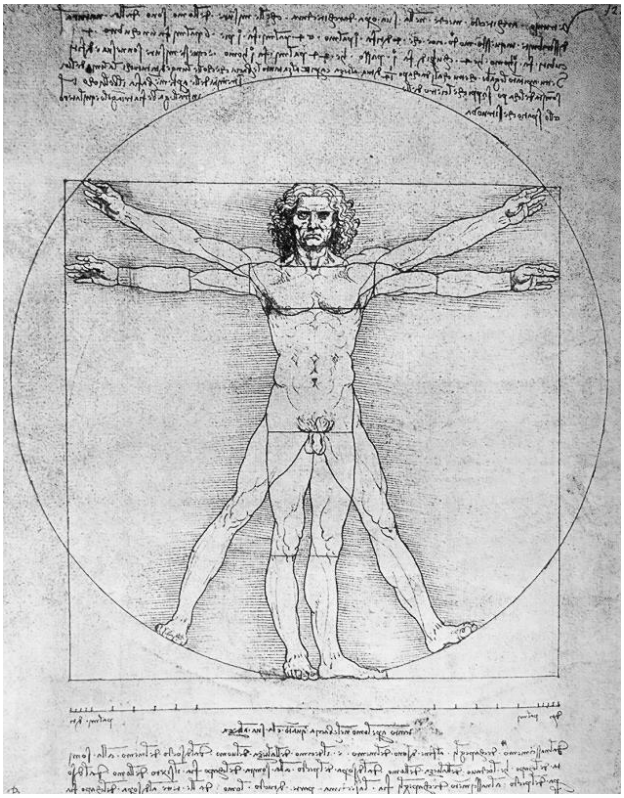


Fig. 2.3 Vitruvian man by Leonardo da Vinci (Source: Rasmussen, 1964)

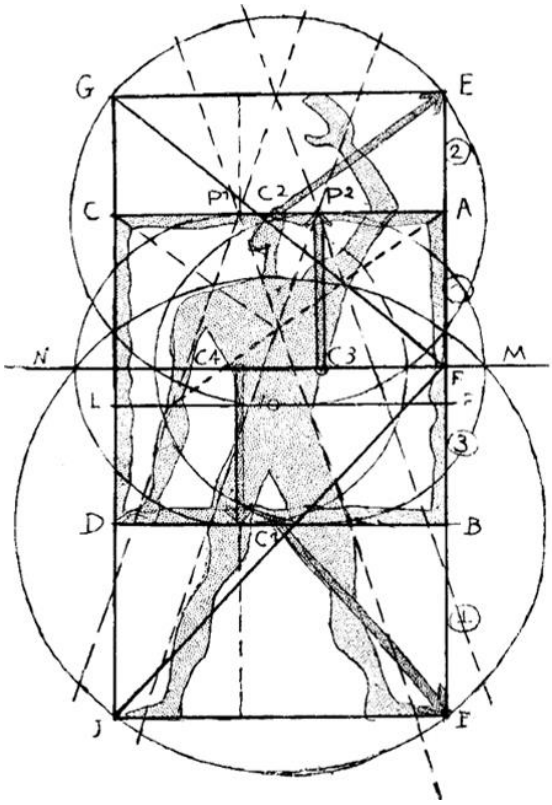


Fig. 2.4 The Modulor. Le Corbusier (Source: Corbusier, 1953)

Even though the idea of "human scale" can be called "primordially old" (Sale 167) and "old fashioned" (Krieger 23) and argued that it is thoroughly familiar and well-studied, this notion still remains relevant since many times in history until today "enormous crime have been prepared against it" (Zevi qtd. in Sale 168). Apparently, the perception of human scale in architecture began to be forgotten somewhere during the beginning of the industrial era. "Then with the rise of industrialism and the triumph of engineering in the nineteenth century, mechanical consideration came to outweigh visual and aesthetic ones and the "utility" of a building became its prime consideration." Technological development appeared to become a central factor in shaping architecture (Sale 168).

In Germany, after the First World War, during severe housing shortages the new construction technologies introduced new kinds of production methods for mass housing. "Minimal dwelling" signalized a new modernist style (Miller 237). In 1928, The International Congresses of Modern Architecture (CIAM) declared specific design principles promoting "modern, functional, large-

scale and efficient housing." As a result of this policy, many post-Second World War housing projects "undertaken in the name of modern architecture" afterwards were criticized for "inhuman scale" (Adler 195). Once again, prefabricated houses being inexpensive alternatives to conventional residential buildings, solved post Second World War lack of housing. They became a common building practice in devastated post-war European cities. Despite the obvious advantages of manufactured dwellings under the circumstances, their limited laconic appearance has caused a deterioration of the built area (fig.2.5).

Nowadays, there are still many featureless residential developments that have nothing to do which human scale. During the mid-twentieth century in fruitless efforts to heal the "sick" urban developments, the Modernist "hygienic" high-rise housing complexes replaced the slums. However, these "scaleless" buildings turned out to be unable to address the urban sprawl issue and in fact became "vertical slums", architecturally clashing with existing residential areas (Siegel 7). Placed in suburbs or on the edges of towns many high-rise estates were lacking of architectural quality, visual and physical connectivity with their surroundings. In fact they were isolated from urban amenities and had no more offerings than council estates normally provided (Miller 354) (fig.2. 6).

Fig. 2.5 The neighbourhood of Overvecht, Utrecht, Netherlands (Source: Paans, 2014)

Fig. 2.6 Berlin, Residential complex Leipziger Strasse, Germany (Source: http://sciencenordic.com/cities-will-die-if-cars-dominate)

The Pruitt-Igore project (St. Louis, Missouri, U.S., 1954) is now considered as the largest failure in public housing development. Occupied by low to moderate income citizens, it was conceived as an architectural solution to social problems, but had the highest crime rate in the city. Ultimately

it was admitted that it was unmanageable and had been demolished. One of the possible explanations of the failure of this urban housing project is that its high-rise apartment blocks “have repetitive, anonymous spaces within little relationship to the environment; monitoring spaces within and around the structures is difficult. This suggests that public housing should be built with respect to human scale as low-rise units, where residents can monitor activities from windows, doorways, patios, and porches.” (Tyler, Robert 104-105) (fig.2.7).

Fig. 2.7 Demolition of Pruitt-Igore housing project, 1972 (Source: Tyler, 2011)

Another social housing estate, Park Hill (Sheffield, South Yorkshire, England) suffered the same fate with the exception that it had not been completely demolished. The construction of this concrete large scale project between 1957 and 1961 was greeted enthusiastically. The idea of generating a strong sense of community was promising; however Park Hill was unable to maintain its residents’ security and welfare and appeared to be known as "Little Chicago" and "San Quentin" after the notorious American prison, owing to the incidence of violent crime there. (Saving Britain's Past - Streets in the sky - Park Hill. Retrieved from https://www.youtube.com/watch?v=HuVQ7LsAfGM) (fig.2.8, fig2.9).

Fig. 2.8 Aerial view of Park Hill Housing Estate, Sheffield, UK (Source: http://www.skyscrapercity.com/showthread.php?t=501265&page=107)

Fig. 2.9 General view of Park Hill Housing Estate, Sheffield, UK (Source: http://www.skyscrapercity.com/showthread.php?t=501265&page=107)

One more example of a residential building which became a symbol of urban decay is the cylindrical skyscraper with a hollow core known as Ponte City (Hillbrow neighbourhood of Johannesburg, South Africa). It was built in 1975 and a decade later it had become a shelter for drug dealers and gangs meanwhile its atrium was dubbed "suicide central" due to the number of people who chose to end their lives by hurling themselves off the tower (The Hollow Tower of South Africa, 2014) (fig.2.10, fig.2.11).

Since the 1960s a series of urban renewal projects had had an impact on many cityscapes and consequently many cities had continued with costly construction, defined by traffic flow leading to severe congestion. As well, "the massive economic and social influence of automobiles and the rise of large real estate developers in the 20th century became the basis for urban planning's "scientific" justification of suburbanization, marginalization of public transit and the consolidation of car-based retail and services" (Phillips 16).

Fig. 2.10 Ponte City, Johannesburg, South Africa (Source: http://fr.academic.ru/dic.nsf/frwiki/880612)

Fig. 2.11 High rise residential building known as Ponte City, Atrium, Johannesburg, South Africa (Source: http://www.skyscrapercity.com/showthread.php?t=501265&page=107)

Modernist values neglected traditional urban living. Land use planning focused on segregation of commercial land uses from residential land uses and a separation of housing types in residential areas. This practice has led to greater dependency on automobile transportation for daily mobility and has created a differentiation of social groups. No efforts have been undertaken to develop a walking environment and consequently traffic made pedestrian activity dangerous and unhealthy (fig.2.12). Standardizing streetscape features contributed to a "uniformity of urban and suburban development" as a result of which todays "communities lack of unique aesthetic and social neighbourhood character" (Steinfeld and White 18-19). Such residential planning, which paid less attention to human scale, resulted in neighbourhoods which did not offer a satisfying level of environmental comfort and good spatial quality for their dwellers. Uniform buildings, excessively wide streets, and vast open public spaces did not permit for a favorable physical and visual scale meanwhile suburban landscape of housing tracts created automobile dependency (fig.2.13, fig.2.14).

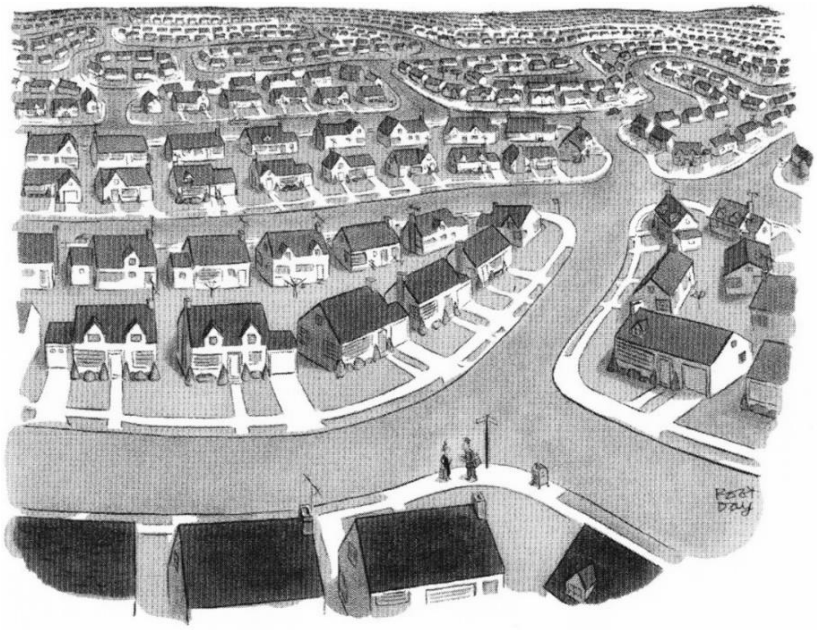


Fig. 2.12 "I'm Mrs. Edward M. Barnes. Where do I live?", cartoon by Robert Day, The New Yorker, 1954. (Source: Lane, 2006)

Fig. 2.13 Single-family housing development, Colorado (Source: Scheer, 2010)

Fig. 2.14 A wide arterial road in Arlington, Texas, is typical of the scale in many suburban places (Source: Scheer, 2010)

The realization that these standards did not offer a comfortable living environment led designers, critics, and practitioners to reconsider an approach to planning buildings and public spaces from a human scale perspective and to revisit older time-proven models of urban fabric, such as spontaneously derived medieval European cities which appeal to human interaction. Old historic cities with "dense city structure, short walking distances, beautiful courses of space, high degree of mixed use, active ground floors, distinguished architecture and carefully designed details"

represent human scale and serve as a "meeting point" for its inhabitants (Gehl 13). Norbert Schoenauer remarks:

> Medieval streets, which had been narrow and crooked, were now subjected to geometric clarification, and wide avenues with distant vanishing point were cut through the intricate and intimate maze of their medieval urban fabric. The human scale of the medieval cities gradually vanished and was too readily exchanged for a monumental and impressive scale (268).

"The traditional city seems at once so clearly organized, humanely sized, manageable and beautiful. Such virtues seems absent in the modern metropolis" (Krieger 22) (fig.2.15).

Fig. 2.15 Piazza del Campo, Siena, Italy (Source: Gehl, 2007)

Fig. 2.16 Pedestrian-priority street in Brighton, UK (Source: Gehl, 2010)

Nostalgic for traditional architecture in the 1980s caused a New Urbanism movement which confronted modernist ideologies and revived traditional neighborhood design. Together with environmentally conscious groups such as regionalists and environmentalists, New Urbanism was aimed at rethinking urban planning in order to create more sustainable neighbourhoods suitable for pedestrians (Siegel 9, 13). New Urbanism's followers in North America: Smart Growth, Traditional Neighbourhood Development, and Transit Oriented Development also promoted

livable urban areas and appealed for qualitatively better and more environmentally sensitive developments (Phillips 17).

Another alternative group, the Healthy Cities Movement demonstrated detrimental consequences of the current approach to planning built environment such as decreased physical activity, stress factors and social isolation amongst people. It suggested that "walkable neighbourhoods with pedestrian-friendly streetscapes and good public transit are associated with more active travel behavior, lower body weights, fewer traffic accidents and less crime" (Phillips 19). Other schools "working in conscious opposition to the dominant industrial aesthetic" over the last two decades are ergonomics, anthropometrics, sociometrics, human engineering, biomechanics, and so on. United by mutual interests regarding the human body and its behavior, these disciplines resurged attention to human-based design (Sale 169).

In spite of criticism New Urbanism and similar alternative movements managed to point out problems which resulted from poor planning practices: "alienated, wasteful, isolated society" and "contribute much to the dialogue on good planning" with attention to "design at the neighbourhood scale." Smart Growth encouraged to utilize existing urban areas, rather than new ones in order to "control urban sprawl and minimize growing costs for building infrastructure", and also "advocated land uses that are walkable, bicycle-friendly, and well-supplied with local transportation." (Tyler & Ward 74, 76, 98-99). This special attention from environmentally concerned groups indicates the reintroduction of the humanistic approach to design the build environment that creates "a sense of place and an architectural character for each community" (Steinfeld & White 17) (fig.2.16).

2.3 Human Scale and Mobility

The built environment is the walking environment. When we move through the city from one district to another we experience a series of physical objects that form the urban core: buildings, public spaces, roads, trees, and monuments that can be called "urban armature". The armature divides the experience of the city into differing levels according to various scales. A range of scales is dictated by both the speed and form of movement. At a larger scale, the district key routes of armature is formed by a bus or train meanwhile the smaller locality such as the neighbourhood is more oriented to pedestrian movement. At this small scale, the armature is articulated by walking distances, short rides or a long walks away (Erickson 32) (fig.2.17).

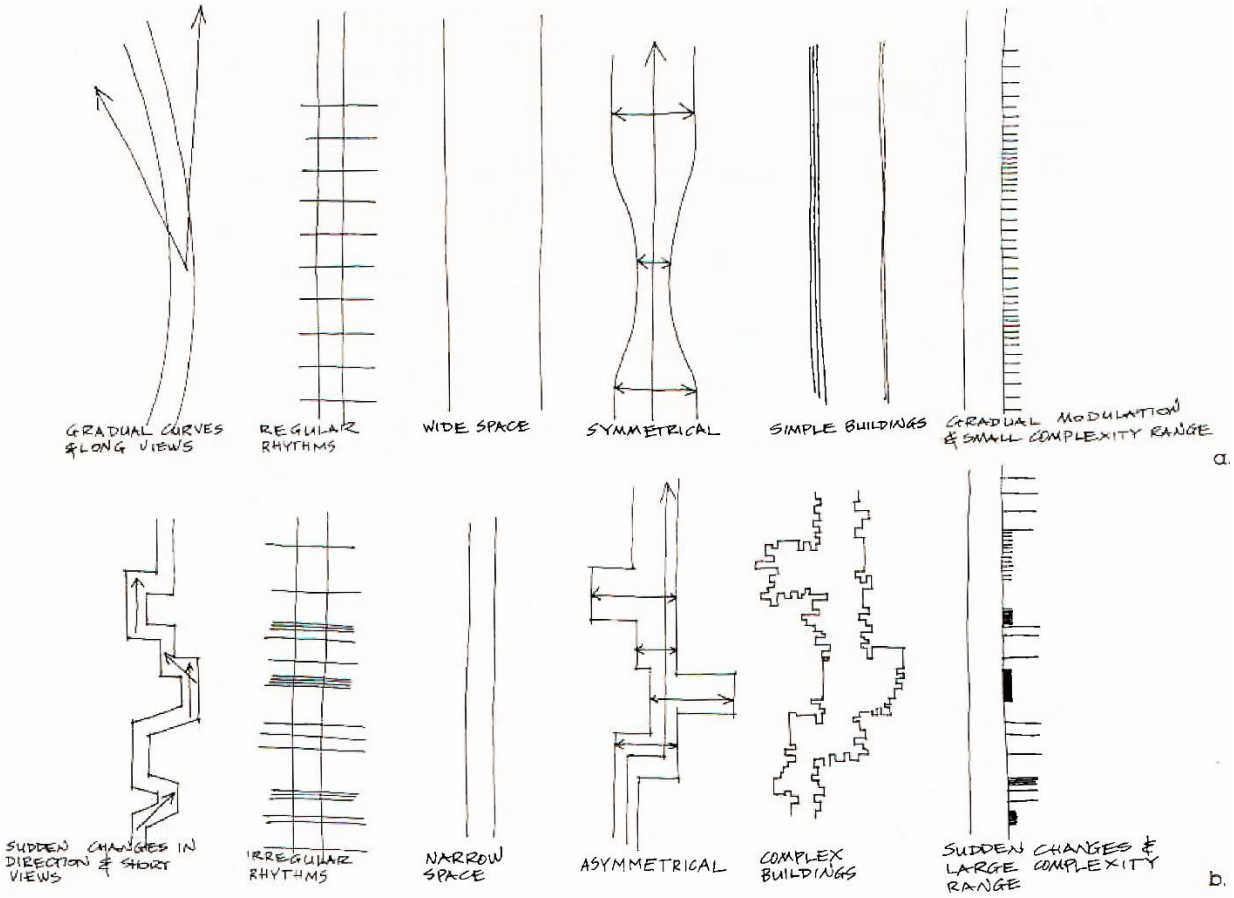


Fig. 2.17 Perceptual characteristics for: a. motorist, and b. pedestrian spaces (Redrawn from Rapoport 1977: 244) (Source: Moudon, 1987)

Streets are one of the most important elements of urban armature. They are a basis in the movement network of a city where active walking mostly occurs. The qualities make one street more inviting and attractive for pedestrians than another. In other words, a streets qualities "influence choices about active travel and active leisure time… [for instance] …to walk rather than drive to a destination, stroll on their leisure time, or just hang out and socialize on a street" (Ewing & Clemente 1, 3). So that to understand cities from the human mind perception when walking down a street, scale can be defined as the relationship between space and form rather than a number of geometrical attributes of space isolated from forms (fig.2.18).

Fig. 2.18 Birkdale Village, Huntersville, North Carolina (Source: Schmitz and Scully, 2006)

Fig. 2.19 Quincy Market, Boston (Source: Tyler and Ward, 2011)

Human understanding of the built environment depends on how we experience it. From the standpoint of a moving observer, an urban area is perceived differently from the view of a static observer. The relationship of forms to space, which is apprehended through our movements, creates a three-dimensional scale that stands for the combination of size, distance and form (fig.2.19).

A new view of scale assumes the new more complex meaning and is named as the cityscape scale. Cityscape scale or configuration of space, proportions, heights and sizes of the form along the street influences our perception and decision making related to movement: orientation and navigation in an urban setting (Mavridou 45).

Generally, we experience urban environment on the move. Movement through space creates the range of emotions related to visual and non-visual aspects. Therefore when designing urban space we want people to have positive aesthetic experiences that can be achieved by a number of considerations ranging from surface treatment to microclimates (Taylor 189-202) (fig. 19). The visual perception of the built environment forms a continuous process of interaction between man and his surroundings. Taking into consideration that man is always on the move, "an environment is never perceived in isolation, but always in a context." We collect visual information by scanning the environment with our eyes meanwhile the movement confirms our spatial perception. (Prak 86) (fig.2.20, fig.2.21).

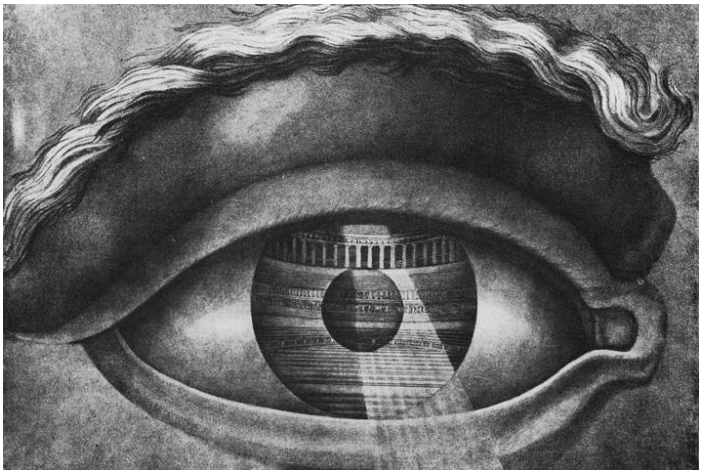


Fig. 2.20 Claude-Nicolas Ledoux. Eye of theatre at Besancon, 1804 (Source: Niels, 1977)

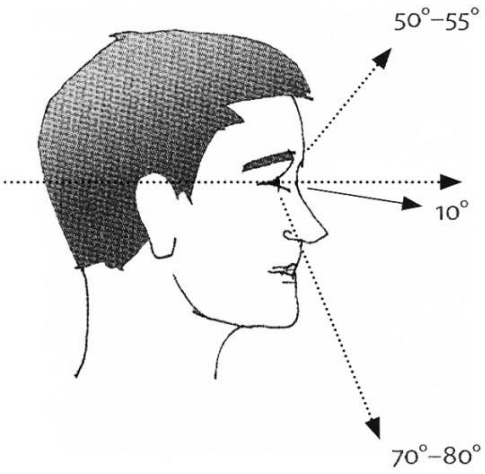


Fig. 2.21 Human horizontal sensory apparatus (Source: Gehl, 2010)

While human scale is a desirable quality of a walking environment, pedestrian movement remains the basic way to experience the city. The attempts to measure urban design qualities that affect walking behavior are undertaken on a regular basis. The fact is individual physical features of built environment do not cover overall human's perception of the streetscape. In the meantime, perceptual qualities of the urban environment are supposed to mediate between physical features and walking behavior (Ewing & Handy 67) (fig.2.22).

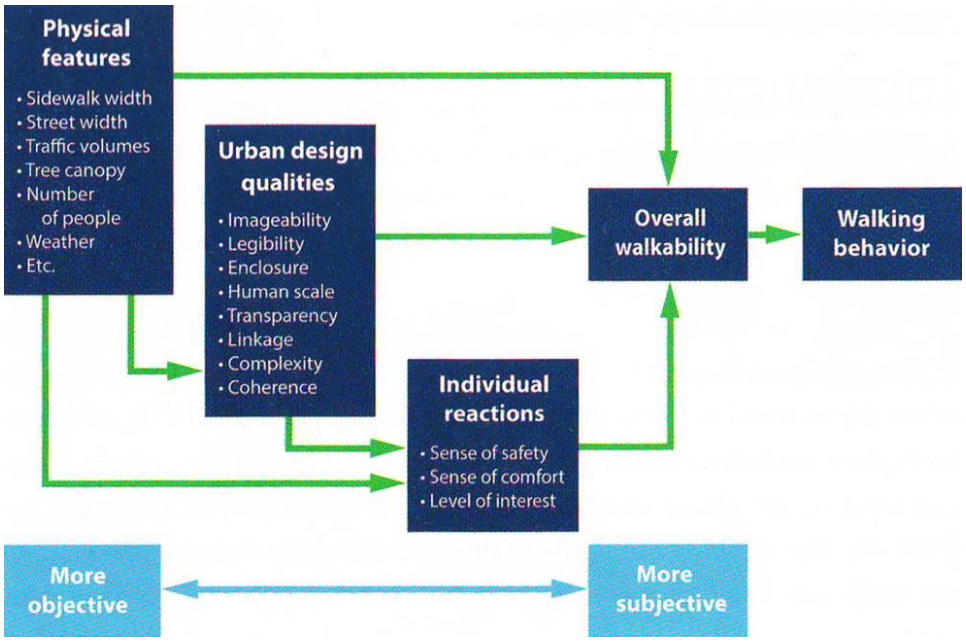


Fig. 2.22 Connection between physical features and behavior, encouraging people to walk (Source: Reid and Clemente, 2013)

Until recently, the measures used to characterize the built environment have been mostly gross qualities such as neighbourhood density and street connectivity. Many measuring tools which allow to objectively measure a walkable neighborhood have emerged recently. At present so-called "walking audit instruments" are widely used by various parties whether researchers, local governments or community groups (Ewing & Handy 65).

Human scale is among other perceptual qualities such as imageability, visual enclosure, transparency, and complexity that are related to walkability. "Human scale refers to a size, texture, and articulation of physical elements that match the size and proportion of humans and, equally important, correspond to the speed at which humans walk" (Ewing & Clemente 103).

The goal of pedestrian planning is to create a comfortable walking environment so that to generate human presence. Allan B Jacobs posits that:

> It's on foot that you see people's faces and statures and that you meet and experience them. That is how public socializing and community enjoyment in daily life can most easily occur. And it is on foot that one can be most intimately involved with the urban environment – with stores, houses, the natural environment, and people (as cited in Watson, J. Plattus, and Shibley 6.3-1 – 6.3-2).

In other words, walkability is an indicator of the physical quality of urban environments (fig.2.23).

Fig. 2.23 Solavita, an active-adult community in central Florida (Source: Schmitz and Scully, 2006)

Fig. 2.24 Clumber Street, Nottingham, UK (Source: http://mumblingnerd.com/category/nottingham/)

The pedestrian experience entails more than merely a commuting function from point A to point B. Planners, designers, and the engineers' task is to identify the physical features that distinguish a good pedestrian environment from a poor one so that to create a pedestrian-friendly urban area. Cityscape can be perceived at different speeds, although low speed is the most important in the walking experience. Neighbourhoods appeal to slow pedestrian movement, the way it was in historic town centers where walking was the dominant form of transportation (Jaskiewicz G-1/1, G-1/4) (fig.2.24).

Low-speed foot traffic is driven by well-articulated groups of buildings that attract the attention of the passersby. On the contrary, the contemporary built environment, which was primarily designed to appeal to high-speed automobile traffic with aggressive signage and extensive parking detract from the perception of human scale. As a result pedestrians at relatively slow paces are unable to react to this vehicular oriented milieu (Jaskiewicz, G-1/5) (fig.2.25, fig.2.26).

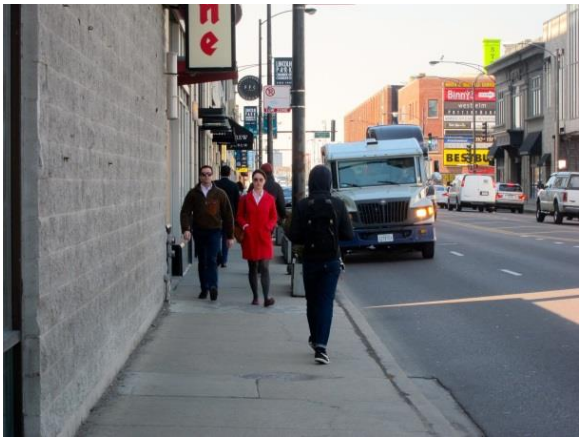


Fig. 2.25 Suburban street. There is nothing to experience for pedestrians (Source: http://imgkid.com/walking-on-sidewalk.shtml)

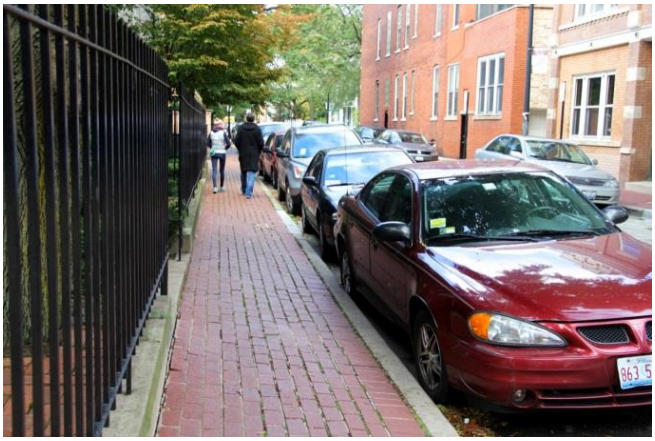


Fig. 2.26 Cars invasion (Source: http://vidafit.com.br/blog/6-maneiras-de-incluir-mais-atividades-no-seu-dia/)

Streets, sidewalks, and boulevards are adapted to mankind's horizontally developed sensory apparatus so that pedestrians could move linearly at a walking pace. Our sensory apparatus defines our perception of urban space. When walking at our usual speed (4-5 km/h) we have enough time to assess and respond to street activity. When we run or cycle at 10 – 12 km/h or 15 – 20 km/h respectively, our sensory apparatus still allows us to be in a good sensory contact and assess the surroundings. However, at greater speed (50 km/h and more) we can hardly effectively perceive

what is happening around us. Hence walking pace mostly contributes to the human's–intense sensory experience of the urban environment (Gehl 43) (fig.2.27).

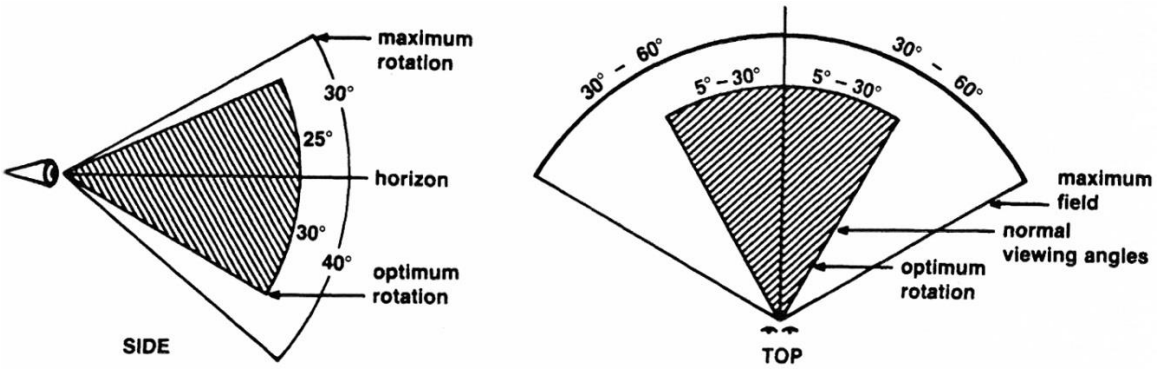


Fig. 2.27 Human's field of vision. The vertical viewing angle is more limited than horizontal (Source: Sale, 2007)

Naturally, we are able to grasp primarily the ground floors when walking along streets meanwhile the upper floors can only be seen at a distance. Therefore the higher a floor is the less visual and social connection it has with the street plane. In fact the lowest five floors allow for the interconnection between building and street. "If ground floor facades are rich in variation and detail, our city walks will be equally rich in experience" (Gehl 41) (fig.2.28).

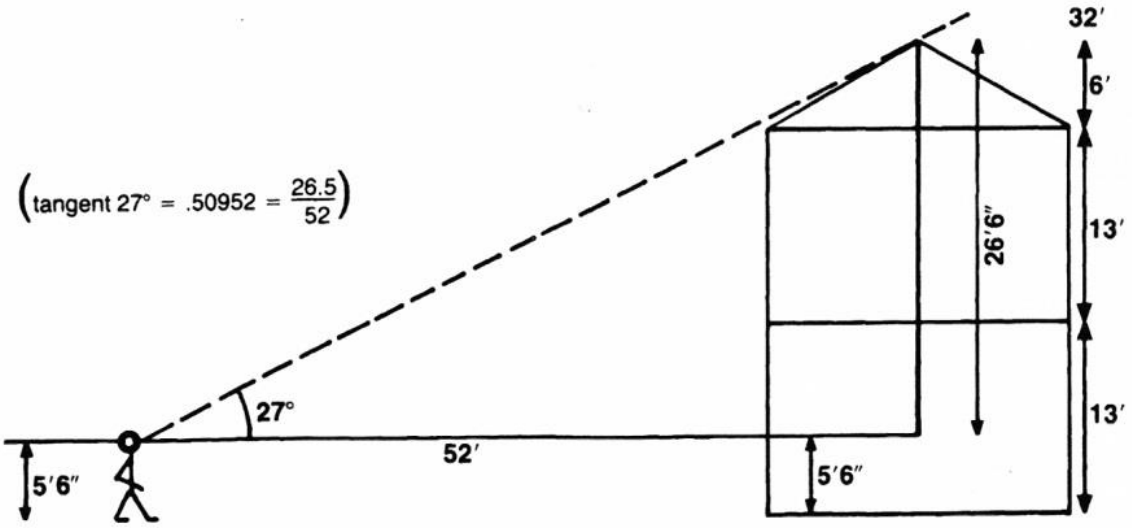


Fig. 2.28 The most successful view of two-story building should be seen at a distance twice its height (Source: Sale, 2007)

The pedestrian perceives streets as outdoor rooms where the “walls” are buildings, the “ceiling” is the sky and the “floor” is the street and sidewalk surface. These outdoor interior attributes bound and shape the street space and make it feel more room like. Meanwhile, a good pedestrian street is an outdoor room, with squires, playgrounds and parks being the alcoves within this room. This serves as an extension of streets and sidewalks within public spaces and punctuates the street network and affects pedestrian speed. Thoughtfully designed with respect to traveler reaction times, they create good urban design qualities. Consistent vocabulary of the streetscape: heights, sizes, shapes, materials, colors, and lettering help maintain pedestrian interest and promote an active street-level (Ewing 10-11, 16, 19).

Fig. 2.29 Interior of Sonsbeek Pavilion by Aldo van Eyck (Source: http://socks-studio.com/2013/11/18/sonsbeek-pavilion-in-arnhem-aldo-van-eyck-1966/)

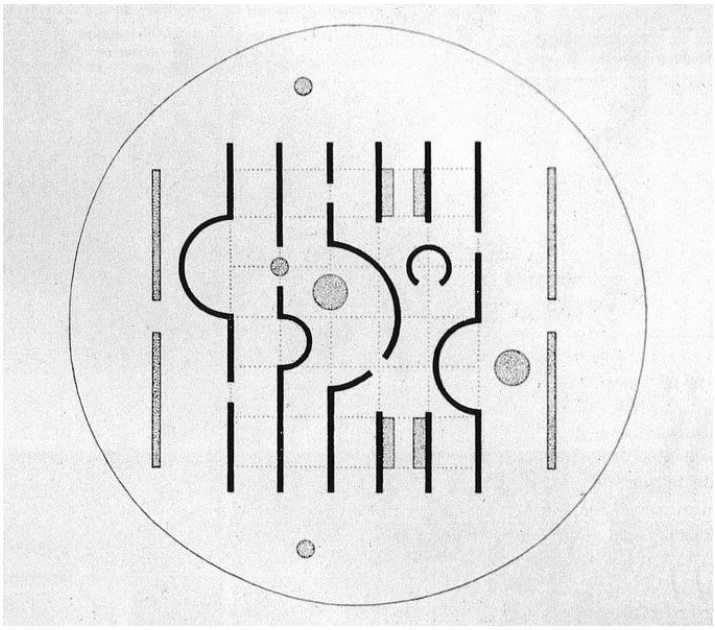


Fig. 2.30 Plan of Sonsbeek Pavilion by Aldo van Eyck (http://socks-studio.com/2013/11/18/sonsbeek-pavilion-in-arnhem-aldo-van-eyck-1966/)

A certain spatial configuration of the built forms and open spaces encourages us to move onward and experience new areas. Likewise the labyrinth evokes the invitation to explore the way and holds interest until we reach the destination. We walk around, observe an elaborate structures from different points of view, and devise new routes in order to bate our curiosity (Hadjiphilippou 21, 22) (fig.2.29, fig.2.30) Similarly the Gestalt-laws of perception state that human vision is well adapted to the perception of differences and changes in the environment. “Perception tends to

focus on the different rather than on the similar, and on the new rather than on the familiar" (Prak 15).

Gestalt-laws give more clues about human perception. "The human visual system tends to divide the perception of a building in chunks, which are at the same time as large as possible" (Prak 47). The law of proximity suggests that forms which are close to one another tend to be perceived as a coherent. On the contrary, a number of separate scattered forms are not perceived as a group by the human visual system. The law of equality implies that equal elements are immediately recognized as such. Similarities however depend on the adjacent elements in the form. The law of continuity assumes continuation of the object, contour or surface in the same fashion as it was started: "a straight line as a straight line, a zigzag as a zigzag, a curve as a curve, a plane as a plane, etc." Such continuation is clear and our vision does not tend to add new information whether turning an angle or changing a direction. Another low - simplicity of form – refers to perception: large, whole and simple (regular or symmetrical) forms (Prak 18) (fig. 2.31). Gestalt laws reveal how the visual system operates with maximum efficiency. Application of these principles to design practice help to tackle visual design-problems.

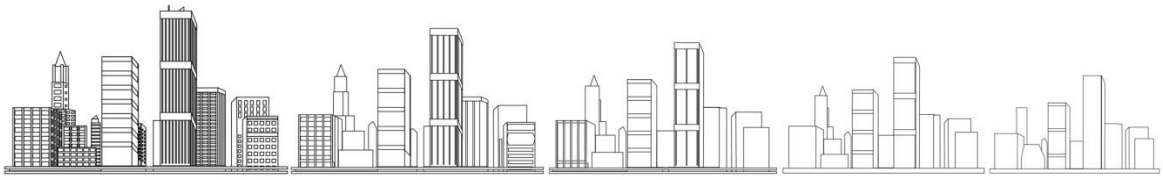


Fig. 2.31 According to gestalt-laws human vision tends to simplify complex forms perceiving them as coherent entity
(Source: http://web.siat.ac.cn/~vcc/publications/2011/gestalt_abstraction)

"An important spatial quality, which we identify with the criterion of "scale" stands for the experience of coherence and diversity." It ensures "within the visual perspective or during a stroll, different vistas that not only make the city more varied and interesting, but also provide insights into the city as a whole. "Those moving about the city look for continuity and variety – certainly when they regularly follow the same root. Variations in types of buildings, varying street profiles, squares and unique buildings ensure that the route through the urban tissue remains an interesting experience. It is a form of staging of the view in the space of urban design. This means buildings must be positioned so as to create varying perspectives" (Uytenhaak 75).

So that to "increase pedestrian enjoyment and awareness of the experience of walking" it is important to "focus attention on the present moment, the immediate sensory experience, that feel of the paving underfoot, the changing materials. [...] This intensification of one's awareness of "being here", in a pleasing environment intensifies one's sense of wellbeing" (Lennard & Lennard 38).

People are in constant dialogue and interaction with the built environment. Our bodies collaborate with our eyes and other senses in the multi-sensory experience of architecture. "Architecture initiates, directs and organizes behavior and movement" (Pallasmaa 41-42, 63). The quality of space, matter, and size can equally be measured by the eyes, the skeleton and the muscles. Pedestrians who encounter built forms and public spaces on a regular basis are the best observers and judges. Thereby we can easily evaluate the quality of built forms and spaces between them according to the presence of people (Pallasmaa 67).

2.4 Human Scale in Action

Any new built intervention whether the regenerating of existing urban areas or creating the new landscapes have to begin with reconsidering the context, its true usage potential, and community space. Among those considerations that have to do with urban transformation are: "the corner building, the ground-floor home overlooking the street or square, the importance of views and sunlight, harmonious architectural references, community and service spaces and their relationship with public spaces, the independent value of facades, and more." Integrating these components within the urban structure makes it possible to generate urban quality as well as increase spatial value with the capacity to create public spaces, green areas, biking and pedestrian routes (Gelsomino & Marinoni 17).

In the physical creation of communities design, both buildings and the open spaces between and around them are equally important. New Urbanism principles advocate low-rise traditional developments creating stylistic harmony of "front porches, rooflines, setbacks, details, and colour" so that "to achieve a certain coherence, scale, and pleasantness" and therefore to create a desirable urban context (Tyler & Ward 69, 73-74).

Buildings are surrounded by streets, and they interact with each other by means of a whole set of attributes that form spatial quality and the exterior character of the built environment. The more interactions between buildings and streets that enclose them, the more exciting public street life is. A relationship between a building and a street can be guided by height-to-width ratios. Comfortable ratio's diapason ranging from 1:1 to 1:3 sustains a visual sense of enclosure while clearly defining edges, exterior space, building entrances at ground level, visual permeable frontage, and tree-lined streets intensify a sense of community (Ewing & Bartholomew 49, 50) (fig.2.32).

Fig. 2.32 Height-to-width ratios. Plateau Mount Royal. Montreal

Pedestrian friendly neighbourhoods designed to accommodate pedestrian flow first and then vehicular movement do not inhibit walkability. Similarly to historic city patterns with highly connected street networks the narrower street widths encourage the freedom to walk and foster

CHAPTER III

CASE STUDIES

3.1 Introduction

In order to fully understand how the built forms are perceived in motion and what physical features contribute to human scale this chapter investigates the streetscape attributes and buildings' elements in the context of urban and suburban settings in Montreal. The methodology of this study is through the observation of residential areas with identifying walking routes and their subsequent analysis. In the case studies that are reviewed in this work the built environment is apprehended through a series of streets that are linked in a walkable route which creates awareness of how built forms are perceived by a walking observer. The observation is made using a serial vision where the location of the buildings, their size, material and other details complement the overall impression of the route. The study scrutinizes the factors that form the physical and visual quality of a streetscape and facilitate a rich urban experience.

3.2 Methodology

The methodological approach of the study is based on observation and spatial analysis of a number of streets of different types that are accessible via walking, biking, or public transit. The route for analysis is built on streets with active pedestrian traffic. Each segment of a street is logically linked with the previous one in a continuous way which brings the pedestrians from a departure point through the network of pathways to a final point whether it's a metro station, public space or any other destination. The task is to note how effectively the routes stimulate the observer's interest and enjoyment.

Spatial analysis of the route derives from observation of the streetscape in motion. The study assumes that moving from a departure point to an arrival point at a uniform pace, an observer experiences a sequence of views. Thereafter, street "edges" are considered as linear elements that assist the walk. As a result of observation, the features of the street environment that are important to the view and perception of spaces are recorded (blocks, buildings and streets'

parameters and characteristics) whereas the site plan illustrates linkages and the interfacing of a route with the surrounding context. Particular attention is given to the analysis of street cross sections made along the route and corners that act as pivots between street fragments. This data gives the initial assessment of the spatial quality of streets.

Each cross section is followed by detailed analysis of a route that is divided into the following sets of components: urban qualities related to walkability, public spaces, buildings and their components, and street related attributes. This further assessment is developed in graphic format (diagrams and tables), categorized according to human scale criteria. This data catalogues physical and spatial aspects of individual buildings and their elements as well as public spaces for evaluation in relation to another. As integral components of a street wall, these individual features collectively give shape and character to a particular urban setting. Physical arrangements of buildings' elements and streetscape features generate spatial quality and create interesting visual experiences.

The methodology is designed to document the qualities of a given urban and suburban area. It allows us to examine and compare the results of the observation of residential developments, and thereafter identify a set of factors that influence the walking experience. These factors can be ultimately used to create guidelines for design neighbourhoods with regards to human scale.

3.3 Physical Attributes of the Built Environment Related to Human Scale

3.3.1 Introduction

The physical attributes of the built environment related to human scale considered in this chapter are divided into four groups for a more comprehensive analysis: Urban qualities related to Walkability, Public spaces, Buildings' features, and Ground related features. Each group comprises a number of aspects that allow to evaluate the urban or suburban setting in greater detail. All these groups of attributes are exploited in case studies below in the form of analytical tables.

3.3.2 Urban Qualities Related to Walkability

A block's Length. Smaller blocks ensure better street connectivity within a neighbourhood whereas dense street networks provides alternative accessible routes and shortcuts for pedestrians.

Street Definition. *Arterial, collector, local road or pedestrian street.* Functional classification of streets that identifies groups of roads according to the type of service they are intended to provide.

Spatial Quality of a Street. *The building height to street width ratio: H x W*. Proportion of the height of the building that encloses a street and the width of the street. Height to Width ratio is critical to the spatial character of the street. A ratio that is 1:1 provides good spatial definition of a street and generates sufficient enclosure.

Presence of Borders. *Fences, curbs, gutter and bollards.* Street related features/attributes that serve as dividers of different functional zones of a street and establish a territorial boundary. They often times mark the sidewalk edge and prevent parking on the sidewalk and cutting across the corner of the sidewalk.

Change in Grade. *Steps, ramps, uneven transitions within a street environment*. Vertical height transitions between adjacent surfaces or along the surface of a path. The elevation changes in the grade (height) are a result of the topography of the street or the streets' design.

Wayfinding. S*igns and lettering, signage treatments, graphic communications, spatial markets, tactile warning mark the edge (size, placement).* Tools which help orient pedestrians to ensure the ability to navigate through an area.

3.3.3 Public Spaces

Common Open Spaces. *Parks, squares, playgrounds, sport grounds* (their size, proportion, function and aesthetic features). These amenities are leisure resources of residential

developments that increase their accessibility for dwellers, foster recreational opportunities and enhance social interaction at a neighbourhood level.

Sidewalk (*width*). The footpath along a building line which as a rule separates the street wall from the roadway.

Parking Lot. *Outdoor parking lot, street side parking*. The area where vehicles are parked.

Bike Lanes. Special routes designated for bike paths that may share right-of-way with vehicles or be separated.

3.3.4 Buildings' Features

Type of Building. *Single family detached, attached or semi-attached (duplex or triplex, townhouse, rowhouse, small apartment), apartment building (block of flats)*. Different housing types vary according to its setting in an urban context, or it's relation to adjoining buildings, the number of storeys, size, spatial parameters, layout and house designs. They also represent a range of affordability and accommodate diverse households whether single- or multifamily.

Building Size. *Length and height of a building*. Overall proportion of the front of the building that creates the street wall.

Number of Floors. *Number*. Important consideration in design with regards to human scale.

Fenestration. *Percentage, %*. The arrangement and design of the windows and doors in a building's facade.

Building Access. No-step entry (on grade access), elevated ground floor, second or third floor is accessed from an outdoor staircase. The access to the front entry of the building from the sidewalk and street.

Set Back. *Setback, front yard (width)*. The minimum distance from the property line to the building where buildings is to be built. Substantial front yards and setbacks are a buffer zone that provides privacy for residents.

Facade Articulation. *Detailed or flat*. Projection beyond wall or recesses on façade surface.

Exterior features. *Corner treatment, porch, canopy, terrace, balcony, bay window, cornice etc*. The detailing of a building and design of building elements that form its unique and distinctive character.

Roof Profile. *Flat, mansard, gable.* The roof shape that forms a building's silhouette.

Texture, Materials, Color. *Masonry/brickwork, metal, siding, plaster, composite wall panels etc.* The range and texture of the exterior wall cladding materials. Color of exterior walls and facade elements, their relation whether contract or nuance.

Ground Level Condition. *Residential, retail, public spaces*. The way that a building is experienced at-grade. Active uses with presence of people provide engaging ground level conditions and increase marketability or usability of a residential area.

Sun Exposure. *Before noon or in the afternoon.* The degree of light exposure on the facades depending on the time of the day.

3.3.5 Ground Related Features

Landscape Features. *Trees aligned along the street, shrubs/shrubbery, flower-beds and other greenery*. Natural elements of a streetscape that shape screening from the public view and create a favorable microclimate of a street.

Street Furniture. *Benches, seating walls, bus shelters, street lighting, sculptures, hardscape features etc.* These ground related elements form a good quality of streetscape and allow to moderate large scale of buildings.

Street texture, pavement. *Cobblestone, brick pavers, concrete slabs, etc.* Characteristic visual and tactile quality of the surface whether sidewalks, roadways or squares resulting from the way in which the materials are used.

3.4 Case Study 1. Plateau Mont-Royal

3.4.1 Introduction

The Plateau Mont-Royal is the most densely populated residential area of Montreal with a population of more than 100,000. Located in the city centre this unplanned community symbolizes Montréal's diverse and vibrant culture and is known to be one of the most desirable places to live and work in. It offers its dwellers a high quality of living due to a wide range of business types represented there and therefore a good choice of services. A mixed use development, the Plateau Mont-Royal successfully combines the residential and the commercial components which maintain an active urban live and makes the neighbourhood an attractive destination for visitors. Its varied architecture with famous triplexes that define its distinctive character as well as many green spaces create a comfortable and safe living environment.

Neighbourhood	Location	Area	Population	Date of establishment
Plateau Mont-Royal	Urban Area	8.2 km^2	100.390	18th century

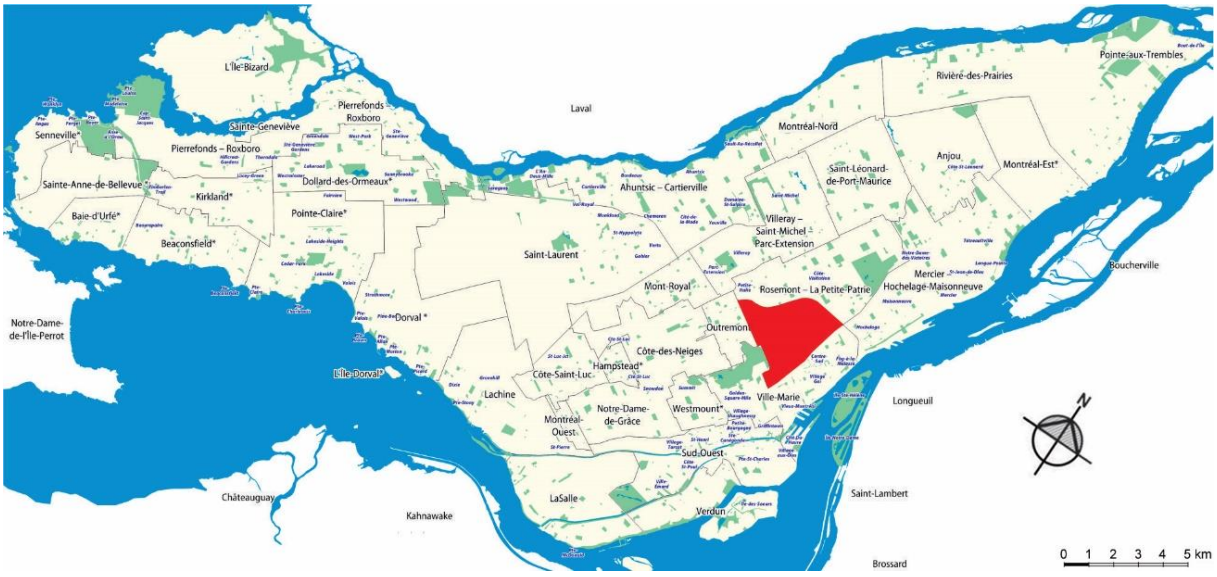


Fig. 3.1 Situation plan. Plateau Mont-Royal (Source: https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Montreal)

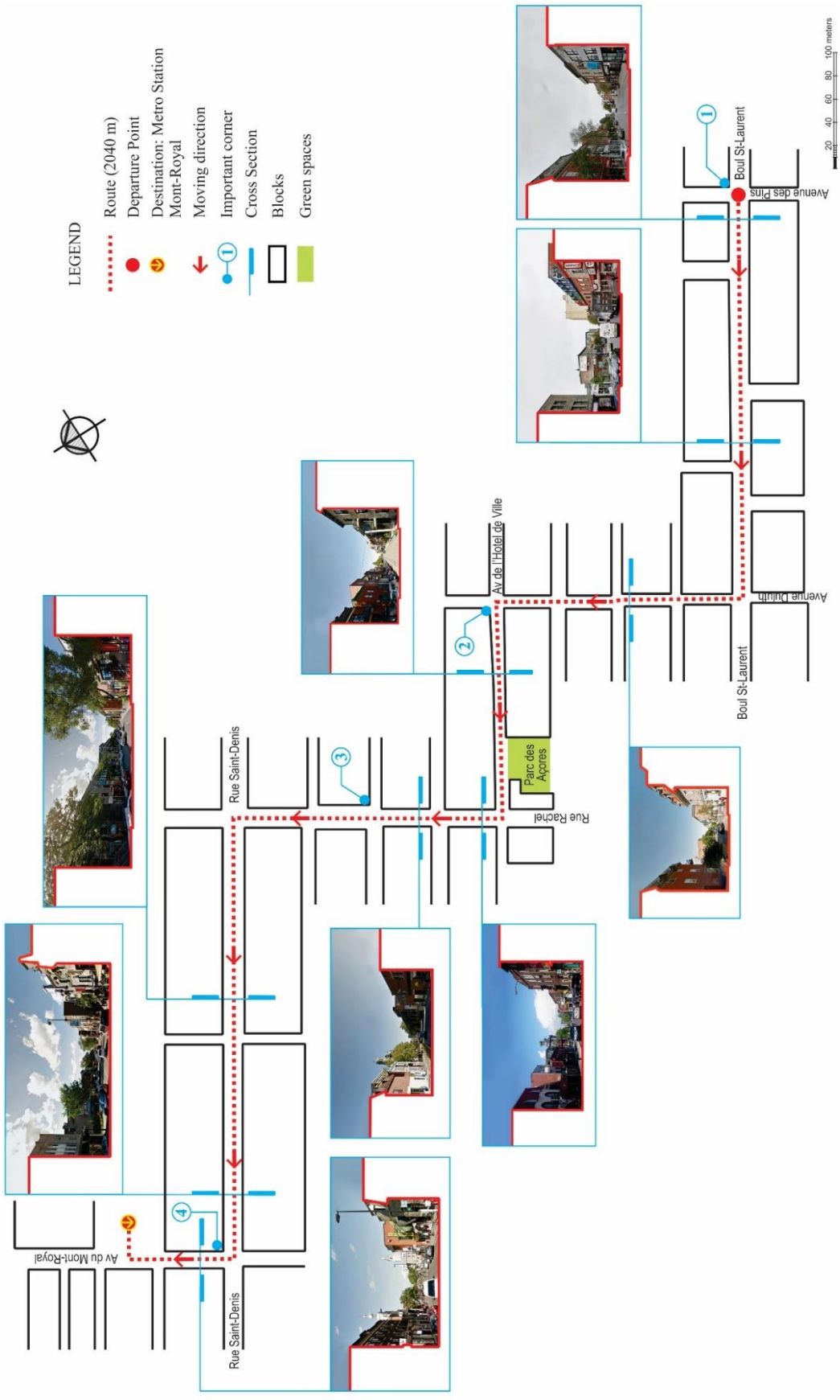


Fig. 3.2 Route. Plateau Mont-Royal

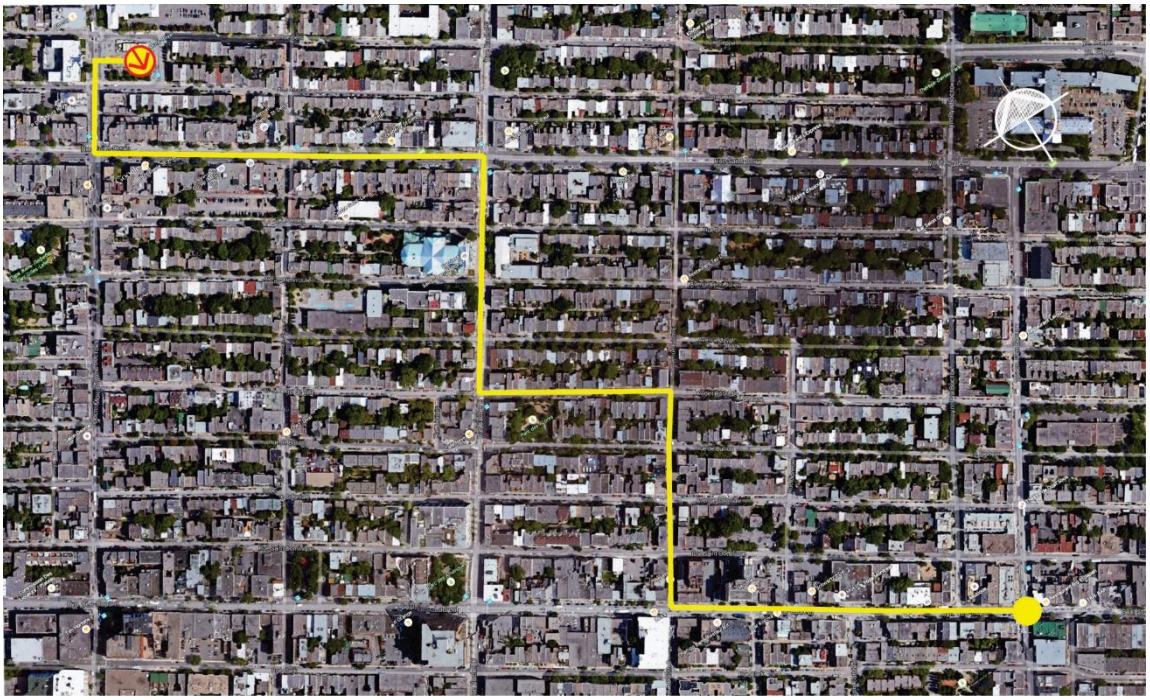


Fig. 3.3 Plateau Mont-Royal. Route. Context Map

3.4.2 Streetscape analysis

3.4.2.1 Boulevard St. Laurent

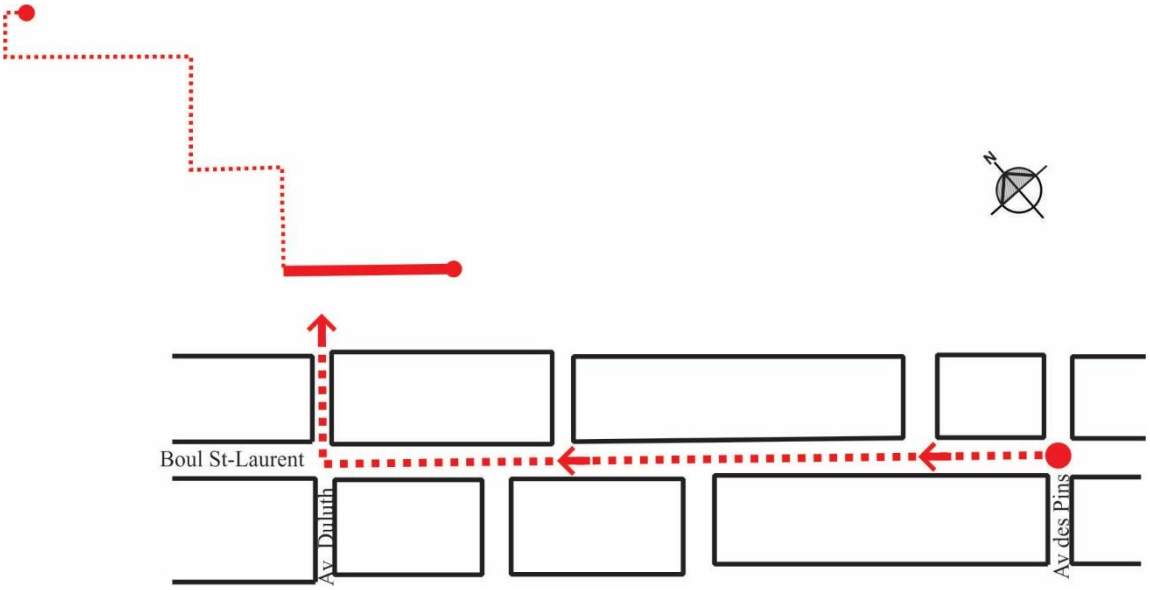


Fig. 3.4 Plateau Mont-Royal. Route. Boulevard St. Laurent

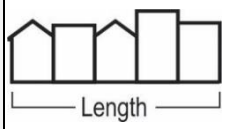
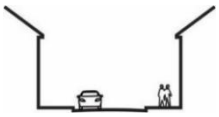
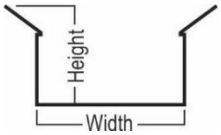
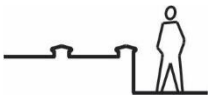
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		185 m	Rectangular blocks and parallel streets provide pedestrians clear orientation on the site	
Street Definition		Arterial road (one direction)	The street provides the neighbourhood with transport links	
Spatial Quality of a Street		1(H) x 1,5(W)	The buildings form the cohesive street walls and generate a sense of enclosure	
Presence of Borders		Sidewalk cafes	Sidewalk cafes narrow side-walks slowing down public transit	
Change in Grade		Raised sidewalks	Steep cross-slopes smooth transition for wheel chair users	
Wayfinding		Signs, lettering, signage	Signs and lette-ring scaled with buildings attract people's attention to on-grade retail shops	

Fig. 3.5 Urban qualities related to walkability. Boulevard St. Laurent

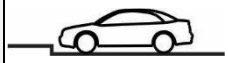
Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Sidewalks	Boutiques, grocery stores, shops, cafes and restaurants keep streets busy	
Sidewalk		4 m	Sidewalks on both sides of the street accommo-date intense pedestrian traffic in the mixed use area	
Parking Lot		Street side parking	Street side parking on both sides of the one-way street	
Bike Lanes		Shared right-of-way	Parked cars make cycling difficult	

Fig. 3.6 Public spaces. Boulevard St. Laurent

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Trees, potted plants	Occasional trees add some natural features to the street	

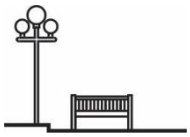
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Benches, street lamps	Benches occur near retail outlets	
Street Texture, Pavement		Concrete slabs	Concrete slabs are used for sidewalks	

Fig. 3.7 Ground related features. Boulevard St. Laurent

3.4.2.2 Avenue Duluth

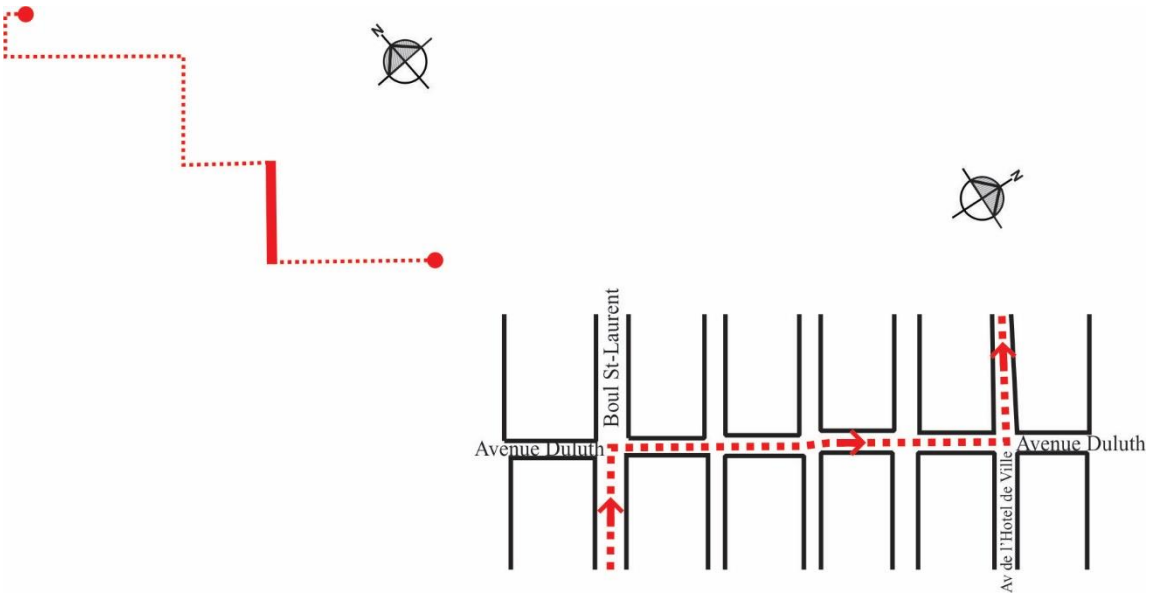


Fig. 3.8 Plateau Mont-Royal. Route. Avenue Duluth

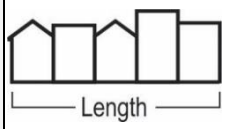
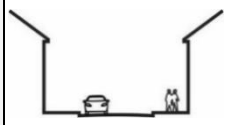
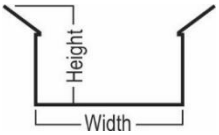
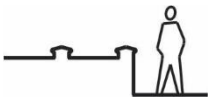
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		50 m	Frequent intersection enhance walkability of the area	
Street Definition		Local road (one direction)	The street connects the major boule-vards of the neighbourhood	
Spatial Quality of a Street		1(H) x 1,5(W)	Relatively narrow street create a sense of enclosure	
Presence of Borders		Flower boxes	Flower boxes are places between the sidewalks and the roadway	
Change in Grade		Raised sidewalks	Around the street intersections, the sidewalks are leveled with the roadway	
Wayfinding		Signs, lettering, signage	Occur primarily around the road crossing	

Fig. 3.9 Urban qualities related to walkability. Avenue Duluth

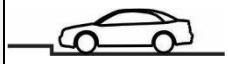
Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Sidewalks, small squares	On lot line buildings have easy access from sidewalks	
Sidewalk		3 m	Sidewalks are on the both sides of the street	
Parking Lot		Street side parking	Due to the narrowness of the street on street parking is limited	
Bike Lanes		Shared right-of-way	Bicycle facilities enhance cycling	

Fig. 3.10 Public spaces. Avenue Duluth

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Trees, vines plants	Landscaped street makes walking more pleasing and comfortable	

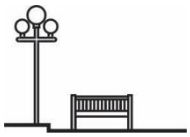
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Benches, trellises	A few places equipped with benches welco-me pedestrians to slow down and rest	
Street Texture, Pavement		Brick pavers	Brick pavers that are used for sidewalks a roadway evoke a feeling of a pedestrian street	

Fig. 3.11 Ground related features. Avenue Duluth

3.4.2.3 Rue Rachel

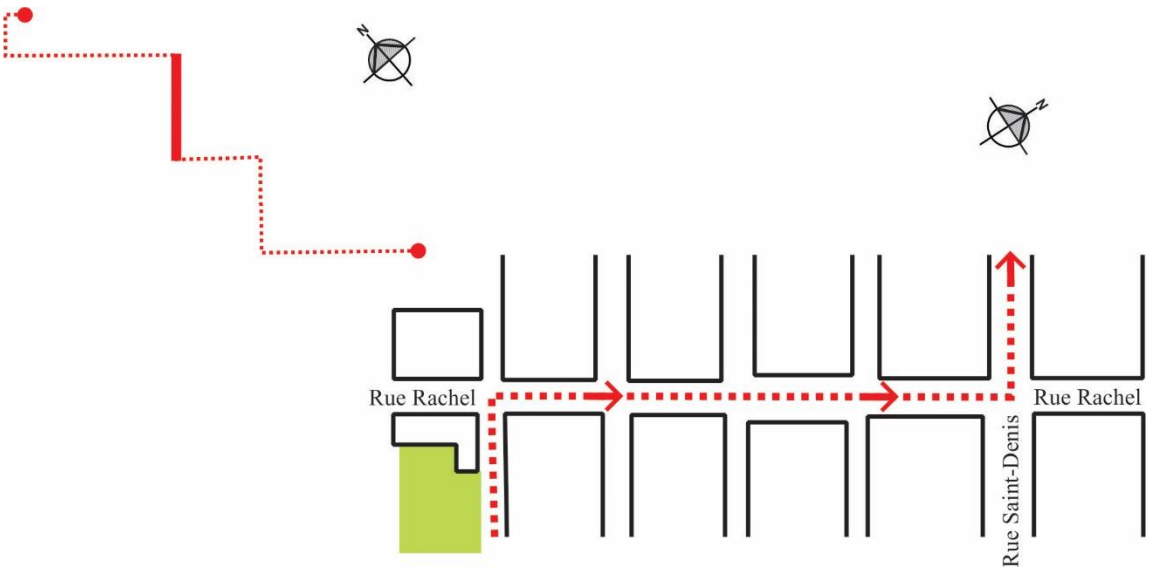


Fig. 3.12 Plateau Mont-Royal. Route. Rue Rachel

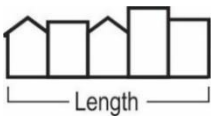
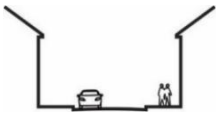
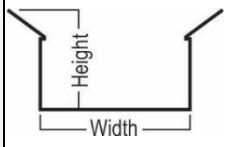
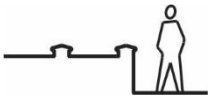
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		47 m	Wide streets provide pedestrians clear orientation	
Street Definition		Collector road (two directions)	The street comprises a roadway and a two-way bike lane	
Spatial Quality of a Street		1(H) x 2(W)	Street's perspective is accentuated by the church's silhuette	
Presence of Borders		Fences	Fences surround front yards of civic buildings	
Change in Grade		Raised sidewalk and median	Street slopes downhill	
Wayfinding		Signs, lettering, signage	Signs and lettering direct pedestrian's attention towards on-grade retail outlets	

Fig. 3.13 Urban qualities related to walkability. Rue Rachel

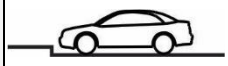
Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Sidewalks	Sidewalk is an area where locals take their daily rounds	
Sidewalk		2-3 m	Sidewalk is on the both sides of the street	
Parking Lot		Street side parking	Street side parking is on one side of the road	
Bike Lanes		Shared right-of-way	Two way bicycle lane separated from the road by a median ensures secure cycling	

Fig. 3.14 Public spaces. Rue Rachel

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Trees, flower boxes	Trees and grass form green set-backs. Planter strip divides the bicycle lane from the drive-way	

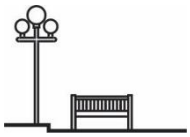
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Benches, street lamps	Benches occur near retail outlets	
Street Texture, Pavement		Concrete slabs, brick pavers	Concrete slabs are used for sidewalks, brick pavers occur around the entries	

Fig. 3.15 Ground related features. Rue Rachel

3.4.2.4 Corner buildings

The buildings' numbers in parenthesis are given according to the route (fig.3.2).

Fig. 3.16 A building on boulevard St. Laurent (1)

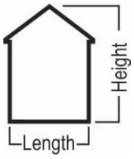
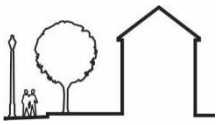
Fig. 3.17 A building on avenue Duluth (2)

Fig. 3.18 A building on rue Rachel (3)

Fig. 3.19 A building on avenue du Mont-Royal (4)

3.4.3 Buildings' Features

3.4.3.1 A Building on Boulevard St. Laurent

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Apartment building	 Mixed use building incorporates commercial uses at the ground floor
Building Size		21 m x 13 m	
Number of Floors		4	 Window arrangement is compatible with the fenestration pattern of adjoining buildings
Fenestration		Symmetrical 30 %	
Building Access		No-step entry	 The building set on the lot line allows direct access from the sidewalk and visual transparency
Setback		4 m	

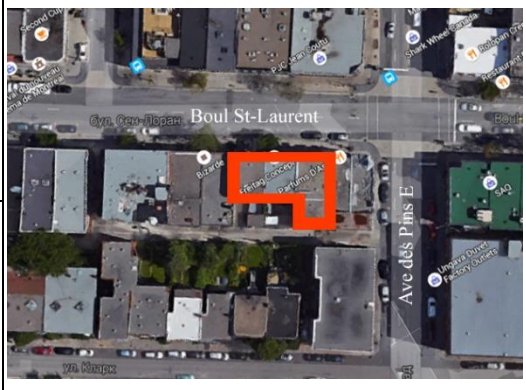
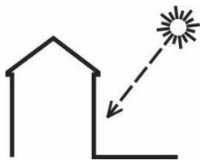
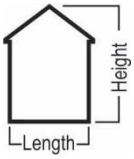
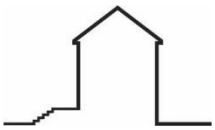
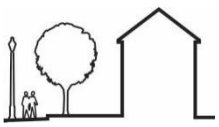
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Flat	
Exterior Features		Dormer windows, cornice	Dormer windows provide natural light to the mansard and vary a flat building's facade
Roof Profile		Mansard	
Texture, Materials, Color		Brickwork	Uses of ground and upper floors differ in exterior design
Ground Level Condition		Retail	
Sun Exposure		Before noon	

Fig. 3.20 A building on Boulevard St. Laurent

3.4.3.2 A Building on Avenue Duluth

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Apartment building	
Building Size		12 m x 8 m	The length to height ratio creates good proportions of the building
Number of Floors		3	
Fenestration		Symmetrical 25 %	Large proportion of glazing at the ground floor allows visual contact between inside and out
Building Access		Step up entry	
Setback		3 m	Set on lot line building allows easy access and visual connection due to the large ground floor windows

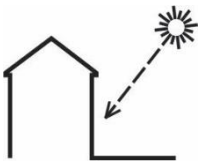
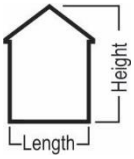
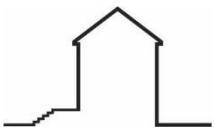
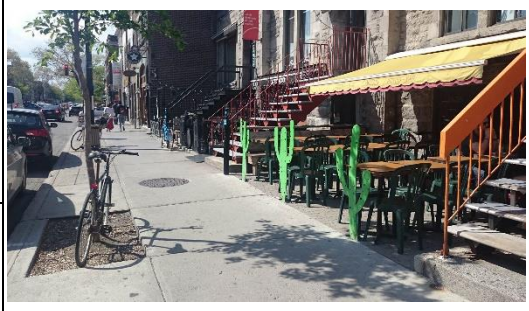
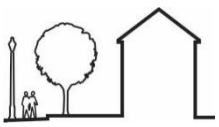
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Corner building	
Exterior Features		Dormer windows, cornice	The location of the building determines its symmetrical design with horizontal articulation
Roof Profile		Mansard	
Texture, Materials, Color		Brickwork, stucco	Dormer windows contribute greatly to the distinctive character of the facades
Ground Level Condition		Retail	
Sun Exposure		Before noon/ in the afternoon	

Fig. 3.21 A building on Avenue Duluth

3.4.3.3 A Building on Rue Saint-Denis

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Row house	
Building Size		9 m x 14 m	Row houses shape cohesive frontage
Number of Floors		3	
Fenestration		Symmetrical 20 %	Projections and recessions on the building wall, window alignment form well-articulated facades
Building Access		Elevated entry	
Setback		4 m	The spaces between staircases accommodate outdoor dining areas

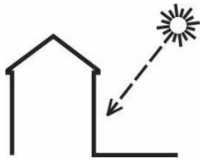
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Well-articulated	
Exterior Features		Roofline, turrets	Roofs' features add distinction to the facades and create a strong rhythm of the roofline
Roof Profile		Gable	
Texture, Materials, Color		Stone	Different roofs' and staircases' colours distinguish adjacent houses
Ground Level Condition		Retail	
Sun Exposure		In the afternoon	

Fig. 3.22 A building on Rue Saint-Denis

3.4.4 Conclusion

The orthogonal street pattern of the neighbourhood gives people a clear sense of orientation facilitating their navigation in the area. Small to medium blocks and parallel streets form dense networks of pathways which provide pedestrians with direct paths to a destination. The mixed-use development galvanizes commercial activity and generates active street edges inviting dwellers to participate in urban life. The major streets primarily are formed by low and medium height mixed-use buildings which incorporate commercial uses on the ground floor and the residential units above. This spatial organization of the buildings mostly fits the dense urban area and benefits both the local businesses and the residents. During the day and at night, these streets attract dwellers by offering them a variety of uses and services and therefore provide them with a good quality of life.

In core retail areas, the buildings are placed against the edge of the sidewalk and allow direct pedestrian access which is convenient for all categories of people. Buildings height and their juxtaposition create coherent street walls. The height to width ratio of the streets generate a sense of enclosure and positive feeling about the space in a viewer's perception. Along the commercial streets, the sidewalks become wider than on purely residential ones so that to accommodate intense pedestrian traffic. A comfortable street environment is supported by bicycle facilities, benches and side walk cafes which welcome people by offering them outdoor seating. Beautifully decorated by flower boxes and potted plants this street furniture allows people to communicate with other people and therefore promotes casual social interactions.

The residential buildings along the local streets are lower then their mixed-use counterparts and create more intimate scale of the urban area. Green set-backs of the buildings permit small fenced front gardens that ensure more privacy than public streets. The front yards, little verandas and balconies are places where neighborly contacts often occur. The well-articulated facades of duplexes and triplexes whose rhythm is created by balconies, elaborative openings, diverse roof forms, and the outdoor staircases contribute to the richness of the streetscape and sustain viewers' visual interest. The detailed frontages are well scaled to slow pedestrian pace allowing people to appreciate the wealth of details on the move. Street side parking buffers sidewalks from roadways ensuring more safety for pedestrians and simplifying the transition from driver to pedestrian.

3.5 Case Study 2. Bois Franc

3.5.1 Introduction

Bois Franc is a planned neighbourhood based on the principles of New Urbanism. Designed by Louis Sauer to be pedestrian-friendly the Bois Franc is different from conventional suburban counterparts of sprawling single-family houses. When designing this development the main objective was "to give the community its own signature or identity" (Sauer, 1994). The Bois Franc provides their inhabitants with a variety of buildings types (10,000 housing units) and carefully designed places for recreation. Owing to plenty of green spaces, well-landscaped residential areas and high quality open spaces the neighbourhood evokes a vision of traditional communities

Neighbourhood	Location	Area	Population	Date of establishment
Bois Franc	Suburban area	2.4 km^2	20.000-25.000	1994

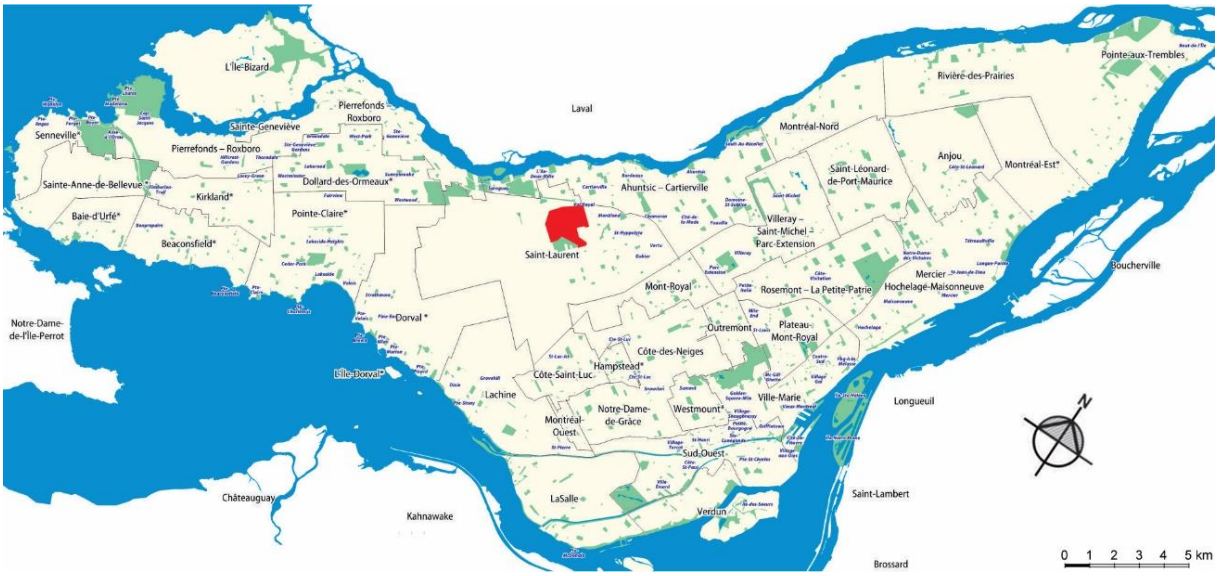


Fig. 3.23 Situation plan. Bois Franc (Source: https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Montreal)

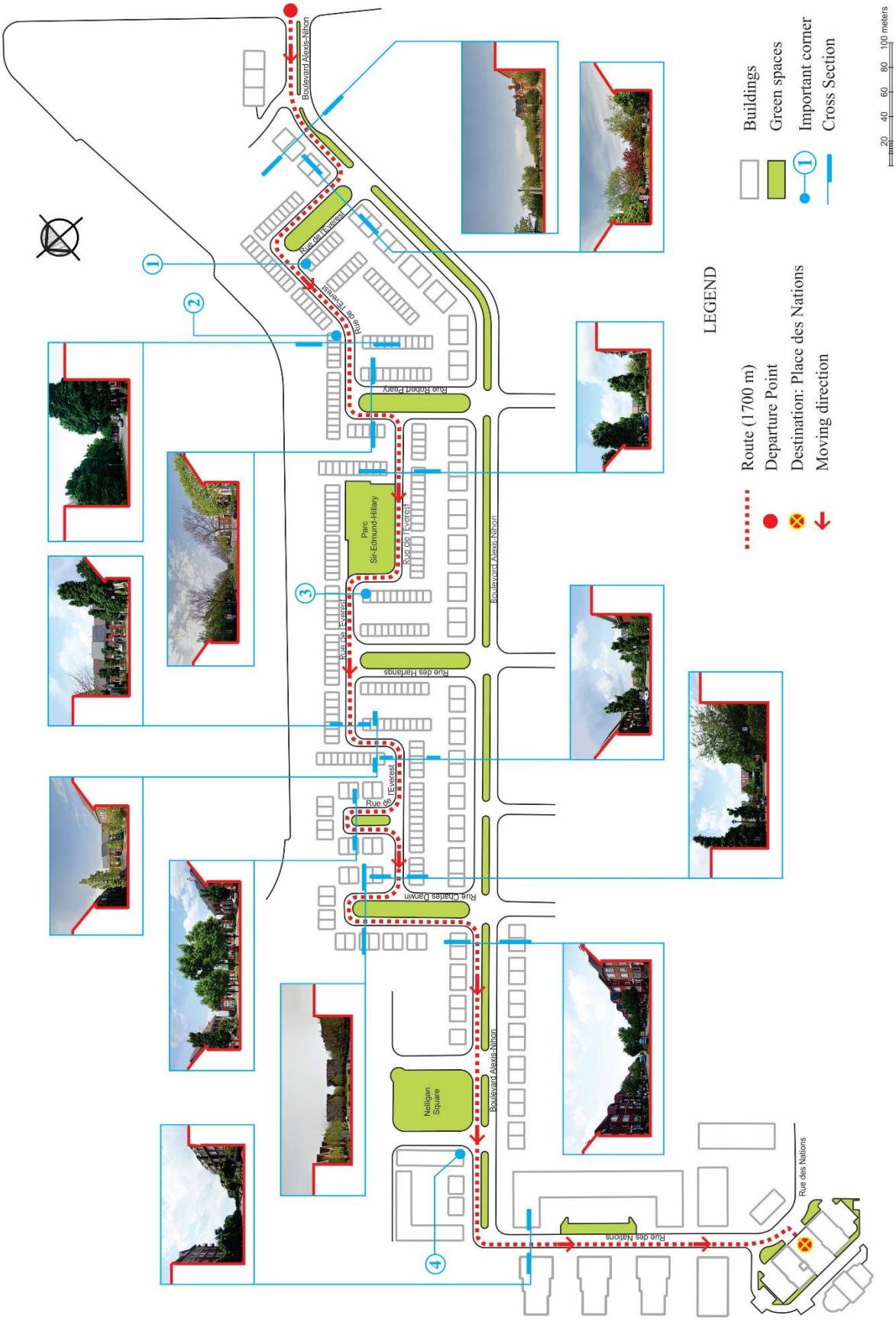


Fig. 3.24 Route. Bois Franc

Fig. 3.25 Bois Franc. Route. Context Map

3.5.2 Streetscape Analysis

3.5.2.1 Boulevard Alexis-Nihon

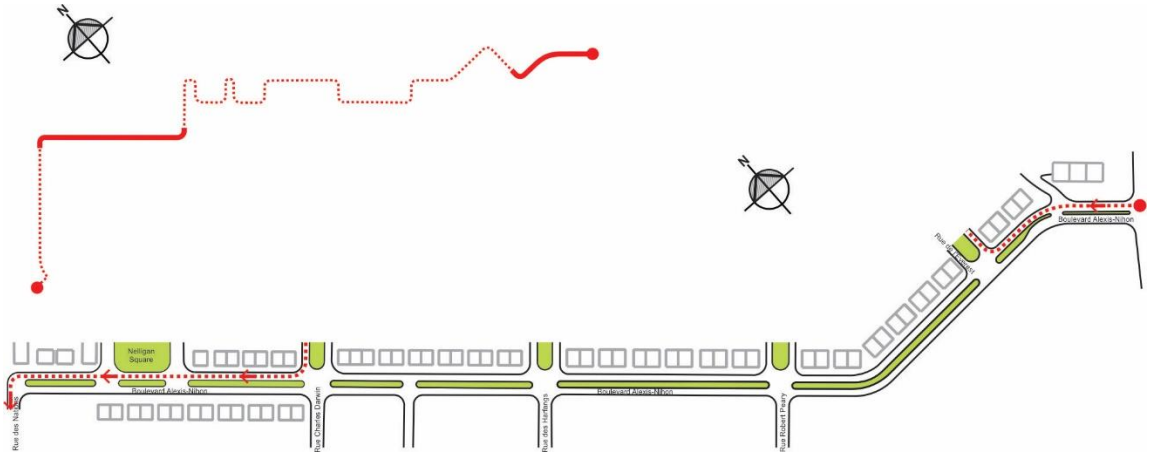


Fig. 3.26 Bois Franc. Route. Boulevard Alexis-Nihon

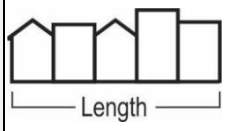
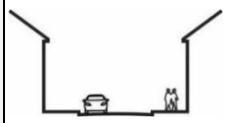
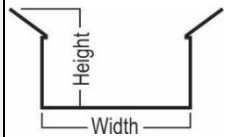
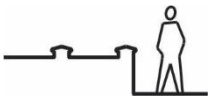
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		110 m	Shape of blocks has an organic pattern	
Street Definition		Arterial road	The street provides the neighbourhood with transport links	
Spatial Quality of a Street		1 x 3	Trees aligned along the street help to achieve a sense of enclosure	
Presence of Borders		Fences	The fences delimit the border of property	
Change in Grade		Raised sidewalks	Planter strip divides the sidewalk and the roadway	
Wayfinding		Identification and road sign	Occur primarily around the road crossing	

Fig. 3.27 Urban qualities related to walkability. Boulevard Alexis-Nihon

Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Sidewalks, green spaces	Numerous green spaces provide people with recreational opportunities	
Sidewalk		1,5 m	Sidewalks are on the both sides of the street	
Parking Lot		Street side and private indoor parking	Individual garages at the rear of the houses with a shared driveway access	
Bike Lanes		On-street bicycle lane	Likewise the street and the bicycle lanes travel in both directions	

Fig. 3.28 Public spaces. Boulevard Alexis-Nihon

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Trees, rocks, front yards	Tree-lined pedestrian paths. Front yards are well landscaped	

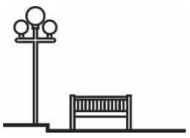
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Functional street furniture	Street lamps, fire hydrants, bus shelters	
Street Texture, Pavement		Concrete slabs, brick pavers	Concrete slabs are used for sidewalks, brick pavers – for narrower pedestrian paths	

Fig. 3.29 Ground related features. Boulevard Alexis-Nihon

3.5.2.2 Rue de I'Everest

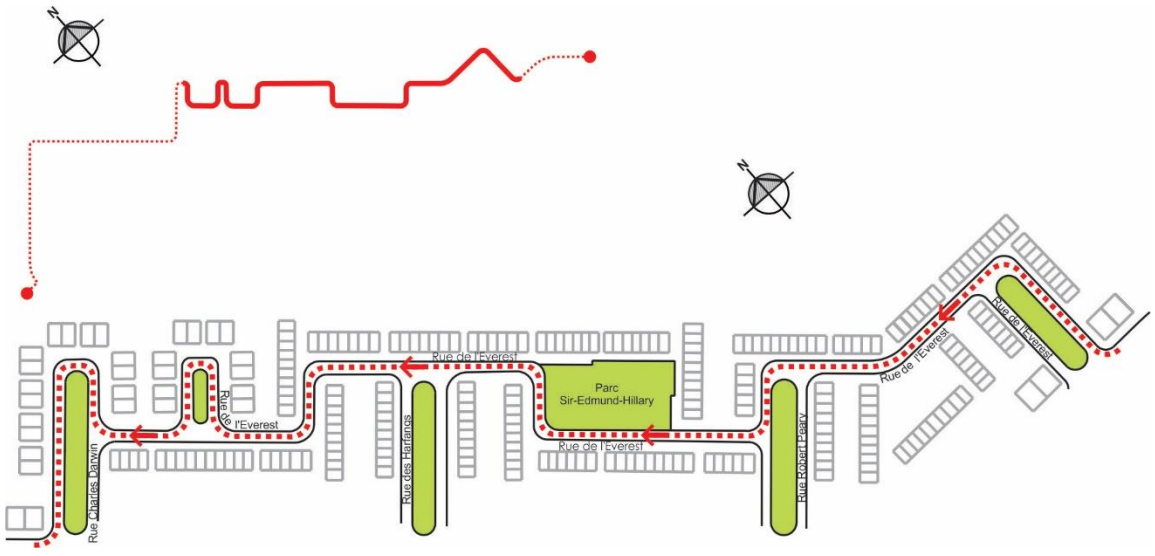


Fig. 3.30 Bois Franc. Route. Rue de I'Everest

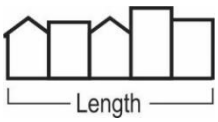
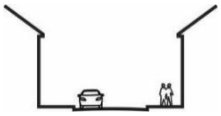
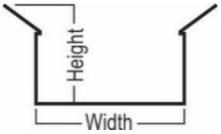
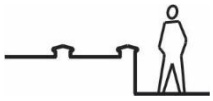
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		90 m	The blocks are formed by rows of terraced and semi-detached houses	
Street Definition		Local road	The street forms a green spaces between building rows	
Spatial Quality of a Street		1 x 2,5	Low-rise row houses create good proportion relative to the street	
Presence of Borders		Fences, hedges	Greenary creates soft green edges on the street	
Change in Grade		Raised sidewalks and green spaces	Cross-slopes smooth car transition to private indoor parking	
Wayfinding		Identification and road sign	Occur primarily around the road crossing	

Fig. 3.31 Urban qualities related to walkability. Rue de I'Everest

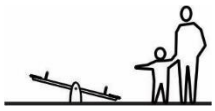
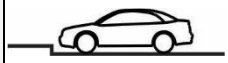
Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Sidewalks, green spaces	Numerous green spaces provide people with recreational opportunities	
Sidewalk		1,5 m	Sidewalks are on both sides of the street	
Parking Lot		Street side and private indoor parking	Individual garages at the rear of the houses with a shared driveway access	
Bike Lanes		On-street bicycle lane	Likewise the street and the bicycle lanes travel in both directions	

Fig. 3.32 Public spaces. Rue de I'Everest

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Trees, bushes, flower beds	Green areas between rows of houses create a park-like ambience	

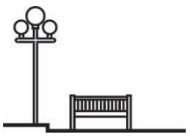
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Benches, hardscape, flowerpots	Small landscaped open spaces equipped with benches and hardscape	
Street Texture, Pavement		Concrete slabs, brick pavers	The area around entries is paved by pavers of various kinds	

Fig. 3.33 Ground related features. Rue de I'Everest

3.5.2.3 Rue des Nations

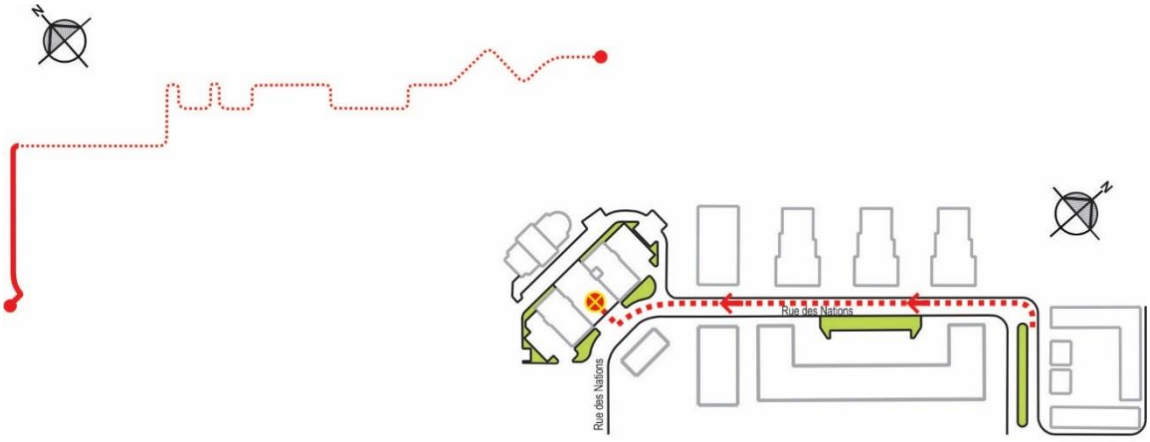


Fig. 3.34 Bois Franc. Route. Rue des Nations

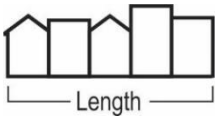
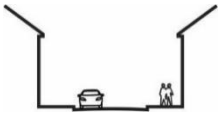
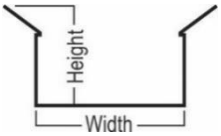
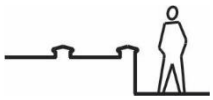
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		250 m	The blocks are formed by medium height freestanding buildings	
Street Definition		Collector road	The street gives access to the community center – Place des Nations	
Spatial Quality of a Street		1 m x 1,8 m	6 story apartment C - shape building is set back from a road creating an appropriate buffer with the planting strip	
Presence of Borders		Fences, retaining walls, bollards	The fences identify semi-public and private ownership	
Change in Grade		Raised sidewalks, ramps	Cross-slopes smooth car transition to private indoor parking	
Wayfinding		Identification and road sign	Occur primarily around the road crossing	

Fig. 3.35 Urban qualities related to walkability. Rue des Nations

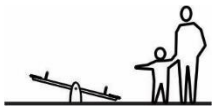
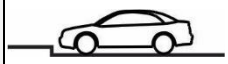
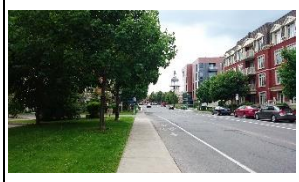
Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Sidewalks, parks, squares	Place des Nations is a common destination for dwellers	
Sidewalk		1,5 m	Sidewalks are on the both sides of the street	
Parking Lot		Street side and underground parking	Underground parking lowers the number of cars parked on the street	
Bike Lanes		On-street bicycle lane	Two-way bicycle route	

Fig. 3.36 Public spaces. Rue des Nations

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Trees, bushes, hedges	The greenery fences private territory. A planter strip and landscaped setbacks buffer the buildings from the road	

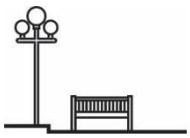
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Functional, decorative street furniture	Place des Nations provides outdoor seating, a fountain, and bicycle facilities	
Street Texture, Pavement		Concrete slabs, brick pavers, gravel	Brick pavers are used around entries to the buildings and in the public square	

Fig. 3.37 Ground related features. Rue des Nations

3.5.2.4 Corner Buildings.

The buildings' numbers in parenthesis are given according to the route (fig.3.24).

Fig. 3.38 A building on rue de L'Everest (1)

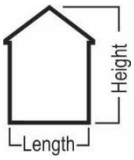
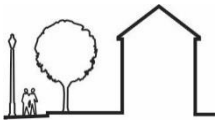
Fig. 3.39 A building on rue de L'Everest (2)

Fig. 3.40. A building on rue de L'Everest (3)

Fig. 3.41 A building on boulevard Alexis-Nihon (4)

3.5.3 Buildings' features

3.5.3.1 A building on Boulevard Alexis-Nihon

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Semi-detached	
Building Size		16 m x 14 m	
Number of Floors		4	
Fenestration		Symmetrical 20 %	Symmetrical alignment of windows continues the fenestration pattern of the adjoining buildings.
Building Access		Elevated ground floor	
Setback		8 m	Stairs lead to the outdoor arch entries. Semi-private front yards are well-landscaped

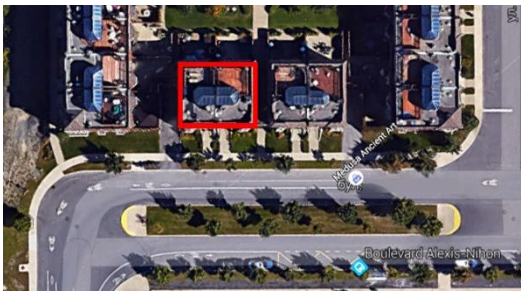
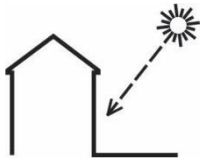
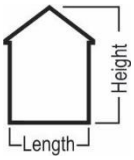
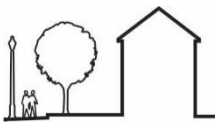
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Articulated	
Exterior Features		Balconies, bay windows, arch entries	
Roof Profile		Hipped roof	
Texture, Materials, Color		Brickwork, stone	Stairs lead to the outdoor arch entries. Semi-private front yards are well-landscaped
Ground Level Condition		Residential	
Sun Exposure		Before noon/in the afternoon	

Fig. 3.42 A building on boulevard Alexis-Nihon

3.5.3.2 A Building on Rue des Nations

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Apartment building	 The apartments building is a part of the group of identical buildings aligned along the street
Building Size		30 m x 18 m	
Number of Floors		4	 Stone-dressed red brick walls are supplemented with large symmentrically arranged windows
Fenestration		Symmetrical 40 %	
Building Access		Elevated ground floor	 The entries are not providing handicap access
Setback		6 m	

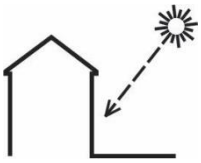
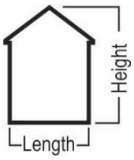
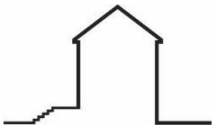
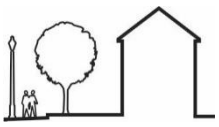
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Articulated	 Triangular and curved dormers'pediments is a distinctive feature of the building
Exterior Features		Balconies, dormers	
Roof Profile		Mansard roof	 Red brickwork contrasts beautifully with white bases and cornices that form the horizintal rhythm of the façade
Texture, Materials, Color		Brickwork, stone	
Ground Level Condition		Residential	
Sun Exposure		Before noon/in the afternoon	

Fig. 3.43 A building on rue des Nations

3.5.3.3 A Building on Rue de I'Everest

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Townhouses	
Building Size		6 m x 10 m	
Number of Floors		3	
Fenestration		Asymmetrical 20 %	Townhouses with symmetrically arranged paned-windows evoke Georgian style homes
Building Access		Elevated ground floor	
Setback		3 m	Various shapes of porches and bay windows create the rhythm of the frontages

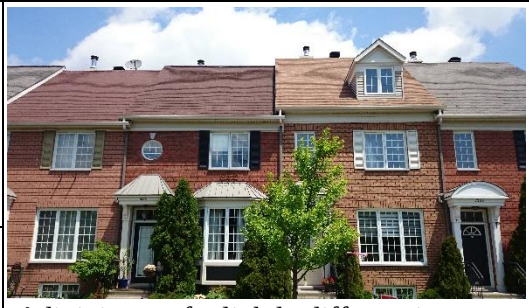
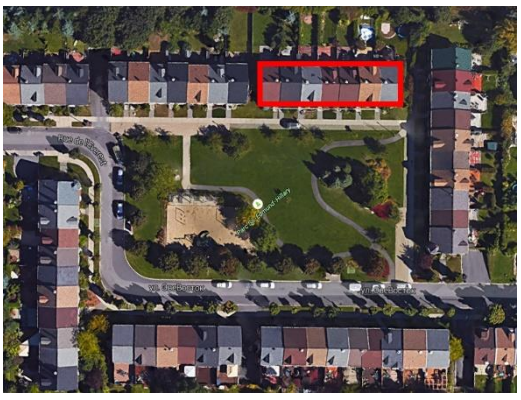
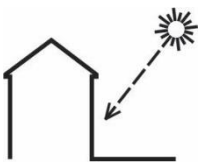
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Well-articulated	 Asymmetrical facades of complementary colours create a coherent street wall
Exterior Features		Porches, bay windows, dormers	
Roof Profile		Gable roof	 Adjoining roofs slightly different in height and punctuated by dormers form well-proportioned roofline. The shatters' colour match the doors
Texture, Materials, Color		Brickwork	
Ground Level Condition		Residential	
Sun Exposure		Before noon	

Fig. 3.44 A building on rue de I'Everest

3.5.4 Conclusion

Bois Franc offers a diverse range of housing types and therefore plenty of choices for living whether in townhouses, semi-detached houses or apartment buildings designed in both classic and contemporary architectural style. Diverse housing typologies attract more a varied group of inhabitants. A system of streets creates small blocks which give enough directional choices for pedestrians. The route maintains a viewer's interest along the way offering short views due to frequent turns of the streets. Sidewalks located on both sides of the streets provide connectivity between open spaces and residential groups and enhance circulation within the site. In wider streets sidewalks are separated from the roadway by a planter strip that increases pedestrian comfort and safety.

Townhouses - the dominant building type - are primarily arrayed along the local streets which low-rise domestic character contributes a lot to the human scale of the neighbourhood. The buildings' setback with landscaped semi-private front yards and elevated entrances allow more personal comfort for dwellers. Being a part of a street wall each building however has a character that becomes apparent by means of the entry design, colour and material of exterior walls, façade articulation and shape of the roof. Semi-detached houses do not form continuous street walls, but rather create a group of freestanding buildings placed around green spaces and allow more comfort and privacy to their occupants. Many houses have private garages which lowers the number of cars parked on the street.

Medium-rise apartment buildings that are more scaled to wider streets are located along major roadways. Adjoining buildings of similar heights differ by the design of facades and roof silhouette. Thus they sustain a variety of street walls, give buildings individual features and enrich the streetscape. Whenever the number of floors rises, the setback of the buildings increases respectively in order to moderate the scale of the larger masses. Such hierarchy of townhouses, semi-detached houses and apartment buildings, which setback are tailored to street width, allows for a smooth transition in height through the residential fabric and appropriate proportion of the streets and the buildings that enclose them. An attractive park-like environment of the neighbourhood is achieved by numerous green spaces. Publicly-accessible open spaces: parks, squares and playgrounds serve as centres of activity and recreation, and provide locals with social opportunities.

3.6 Case Study 3. Ville Marie

3.6.1 Introduction

Ville-Marie represents a contrast between Old Montreal's rich architectural heritage and the modern city's downtown core. The development comprises the streets of various scales: from arterial road Rue McGill to narrow winding Rue Saint Paul with the tendency of buildings height decreasing. Medium and low-rise buildings in urban core, some of which dating from 1685, enclose highly walkable streets – centres for meeting and commercial display. The streets enable a variety of activities weather retails, public squares or green spaces. The ground floors of 18th and 19th century stone buildings are animated by commercial uses. The businesses draw visitors' attention and generate pedestrian activity. People however head to Old Montreal driven not merely by its commercial component, but rather fascinated by its authentic architecture and French charm.

Neighbourhood	Location	Area	Population	Date of establishment
Ville-Marie	Urban Area	16.5 km^2	84.000	17th century

Fig. 3.45 Situation plan. Ville Marie (Source: https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Montreal)

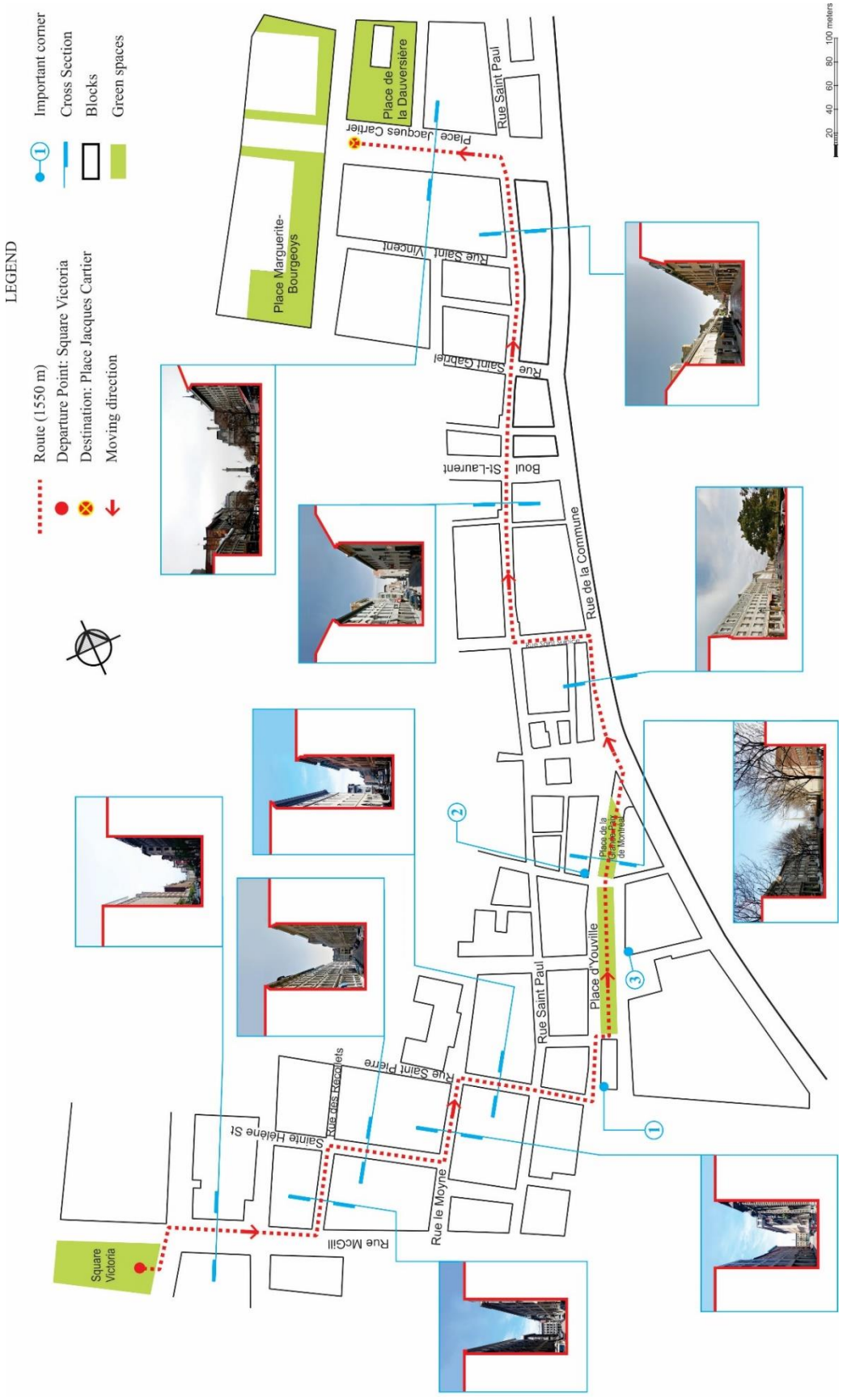


Fig. 3.46 Route. Ville Marie

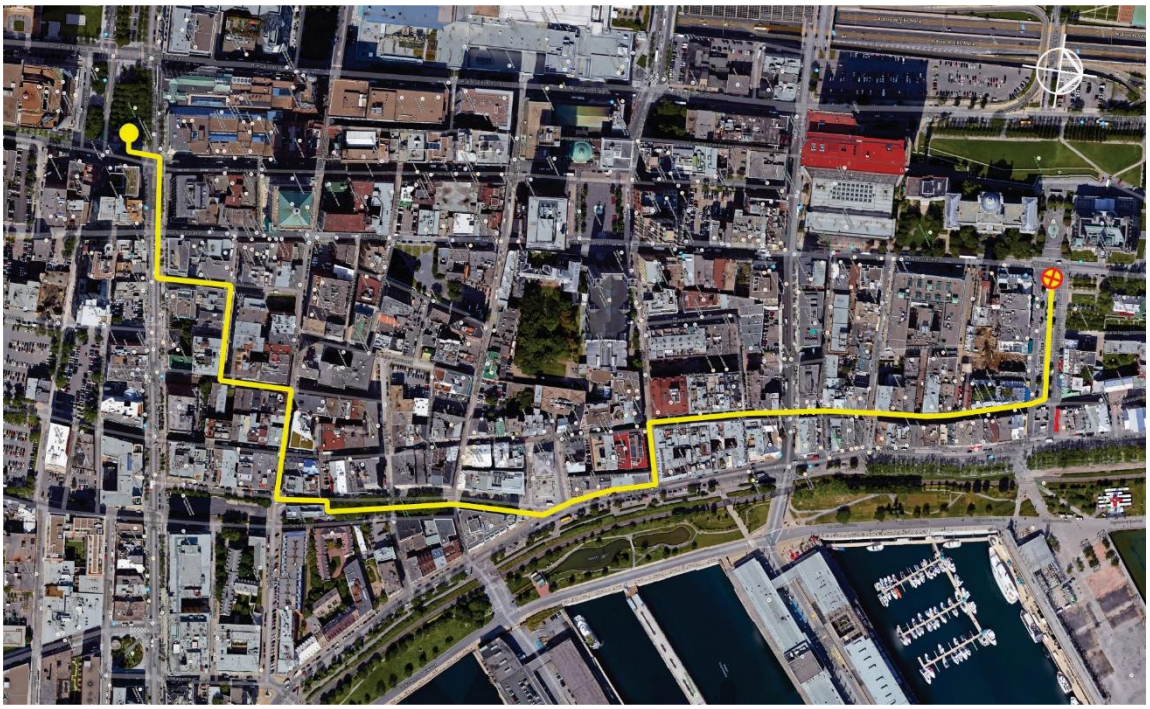


Fig. 3.47 Ville Marie. Route. Context Map

3.6.2 Streetscape Analysis

3.6.2.1 Place Jacques Cartier

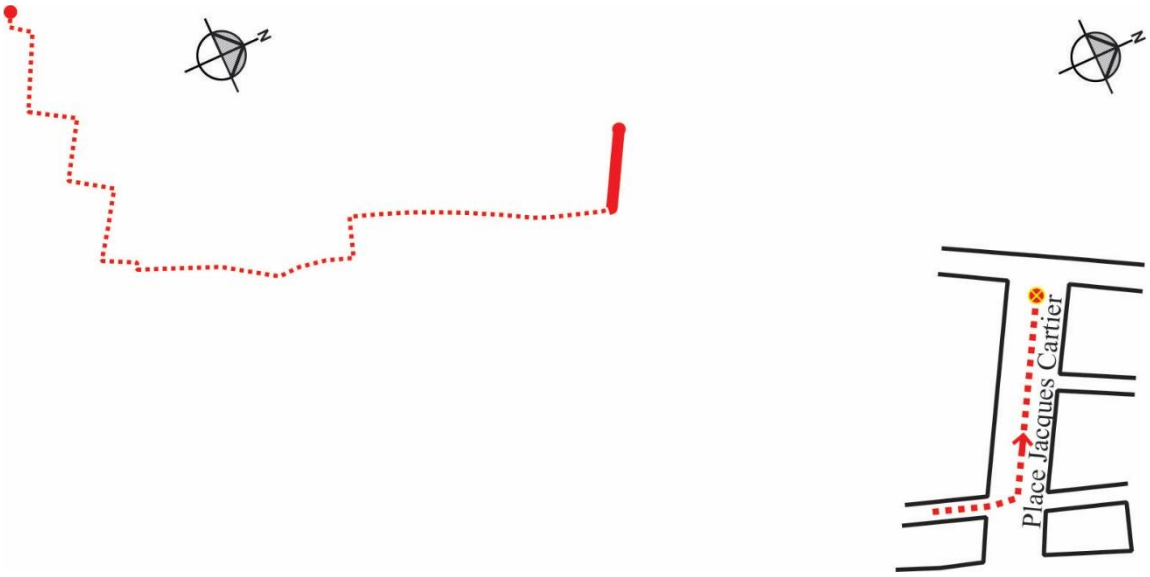


Fig. 3.48 Ville Marie. Route. Place Jacques Cartier

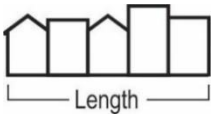
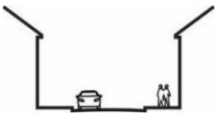
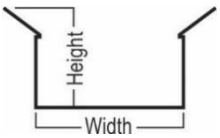
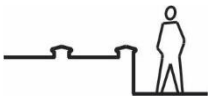
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		130 m	A wide range of uses located on the ground floors of the buildings enhances pede-strian activity	
Street Definition		Pedestrian oriented street	The upper end of the street is flanked by a Column that emphasizes the symmetry of the street	
Spatial Quality of a Street		1 x 3	Tree lines and street furniture moderate the height to width ratio of the street	
Presence of Borders		Sidewalk cafes, market stalls, kiosks, sunshades, phone booths, bollards	The temporary structures block the view to the square, but encourage pedestrian flow	
Change in Grade		Raised central sidewalk	The cross-slopes smooth transi-tion for wheel chair users. Street slopes steeply downhill	
Wayfinding		Signs, lettering, signage	Wide street allows clear views of the surrounding area and easy orientation	

Fig. 3.49 Urban qualities related to walkability. Place Jacques Cartier

Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Sidewalks, square, park	Open spaces create a desirable destination for pedestrians	
Sidewalk		15 m	Raised central promenade helps to divide pedestrian flow	
Parking Lot		Street side parking	Street side parking available only for special vehicles	
Bike Lanes		No bike lanes	Bike lane is on adjacent Rue Notre-Dame East	

Fig. 3.50 Public spaces. Place Jacques Cartier

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Trees, flower pots	The square is lined with trees and flower pots	

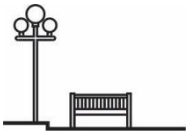
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Benches, street lamps, potted plants, seating walls	The street furniture scale a wide street to slow pedestrian pace	
Street Texture, Pavement		Paving slabs	The pavement pattern visually breaks up the large paving surfaces	

Fig. 3.51 Ground related features. Place Jacques Cartier

3.6.2.2 Rue Saint Paul East

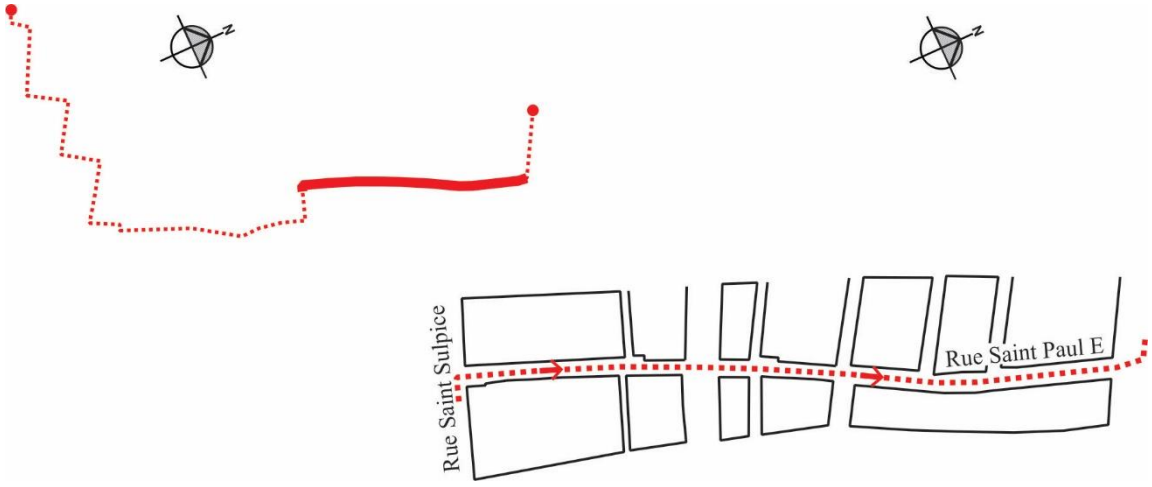


Fig. 3.52 Ville Marie. Route. Rue Saint Paul East

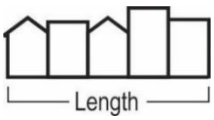
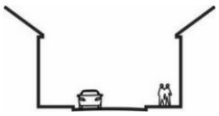
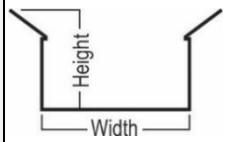
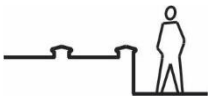
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		130 m	Small-block layout offers pedestrians a variety of routes	
Street Definition		Pedestrian oriented street	Narrow winding street provides interesting vistas and a rich perceptual experience	
Spatial Quality of a Street		1 x 1	Low and medium rise buildings with articulated facades create a sense of enclosure	
Presence of Borders		Sidewalk cafes	Outdoor cafes make pedestri-ans slow down and enjoy the views of the surrounding area	
Change in Grade		Raised sidewalk	The entries of the ground floors are level with the sidewalk	
Wayfinding		Signs, lettering, signage	Occur primarily around the street crossing	

Fig. 3.53 Urban qualities related to walkability. Rue Saint Paul East

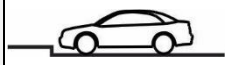
Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Sidewalks	During specific times of the year the street becomes solely for pedestrians	
Sidewalk		2 m	Sidewalk is on the both sides of the street	
Parking Lot		Street side parking	Due to the relative narrow-ness of the street parking is on one side of the road	
Bike Lanes		Shared right-of-way	Because of the cobblestone pavement cycling becomes difficult	

Fig. 3.54 Public spaces. Rue Saint Paul East

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Flower pots, hanging baskets with flowers	The plants, flowers and pots are primary landscape features on the treeless street	

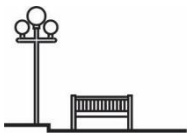
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Benches, street lamps, flower pots, public art	Street side cafes offer more outdoor seats for people. Public art varies the streetscape	
Street Texture, Pavement		Cobblestones	Paved with cobblestones the street evokes an atmosphere of an old European city	

Fig. 3.55 Ground related features. Rue Saint Paul East

3.6.2.3 Place d'Youville

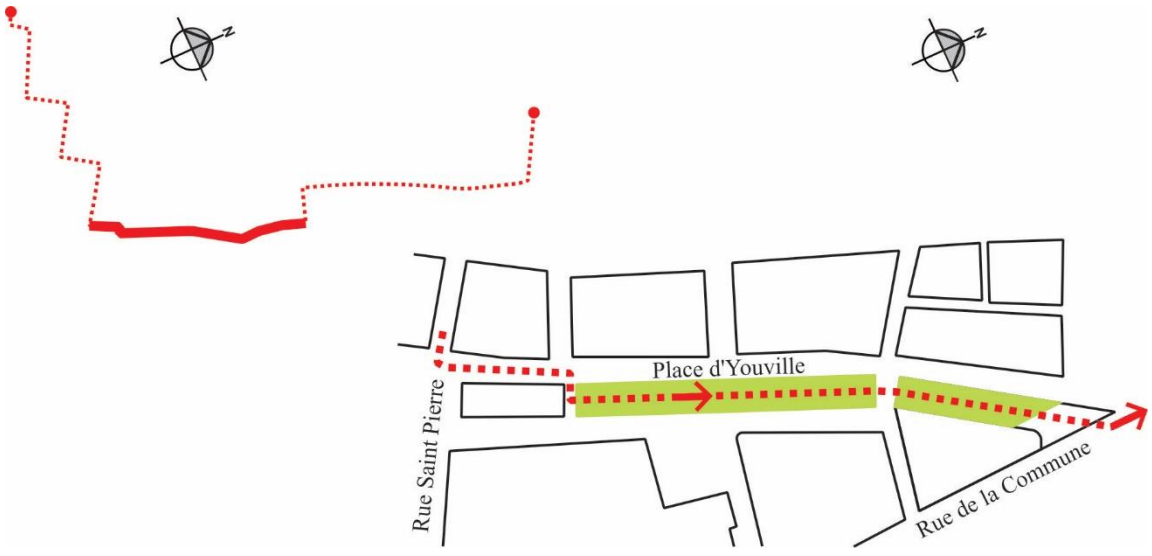


Fig. 3.56 Ville Marie. Route. Place d'Youville

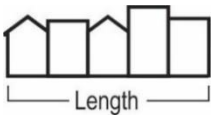
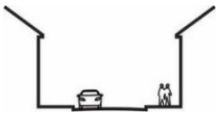
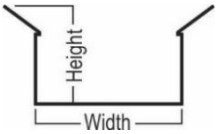
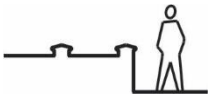
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		70 m	The residential area divided into small blocks gives great choice of routes for pedestrians	
Street Definition		Local street (two directions)	A pedestrian boulevard runs along the street	
Spatial Quality of a Street		1 x 2,5	Trees aligned along the street moderate WxH ratio and create good spatial quality	
Presence of Borders		Hedges	Hedges and planting strips buffers the pedestrian zone from traffic	
Change in Grade		Raised sidewalk	Cross-slopes allow vehicles smooth motion	
Wayfinding		Signs, lettering, signage	Occur around the street cros-sing and along the street	

Fig. 3.57 Urban qualities related to walkability. Place d'Youville

Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Place de la Grande-Paix de Montréal	Small public square with resting places and natural features welco-mes passers by	
Sidewalk		1,5 m	Sidewalk is on the both sides of the street	
Parking Lot		Street side parking	Street parking is on one side of each street	
Bike Lanes		Shared right-of-way	Cyclists share right-of-way with other vehicles	

Fig. 3.58 Public spaces. Place d'Youville

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Flower pots, hedges	Well landscaped open space offers comfort and shade for pedestrians	

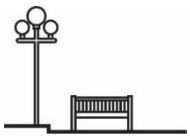
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Benches, street lamps, flower pots, public art	Street furniture creates good quality streetscape	
Street Texture, Pavement		Paving slabs, decking	Pavers scale street surface to low-speed pedestrian movement	

Fig. 3.59 Ground related features. Place d'Youville

3.6.2.4 Corner Buildings

The buildings' numbers in parenthesis are given according to the route (fig. 3.46).

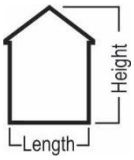
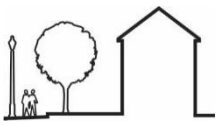
Fig. 3.60 A building on place d'Youville (1)

Fig. 3.61 A building on place d'Youville (2)

Fig. 3.62 A building on place d'Youville (3)

3.6.3 Buildings' Features

3.6.3.1 A building on Rue Saint Paul East (Intersection with Rue Saint Pierre)

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Apartment building	 The ground floor accommodates a restaurant
Building Size		18 m x 14 m	
Number of Floors		3	 Display windows allow more transparency between inside and outside
Fenestration		Symmetrical 25 %	
Building Access		Step up entry	 Easy access to the ground floor from the sidewalk
Setback		Zero lot line	

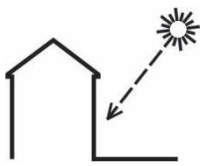
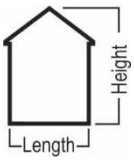
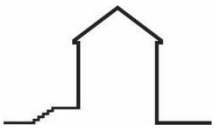
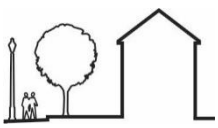
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Corner building	
Exterior Features		Pilasters, cornice, dormer windows	The facades of the building is decorated by window sills, pilasters and stepped cornice
Roof Profile		Hipped roof	
Texture, Materials, Color		Stone	The facade texture with distinctive wall lines reveals historic character of the old building
Ground Level Condition		Retail	
Sun Exposure		Before noon/ in the afternoon	

Fig. 3.63 A building on rue Saint Paul East (Intersection with rue Saint Pierre)

3.6.3.2 A Building on Rue Saint Paul East (Intersection with Rue Saint Vincent)

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Apartment building	 Mixed use building in the historic city centre
Building Size		10 m x 13 m	
Number of Floors		4	
Fenestration		Symmetrical 20 %	
Building Access		Step up entry	
Setback		Zero lot line	Sidewalk cafe forms a comfortable seating area between the building and the street

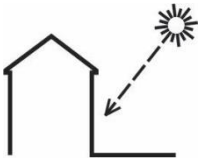
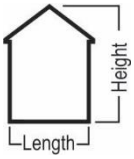
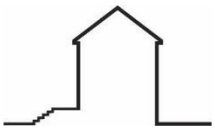
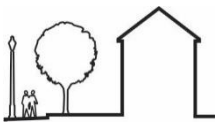
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Ornate	 Terrace above the ground level offers outdoor dining in a shade with a view to the street
Exterior Features		Dormer windows, window pediments, cornice, terrace, flower boxes	
Roof Profile		Pseudo mansard	 Facade ornamentation and red wooden window frames give the building the European character
Texture, Materials, Color		Stone, masonry and wood	
Ground Level Condition		Retail	
Sun Exposure		In the afternoon	

Fig. 3.64 A building on rue Saint Paul East (Intersection with rue Saint Vincent)

3.6.3.3 A Building on Place Jacques Cartier

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Apartment building	
Building Size		15 m x 12 m	The ground floor accommodates a souvenir shop
Number of Floors		3	
Fenestration		Symmetrical 20 %	Display windows allow pedestrians to see into the building
Building Access		Step up entry	
Setback		Zero lot line	Both facades that are exposed to the public streets have entries leveled with the sidewalks

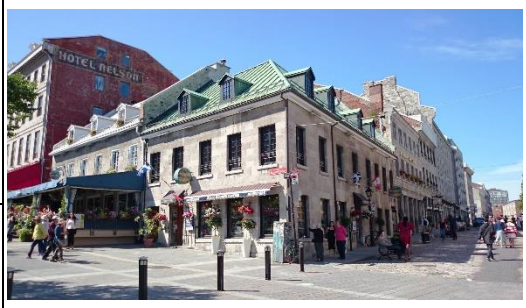
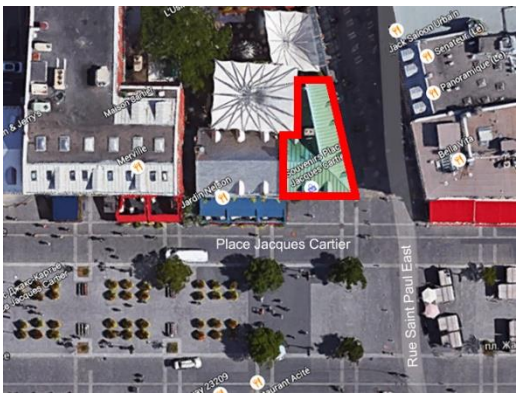
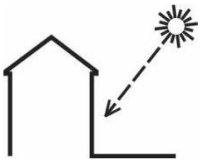
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Corner building	
Exterior Features		Roofline, small-paned windows, awnings	Windows with multiple small-panes sustain historic image of the facades
Roof Profile		Gable	
Texture, Materials, Color		Stone	Multi-window gable roof creates a distinctive character for the building
Ground Level Condition		Retail	
Sun Exposure		In the afternoon	

Fig. 3.65 A building on Place Jacques Cartier

3.6.4 Conclusion

Ville Marie represents the streets of various scales with respectfully changing buildings' masses whether high-rise glass offices around modern squares or historic areas with traditional apartment buildings. Such hierarchy of elements and subdivisions maintains a viewer's interest when walking. Irregular street patterns of historic urban fabric and the dense network of streets offer people a variety of routes for moving from place to place around the area and thus enhances their mobility. Slightly curved streets provide pedestrians with short views and sudden street wall openings that make the walking experience more interesting and meaningful. On lot lines buildings maintain consistent street walls rich in texture, materials and architectural details. Old stone buildings' thoughtfully designed facades and varied roof lines greatly contribute to the aesthetic quality of the streetscape. The size and proportion of the buildings that enclose narrow streets create a good spatial definition, foster a sense of enclosure and create the human scale of the neighbourhood.

A continuous network of streets, with sidewalks on both sides, creates a highly walkable environment, supported by a diversity of activities at eye level where people can watch other people and interact with them. Frontages animated by retail uses at the ground floor with direct zero step entry or step up entry enhance pedestrian activity by offering them a chain of events that keep people entertained. The display windows of cafes, restaurants, art galleries, artisan's boutiques, and stores allow visual contact between inside and outside and thus enhance peoples' visual and sensational experience. Likewise cobblestone streets intensify pedestrian walking perception evoking a vision of old European cities. Street furniture and pavement, sidewalk cafes and public art scale the street environment to low-speed pedestrian movement providing people with a good quality streetscape and rich perceptual mix.

Due to the lack of front yards and green the buildings' ground floors are decorated by potted plants and flower boxes that add some natural features to the mainly stone streetscape. The parks and green spaces invite passers-by to slow down and enjoy seating in shade and rest. On wider streets, trees, hedges and other landscaping buffer the pedestrian zone from traffic, thus increasing people's comfort and safety.

3.7 Case Study 4. Dollard-Des Ormeaux

3.7.1 Introduction

Dollard-Des Ormeaux is the residential development located North-West of city centre. It comprises typical features of conventional North American suburbian area. The curvilinear street system of the community is designed to be convenient and easily accessible for automobiles. The neighbourhood is primarily formed by single-family detached houses arranged along the streets. A plenty of well-attended green spaces which are within walking distance from all residential groups offer the dwellers recreational opportunities.

Neighbourhood	Location	Area	Population	Date of establishment
Dollard-Des Ormeaux	Suburban area	15.10 km^2	50.000	1924

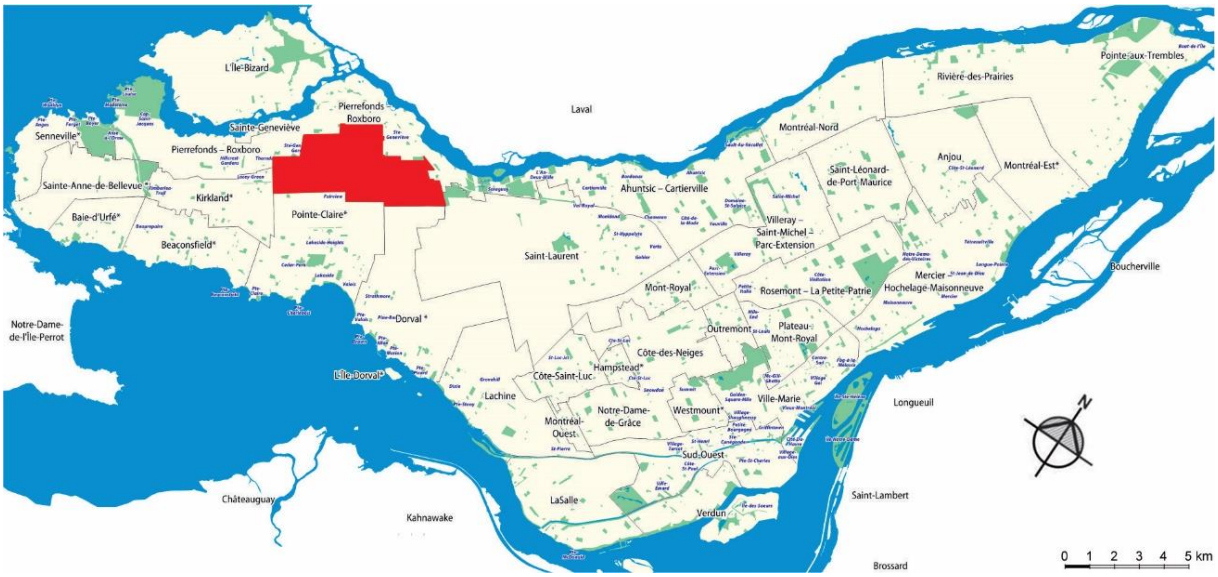


Fig. 3.66 Situation plan. Dollard-Des Ormeaux (Source: https://en.wikipedia.org/wiki/List_of_neighbourhoods_in_Montreal)

Fig. 3.67 Route. Dollard-Des Ormeaux

Fig. 3.68 Dollard-Des Ormeaux. Route. Context Map

3.7.2 Streetscape Analysis

3.7.2.1 Rue Baffin

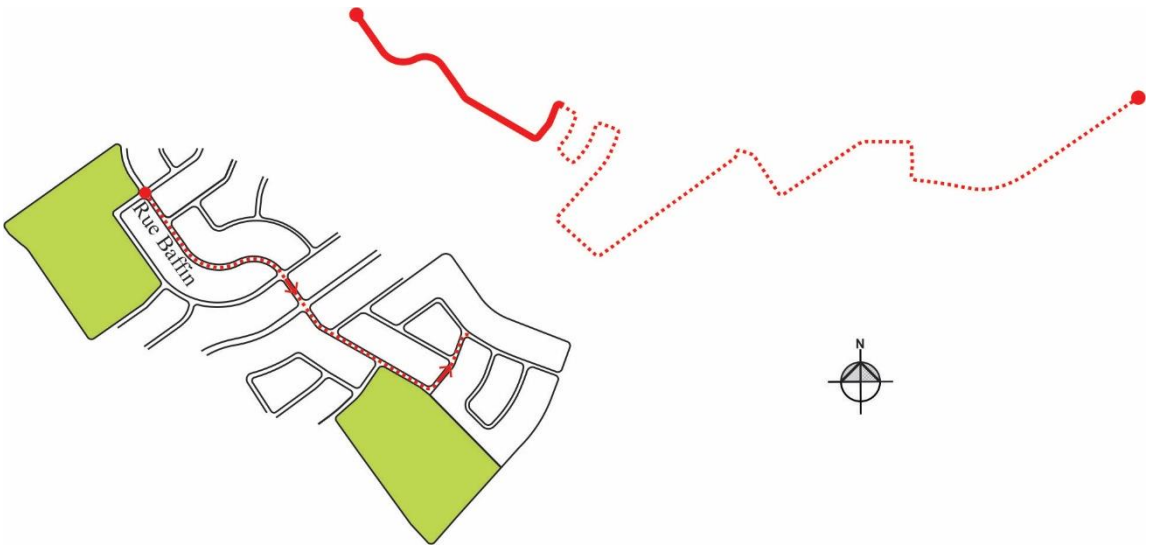


Fig. 3.69 Dollard-Des Ormeaux. Route. Rue Baffin

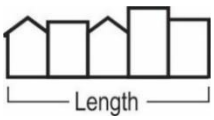
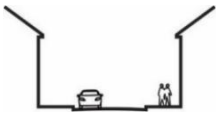
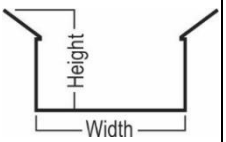
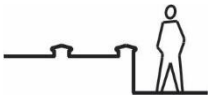
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		350 m	The residential development is formed primarily by free-standing single-family homes	
Street Definition		Local street (two directions)	Curvature blocks provide long views	
Spatial Quality of a Street		1(H) x 4(W)	Wide setbacks and low height of the buildings do not create a sense of enclosure	
Presence of Borders		Rare fences, hedges	Fences and hedges gate property	
Change in Grade		Raised sidewalk	Cross-slopes smooth transition to private garages	
Wayfinding		Identification signs, signage	Occurs mainly around cross-roads	

Fig. 3.70 Urban qualities related to walkability. Rue Baffin

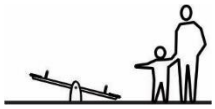
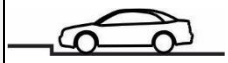
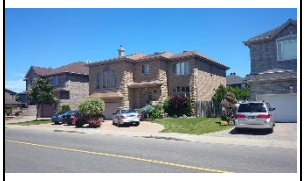
Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Sidewalks, park	Playgrounds, tennis courts and green spaces offer dwellers recreational opportunities	
Sidewalk		1,5 m	Sidewalk is on one side of the road	
Parking Lot		Private garages and parking lots	Street side parking occurs rarely	
Bike Lanes		Shared right-of-way	Bicyclists share right-of-way with other vehicles	

Fig. 3.71 Public spaces. Rue Baffin

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Trees, flower beds, hedges	Individual landscape design occurs frequently	

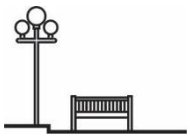
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Benches, street lamps flower pots, hardscape	Street furniture are mostly private	
Street Texture, Pavement		Concrete slabs, brick pavers	Individual entries are paved with brick pavers	

Fig. 3.72 Ground related features. Rue Baffin

3.7.2.2 Rue Lake

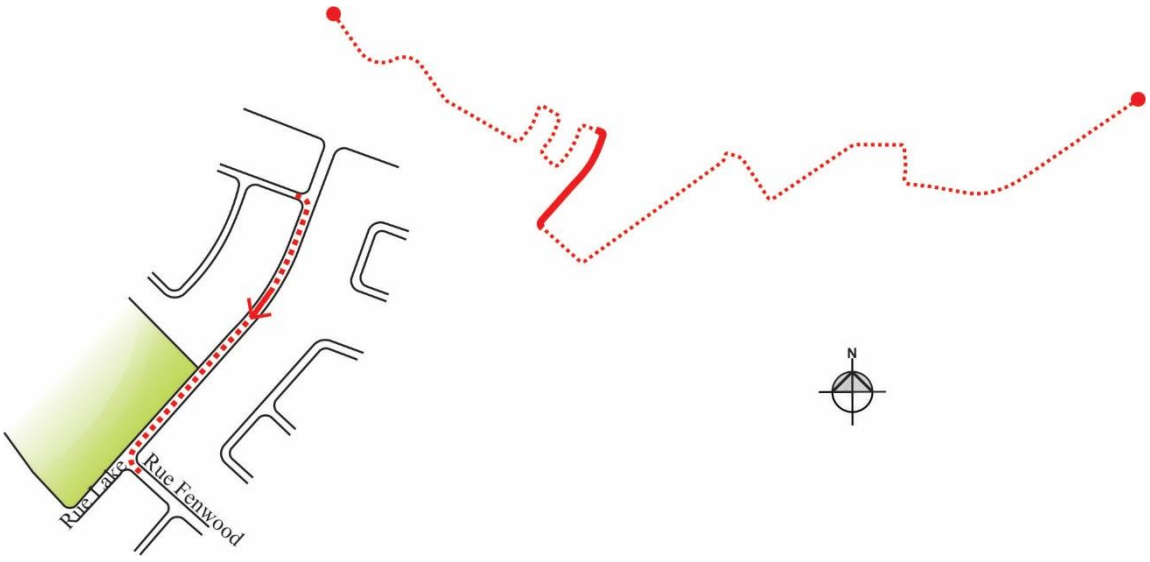


Fig. 3.73 Dollard-Des Ormeaux. Route. Rue Lake

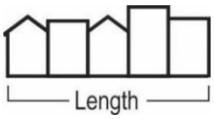
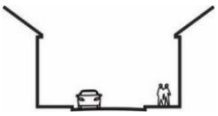
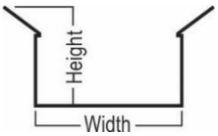
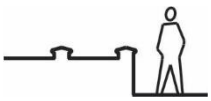
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		200 m	Loop street pattern forms extended blocks of single-family homes	
Street Definition		Collector street (two directions)	The street links the central part of the neighbor-hood with the arterial roads	
Spatial Quality of a Street		1(H) x 5(W)	Excessively wide street in relation to the buildings' height do not create good street proportion	
Presence of Borders		Rare fences	The street allows easy navigation and access to the buildings in the area	
Change in Grade		Raised sidewalk	Cross-slopes allow smooth access to the garages	
Wayfinding		Identification signs, signage	Occurs mainly around cross-roads	

Fig. 3.74 Urban qualities related to walkability. Rue Lake

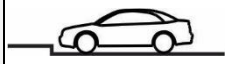
Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Sidewalks, park	Playgrounds, athletic fields, green spaces	
Sidewalk		1,5 m	Sidewalk is on one side of the road	
Parking Lot		Private garages and parking lots	Street side parking occurs rarely	
Bike Lanes		Specially designated bike lanes	The street has designated bike routes with special road markings identifying the travel direction	

Fig. 3.75 Public spaces. Rue Lake

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Trees, lawns	Trees and plants are on semi-private yards	

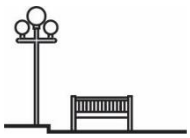
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Street lamps, hardscape	Street furniture are mostly functional	
Street Texture, Pavement		Concrete slabs, brick pavers	Individual entries are paved with brick pavers	

Fig. 3.76 Ground related features. Rue Lake

3.7.2.3 Rue Montevista

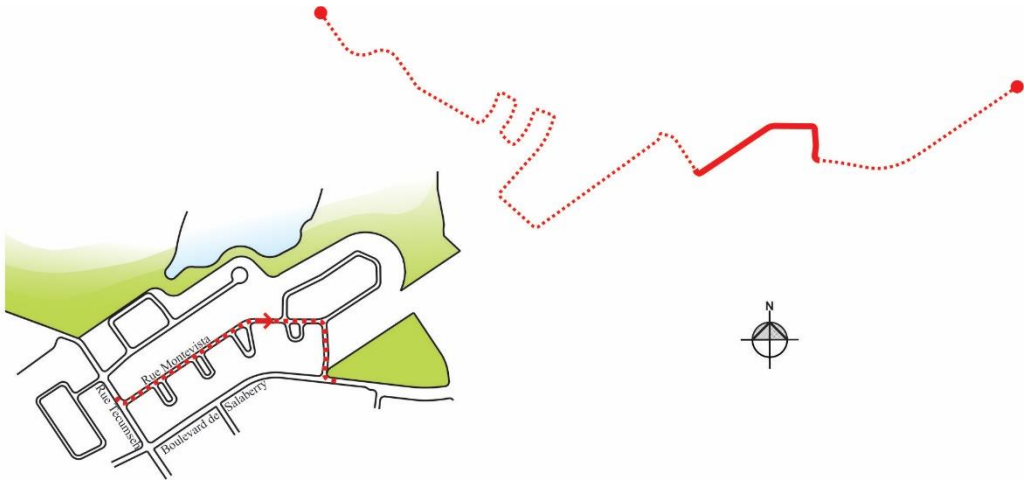


Fig. 3.77 Dollard-Des Ormeaux. Route. Rue Montevista

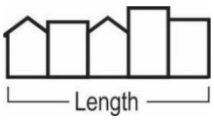
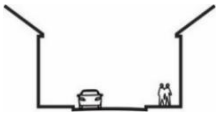
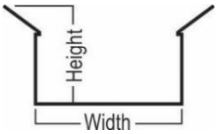
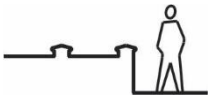
Urban Qualities Related to Walkability	Legend	Measurement Unit	Description	Photo
Block Length (maximum)		150 m	Loop street pattern forms extended blocks of single-family homes	
Street Definition		Local street (two directions)	The street allows access to the property	
Spatial Quality of a Street		1(H) x 3,5(W)	Narrow well-landscaped street create a quiet domestic character of the area	
Presence of Borders		Rare fences	Fences and hedges gate property	
Change in Grade		Curbs	Cross-slopes allow smooth access to the garages	
Wayfinding		Identification signs, signage	Occurs mainly around cross-roads	

Fig. 3.78 Urban qualities related to walkability. Rue Montevista

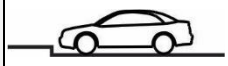
Public spaces	Legend	Measurement Unit	Description	Photo
Common Open Spaces		Street	Semi private front yards may serve as occasional places for neighbourly connections	
Sidewalk		____	The only alternative for pedestrians is walking along the street	
Parking Lot		Private garages and parking lots	Street side parking occurs rarely owing to private parking lots	
Bike Lanes		Shared right-of-way	Bicyclists share right-of-way with other vehicles	

Fig. 3.79 Public spaces. Rue Montevista

Ground Related Features	Legend	Measurement Unit	Description	Photo
Landscape Features		Trees, lawns, flower beds	Trees, green front yards and hedges create welcoming environment	

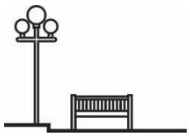
Ground Related Features	Legend	Measurement Unit	Description	Photo
Street Furniture		Street lamps, benches, flower pots, hardscape	Street furniture complimented by landscape design contribu-tes to aesthetic quality of the street	
Street Texture, Pavement		Concrete slabs, brick pavers	Individual entries are paved with brick pavers	

Fig. 3.80 Ground related features. Rue Montevista

3.7.2.4 Corner Buildings

The buildings' numbers in parenthesis are given according to the route (fig.3.67).

Fig. 3.81 A building on rue Baffin (1)

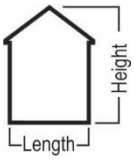
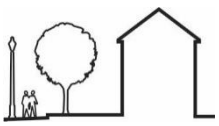
Fig. 3.82 A building on rue Fenwood (2)

Fig. 3.83 A building on rue Montevista (3)

Fig. 3.84 A building on rue Montevista (4)

3.7.3 Buildings' Features

3.7.3.1 A building on Rue Baffin

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Single-family detached house	
Building Size		14 m x 11 m	The building design is based on simplicity of forms and functionalism
Number of Floors		2	
Fenestration		Asymmetrical 15 %	Thin metal-framed windows create contrast with light textured walls
Building Access		Elevated ground floor	
Setback		7 m	The entry is placed between two rectangular boxes that shape the building

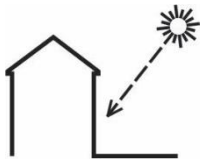
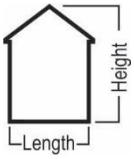
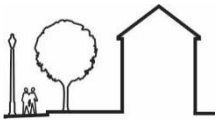
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Box-like aesthetic	
Exterior Features		Texture	The flat functional exterior reveals arrangment of the interior space
Roof Profile		Flat	
Texture, Materials, Color		Cement blocks, brickwork	Simple prismatic shape of the building' parts and openings supplements overall appearance of the house
Ground Level Condition		Residential	
Sun Exposure		Before noon	

Fig. 3.85 A building on rue Baffin

3.7.3.2 A Building on Boulevard de Salaberry

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Multi-family detached house	
Building Size		21 m x 13 m	The building comprises the large verandas which allow the inhabitants a better quality of life
Number of Floors		4	
Fenestration		Symmetrical 30 %	The symmetry of the facades is supported by arrangement of the openings
Building Access		No-step entry	
Setback		4 m	The building is elevated above the street and has a wide setback

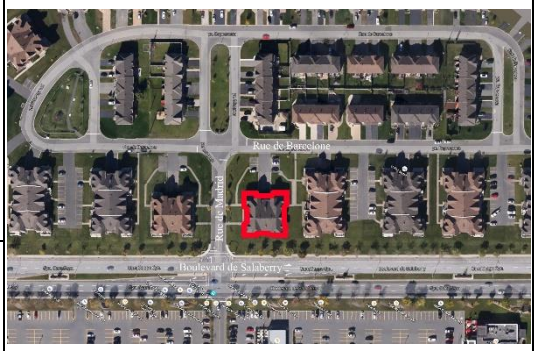
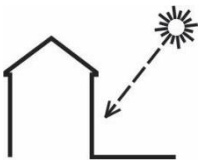
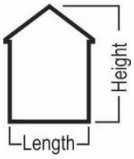
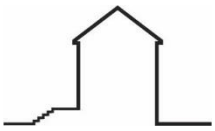
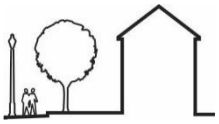
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Articulated	
Exterior Features		Dormer windows, cornice	The design accentuates the corners of the walls which are decorated by stone blocks Together with the rusticated ground floor and the cornice they maintain the noticeble contrast of white stone and red brickwork
Roof Profile		Mansard	
Texture, Materials, Color		Brickwork, stone	Steepy sloping gabled roof and pediments above the upper floor windows create rhythmic roofline
Ground Level Condition		Residential	
Sun Exposure		Before noon/in the afternoon	

Fig. 3.86 A building on boulevard de Salaberry

3.7.3.3 A Building on Rue Montevista

Building's Features	Legend	Measurement Unit	Photo/Description
Type of Building		Single-family detached house	
Building Size		16 m x 9 m	The distance between adjoining buildings ensure comfort and privacy
Number of Floors		2	
Fenestration		Asymmetrical 20 %	Low-pitched roof line together with cornices accentuate the linearity of the building design
Building Access		Elevated ground floor	
Setback		8 m	Easy access for cars to the private garage

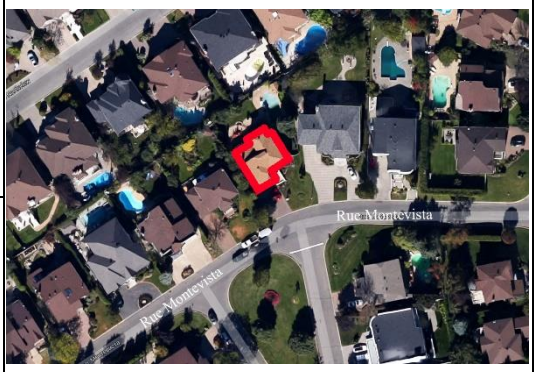
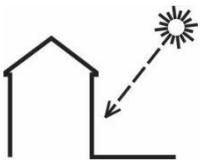
Building's Features	Legend	Measurement Unit	Photo/Description
Facade Articulation		Texture	
Exterior Features		Gable	In relatively simple design of the building the accent is made on the materials and texture
Roof Profile		Masonry, wood panel siding	
Texture, Materials, Color		Brickwork, stone	Stone and wood panel siding on the facade complement each other
Ground Level Condition		Residential	
Sun Exposure		Before noon	

Fig. 3.87 A building on rue Montevista

3.7.4 Conclusion

The suburban community is formed mainly by single-family detached houses centered on plots. However multi-family detached houses are also represented diversifying housing types. Street-oriented front facades with entries facing streets do not form coherent street walls, but rather a chain of free standing individual buildings aligned to the curve in the roads. The streets provide long clear views to the surrounding area with lack of details and do not create an inviting ambience since there is nothing much to experience outside the property lines. Set backs are two wide while buildings are not tall enough in relation to the street width so that to generate a sense of enclosure. Houses of the same height form a homogeneous residential area which does not sustain a viewer's visual interest and where distances seem longer while walking seems monotonous. Architecturally however, buildings differ from each other, enabling some stylistic variety and character of the streets.

Due to the fact that the yard edges are primarily formed by semi-private front yards, street furniture is mainly private. Benches, hardscape, sculptures and the like improve the street environment that is immediately adjacent to the houses. Landscaped by trees, shrubs and flowers front gardens gain some individual features and enhance a sense of identity. Hedges and fences are widely used as a visual barrier between properties. They form anonymous passive street edges which do not enhance neighbourly contact. Furthermore, in low-density residential areas, sidewalks where people could meet are not represented. Owing to these planning features, social interaction for dwellers is minimized. Nevertheless, plentiful of well-attended parks and green spaces serve as meeting points for dwellers, offering them recreational opportunities.

The vehicle-oriented character of the development establishes less priority for people on foot. As a result, pedestrians feel alienated in this suburban environment. Sidewalks are installed on one side of the street and serve for occasional pedestrians. Narrow sidewalks along wide driveways create a feeling of discomfort and danger associated with the absence of any significant barriers between car and pedestrian areas with the exception of raised elevations in the pavement. Semi-private front yards of the houses are complemented by back gardens which in turn allow more privacy and a retreat for dwellers. Owing to private garages at ground level and parking lots in front of them, street side parking occurs quite rarely.

3.8 Conclusion

The case studies examine physical, visual, perceptual and the spatial quality of the different neighbourhoods. The walking experience through the sites along the chosen routes at a slow pedestrian pace reveals the attributes of the urban and suburban areas that in a certain way affect the pedestrian perception of the space.

High density urban settings which call for a diversity of uses provide mixed-use buildings. The buildings that enclose public streets are set primarily on lot lines allowing easy access for pedestrians from the sidewalk. The ground floors of mixed-use buildings incorporate commercial uses and hence generate active street life. Residential buildings of the city centre facing local streets have set-backs that permit front yards and green buffers between the roadways and the street walls that permit some privacy. A network of connected streets with sidewalks on both sides punctuated by public spaces support walking by providing people easily accessible destinations and well-travelled routes.

Low and medium density suburban areas examined in this study reveal a lack of commercial activity and mixed-use buildings which results in deserted streets and under-utilized public spaces. A sidewalk on one side of the street accommodates rare pedestrians. The suburban neighbourhoods with priority on privacy and personal comfort create dormitory uniform residential developments with nothing much to experience out of the property line. Wide vehicle-oriented streets with narrow sidewalks on one side of the street interrupted by roadways offer little protection for pedestrians.

Careful analysis of the streetscapes leads us to understand that a pedestrian feels comfortable in the spaces which are scaled to the size of the human body and respond to people on foot. A desirable environment is functionally appropriate and aesthetically pleasing since it allows a high level of complexity and visual richness as well as ensures a feeling of satisfaction and safety. A number of physical features identified in the analysis of the residential developments that collectively create a good quality urban environment allow one to put forward a set of recommendations for designing walkable communities.

CHAPTER IV
DESIGN WITH HUMAN SCALE

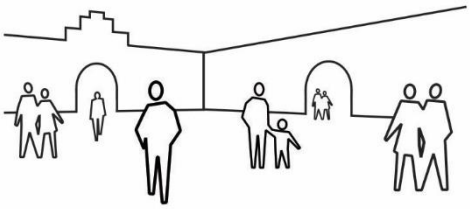
4.1. Introduction

By summing physical and spatial characteristics of residential urban area favorable for pedestrians, identified above, this chapter represents the guidelines that address human scale and may be potentially applied to a new urban or suburban setting. The physical attributes of the streetscape that collectively create good-quality urban area are the essence of the guidelines. Logically divided into sections, the recommendation attempt to cover all important aspects of welcoming streetscapes ranging from length of the block to street furniture. The guidelines are supposed to assist designers to create walkable livable neighbourhoods.

4.2. Guidelines

4.2.1 Destination

Description



Destination is the first prerequisite of human scale and a pedestrian oriented environment which attracts dwellers to take part in a community's life. Once the destination is established the next step for designers is to provide people a good quality environment and safe yet pleasing walking routes to travel between destinations. Oftentimes, a destination is a community focal point: public spaces, plazas, metro stations or shopping centres which people head to whether during daily rounds to work or at their leisure to participate in public events and celebrate the delights of the place.

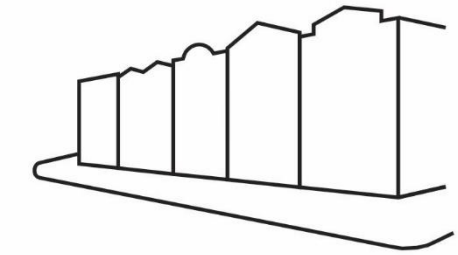
Fig. 4.1 Bois Franc. Rue des Nations

Fig. 4.2 Ville Marie. Place Jacques-Cartier

Recommendation

A destination should be easily accessible from every quarter of the neighbourhood and linked to all open spaces by a continuous network of sidewalks. The more the destination has to offer the more desirable it is for dwellers and visitors. A variety of services and amenities that keep people entertained should contribute to the popularity of a place and make it a beloved meeting point. Open places should encourage people to want to come back.

4.2.2 Short Travel Distances



Description

Humans' natural walking pattern is short cut since people prefer to take the most direct path towards a given destination. Frequent intersections with linkages and interfaces with the surrounding context improve pedestrian accessibility by creating more opportunities to navigate in an urban environment and giving them a sense of freedom. More walkable environments favour not only pedestrians, but businesses based on the ground floor of the buildings.

Fig. 4.3 Ville Marie. Rue St-Paul East

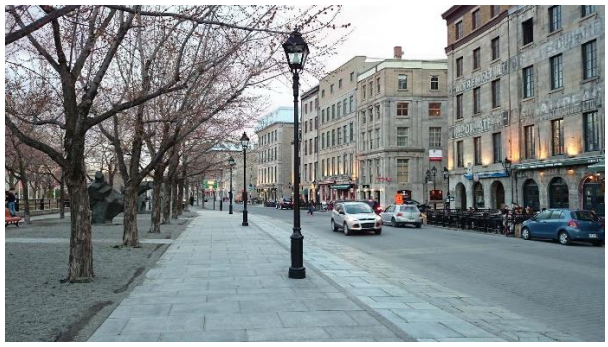
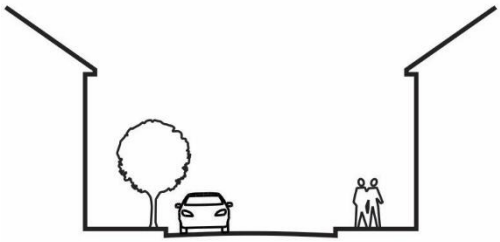


Fig. 4.4 Ville Marie. Rue de la Commune

Recommendation

Pedestrian focused communities with dense street networks that enhance connectivity and allow for easy movement in many directions. Short- to medium length blocks (200 m maximum) that are scaled to pedestrian traffic and provide people with more direct routing minimizing walking distances and traveling time. Outwards oriented frontages of small walkable blocks should intensify pedestrian activity at street level and make the walking experience more eventful. Recommended walking distance of 400 m can be easily walked by an average person in the 5-10 minute range should be a basis for planning considerations.

4.2.3 Proportion of the Street



Description

Enclosure, a perceptual characteristic of a street, is obtained by the appropriate parameters of frontages and spatial volume between them. Optimal proportion of width of the street to height of the buildings that enclose it form welcoming streetscapes, evoke a sense of enclosure with a viewer, and keep up a visual interest along the way. The width to height ratio that create a good spatial quality ranges within 1:1 to 1:3. Buildings with too wide set-backs lose their connection to the street and fail in creating a sense of enclosure.

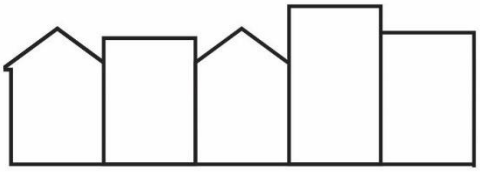
Fig. 4.5 Ville Marie. Rue St-Paul East. Height-to-width ratio is 1:1

Fig. 4.6 Bois Franc. Boulevard Alexis-Nihon. Height-to-width ratio is 1:3

Recommendation

To create a comfortable feeling of enclosure, streets should have a room-like quality: the heights of the buildings should be proportionally related to the width of the space between them. The buildings' heights should not be considerably less than the street's width. The recommended height-to-width ratio is 1:1 – 1:3. It the ratio exceeds 1:3 extra design measures should be carried out so that to correct the proportion of the street. Thus planting trees between building lines on excessively wide streets form a virtual street wall that act as an intermediary that generates a sense of enclosure.

4.2.4 Street Wall



Description

Adjacent buildings facing streets form a continuum of facades which are walls in the imaginary outdoor room. Buildings built-to lines and appropriately scaled to the width of the street create harmonious street walls and generate positive emotions in a viewer's perception about the space. Buildings aligned along straight streets provide vistas with long direct views and clear routes while curving the alignment of buildings creates another perspective with sudden changes in direction, short views hiding and gradually revealing other views that stimulate a pedestrian's interest and make walking more enjoyable.

Fig. 4.7 Ville Marie. Place d'Youville

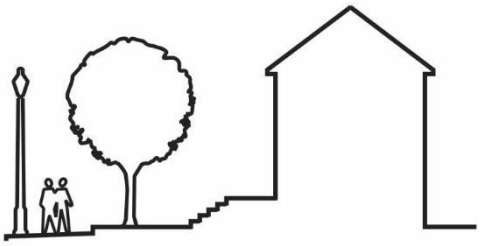
Fig. 4.8 Bois Franc. Rue de I'Everest

Recommendation

Well-articulated coherent street walls with uninterrupted frontages help in achieving a harmonious street environment. Frontages should not be far away from the street edge so that to form appropriate street walls. Adjacent buildings should be of compatible height and correlate in the façade rhythm and pattern fenestration. Blank spaces between buildings and breaks in the continuity of the street wall should be avoided.

At suburban settings where building masses do not always create a continuous street wall rows of trees help to maintain the visual linearity of the streetscape. Street walls of pedestrian boulevards should be designed with a high-level of complexity and scaled to slow the pace of pedestrian traffic, offering people the opportunity to appreciate the environment. Detailed frontages with various architectural details ought to offer pedestrians interesting perceptual experiences and contribute to the visual cohesiveness of a street.

4.2.5 Building's Relationship to the Street



Description

A building's relationship to a street is identified by their settings, physical parameters, uses and the type of a street they are adjacent to. Setbacks and sidewalks vary according to street types and uses whether buildings incorporate a commercial component or it is purely residential. Setbacks should be an appropriate width in order to reinforce the existing scale and character of the community, and they should increase as building height increases.

Fig. 4.9 Dollard-Des Ormeaux. Rue Baffin

Fig. 4.10 Ville Marie. Place d'Youville

Recommendation

Setback is mainly defined by the street's type and width, the height of the buildings that enclose the street and the urban settings. Setbacks should support good width-to-height ratio of the street. Recommended setback's width for public streets: 3 – 6 m, for local streets: 1.5 – 3 m.

In mixed-use residential developments buildings are street-oriented. Ground floors that accommodate a variety of uses are set on a lot line which makes the best use of available space and permits direct pedestrian access. Shops, galleries, boutiques and other retail spaces imply no-step or easy accessed step-up entry. Restaurants and cafes should have adjoining sidewalks wide enough to organize outdoor dining where people could observe a street life and interface with one another. Sidewalk cafes should leave enough room for transit foot traffic along the street.

In private residential areas, emphasis should be made on privacy, retreat, personal comfort and security in order to support domestic residential character. Residential ground floor units should be set from a street at a depth which makes small front yards possible. The yard edges serve as a buffer between private and public domains and permit more privacy for dwellers. Well-greened setbacks with trees and bushes screen houses from the noise of the road and ensure safety and comfort. Staggered setbacks could be used to enhance variety and identity and add visual interest to rows of same height buildings. Low fences or hedges define semi-private front yards while elevated entrances generate a greater sense of security for dwellers.

4.2.6 Building Articulation

Description

Detailing of building mass, design of the facade, and solar orientation – all these aspects of a building's exterior contribute to the physical and visual quality of the streetscape. A wealth of architectural details enriches street walls and varies the walking experience. Projections and recessions on the building walls, exterior extensions such as sheds, balconies and bay windows form rhythm on the facade surface and create light and shade depending on the time of the day. The perception of the facades varies according to sun exposure whether it gets morning, afternoon or evening sun.

Fig. 4.11 Plateau Mont-Royal. Rue Saint-Denis

Fig. 4.12 Plateau Mont-Royal. Avenue de l'Hôtel-de-Ville

Recommendation

Building facades, especially along public streets, should be well-articulated. In order to create human scale, the number of storeys should depend on the width of the adjoining street and should not exceed 3-4. Street proportion should permit sunlight on building facades which would produce positive emotional effects on a viewer. Building design, textures, materials,

colors, doors and windows arrangements, a facades decoration and stylistic characteristics should incorporate a consistent architectural theme of the development. A wide facade should be divided into small units by projections, recession, and decorative elements. Vertical facade articulation is preferable so that to make the street wall seem visually shorter and intensify the walking experience.

In mixed-use buildings, hierarchy of architectural forms should clearly identify individual businesses at the ground floors which design should be based on the need of persons on foot. Highly transparent ground floors that allow people to see inside should be further articulated by comfortable and functional street furniture. Experienced at-grade storefronts should sustain pedestrian interest and make a walk interesting and meaningful. Clearly identified entrances and signage should help people to orient themselves in the urban context.

4.2.7 Building Openings

Description

The area of fenestration should be necessary and sufficient for natural light penetration and sightlines. Building openings at ground level are crucial as they are in people's immediate field of vision and contribute a lot to their walking experience. At eye level, pedestrians see details and receive plenty of information. In mixed-use areas, outward-oriented ground floors with large glass display windows create efficient exchange points and allow visual contact between inside and outside. Open, transparent facades visually widen a street and create opportunity for passive contact by making pedestrians slow down and come in.

Fig. 4.13 Ville Marie. Rue Saint Paul East

Fig. 4.14 Bois Franc. Rue de I'Everest

Recommendation

Special attention should be paid to the ground level condition. In a commercial setting, ground floor facades facing public streets should have a large proportion of large expanses of glass on the wall surface, enough for the merchandise display, in order to generate active street life. The upper floors may have less fenestration. Window alignment, spacing and dimensions of adjoining facades should be visually related and continue the fenestration pattern of the surrounding buildings.

Quiet residential settings require more intimacy and less transparency. Positioning of the openings in the house's facade should allow enough natural light and ensure privacy. The openings' alignment should match stylistic characteristics of a building and its size. A front door should be roofed by a porch so that to provide a more comfortable entrance. Porch-fronted homes with well-proportioned fenestration should form welcoming residential streets and preserve character and integrity of the neighbourhoods.

The area of a building's fenestration depends on its heat capacity, solar orientation and stylistic characteristics of the building. The recommended ratio of fenestration: 65% for the buildings with the commercial uses at grade, and 35% for the purely residential buildings. Minimum fenestration requirements is 15%.

4.2.8 Buildings' Silhuette

Description

Roof forms contribute greatly to a visual richness of the streets and squares. Each building with its own character adds a variety to a street wall while their roof profiles unite the overall appearance of the frontages and complete the image of the streetscape. Roof profiles frame urban landscape and form distinctive silhouettes of the city.

Buildings' roofs cannot be fully seen well enough in a short viewing distance. In close proximity to the buildings the threshold of a viewer's vision is oftentimes horizontal cornice lines of upper floors. However when buildings are aligned along a wide boulevard or around a square their roofs are visible enough and their well-articulated roofline can be highly appreciated by viewers.

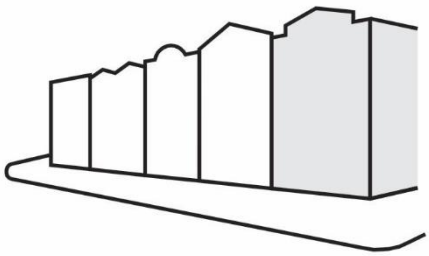
Fig. 4.15 Bois Franc. Rue de I'Everest

Fig. 4.16 Ville Marie. Rue Saint Sulpice

Recommendation

Buildings' height should not differ considerably so that not to interrupt the entire roofline and to maintain a visual relationship with adjacent buildings. The top portion of the buildings crowned by roofs should be well-articulated so that to form interesting vistas and view corridors. Roof shapes should be stylistically compatible with their surrounding context. The attractively varied roof forms that create a strong rhythm of rooflines is preferable in public spaces or at corner locations. Monotonous facades with featureless flat roofs should be accentuated through decorative cornice and parapets or pseudo mansards. Whenever possible multi-window roofs which allow more natural light and enrich roof-scape should be introduced.

4.2.9 Corner Building



Description

Street intersections are accent points of communities where pedestrians, cyclists and drivers slow down or stop, having enough time to look at the surrounding area and appreciate the corner treatment. Corner buildings are anchor buildings which play an important role in homogeneous residential fabric. Their unique architectural character and well-articulated exposed facades make them reference points for dwellers.

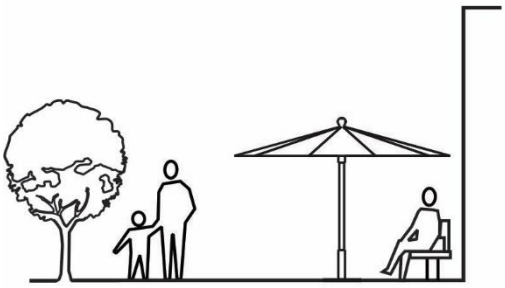
Fig. 4.17 Plateau Mont-Royal. Saint-Laurent boulevard

Fig. 4.18 Bois Franc. Rue des Équinoxes

Recommendation

Corner buildings in residential developments should be given special consideration – their exterior design should address both streets which their facades face to. The appearance of a corner building should stylistically represent a block that it flanks. To emphasize its corner location, a building should be articulated by distinctive architectural features such as recessed entry, a balcony or a bay window above the entry, a canopy, a higher roof or a turret, etc. A chamfered or rounded corner section of the building should create positive space at ground level, smooth transition around it and allow more room for maneuvering-in the intersections.

4.2.10 Public Spaces



Description

Good quality public spaces provide recreational opportunities for people, enhance neighbourly contact and promote active life in the community. Public spaces that are integrated parts of a continuous network of streets attract more people and enhance walkability. Open spaces are publicly beneficial if they meet needs of various categories of people whether young couples, families with children or pets, or wheelchair users.

Fig. 4.19 Ville Marie. Square Victoria

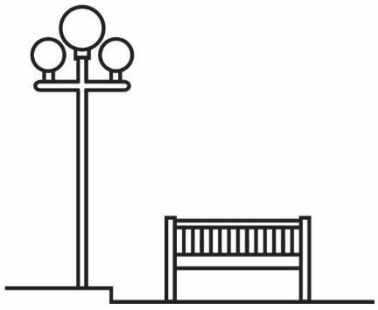
Fig. 4.20 Bois Franc. Park Sir-Edmund-Hillary

Recommendation

Public spaces should offer activities for people at different ages and with a range of abilities. Squares, parks, and play areas should be easily accessible to the surrounding community and create social opportunities. Public spaces ought to be extensions of streets. Pathways, sidewalks and pedestrian boulevards – the connectors of public spaces – should be well-designed, comfortable and safe to accommodate pedestrian traffic and assist people to reach destinations.

Due to their therapeutic value, trees, bushes and other plants should become essential components of open spaces. Plentiful street furniture should provide comfortable seating, especially at the edge of areas of activity in order to allow people to see other people and therefore stimulate their interactions. Open spaces should include both aesthetic and functional amenities such as water features, hardscape, public art, drinking fountains, bike facilities, restrooms and the like so that to provide visitors maximum comfort.

4.2.11 Streetscape Elements



Description

Functional street furniture, high quality materials, hard and soft landscaping and other ground-related attributes play a vital place-making role in successful public spaces. Pedestrians feel comfortable in areas with well-defined edges that accommodate benches, signage, and natural features and create good quality streetscapes. Small scale features such as hardscape, fountains and public art make open spaces more welcoming and contribute to perceived human scale.

Fig. 4.21 Plateau Mont-Royal. Rue Saint-Denis

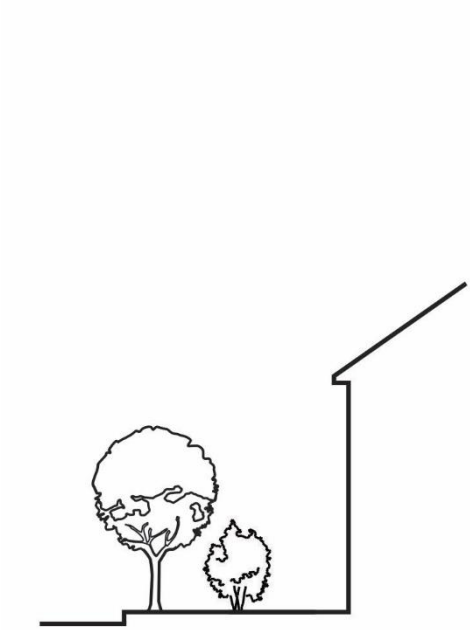
Fig. 4.22 Ville Marie. Rue McGill

Recommendation

Street environment should encourage people to stay outdoors making their stay the most enjoyable. For reasons of comfort and safety, the street edge should be reinforced by tree lines, grass strips, bollards, street lamps and specialty curbing that buffer pedestrian and vehicle areas. Sitting-out areas should be friendly gathering spots for people with the opportunity to observe street life and socialize. Streetscape elements should not create obstacles on the pedestrians' way, but rather support seating, walking and strolling.

Street design should complement the buildings and vice versa. Signs and lettering should be in scale with buildings upon which they appear. Awnings should be compatible with the streetscape and correlate with the colors and style of the building. Placement of sidewalk cafes should be equally convenient for pedestrian passers-by. Overall, street furniture should attempt to harmonize the public environment by bringing colour, variety and delight for people.

4.2.12 Landscaping



Description

Landscaping is an important component of the built-up area that has a positive psychological effect on humans, visually softens the townscape and contributes to aesthetics and sustainability of the urban environment. In addition greenery offers some degree of protection from adverse weather conditions and creates a "sense of place" within the community. Closely spaced trees aligned along streets with discontinuous or inappropriately scaled street walls help to create continuity of the streetscape, humanize the height-to-width ratio and form a sense of enclosure. Parks are green islands in urban areas where inhabitants encounter nature. Trees' canopies offer desirable shade in summer time, while lawn is common place for sunbathing for immediate neighbourhood residents.

Fig. 4.23 Ville Marie. Place d'Youville

Fig. 4.24 Dollard-Des Ormeaux. Rue Montevista

Recommendation

A system of green spaces such as parks, tree-lined boulevards, and landscaped front yards which are significant contributors to a human scale built environment should be integrated in communities so that to soften urban and suburban microclimates. Natural features should be introduced along roads and pedestrian routes especially where the scale of buildings needs to be mediated. Planting strips between the street and the sidewalk should serve as a green buffer dividing vehicle and pedestrian domains ensuring a safe walk. Likewise, plantings such as hedges or potted plants at the curb of sidewalks should offer protection for pedestrians from the roadway.

In residential areas where visual isolation is required, a barrier in the form of greenery or hedges between properties can be introduced instead of fences so that to ensure privacy. Tree lines or single trees, strips of grass, landscaped terraces and flower pots should complement public spaces and pedestrian boulevards promoting the park-like character. The protective effect of greenery should be taken into account in design considerations. Thus bushes and hedges planted along the sidewalks can reduce the wind factor while a trees' canopy depending on weather can protect pedestrians from rain or provide desirable shade.

4.2.13 Pedestrian Movement and Cycling

Description

The more people on foot and on bicycles, the more active street life is. The latter stimulates the local economy and contributes to a healthy society as a whole. People-friendly built environments that respond to pedestrians and cyclists' needs promote active living within the neighbourhood. Interesting paths in good quality streetscape with trees and well-articulated buildings offer the observer a stimulating and memorable image of connected places. Accessible, barrier free paths of travel encourage the ease of pedestrian movement and facilitate walkability.

Fig. 4.25 Ville Marie. Rue McGill

Fig. 4.26 Plateau Mont-Royal. Saint-Laurent Boulevard

Recommendation

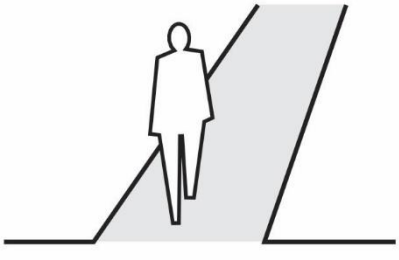
Pedestrians and cyclists should be prioritized when designing for human scale – neighbourhoods should allow easy pedestrian and bicycle circulation. Pedestrian and car traffic should be separated. One should focus on creation of human and safe conditions within and about

residential streets and open spaces. Streetscape should be scaled to pedestrian flow and respond to the urban context whether mixed-use commercial core with broad sidewalks on both sides of the street or low-rise residential areas with narrow sidewalks along one side of the street. Accessible to all categories of people pedestrian streets may be emphasized by special pavement.

A system of designated bicycle lanes provided in both directions ought to ensure safety for cyclists. Whenever possible, buffers between bicycle lanes and roadways should be integrated in order to prevent dooring and minimize accidents as a whole. A continuous network of safe pedestrian and bicycle routes should be indicated by identification signs. Bicycle facilities should be established along bicycle lanes and paths in order to ease the transition from cyclist to pedestrian.

If there is a lot to experience outside of the buildings, if the streets and open spaces provide safe and interesting events, if there is enough amenities that keep people entertained, then they are motivated to come out and actively participate in city life. A good quality streetscape scaled to people on foot with destinations available within comfortable walking distances support walkability in the neighbourhood.

4.2.14 Pavement and Texture



Description

Pavement is the part of a streetscape that bicyclists and pedestrians directly interface with. The latter perceives pavement texture and quality immediately when walking. Street texture such as bricks, cobbles or precast pavers scale surface to slow pace pedestrian movement, intensify people's walking perception and emphasize the contrast of pedestrian, bicycle and motor surfaces.

Fig. 4.27 Bois Franc. Square Vivaldi

Fig. 4.28 Dollard-Des Ormeaux. Rue Tecumseh

Recommendation

Streets and sidewalks surface ought to provide bicyclists, pedestrians, and wheelchair users with smooth transition and assist their movement and maneuverability. The surface of the pavement should be comfortable, even and safe, and should invite people to walk. Changes in level and cross-slopes should be predictable and highly visible for people. Small scale pavement such as paving blocks that visually break up large paved areas should be carefully used in pedestrianized areas. Colour, texture and pattern should be used to identify pedestrian space such as crosswalks, sidewalks along storefronts, public spaces and the like. Elaborate paving patterns in public spaces can be applied to direct pedestrian traffic or outline focal points such as fountains, flower beds, sculptures etc. As a part of a comfortable pedestrian-friendly environment, a streets' pavement and texture should facilitate walking offering pedestrians visual and perceptual pleasure and safe travel.

4.3 Conclusion

Considering all aspects of human scale mentioned in this study such as the proportional relationship between buildings and streets to the human dimension, characteristics of human vision, pedestrian's speed of movement and reaction and others, it becomes obvious that human scale is a broad notion which includes many elements that make our living environment more human friendly and responsive to people and their various needs.

The quality of the cities and their attractiveness to people can be explained by a number of physical and perceptual variables which form our attitude towards the surrounding urban environment. Those variables of built area (e.g. the buildings' height to street width ratio, connectivity between destinations, facades' articulation) can generate quite the opposite effects on dwellers: either inviting them to take part and enjoy the urban life, or on the contrary, create a perceptional discomfort, causing streets to be deserted. Cumulative knowledge on human scale complemented by this study emphasizes the critical importance of good design that favors pedestrians, creating an appealing, comfortable, safe and meaningful environment.

The guidelines described above are intended to provide designers with strategies and directions for creating communities where comfortable conditions for people are a prerequisite. A complex approach to designing buildings and streets should take into consideration every individual component of the built environment, whether physical, spatial, visual or perceptual aspects that make up a good quality cityscape. The importance of human scale should be thus reconsidered in order to design a pedestrian-friendly living environment which dwellers will appreciate by an active use, thus benefiting local businesses and society as a whole.

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casual interactions that occur along the street. “More intersections and smaller blocks mean slower speeds and a safer street network” (Steuteville & Langdon 136) (fig.2.33).

Short blocks divided by streets help find a balance between streets and walkways. Optimal block dimensions should not be greater than 180 by 90 meters or 210 by 60 meters. Such blocks increase street connectivity and make neighbourhoods more walkable (Schmitz & Scully 28-29). A high degree of short blocks’ walkability is explained by more intersections that bring about more places where pedestrians can cross while cars stop. Short to medium length blocks and frequent cross streets also permit more direct routing for pedestrians. Another opportunity that dense networks of streets create is more of a sense of freedom and control for people who have directional choices: a variety of paths to a given destination (Ewing 4) (fig.2.34).

Fig. 2.33 Aerial view of Birkdale Village, Huntersville, North Carolina (Source: http://patrickschneider.photoshelter.com/image/I0000fK3adGQnP_E)

Fig. 2.34 Aerial view of Copenhagen, Denmark (Source: http://www.ckarlson.com/blog/2011/9/5/context-copenhagen-denmark.html)

Street corners should be given a particular attention in design considerations. Additional building articulation of unique features on the corner building such as turret or balcony allow to generate the sense of place as well as to identify a certain block or a street. As well, distinctive corner treatment focus pedestrians’ attention and serve as an interesting destination for them. Rows of houses punctuated by corner buildings form visual connection between streets (Schmitz & Scully 157) (fig.2.35, fig.2.36, fig.2.37, fig.2.38).

Fig. 2.35 Corner building. Rue Drolet, Montreal

Fig. 2.36 Corner building. Square Saint-Louis, Montreal

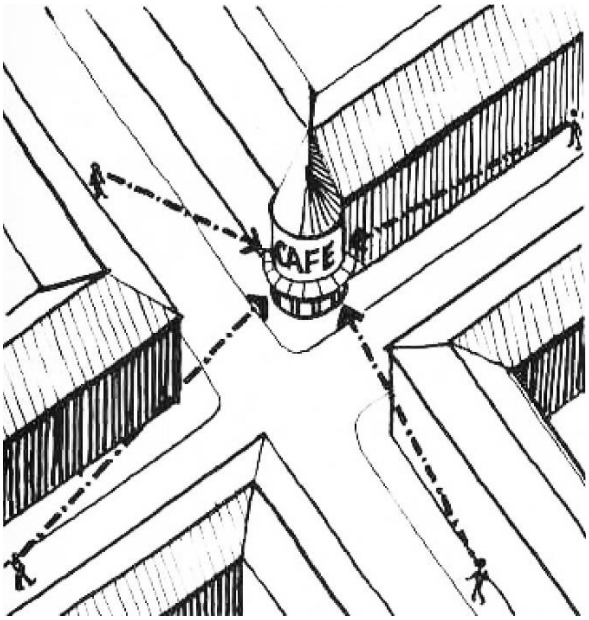

Fig. 2.37 Corner buildings are "street markers" which allow people to orient themselves within the built environment (Source: Bentley, Alcock, Murrain, McGlynn & Smith, 2003)

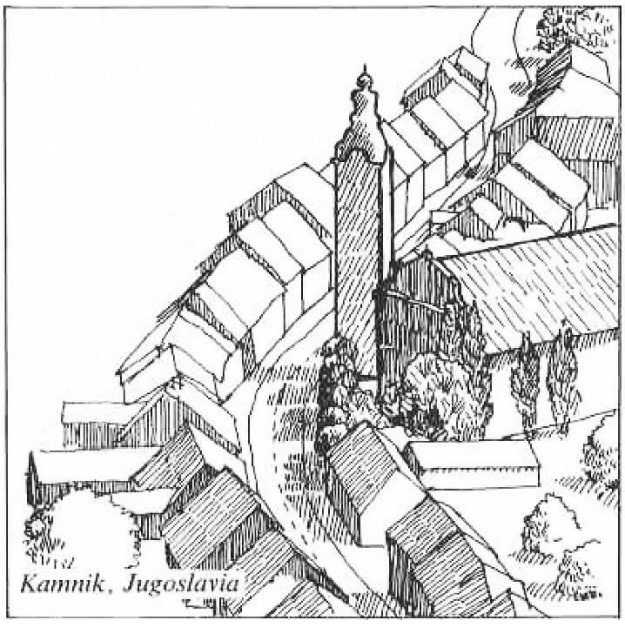

Fig. 2.38 Landmark buildings enhance legibility of the streets (Source: Bentley, Alcock, Murrain, McGlynn & Smith, 2003)

The ground level is the pedestrians' realm and an exchange area between inside and out. Due to human's horizontally adapted visual system we experience ground floors closely and intensely whereas higher floors are more difficult for us to see. The latter have far less importance for visual perception at eye-level. As a rule two lower stories form the "edge quality" of a city life. Ground floor facades that create edges of a city are given a high priority in a whole building's composition.

Consciously or unconsciously pedestrians react and appreciate ground level design since all of our senses and perception are activated when we are on the street close to buildings (Gehl 77, 79) (fig.2.39, fig.2.40).

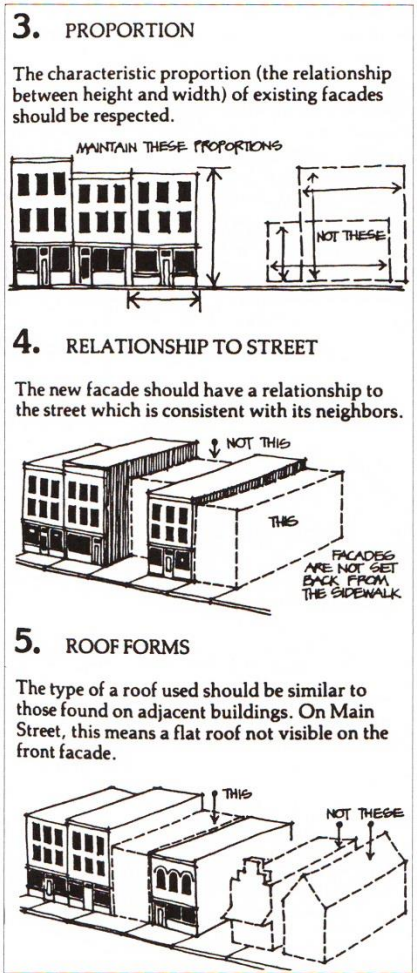

Fig. 2.39 Sample downtown design guidelines (Source: Tyler and Ward, 2011)

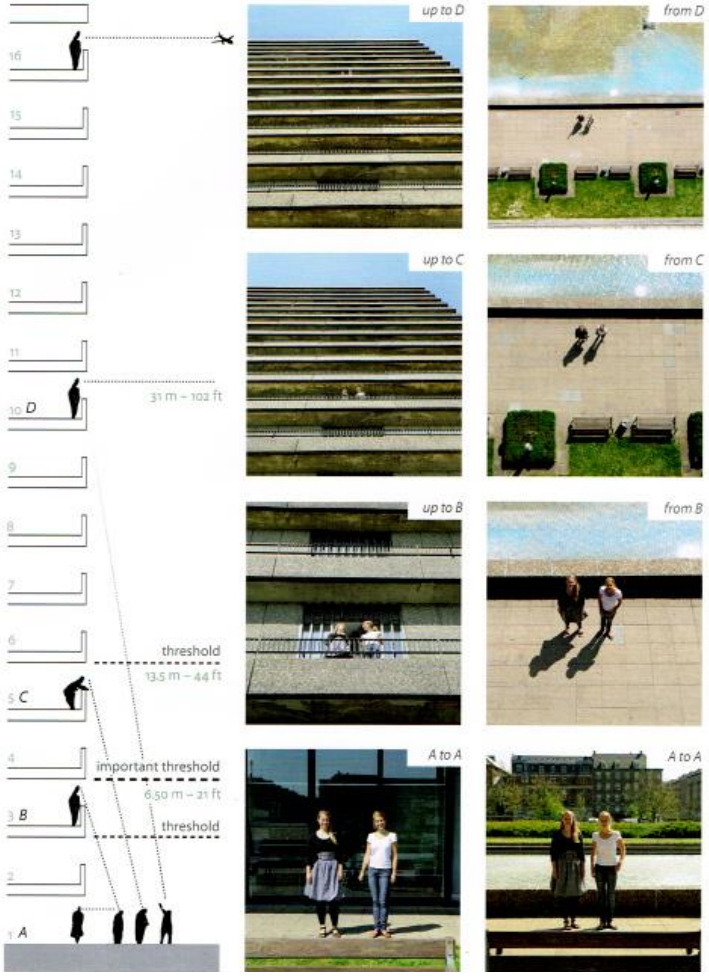

Fig. 2.40 Contact between building and street is possible from the lowest five floors (Source: Gehl, 2010)

"Active facades" substantially contribute to the physical and visual quality of the streetscape intensifying the walking experience. Narrow units, elaborate building articulation, wealth of texture and materials provide engaging ground level conditions. Vertical facade rhythm makes street walls more complex and is attractive to pedestrians. Owing to dividing frontages into sections by vertical partitioning, the walk distance seems shorter. In contrast, "passive facades" do not favour interesting and eventful walks. Horizontally oriented street walls which have few details to offer does not assist in creating interesting impressions and opportunities for pedestrians.

Monotonous walk along such frontages do not sustain a pedestrian's attention and seems to be longer that it actually is (Gehl 79) (fig.2.41, fig.2.42).

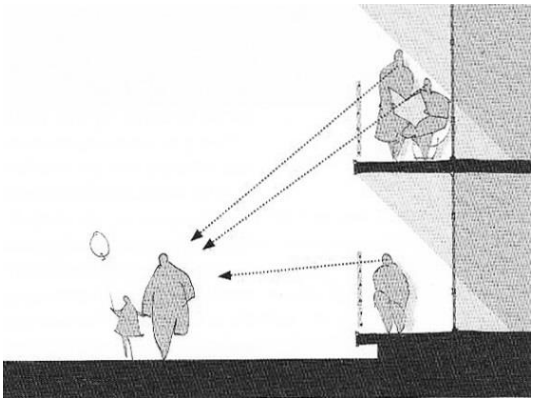

Fig. 2.41 Visual and social connection between street plane and first two floors (Source: Gehl, 2010)

Fig. 2.42 The activity level in front of active and passive facades (Source: Gehl, 2010)

Vertical and horizontal dimensions are primary considerations in designing human scale buildings. Both of them should be limited in order to fit a pedestrian's cone of vision. There is no simple rule on human height of a building, however the general agreement on this issue implies that up to a four-storey building refers to small scale. With regards to horizontal dimension, a desirable building width lies in the range of 10 to 30 meters. Buildings wider than their height or wider than street's length "seem incongruent and out of place". In other words vertical proportion should dominate. "Wide buildings […] provide little of visual interest to pedestrians unless the ground floor is broken up into narrower, subdivided uses. These elements help define street space and subdivide long streets by providing many vertical lines against which scale can be judged" (Ewing & Bartholomew 78) (fig.2.43).

Human scale is not always defined as small scale, but rather the overall streetscape that creates urban quality. "A careful balance must always be maintained between human scale and the scale of the setting" (Ewing & Bartholomew 78). Even some wide boulevards and avenues which are bounded by tall buildings can nevertheless generate a sense of street enclosure.

A city's various scales efficiently combined help to achieve the required density and good urban qualities at eye level. Design of the developments with two layers attempts to combine large and small scales in the same development. "The lower level is two to four stories high, a plateau that follows building lines along the city streets. Above this plateau rise densely built skyscrapers

recessed from the lines of the street, so that they do not impact on the pedestrian landscape", suggests Jan Gehl (203) (fig.2.44).

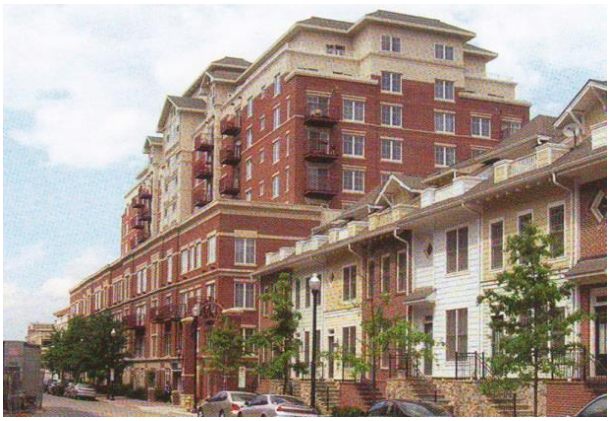

Fig. 2.43 Human scale with taller building stepping back from the street (Source: Ewing & Bartholomew, 2013)

Fig. 2.44 Building designed to break horizontal dimension (Source: Ewing & Bartholomew, 2013)

Large building masses can be divided into smaller forms with heights and widths that relate to human scale. The changes which endeavor to establish appropriate scale are related to a buildings' exterior treatment. For example, elaborately implied cornices and belt courses disguise the true size of buildings. Such elements as balconies, bay windows, awnings, canopies, and other projections are equally able to reduce the perceived mass of built forms. Likewise angled surfaces, varying roof lines, exterior building materials and facades painted in different, but complementary colors can also mitigate a big scale of buildings (Ewing & Bartholomew 78-79) (fig.2.45).

Fig. 2.45 Hismen Hin-nu Terrace, Oakland, California, US
(Sourse: http://www.designadvisor.org/content/hismen-hin-nu-terrace)

Fig. 2.46 Rhythm of projections and recesses divide the facade into smaller parts (Source: http://livetheorangeline.com/gaslight-square/)

Other attributes which mitigate scale of the built environment are ground-related elements such as street furniture, street lights, small-scale signage, texture of materials and pavement, landscape features, and others. These thoughtfully designed physical features coupled with street wall elements introduce a good quality of the public outdoor space and activate intense uses of public places. (Ewing & Bartholomew 91) (fig.2.46).

Fig. 2.47 The decorative arch on boulevard St. Laurent, Little Italy, Montreal

Fig. 2.48 Boje Lundgaard Lene Tranberg, Copenhagen (Source: Gelsomino & Marinoni, 2009)

Kevin Lynch claims that "distinctive buildings or landscape features promote a vivid and memorable sense of place and help people orient themselves within the built environment; this imageability makes a place more comfortable and rewarding in which to walk" (as cited in Ewing & Clemente 64). Ground-linked items are significant contributors to pedestrian-oriented human scale environment giving abundance of outdoor opportunities for citizens. "These interventions form an intermediary between the scale of the whole city and that of the smaller island" (Uytenhaak 77) (fig.2.47, fig.2.48).

Tree-planted medians are equally important elements of the streetscape since they do not only create an aesthetically pleasing ambience, but also a favorable street microclimate. According to Ewing "The right spacing of trees places them close enough together to form a continuous canopy over the sidewalk and a buffer between street and sidewalk." Trees set up outdoor comfort and beauty, and help to moderate scale of the larger volumes and thus achieve human scale (13) (fig.2.49, fig.2.50).

Fig. 2.49 Trees planted along the street moderate the scale of the buildings (Source: http://torontoist.com/2010/08/extra_extra_55)

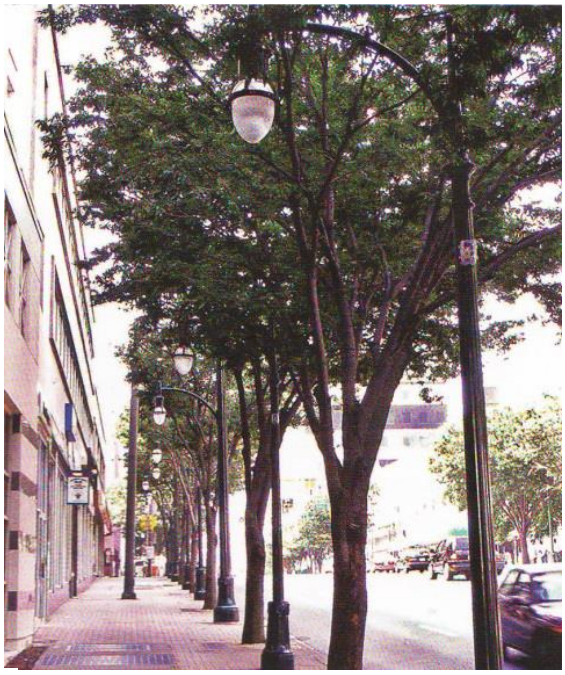

Fig. 2.50 Tree canopy above pedestrian-scale lights (Source: Ewing & Bartholomew, 2013)

Colour gains importance in residential developments becoming an efficient medium that diversifies a frequently homogeneous context and helps to create a unique aesthetic and social neighbourhood character. The practical aspect of applying colours lies in making houses more distinguishable meanwhile the overall view of a colourful street wall provides visual delight (fig.2.51, fig.2.52).

Fig. 2.51 Burano, Veneto region, Italy (Source: http://benvenutoamalficoasttours.blogspot.ca)

Fig. 2.52 Graffiti on a wall on Bullion street, Montreal

Coloured facades can be further articulated through graffiti or stenciling. Such artistic endeavors reflect people's notion of informal public art. Thus arise divergent opinions about whether such works constitute vandalism or art and this will vary according to the quality of the result. Although a number of successful examples of graffiti demonstrate how featureless end walls of the buildings, drab gables, or bland facades can be brightened up. Moreover some ingenious works become an integral part of the community, like some kind of markers that enrich streetscape and assist people to navigate in the neighbourhood (Shaftoe 113) (fig.2.53, fig.2.54).

Fig. 2.53 San Giuliano, Rimini, Italy. Colour helps to celebrate differences and emphasizes uniqueness of each home

Fig. 2.54 San Giuliano, Rimini, Italy. Pastel-coloured houses portray some of Federico Fellini's film characters

Fig. 2.55 Mural by the artist Banksy, Bristol, UK (Source: Shaftoe, 2012)

Fig. 2.56 Neal's Yard, Covent Garden, London, UK (Source: Shaftoe, 2012)

Graffiti and murals attempt to humanize public spaces and make them look more livable and eventful. Thus artists create interesting visual illusions, for instance windows or doors painted on blank sidewalls, that improve the lack of architectural details and cultivate social interactions (Ewing & Bartholomew 99) (fig.2.55, fig.2.56).

2.5 Conclusion

All attributes of the living environment should be carefully designed with respect to human scale and attention to slow-pace pedestrian movement. This shall provide people with good physical and visual quality of the built area and open spaces. Block size, materials and colors, proportions of buildings and their components, streets' and squares' parameters, ground-level features, pavement texture, etc. - all these layers of cityscape contribute to a comfortable built environment, enhance pedestrian activity and foster social interaction. Pedestrian-friendly environments benefit pedestrian themselves, of course, but also local businesses and society as a whole.