

**Reweaving Urban Fabrics:  
Urbanisation, Industrialisation and Regeneration  
in Southwest Montréal**

**Retissage de tissus urbains:  
urbanisation, industrialisation, et revitalisation  
dans le Sud-Ouest de Montréal**

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A Thesis in

The Department of

Geography, Planning, and Environment

Presented in partial fulfillment of the requirements for the degree of  
Master of Arts (Public Policy and Public Administration – Geography)

**Concordia University**

Montréal, Québec, Canada

December, 2007

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*ISBN: 978-0-494-42479-7*  
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# Abstract

## Reweaving Urban Fabrics: Urbanisation, Industrialisation and Regeneration in Southwest Montréal

Desmond Bliet

In the pages that follow, this thesis examines the urbanisation, industrialisation, and regeneration processes that have shaped the built landscape along Montréal's Lachine Canal. Adopting an approach that sees urban tissue as more than the simple result of agents' interventions, that is to say as a structuring influence itself, the thesis critically examines the history and geography of urban industrialisation, particularly in relation to Montréal, and takes a look at contemporary redevelopment paradigms.

After putting forward a morphological methodology and offering a short history of the Canal, the thesis presents the results of an in-depth analysis of urban tissues in adjacent industrial sectors. Proposing a typology of industrial complexes and sectors rooted in the degree of differentiation between industrial elements and the surrounding urban tissue, this thesis argues that urbanisation, industrialisation, and regeneration are diffuse, incremental processes that dialectically engage with the landscapes left by the past. The thesis wraps up with a discussion of the historiographical and practical implications of such a perspective.

# Resumé

## Retissage de tissus urbains: urbanisation, industrialisation, et revitalisation dans le Sud-Ouest de Montréal

Desmond Bliet

Dans les pages qui suivent, cette thèse cible les processus d'urbanisation, d'industrialisation, et de revitalisation qui ont contribué à la formation du paysage bâti longeant le Canal Lachine dans le sud-ouest montréalais. Empruntant une approche qui considère le tissu urbain comme étant plus qu'un simple résultat des actions prises par les intervenants - c'est-à-dire comme influence structurante en soi-même - cette thèse examine de manière critique l'histoire et la géographie de l'industrialisation urbaine, surtout en relation au cas montréalais, et jette un coup d'oeil sur les pratiques de revitalisation contemporaines.

Après la proposition d'une méthodologie morphologique et une courte histoire du Canal, suit une présentation d'une analyse approfondie des tissus urbains des secteurs industriels avoisinants. En proposant une typologie des complexes et des secteurs industriels fondée sur la spécialisation manifestée par le degré de différenciation entre ces éléments industriels et les tissus urbains dans lesquels ils se trouvent, cette thèse maintient que les processus d'urbanisation, d'industrialisation, et de revitalisation sont diffus, et procèdent graduellement dans un rapport dialectique avec les paysages légués par le passé. La thèse conclut avec une discussion des implications théoriques (historiographiques) et pratiques de ces constats.

# Acknowledgements

## Personal

My most sincere and deepest thanks go to Lindsay Pearce for having the patience to help me through this work, and for sharing her insights along the way, which have surely made it better. Thanks for your patience, Lins; and thanks also for knowing when to run out of it.

The ideas and perspectives developed in this thesis owe their origin in large part to the hours I've been privileged to spend with Dr Pierre Gauthier in courses and in rambling conversations that usually touched on urban form at some point. This exchange has greatly enhanced my understanding of urbanisation and will forever mark the way in which I analyse and consider the city as a project. Dr Norma Rantisi's advice, questioning, and encouragement should also be noted. To have such generous access to such a sharp mind, just across the hall, was a privilege indeed. A big thanks go out to Annie Pollock, as well, as without her genuine care and administrative savvy, there is simply no way I could last as a graduate student.

I could not have gotten myself so far over my head into such a big undertaking without the unconditional support of my parents. Hopefully I'll make it up to them some day. My friends, in Montreal and elsewhere, are to be commended. Without them, the whole experience would not have been as rich, and it would likely have been over sooner.

This research was funded in large part by the Social Sciences and Humanities Research Council of Canada, as well as by support from various Concordia University programs.

## Content

Certain sections of this work have appeared in the publications listed below. Content from the literature review (chapter one) and the first section of the discussion (chapter five), relating to brownfields regeneration, appeared in Bliet, D and P Gauthier (2007), "Mobilising Urban Heritage to Counter the Commodification of Brownfield Landscapes: Lessons from Montreal's Lachine Canal." *Canadian Journal of Urban Research - Canadian Planning and Policy Supplement*, 16(1). Content from the literature review and from the third chapter's historical overview of the Lachine Canal have also appeared (though in substantially different form) in Bliet, D and P Gauthier (2006), "Understanding the Built Form of Industrialisation along the Lachine Canal." *Urban History Review*, 35(1): 1-17.

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# 0. Introduction

## *Problématique*

A discussion of the set of issues popularly known as deindustrialisation, and their consequences serve as a point of entry for this thesis. The flight of manufacturing from central cities to locations in suburbia, the 'sunbelt,' and overseas had a profound impact on the communities left behind. The classic negative features – severe job losses, capital flight, shuttered storefronts, and disempowered unions – are now increasingly being superseded in the popular imagination by the symbols of (an at least partial) recovery – galleries, boutiques, public markets, condominiums, and lofts. The disused industrial areas that are a legacy of deindustrialisation, far from lying fallow, are now provoking profound questioning on the nature of the city and its future directions.

The wholesale conversion from zone of production to zone of consumption, and the challenges encountered when attempting to insert the products and practices of contemporary urbanisation into these now treasured landscapes have become critical issues. Deindustrialisation has raised a whole new set of concerns for students of the city: what do these former industrial districts tell us about the process of urbanisation, and more practically, what actions can be taken to ensure their successful redevelopment? How can the trauma of deindustrialisation and the significant functional and cultural changes it presents us with be seen as still continuous within the larger historical thrust of the city? The enlargement of notions of heritage to include entire urban landscapes and former sites of industrial production poses new challenges; how can such areas contribute to contemporary urban vitality while maintaining the continuity of the urban experience and keeping their historical significance intact?

One must carefully situate the processes of urbanisation and industrialisation that are intertwined with the landscapes of production that are now such controversial and compelling sites. This is particularly true when dealing with the industrial North American city, which has often been seen as lacking the cultural and physical coherence of pre-industrial civilisation. In fact, many critics (Bodson, 2001; Caniggia & Maffei, 2001; Moudon, 1994; Panerai, Castex, Depaule, & Samuels, 2004) have highlighted the emergence of a crisis in the comprehension and production of the built landscape.

For architect Alan Knight: *“l'avènement de la grande ville en Europe tend à transformer la réalité de la vie urbaine, elle affaiblit ces anciennes certitudes et change les règles de son organisation interne, aux exigences naissantes de la rationalité d'un lieu d'exercice de fonctions bureaucratiques et industrielles. ... La perte de l'intelligibilité de la vie métropolitaine constituée, depuis le XIXe siècle, le fondement du 'choc moderne'”* (Knight, [www.archiurb.org](http://www.archiurb.org) – 2007-06-21).

An increased emphasis on rationality, through the logic of bureaucracy and industry, and the interpretation of buildings as individual, architectural, objects rather than as anonymous parts of an urban fabric, are all part of the decline in what the Italian architect Saverio Muratori has labelled the spontaneous consciousness in favour of critically conscious approaches that emphasise individual architectural monuments at the expense of the connective tissue of the city. As Caniggia and Maffei put it, “in a panorama of emergences, what is lacking is a global, basic, connective tissue” (2001: 33). The primary objective of this thesis is to contribute to the discussion on deindustrialised urbanism by proposing, through a reading of the urban form of the Lachine Canal basin, that the industrial city does indeed have such connective framework.

*“...the city is something that persists through its transformations, and that the complex or simple transformations of functions that it gradually undergoes are moments in the reality of its structure”* -Aldo Rossi (Rossi & Eisenman, 1982: 55-56).

This thesis postulates the existence of a connective structure in the industrial city; ‘structure’ in Malfroy’s (1986: 200) sense of *“formes qui conservent leurs caractères malgré le renouvellement de leurs composantes. Les permanences structurales fixent des limites au changement et exercent une rétroaction sur les processus de formation d'échelle inférieure”* and aims to reveal it through a historical reading of the urban form of one of its industrial districts, in a sense attempting to excavate the “the operative vestiges of true spontaneous consciousness” (Caniggia & Maffei, 2001: 47). Thus, the work presented in the following pages constitutes an attempt to identify and interpret significant patterns, or *permanences*, in the structure of the built landscape along the Lachine Canal in terms of their impact on its urbanisation through history and its contemporary redevelopment. In a sense, it makes explicit the persistence of certain elements of the urban fabric through the moments in history that industrial urbanisation and contemporary consumer-residential redevelopment represent. Through a set of inter-related narratives, I propose that the Lachine Canal basin specifically, and the industrial districts of

North American cities more generally, can be read as thick palimpsests (Banham, 1971) upon which projects of local and continental scale continually informed each other throughout history – in essence providing each other with the structures within which they took shape. Through the different eras of urbanisation, or moments in the history of the city – from before the industrial revolution to the revitalizations associated with contemporary economic restructuring – there is a remarkable tendency for subsequent interventions to be inserted into the already existing urban fabric.



0-1: The Lachine Canal (the shaded band at centre-left) is identified as a major industrial heritage site by the Ville de Montréal. For source information on images, please consult the references at the end of the thesis.

The following chapters present a study of the form of the Griffintown district with a view to understanding its progressive industrialisation, and then moves on to a typology of industrial complexes along the length of the Canal, emphasising changes in their relationship with the surrounding urban fabric. A discussion highlights the impact of these forms and their emergence for concepts of urban heritage and the role they have played as interface between the local city and the larger continent. The discussion also proposes the notion that the structure of these forms mediates the transformation of the Lachine Canal from a space of production to a space of consumption.

In this work I argue that the urban form of the Lachine Canal basin, a North American industrial district *par excellence*, validates a structuralist approach to the city that sees the built landscape as a durable and coherent structure that, by virtue of its collective and non-intentional nature, provides agents of change with a variably malleable material – full

of constraints and opportunities. The idea of the city plan as resource or as persistent, as evoked by Poète and developed by Rossi implies that the plan of the city is fundamentally “a past that we are still experiencing” (Rossi & Eisenman, 1982: 58).

Certain students of urban form – urban morphologists – have for some time proposed such an interpretation, but have been reluctant to apply it to industrial or mass-produced environments, which do not emanate from longstanding folk culture, centuries-old tradition, or spontaneous consciousness. This thesis argues that the urbanisation of Canada’s faded industrial metropolis did indeed have a somewhat autonomous spatial logic, one that played a considerable mediatory role in the historic industrialisation and decline, and the contemporary reinvention and revitalisation of the Lachine Canal basin. That is to say, although the North American industrial city is indeed the product of explicitly conscious and intentional practices in the production of the built environment, it most certainly is not without an autonomous and legible underlying spatial logic, one that can be read morphologically. To make explicit the underlying logic of the built landscape is thus to shed light on the permanences that have variably constrained and furnished opportunity to the agents involved in the shaping of the city. It is my hope that this may serve as a guide of sorts for understanding the industrial metropolis, and ensuring effective contemporary intervention.

## Structure and organisation

The work is organised around a series of chapters; the first of which elaborates the theoretical framework and situates this project in the literature pertaining to urban historical geography and debates in contemporary urban planning and design, both globally and in respect to Montréal in particular. Key concepts in historical urban geography and the political-economic issues surrounding deindustrialisation are examined with a view to constructing a foundation for the work presented in subsequent chapters. The second chapter addresses urban morphology as a heuristic resource, and consists of a multidisciplinary literature review emphasising the theoretical and practical roots of this project. It is in this chapter that the basic concepts underlying the research undertaken are laid out, particularly the morphological foundations in which this thesis is rooted. This draws particularly from the work of theorists such as Sylvain Malfroy (1986a; 1986b; 1998), Philippe Panerai (1980; 2004; 1999), Gianfranco Caniggia and Gian Luigi Maffei (2001), and Anne Vernez-Moudon (1986; 1992; 1994; 1997), for insights into the nature of the elements and relationships that comprise the urban fabric. This chapter includes a methodological discussion, in essence putting some of the above concepts (particularly those of a morphological nature) into operational form and describing the process by which an analytical framework was constructed.

This third chapter orients the reader to the history of the Lachine Canal and its place in southwest Montréal, from its very beginnings to the present day, touching on its crucial significance for Montréal in its North American context. A narrative of the intertwined fortunes of the Lachine Canal and Montréal integrates a variety of anthropological, geographical, and historical research highlights the importance of the canal for Montréal's industrialisation and the traces left behind on the landscape by each era of settlement and development. This review contextualises the progressive sedimentation of the landscape through history – from pre-industrial agricultural land holdings to the extensive network of railway lines, spurs, and yards that peaked at the height of industrialisation. Crucially the emphasis is placed upon the continuity and persistence of these traces, but also upon the prevailing politics, technics, and economics.

The analysis around which this project takes shape is presented in chapter four. This is broken down into two inter-related narratives sharing a common thread – the mediation of increasingly specialised urban forms by a distinctive and persistent urban fabric and the integration of industrial infrastructure into the urban fabric. These two narratives,

focus on the emergence of specialised industrial forms in the Griffintown district and the differentiated typology of industrial complexes along the Lachine Canal, from Côte-Saint-Paul in the west to Windmill Point (near the Vieux-Port) in the east. Chapter four's analysis is presented with a view to the importance of the persistence of the city plan, and the largely incremental and adaptive integration of modernity and specialisation in the urban fabric. It is upon these observations that the thesis bases its major claims and which the discussion, in chapter five, takes further in terms of their implications for theory and practice.

Chapter five, the discussion, can be split into three related sections. The first part of the discussion deals with the practical implications of a structural interpretation of industrial urbanisation and the avenues opened up to contemporary practitioners by applying morphological techniques to a non-traditional environment. Arguing that the perils of a disembodied and atomized built environment, one disconnected from the deeply inscribed history of working-class neighbourhoods that are supposed to benefit from regeneration, I call for an integration of morphological analysis in the revitalisation process to ensure more meaningful results. As noted earlier, deindustrialisation, while inciting significant discussion on the nature of the 'post-industrial' city, has left professionals with a heavy burden in terms of adapting these landscapes – often referred to as brownfields – to contemporary needs. This part of the discussion focuses on the potential for morphological knowledge to assist in the integration of new development in brownfield sites into the surrounding urban landscape and the myriad, persistent traces that make up the urban palimpsest. Such knowledge lies at the base of any successful 'projet urbain'; any redevelopment that attempts to be more than an individual building or ensemble of buildings, but that seeks to be an extension of the urban fabric, from the past, into the future.

The second part of the discussion examines the dialectic between continental infrastructures and imperatives and the morphological characteristics of the local territory, emphasising the dual nature of many of southwest Montréal's permanences. In this sense, the discussion explores the permanence of southwest Montréal as an axis of development and Montréal's link with the continental project of North American settlement, development, and industrialisation, even while the material forms and configurations of much of the infrastructure involved in these efforts changed dramatically and left a series of overlapping and partially-faded traces on the landscape.

In the third part of the discussion, the emphasis is placed on the implications of an autonomous, structural interpretation of the built environment for accepted understandings of the history of Montréal and its industrial districts, suggesting that the built landscape can be conceptualised as a mediator of political-economic forces. The implications of this interpretation for the management of contemporary transformations, such as brownfields regeneration, is taken up in light of a discussion of the varying 'grains' to the urban fabric and their influence on redevelopment practices and the neo-liberal privatization of public space.

# 1. Literature review | Chapter one

## Introduction

This chapter probes the contemporary issues raised by the Lachine Canal, in theoretical and practical realms. Theoretically, this means probing the significance of the Lachine Canal as a means for, I argue, augmenting our understanding of the urban history and geography not just of Montréal, but that of North American industrial cities more broadly. On a practical level, this implies addressing the crucial questions of deindustrialisation, economic restructuring, and urban regeneration – particularly brownfield redevelopment – and understanding the heritage value of industrial landscapes such as the Lachine Canal basin. This progresses towards the following chapter's exploration of a morphological approach to apprehending the built landscape in light of NJ Habraken's (1998) call for a means for tackling everyday, ordinary environments.

We start the chapter with a discussion on what I (in a respectful spirit) term the blind spots of contemporary Canadian urban history and geography as revealed by the case of the Lachine Canal. This is followed by a more critical discussion that examines the seeming inability of contemporary city-building practices to address the existing built environment as a coherent structure and to engage with its underlying logic. Taking a structuralist understanding of the city centred on the concept of urban fabric, I argue that when confronted with constraint and opportunity in the post-deindustrialisation urban landscape, contemporary urban regeneration and planning falls short of honouring its nuanced and significant heritage.

Finally, the discussion moves on to consider works that engage with the specificity of Montréal – Charney's notion of 'Montréalness' (1992) – in both theory and practice. In the context of these issues and perspectives, I introduce several morphological works that have tackled the questions raised by Montréal as an urban phenomenon. The body of work and practice known as urban morphology, upon which this thesis draws heavily, is addressed more thoroughly in the next chapter's discussion, which reviews the basic tenets and conceptual vocabulary of this emergent discipline.

## Canadian urban history and geography and the Lachine Canal.

This argument is founded on two notions: the first is that typical agent-centred approaches to interpreting urban history tell only part of the story, because cities are collective projects created in temporal diffusion, and thus are properly structural. This is swiftly, even tersely, observed in the first words of the Centre canadien de l'architecture's catalogue for its exposition 'Montréal métropole, 1880-1930: "[t]he city is a long-term collective work. It cannot be reduced to the output of architects, for they have little impact on much of the built environment" (Gournay & Vanlaethem, 1998: 9). No one person or even group has complete control or can exercise total influence over the urban landscape and thus studying the social history of the city – whether the emphasis is on the survival strategies of working class women (Bradbury, 1989, 1993) or on the architectural tastes of the elite (James, 1985) – can offer only an incomplete, though important, glimpse into the formation of the city. For Dufresne et al, "*(l)a première difficulté posée par l'analyse morphologique du territoire montréalais vient que les études historiques mettent l'emphase sur l'histoire sociale, économique ou politique en traitant la forme urbaine comme un fond de scène presque neutre*" (Dufresne, 2003: 72). Read this way, the built environment is accorded almost no autonomy, and thus serves an incredibly neutral role, one that belies its quite variable malleability. This first notion, that focusing on the agent in relating urban history tells only part of the story, recognises the very partial control that any one agent has over the urban landscape, and that given shifting circumstances amongst different agents of change.

Urban historiography often refers to the material city as a testimony of the living conditions of one group of urban dwellers or another, and regularly cites its concrete forms as evidence of the broad social and economic transformations that affect society. Mysteriously though, the material city, in particular when considered as a dynamic entity undergoing constant mutation, remains one of the great unknowns of urban history Bliet (Bliet & Gauthier, 2006; Gauthier, 2003). Most theoretical perspectives treat it as a dependent variable, either as a neutral stage on which the human drama is being played or as a passive by-product of social or economic processes (Gauthier & Gilliland, 2006). By focusing on the emergence of the built landscape of the Lachine Canal industrial district, this thesis theorizes the built environment as a partially autonomous dynamic system, governed by internal sets of relations. Although the city is a material projection of social, political, and economic systems or structures, this projection proceeds through systems of spatial structuration, and is manifested in a substance, the built space, that has its own consistency and resilience.

The second notion is that the physical form of the city is a hugely influential variable that does much to condition the spatial patterns observed by geographers – to simply map or plot, without taking into account physical forms such as the shape, size, streets, buildings, and lots, again offers only a partial interpretation of what makes our cities tick. Though rich, informative, and essential, urban history and geography suffer from these lacunae, which I propose may be in part addressed by tackling the city as though its very physical form has a degree of autonomy, that is to say that it is structural, and in a dialectic with the agents that urban history so vividly describe and interpret; it is a rough, persistent, and variably independent materialisation of the intriguing spatial patterns brought to life by urban geography. This thesis approaches the study of urban form as something that is partially autonomous and structural - in the sense of being composed of physical elements (such as blocks, or parcels) that simultaneously (and differentially, in social and economic terms) constrain and furnish city-building opportunities. Similar to the perspective proposed by urban morphologists (Caniggia & Maffei, 2001; Gerosa, 1992; Malfroy, 1986, 1998; Moudon, 1986, 1994, 1997; Panerai, Castex, Depaule, & Samuels, 2004; Panerai, Demorgon, & Depaule, 1999), such an approach promises to enrich the bodies of knowledge that are urban history and geography, as they have enriched the interpretations presented in this thesis.

Research into Montréal's urban history however, provides the crucial descriptions of the agents who intervene in the built environment; without such work it would be difficult to envisage the myriad practices: cultural, economic, political, and technological, which are sustained by the urban landscape yet in turn alter it. As the built environment does change over time, in some instances quite dramatically, it would be grossly inaccurate to attribute no power or control whatsoever to the people who inhabit and modify their surroundings. Such agents – from the humblest family erecting a post for a clothesline to the most powerful industrialist whose investments determine the form and extent of an entire factory – do indeed exercise some degree of control when it comes to the spaces in which they live, though typically within a set of structures, whether those structures are the size of an urban backyard, which would determine the length of the family's clothesline, or the spatially variable availability of hydraulic energy, which would determine the localisation of the industrialist's mill.

There is a vast scholarship on Montréal's urbanisation and industrialisation, which the following paragraphs review in terms of its implications for understanding these processes and the various contexts in which they have been situated. The emphasis is on how this

knowledge can be made to contribute to a more structural, morphological, reading of the city as a collective work-in-progress, providing insight into the various agents of change and the opportunities and constraints that confronted them in the built landscape. In essence, the text below asks the following question: In what ways does the historical and geographical literature have shed light on the structural qualities of Montréal's built landscape?

The history of industrial Montreal has been the subject of extensive research covering questions of architecture and urban heritage: Where Marsan (1994) provides an overview of the evolution of Montreal's built landscape and architecture, emphasizing the importance of the rural côte and cadastral system, Burgess, Forget, Lauzon, and Rajotte (2004) use built heritage as a window through which to read the history of Vieux-Montréal, Legault (1989) examines the urban context in which the Montreal triplex emerged, and Sénécal (2001) explores the specificity of the port's massive grain-handling structures. These works not only examine architectural achievements as isolated incidents, but integrate them into larger frameworks. For Marsan this examination involves Montreal's history in its broadest sense, while for Legault and Sénécal, a greater emphasis is placed upon the reflection of cultural origins and practices in urban architecture. Forays into understanding Montreal as a living and working environment include Desloges and Gelly's (2002) well-illustrated glimpse into life in the nineteenth-century industrial complex and Deverteuil's (2004) visual account of the same landscape in post-industrial decline, both rich iconographic sources. Gilliland and Olson's (1998) exploration of the strategic modification of household composition and domestic space highlights the importance of the space inhabited by the working class living along the Lachine Canal discussed by Bradbury (1989; 1993). Political dimensions of Montreal's industrialization are explored by Linteau (1985) in his study of the blending of public and private interests in east-end Maisonneuve, while Young (1986) explores the unique and important role played by the Séminaire de Montréal in the parcelling and development of agricultural land in the Pointe-Saint-Charles area. Linteau's and Young's contributions are important in their situation of urbanization practices in their cultural, economic, and political context as means for agents (both individuals and organizations) to use urban land as a strategy for economic gain and social survival.

Tulchinsky's (1960; 1977; 2000; 2000), Lewis' (1985; 1991a; 1992; 1995; 2000; 2001; 2002; 2004)'s, and Hanna's (1977; 1986; 1992; 2002) work on property development, industrial geography and the emergence of industrial suburbs in the southwest of Montreal is rich in its understanding of the pathways created and followed by industrial capitalists as they fashioned already-shaped urban space in Vieux-Montréal and farmland on the fringes

of the city to meet their needs. Lewis's work serves as a valuable reminder of the temporally and politically diffuse nature of urbanization through his notion of myriad manufacturing pathways coalescing into an industrial district with complex inter-firm linkages and varying control over the landscape. His work leads us to consider more deeply the morphology of the built landscape as a structural component in that process.

It's worth examining Robert Lewis' work in more detail, as it simultaneously tackles the problem of a geography somewhat detached from the material city it probes and provides a wealth of insight absolutely central to understanding the actions, techniques, and investments that shape the city. Lewis remarks that in "the case of Montréal, a process of rapid industrialization beginning in the 1850s created opportunities and limitations on which a residential structure could be forged" (1991b: 127). But in his analysis of the Lachine Canal basin, he is by and large referring to the social and economic map of the city: centre versus periphery as industrial locations, the agglomeration of certain firms and ethnicities around particular points on that map, and not the physical qualities of built space. His work, however, offers real insight into the deployment of industry and its workers in 19th and 20th century Montréal, and his examination of manufacturing in Old Montréal (Lewis, 1995) does indeed highlight the links between industry and the material city.

I will touch on a few of the crucial insights offered by Lewis' work on Montréal's industrial history, much of it dealing specifically with the Lachine Canal basin in the following paragraphs. In his examination of the industrial suburb (Lewis, 2002), which highlights the transition of Saint-Henri and Sainte-Cunégonde from villages to industrial suburbs to industrial districts of ill repute at the centre of an expanding metropolis, Lewis comments on the paradox of a nineteenth-century solution becoming a problem in the twentieth. For this thesis, the point of interest is then, how were twentieth-century slum clearance solutions enacted on a nineteenth-century industrial suburban landscape? How did earlier traces – from Saint-Henri as village and subsequently industrial suburb – guide later interventions?

The built environment plays a significant figure in Lewis' 1995 look at the reorganisation of manufacturing in Vieux-Montréal from 1850 to 1950, which shows that "as new productive strategies emerged and old ones were reorganized, a built environment was constructed in Old Montreal (the traditional core of Montreal) that was able to accommodate a diverse range of productive formats in a multitude of industries" (Lewis, 1995: 5). Drawing on knowledge of Vieux-Montréal, Lewis states that "The central districts of 19th-century North American cities epitomizes the adaptability of urban space to changing forms of industrial

organization” (Lewis, 1995: 6). Processes such as densification through vertical growth and a comprehensive street-widening are highlighted, but unfortunately not at length. Lewis’ emphasis is placed instead on the intersection between manufacturers’ strategies and the flexible space of Vieux-Montréal, detailing the variety of approaches to the implementation of new technologies (a theme he also examines in the context of interwar factory modernisation), and the powerful attraction of agglomeration economies across a range of industries.

This thesis seeks to take such insights in the direction of a more systematic examination of the means by which densification could occur, within a particular framework: the urban fabric comprised by building types, parcels, and the route network. However, as his argument progresses, the emphasis shifts more towards the economic aspects – agglomeration economies and the advantages for small firms to be part of a vertically-disintegrated production complex – and subsequent shifts away from manufacturing and industrial activity in Vieux-Montréal are explained more by its increasing attractiveness as a head-office location and the bid-rent consequences this had, which pushed lower-profit activities out of the district. Gunter Gad’s comparison of central Montréal and central Toronto offers an excellent overview of these dynamics, and highlights the fragmentation of different functions that occurred as Montréal’s ‘central business district’ developed (1999). Again though, the emphasis is on functions and the analysis shies away from tackling physical form. Did morphological configuration play a role? Has regeneration taken place with particular intensity where parcels were of a certain shape and size, or where the route network was configured in a particular way?

The historical geographer David Hanna, known for his study on the origins of Montréal’s New Town (1977; 1986; Hanna & Remiggi, 1981), has also done extensive research on the neighbourhoods produced by industrialisation. Writing from the viewpoint of an historical geographer, Hanna paints a detailed picture of the agents and strategies involved in the urbanisation of the Lachine Canal basin, and offers significant comment on the relationships between working-class neighbourhoods and the major factories around which they rose, but not going so far as to present a systematic theorisation of a coherent urban fabric. Rather, Hanna offers a spatialized or territorialized history, but does not furnish a key to the structural logic of the built environment that resulted from the processes he describes and analyses.

While historical geography has managed in large part to embrace a more structuralist perspective on urban transformation, eschewing an overly agent-focused take, their significant body of work tends to shy away from the material reality of the built environment. Gilliland and Gauthier take the celebrated Canadian urban geographer Larry Bourne as an example, lauding his multiple and significant contributions to Canadian urban geography, which they characterise as having “contributed to our overall understanding of various processes driving urban morphogenesis” but as not having “dealt explicitly with the physical elements of the urban environment – buildings, plots/lots, streets – that are considered the ‘common ground’ of all urban morphologists” (J. Gilliland & Gauthier, 2006: 56). The outlook is similar in archaeology and studies commissioned within the realm of public policy, though in a slightly different manner; where historians and geographers tend to neglect physical elements, the policy-driven literature in archaeology and heritage tends towards the production of inventories that only partially situate their contents within a systematic logic of urbanisation capable of managing continuous change.

The archaeological works by Desjardins (1999) and Provençal (1999) referred to in the previous chapter contribute archaeological studies that employ a unique combination of archaeology and history to explore the character of the transformations of the industrializing urban landscape and draw significantly upon material culture as a means of reading and interpreting the city and its transformations. Desjardins recognises and emphasises the structural quality of the *côte* system – the early rural routes by which the southwest of the island was settled – but is then drawn into a deeper (and fascinating) discussion regarding an early freight railway linking Griffintown with the Lachine Canal. Beaugard further develops this theme of the *côte* system’s structural quality. He emphasises their role as “the structural elements of the first settlement patterns” (1984: 47) in Montréal and observes that in addition to serving as a territorial armature, they are also at the heart of a mode of settlement, colonisation, village, and later, urban neighbourhood life. Regrouping much of this work, Poitras and Bérubé (2004) offer a useful overview of the history of the canal, which this chapter has drawn on, particularly in terms of periodisation and chronologically organising the urbanisation of southwest Montréal, aligning events and phenomena from demographic growth and municipal incorporation to the construction of specific factories, neighbourhoods, and infrastructure.

From the 1970s on, studies geared towards understanding Montreal’s industrialization have been complemented by a plethora of planning- and redevelopment-oriented built heritage studies regarding the Lachine Canal’s potential for reuse, commissioned by public

agencies, largely by the Ville de Montréal, the Arrondissement Sud-Ouest, and Parks Canada. The latter agency has produced an extensive body of historical and archaeological research, work that has been crucial to the canal's full-blown conversion to a popular and well-visited National Historic Site (Espeset, 1977; Parks Canada, 1977, 1979, 2003, 2004; Willis & Parks Canada, 1983). These schemes have largely focused on the redevelopment possibilities presented by the presence of a major linear park, especially one that connects with the Vieux-Montréal tourism cluster, though they have also included inventories of archaeological and heritage assets (Dorion & Association québécoise pour le patrimoine industriel., 1996; Dubois, 2005; Dufresne, 2003). The eminent urbanist Jean-Claude La Haye (1969) produced a study emphasising the unique juxtaposition of built and open space – solids and voids – that characterised the canal basin, which is now increasingly lined by condominium projects as factories give way to lofts and townhouses rise on abandoned industrial lots. These transformations are full of inherent complexities; from attempting to ensure that local businesses and all citizens benefit from this influx of capital to the metamorphosis of a paradoxically peripheral urban form (the canal was both centralizing axis of a regionally-scaled industrial corridor, yet also the barrier separating two neighbourhoods and the edge of both) into a central and attractive amenity.

An initiative by the Ville de Montréal to produce 'cahiers d'arrondissement' serving as guides for heritage management also highlights the diverse and extensive heritage assets along the Lachine Canal (Topp, 2005). Based on a framework that goes beyond buildings and archaeology to include new notions of heritage such as ensembles (including industrial ensembles) and 'tracés fondateurs' or matrix routes, the study makes the valuable contribution of identifying particularly significant sectors, though without going into detail on the structure or processes of these areas' urban tissue. This appears to limit the utility of an otherwise thorough document to highlighting the renovation potential of such sectors, and raising awareness of their specificity, but without providing a structural means for guiding change within the existing urban tissue.

## Towards a morphological understanding

In their variety, these studies paint a rich picture of the history of industrialization in Montreal, but do not generally go far enough to interpret the material culture of the landscape or probe the elements, relationships, and processes at work in the industrial landscape as a coherent system. Some morphological analysis of Montreal does exist, including work on housing forms by Carey (2002) and Legault (1989). Carey explores the decline of rear-lot housing in the context of regulatory shifts and the evolution of building types, while Legault, studying the emergence of triplex housing in the Plateau Mont-Royal, explicitly challenges the predominance of economic and demographic explanations, proposing instead a heightened emphasis on the architectural constraints posed by the characteristics of the route network and parcel system. Going into further detail, La Rue's research on the built form of the Plateau Mont-Royal also privileges the role of allotment practices in the formation of the built landscape (1987). By reconstructing the record of land subdivision in the area, La Rue puts into vivid illustration the permanence of such rural allotment traces and their crucial importance for the subsequent development of the urban parcel system and route network. These structures, he proposes, then form the basis for architectural types, grouped into urban blocks.

But, as historical geographers have made evident through their profiling and narrating of the agents of change and their processes of urbanisation, the economy and demographic change do matter. Several works integrate economic and morphological factors in attempting to understand Montreal's built landscape. Exploring the weaving of economic conditions and built form, Gilliland (2002; 2004; 2001) offers a comprehensive examination of the processes of street widening and waterfront adaptation and transformation. Through physiological metaphor, Gilliland meshes physical transformation in the port of Montréal with quantitative increases in the volume of trade and vessel size. Revealing an intimate link between economy and form, Gilliland's work nonetheless (except in the case of street widening) offers the economy a determining role, perhaps underplaying the structural role of the urban fabric in its response to such change.

Through case study findings relating to the emergence of a loft district in Montreal, Zacharias (1990; 1991) shows that typo-morphological characteristics constitute a form of resistance to redevelopment and have influenced the direction of the growth of the office district. He convincingly puts forward the idea that the morphological structure of the built landscape (in lots, street patterns, and building types) is not only resilient over the long

term, but has an important influence over subsequent transformations. Recent research by Zacharias on contemporary deindustrialization in China appears, on a preliminary basis at least, to indicate similar permanence (Rossi, 1982) and highlights its possibility as an asset for planners.

Morphological orientations also appear to have taken hold at the Ville de Montréal, where, in the course of preparations for the 2004 Master Plan, a variety of studies were commissioned to examine the city's urban form (Dubois, 2004; Dufresne, 2003) Following from this initiative, the Arrondissement Sud-Ouest engaged a specialist firm to study the borough's urban form (Dubois, 2005). Led by Martin Dubois, the team systematically mapped out the different 'landscape areas' and smaller 'landscape units' of the arrondissement, based on the prevalence of particular morphological characteristics, principally building types, but also features of the parcel system and route network. Their methodology involved identifying periods of development, homogenous sectors, and the identification and analysis of the borough's architecture. Stemming from new conceptions of heritage that recognise the value of 'urban ensembles' and 'industrial ensembles', this study presents a thorough, mapped, and systematic characterisation of southwest Montréal's vernacular architecture. Like Beaugard and Desjardins, they also highlight the importance of the côte system, and follow a similar periodisation to that of Poitras and Bérubé. The brief typological process that they derive from their analysis is of great interest for this thesis, describing the densification process in terms of changing relationships between buildings and between building and parcel, and concomitant architectural shifts. Given their rigorous theoretical framework and detailed approach, it is particularly unfortunate that they declined to provide a complete typological description of the Sud-Ouest's considerable industrial zones, focusing instead on the residential landscape.

Pierre Gauthier's work on the faubourg Saint-Sauveur of Québec City has also emphasised the historical evolution of urban form. An architect and morphologist by training, Gauthier's 1997 thesis established the legibility and systematic nature of what he termed a 'spatial syntax' in the urban fabric of that district (Gauthier, 1997). He argues that the particular interweaving of 19th century land development practices after the repeal of seigneurialism, a rural landholding configuration dominated by large institutional landlords, and small-scale builders resulted in the evolution of dense, urban building types and streetscapes from much lower-density and somewhat agricultural roots. Proceeding from the premise that the faubourg's built environment presented a coherent and legible structure that could be systematically and scientifically read as a sort of spatial syntax through morphological

analysis, Gauthier proceeds to identify a series of morphological structures. These structures then form the backbone of a rigorous diachronic analysis exploring Saint-Sauveur's parceling and edification through the detailed examination of particular subdivision operations. Gauthier finishes with a typological analysis, offering not just an overview of the many building types that emerged in the faubourg through its history, but also an attempt to systematically characterise them in relation to one another and to the prevailing morphological conditions (such as parcelling patterns) he earlier elaborates. Ultimately, this serves to reinforce a theoretical perspective emphasising the dialectics between the built landscape and agents' practices of building and dwelling as the central feature of morphological change. In further work, Gauthier explores the interactions between these processes and the conscious manipulation of the ideological connotations of urban fabric and building types as urbanisation progressed (Gauthier, 2003).

## The 'Montrealness of Montréal': *Architecture et projet urbain*

Indeed, one of the major contributions of research into Montréal's exceptionally unique and well-studied history and geography is the realisation that as a city, it is just that: unique. Given that much of what makes Montréal so unique has to do with the structure of colonial land occupation forms and the particular mix of cultures that later appropriated them, as well as the specific role of Montréal in the historical geography of North America, it is in fact fairly difficult to successfully apply many of the conventional theoretical models of the city and of urbanisation processes offered by urban geography and planning (Dufresne, 2003).

To a significant degree, this understanding has come from the field of urban architecture, and more specifically from the work of several architects and faculty at the Université de Montréal's Groupe de recherche sur l'architecture urbaine, led by Alan Knight. Through their studios and professional practice, these architects have done considerable work on what Melvin Charney termed the 'Montrealness of Montréal'. For Charney, "[t]he essential structure of Montréal is to be found in the plan of its initial French settlement," especially "the formation of an undifferentiated, orthogonal grid that subsumes the potential structure of a town: it manifests a tacit representation of the knowledge of city building" (Charney, 1992: 17). Going beyond the grid, Charney observes that "[i]n Montréal, the essential structure consisted of a rudimentary orthogonal street grid; the city block as a basic, urban unit; a specific house type defined by party walls and by the street; and the street and the square as defined spatial entities" (1992: 18). What Charney finds specifically compelling about Montréal's grid in comparison with the characteristic North American version (Lipsky, 1999; Reps, 1965) is its "sustained development of an architecture based on the predominance of the street as a distinct physical entity that subsumed individual buildings" (1992: 18). On Montréal's domestic architecture, Charney remarks that it "...was thrashed out by people who had no choice but to use available means to humanize living conditions in the wake of rapid industrialization. It cemented collective links built on common needs and extended the individual flats into larger social units. It became the architecture of Québec, an authentic urban architecture; the 'knowledge' of its inhabitants to appropriate the city in an empirical way for collective life" (1992: 25).

These comments, particularly those regarding the grid as 'potential structure' echo the vision put forward by French architect-planners David Mangin and Philippe Panerai under the name 'projet urbain' (Mangin & Panerai, 1999). Mangin and Panerai set out the means by which an 'urban project' can be undertaken; their examination of parcel

systems, route networks, and public space is founded on a constant preoccupation with the *longue durée*. In essence, they describe the urbanist's task as one of laying out a frame for the edification of an urban fabric. Following such a lead, the *Division de la planification du Service du développement économique et urbain de la Ville de Montréal* has commissioned a variety of studies and projects for central Montréal, largely undertaken by architects, planners, and urban designers affiliated with the *Groupe de recherche sur l'architecture urbaine*; Gabriel Bodson, Alan Knight (1984; Knight & Vallée, 1988), and Aurèle Cardinal figure prominently in this group. In a catalogue publication, Bodson situates this work: "*Tous ces projets sont basés sur une connaissance et une actualisation d'un savoir-faire urbain. Ce savoir-faire, souvent implicite pour ceux qui le pratiquent à travers le projet, doit être expliqué plus largement*" (Bodson, 2001).

Many of these studies take the forms of propositions that cast themselves as 'repair' operations. While they often do not explicitly examine the city's urban fabric, through their ideas and proposals they betray a highly astute reading of the logic of their sites. True urban projects (Courcier, 2005; Mangin & Panerai, 1999), these works are also worth examining for the understandings they reveal of the city in which they seek to intervene. Jean-Philippe Brouillard, in a thesis produced under the auspices of Alan Knight's *Groupe de recherche sur l'architecture urbaine*, adroitly synthesizes the role of the Lachine Canal as a Rossi-esque *fatto urbano* with Pierre Lavedan's insight into persistence as generator of the urban plan and Muratori's insistence on the route network as the most permanent aspect of the city (Brouillard, 2003). In a similar vein, Bodson specifically targets the Lachine Canal, seeking to restore its status as a grand axis of development by insisting on the interface between neighbourhood and infrastructure – making the canal southwest Montréal's *raison d'être* once more in a changed cultural, economic, and political context.

Within the larger uniqueness of Montréal, the Lachine Canal basin presents another sort of particularity, as it is the milieu in which Montréal's role as plaque tournante or hub in the colonisation and industrialisation of the North America is perhaps revealed most clearly. Two facets of this role have etched themselves permanently into Montréal's urban fabric: the traces left by the various means of production and transportation that inscribed themselves on a landscape that has acted as a constant gateway to the interior of the continent in almost every manner, from its parcelling to its route network; and its privileged place in the introduction of increasingly specialised industrial infrastructure and architecture. To address this aspect of the Lachine Canal basin's history and form, I've turned to a series of ideas: in order to conceptualise the importance and permanence of the route network, the notions of Mangin

and Panerai term *tracés fondateurs*, or what Muratori calls *percorsi matrici* (matrix routes). Their permanence, I would argue, and their deep inscription in the historical geography not just of Montréal but of the North American continent, suggests approaching them as structuring monuments, in the sense of Rossi. The insertion, progressively more imposing, of specialised industrial facilities – factories, warehouses, infrastructure – suggests the writings of Reyner Banham as a guide. Banham’s notion of Los Angeles’ transportation palimpsest on the one hand, his evocation of a ‘Concrete Atlantis’ on the other, offer a means for anchoring massive industrial change in an already-established urban structure (Banham, 1971, 1986). More locally, such themes are taken up, on a practical level by Bodson’s preoccupation with the interface between neighbourhood and canal, and on a theoretical one by Brouillard’s observations concerning the continental scale of the Lachine Canal industrial complex. Following the next chapters’ analytical narratives, I will return to these themes as a means of interpretation.

## Urban regeneration, brownfields, and contemporary planning

Continuing in this exercise of highlighting short-comings in our theoretical understanding of urbanisation, I would like to now draw attention to a connected problem in the domain of policy and planning. In a more critical tone, I argue that if the experience of the Lachine Canal prompts the adoption of a structuralist approach to interpreting the urban landscape: one that emphasises the partial determinism inherent in inter-scalar relationships (from parcels to dwellings, for instance) and the legacy left by the presence and traces of prior allotment and construction. Such a conception has significant implications for the practice of city-building: many observers of our built environment would go so far as to argue that we are in a period of deep and profound crisis when it comes to our human habitat. To pick one example, Panerai et al, for instance use the word 'agony' to describe the decline of the urban block as a truly integrated component of the city's urban fabric (Panerai et al., 2004: ix). This concern, that city-building has become a seemingly unending series of disconnected gestures, linked only by arterial roads and regional infrastructure, void of meaningful public space and lacking an adaptable and resilient logic that could be coherent across different scales – from the dwelling to the urban district and beyond – has not only arisen in response to peripheral suburbanisation but also (perhaps more vividly so) in response to attempts to intervene in the existing city.

The notion that our contemporary city-building practices are proving incapable of providing a framework for urban life that is adaptable to changing lifestyles, energy sources, and economic regimes, that they are incapable of going beyond the simple production of housing, or retail, or industrial buildings and creating an urban fabric, while certainly troubling when it comes to peripheral development, is intimately connected to the significant challenges (and opportunities) posed by the existing city. Hard hit by deindustrialisation, the core of the North American industrial city has seen significant economic change, with the solemn departure of traditional industry – the force that made places like southwest Montréal a hub for manufacturing and logistics in the nineteenth century – now being superseded by a new and optimistic current of revitalisation.

Such deindustrialisation can be theorised as part of a larger set of tensions within the capitalist system. For Brenner, drawing upon the work of Lefebvre (1976) and Harvey (1985; Harvey, 1989) this tension can be thought of as a "contradiction between fixity and motion in the circulation of capital-between capital's necessary dependence on territory or place and its space-annihilating tendencies" (Brenner, 1998: 1). Although capital is

relentlessly mobile and engaged in a constant storm of creative destruction (Schumpeter, 1987), production and consumption depend on assets that are fixed in the built environment: infrastructure, factories, shops, and the housing that makes possible the reproduction of labour. Not insignificantly, these assets – particularly those that represent large investment into the future – also serve as a temporal fix for what Harvey terms capitalism's natural tendency towards crises of accumulation (Harvey, 1985).

The reclamation of this landscape for a new round of accumulation poses significant concerns in terms of the suitability of contemporary city-building techniques, largely adapted to new construction in suburban greenfield locations (Tiesdell & Adams, 2004). When it comes to existing environments whose character and urban quality comes in large part from the aggregate or ensemble effect of the entire built landscape, professionals – from architects to planners and activists to politicians – seem to be hard pressed to manage change in ways that respect or enhance the relationships and processes that hold such environments together, in spite of a broadening and increasingly sophisticated appreciation for urban heritage (Dufresne, 2003; Larochelle, 2005; Topp, 2005).

The term brownfield is often used to describe sites that are “abandoned, idle or underutilized commercial or industrial properties where past actions have caused known or suspected environmental contamination, but where there is an active potential for redevelopment” (NRTEE, 2003). Brownfields are said to be the result of a variety of inter-related changes in our society and economy, from disinvestment to the spread of new technologies, forms of labour organisation, and modes of transport, often referred to as deindustrialisation, which have been integrated into our uses of the urban landscape (Bluestone & Harrison, 1982). Brownfields are thus “a tangible and visible result of the inter-linkages between economic shifts and urban change” and of the radical restructuring of the global economy in recent decades” (Moore, 2002: 325); transformations frequently associated with significant trauma and difficulty for working class urban neighbourhoods.

The redevelopment of brownfields has been criticised for adopting a technocratic approach that often results in “culturally disembodied and spatially atomised urban environments and reduce them to landscapes of consumption” (Bliet & Gauthier, 2007). Others also question such redevelopment practices, citing the emergence of disconnected tourist ‘bubbles’ (Judd & Fainstein, 1999), the creation of ‘fantasy cities’ (Hannigan, 1998, 2005), and a forcible, marginalizing differentiation of the post-industrial city from an industrial past increasingly left to interpreters, museums, and ‘edutainment’ (Sieber, 1991). Zukin (1982) has examined

the role of artists and modern art in particular in the New York context – it's worth noting that several proposals for Silo no 5 – a disused grain elevator on Windmill Point at the Canal's mouth – include space for the Musée d'art contemporain de Montréal – while Gauthier (2003) has explored the manipulation of building types connotations as a strategy for their promotion or removal as an obstacle to redevelopment.

For over a decade, Canadian governments have identified brownfield redevelopment as a critical policy issue. It has been estimated that there are approximately 30 000 brownfields in Canada, concentrated in urban areas where industrial activities have occurred, and that as much as 25% of the land in Canadian cities may be contaminated by its industrial past or present (Benazon, 1995: 18). Research on redevelopment has examined brownfields from many angles: as key components of local economic development strategies (Howland, 2003), regional 'smart growth' plans (Greenberg, Lowrie, Mayer, Miller, & Solitare, 2001), and initiatives to improve environmental quality and increase the supply of urban parks (De Sousa, 2003). Public agencies in Canada (NRTEE, 1997, 2003) and the United States (EPA, 2003) have tended to emphasise instrumental questions such as public health outcomes and community development, and technical issues such as soil remediation (Benazon, 1995; CEMRS, 2007), financing, and liability (CMHC, 1997). This narrow focus has been criticised by DeSousa (2002: 261; 2003: 195-196; 2005), whose research has brought to light a series of collective benefits associated with brownfield redevelopment in contrast with greenfield development. As with Lange and McNeil's (2004) kindred effort to broaden the definition of successful brownfield redevelopment, the literature largely eschews questions of urban planning and design, and especially heritage in favour of a more technocratic and instrumental approach.

Indeed, there is relatively little consideration of planning or design policy options for when redevelopment actually does occur. Tiesdell and Adams claim that the creativity and ingenuity of designers may be of more importance in brownfield projects due to the innately challenging contexts of brownfield sites. They argue, based on the British experience where sustainable urban revitalization has become a national priority that "the involvement of skilled designers together with the need to overcome the intrinsic difficulties of brownfield sites means that 'typical' brownfield development is often better designed than 'typical' greenfield development" (2004: 23-25). Understanding and meeting these 'intrinsic difficulties' demands not just creativity but also an analytical framework capable of conceptualising brownfields in terms of the complex historical sedimentation that saw these sites become anchors of an industrial-era urban fabric that, in its character, organisation,

and familiarity to its inhabitants, is a central component of our material culture. Current research, concentrating on communicating the collective benefits of and on resolving barriers to brownfield regeneration, fails to address brownfields' historic spatial and material characteristics, with troubling consequences in particular with respect to the complex links between such sites and their surrounding inner-city neighbourhoods.

Often centrally and desirably located, brownfields are often conceived as part of larger strategies for success in the post-industrial and cultural economies (Hutton, 2004, 2004a, 2006; NRTEE, 2003). Many researchers have criticised redevelopment projects emerging in this context on the basis that they are simulacra of urbanity. Whatever urban heritage is conserved is often ruthlessly appropriated and the sites reduced to globalised and 'disneyfied' landscapes of consumption, opening a fissure between the affected neighbourhoods' economic livelihood and material culture and that of the implanted and commodified post-industrial spaces (Hannigan, 1998, 2005; Judd & Fainstein, 1999; Zukin, 1982, 1998). In Montréal, in response to such concerns, civil society, and in particular agents of the social economy, have used the potential for these sites to become lynchpins in the development of the social economy a recurring theme (Fontan, Klein, & Tremblay, 2004; Fontan, Lévesque, & Klein, 2003). In the case of the Lachine Canal, the *Regroupement pour la relance économique et sociale du Sud-Ouest* or RESO has explicitly linked the capability of vulnerable neighbourhoods to benefit from economic transition with physical planning and urban design (RESO, 2001). The critical engagement of such agents raises the prospect that current redevelopment approaches are problematic from the perspective of community development, in ways that link community development and local identities to urban heritage issues.

Having been particularly hard hit by deindustrialisation (Germain & Rose, 2000; Kresl & Proulx, 2000), Montréal is an excellent case through which to examine the intersection between brownfields, heritage, and contemporary regeneration planning (Leslie & Rantisi, 2006; Rantisi & Leslie, 2006). The Lachine Canal has long figured prominently in the city's revitalisation efforts, as a focal point for strategies from multiple levels of government; as working canal (militarily and industrially) and national historic site, it falls under federal jurisdiction. If the Lachine Canal is the key infrastructure of Canadian industrialisation (it is often referred to as the 'birthplace of Canadian industry') then by the 1950s, with the opening of the Saint-Lawrence Seaway, and at the very latest by the 1970s, with the filling of its eastern end the motion of capitalism (towards suburban greenfields or overseas) had let it run aground on the shoals of its fixity. Originally created by state intervention (following the insufficient efforts of private promoters), the canal has once again become a locus for state

investment in the decades following its closure to commercial traffic. Its managed descent into picturesque ruin (a sort of *folie de Casson*) coupled with investments in recreational infrastructure (bicycle paths, the reopening of locks to pleasure craft) speaks to two principal phenomena related to permanence and continuity. In economic and cultural terms, such reinvestment constitutes a state-led strategy to foster the creation of new wealth on the basis of a rent gap (Smith, 1996) that emerged as the Canal and its banks slid into obsolescence.

If the *tracé* of the Lachine Canal has morphological permanence, it is in some way connected to the permanence of its status as a conductor of public investment, as well. In more strictly morphological terms, recent changes also represent a speculative renewal of the industrial logic of maximising canal-side linear footage in order to maximise opportunities for waterside redevelopment; such strategies have been pursued elsewhere in Canada as well, notably on the Vancouver waterfront (Beasley, personal communication, 2004).

## A final word on the literature

Together with Gilliland, Gauthier has also offered an effective means for classifying and interpreting contributions to the study of urban form. They make two crucial distinctions: first, between cognitive (or descriptive) and normative (or prescriptive), and second, between internalist and externalist approaches. The first distinction asks whether works are positive, analytical descriptions, or if they are prescriptive recommendations. The second distinction attempts to classify works according to whether they interpret the built landscape as a structural accumulation that shapes the range of possibilities for subsequent interventions – internalist – or if they are the inert and inactive result of human agency – externalist. The aforementioned works fall all over the map, as it were.

Much of the historical and geographical research could be considered cognitive, consisting of attempts to explain urban phenomena. On the other hand, the work of the *Groupe de recherche sur l'architecture urbaine* constitutes a more normative approach, advising the Ville de Montréal on what it should do in order to repair a fragmented inner city- though this work certainly has explanatory value through its reading of Montréal's urban structure. The second distinction, between internalist and externalist is perhaps more crucial to the orientation of this thesis. Much of the historical and geographical research reviewed above falls into an externalist perspective: it tends to consider urban form "as a dependent variable, or passive product of various external determinants." In contrast, the morphological analyses described above – those of the GRAU- Bodson, Charney, Knight, Brouillard, as well as those of De la

Rue, Dubois, Dufaux, Dufresne, Gauthier, and Zacharias, as well as, to an extent, Marsan, take, to varying degrees, a perspective wherein urban form is considered as “a relatively independent system” and the “primary explanation for morphogenesis is in the constraints and potential for change present within the system itself” (Gauthier & Gilliland, 2006: 44). See Gilliland and Gauthier (2006) for the further application of these perspectives to the study of urban form in Canada.

What distinguishes morphological analyses from most of the body of work in architectural, social, and economic urban history and geography is their shared emphasis upon the built landscape as a coherent and to some degree autonomous system and a preoccupation with urban form as a component of material culture, with important and particular physical expressions (Gauthier & Gilliland, 2006). By offering a means to systematically examine the processes of morphological change in the city, they go beyond the actions of the various (often highly compelling) agents of change who populate the history books, and do more than map out the social and economic patterns of a changing city. The mentioned works (excepting Gauthier’s, which deals with similar transformations in Québec) emphasize Montréal’s rapid expansion during the nineteenth and early twentieth centuries, overlaying a complex geography of industrial and residential districts comprising distinctive building types upon an influential and long-lasting rural route and land subdivision framework, complemented by successive infrastructural systems (canals, quays, railways, and highways). But they offer a new explanation for the results, one that begins to tackle the specificity of Montréal’s built environment, examining it in a way that offers it a relative autonomy of form (Malfroy, 1986; Moudon, 1986; Rossi, 1982).

For Gauthier and Gilliland, it is this internalist perspective, a ‘common conceptualization of the urban built environment as a dynamic system granted with relative autonomy,’ that lies at the heart of urban morphology as a research programme (2006: 45). If this thesis were to be characterised in such terms, it would fall into a cognitive/internalist category; many of the issues taken with the works discussed above result from a sense of dissatisfaction with their externalist perspective (though one must show a sincere appreciation for the significant knowledge they contribute on that basis). For Habraken, “[p]ractices historically developed to create unique and limited acts of monumentality cannot guide us in engaging the commonplace” (1998: 3). In that sense, these last few works set a precedent for what this thesis seeks to achieve, that is, an examination of the structural character of the everyday industrial landscape.

Far from being a normative work, the goal of this thesis is to offer an understanding of industrial urbanisation, though in chapter five's discussion, these findings are interpreted in the light of the challenges faced by contemporary practitioners in the areas of heritage, urban design, and planning. The following chapter deals more specifically with operational theory and vocabulary of urban morphology and its foundations in a more autonomous perspective on the built landscape.

## 2. Morphology as a means of inquiry | Chapter two

### Introduction

With the issues raised in the previous chapter in mind, why turn to urban morphology as a means for coming to a more nuanced understanding of the city and for a more solid foundation for city-building practice? The Swiss architect Sylvain Malfroy offers the following idea:

*“l’intérêt d’une analyse typologique des organismes territoriaux pour la pratique contemporaine tient alors à ceci: il y a actuellement baisse de la cohérence d’ensemble de l’environnement construit, les interventions individuelles deviennent de plus en plus contradictoires entre elles et avec les structures héritées (problématique des centres historiques); d’autre part, le patrimoine de notions typiques qui servait traditionnellement à renouveler les structures de l’habitat sans compromettre leur continuité, s’est perdu, ou du moins, sa valeur de convention collective est tombée en crise” (Malfroy, 1986a: 194).*

Over the course of the twentieth century, urban morphology has developed as a discipline that is preoccupied with the study of urban form, seeking to understand “the particular character of the urban landscape: the detailed interplay of land subdivision, buildings and their combined patterns of use” (M. P. Conzen, 1990: 144). Addressing concern that “design, planning, and building have for too long remained prescriptive activities lacking theoretical and other heuristic bases,” (Moudon, 1986: xix) urban morphology has emerged “within the context of debates on architecture and urbanism, which formed part of the effort to overcome ‘abstract’ controls of urban growth.” Its research program focuses on the analysis of *urban tissue*, or “the superimposition of several structures (roads, plots, and buildings) acting at different scales, but which appears as a system with linkages in each part of the city” (Panerai, Castex, Depaule, & Samuels, 2004: 158). Dufresne, in an appendix to a report on the urban form of central Montréal, echoes these concerns, emphasising a growing dissatisfaction with the abstract bases of design, planning, and building:

*“La plupart des différentes théories modernes en architecture et urbanisme forment un exercice normatif afin de définir un monde idéal et rationalisé, telle une formidable abstraction projetée comme un acte de foi. Une critique de ces diverses théories s’articule depuis les années soixante, notamment face à l’échec du développement d’une vie urbaine dynamique dans les projets basés sur ces théories*

*spatiales et fonctionnalistes. Plutôt que de fonder une analyse urbaine fondée sur une conception théorique de son fonctionnement, l'objectif des méthodes d'analyse morphologique vise en premier lieu à développer une approche objective visant à comprendre la forme urbaine telle qu'elle existe" (Dufresne, 2003: 72).*

A morphological approach stresses the structural qualities of the built environment, seeing urban material culture not as a reflection of the modes of production or as the sole product of decisions and purposeful building practices of social actors but as having its own structure and logic, which are imposed on social agents by offering them a substance to work with that is only partially malleable. In this sense, the urban built landscape is socially produced while simultaneously producing society by offering (or withholding) opportunities for agents to realize themselves socially, economically, and culturally (Bliet & Gauthier, 2006; Gauthier, 2003, 2005).

Urban morphology focuses "on the tangible results of social and economic forces: they study the outcomes of ideas and intentions as they take shape on the ground and mould our cities." (Moudon, 1997) The resulting anonymous and structural product, the urban tissue, is the central object of study for urban morphology. (Malfroy, 1998) In their attempts to understand and elaborate that framework, urban morphologists have pursued a variety of strategies. Moudon (1994) offers an excellent breakdown of the contributions of these different schools, highlighting their shared emphasis on process, or the development of the urban fabric through time, and an internalist approach affording a degree of relative autonomy to the built environment.

Some morphologists, such as Gianfranco Caniggia and Gian-Luigi Maffei (2001), grouped into an Italian, or 'Muratorian,' school, inspired by the work of Italian architect Saverio Muratori, have analyzed the city as a means of deciphering an "operational history" of the built environment as an organism in constant evolution. Other researchers, grouped into a British, or 'Conzenian,' school inspired by the work of British geographer M. R. G. Conzen (1960; 1968), such as Jeremy Whitehand (1981; 1987; 1992; 1987), or M. P. Conzen (1990), have concentrated more specifically on "town plan analysis," tracking changes in circulation systems, cadastral arrangements, and building coverage. These studies have situated relationships between agents of transformation and the built landscape in a dynamic historical process.

Typo-morphology, as “*une discipline scientifique vouée à l’étude des processus historiques de genèse et de transformation des milieux bâtis*,” (Larochelle & Gauthier, 2002: 1) is well-positioned within the perspective outlined above to offer a means for understanding an anonymous and structural city in which the logic of the built landscape conditions the possibilities for its transformation. For Malfroy, it is that the building of the city belongs to the *longue durée* that lends it such a structural character: “...for precisely this reason – the temporal diffusion of interventions – that the resulting collective product is of an order that is properly *structural* and therefore not intentional.” Thus it is this theoretical precept that lies at the heart of the conceptual tools and vocabulary of ‘urban tissue.’ “These anonymous structures, resulting from the interconnection of a multiplicity of successive acts of construction, are, then, what is metaphorically called tissue” (1998: 29). The French urbanist Albert Lévy expands on this:

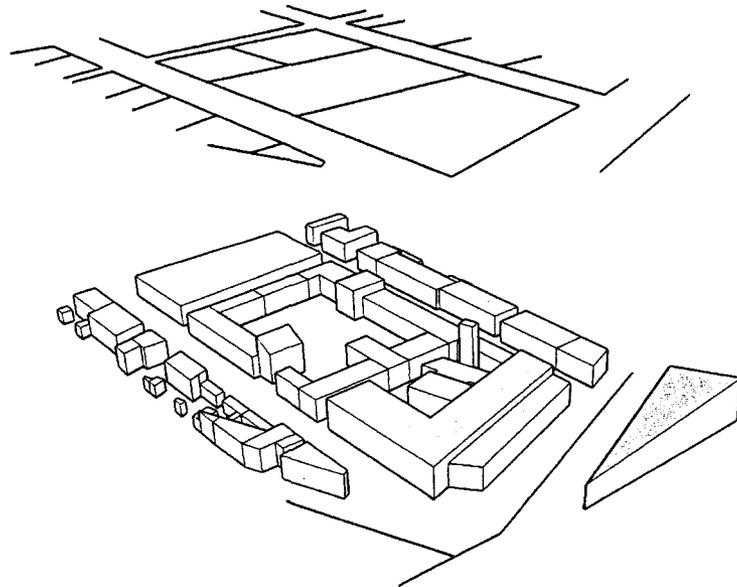
“...postuler l’existence d’une logique sous-tendant l’organisation du tissu urbain (une morpho-logique du tissu), et cela à différentes époques, la reconnaissance de catégories invariantes, de phénomènes de permanence, de règles de transformation diachronique responsable de mutations tissulaires : l’organisation et le développement d’un tissu urbain ne sont pas le fruit de l’hasard, ils obéissent à des lois propres” (1992: 9).

This thesis is intended to comment on how such a structural perspective can shed new light on our knowledge of and practices of the city - to examine the structural character of the industrial landscape as it evolved through history. A concise summary of the theoretical bases for this undertaking would offer up the following precepts:

- The diffuse nature (in temporal and political-economic terms) of urbanisation makes the city a collective project of a structural nature;
- Dialectical relations exist between the built landscape and the practices of its inhabitants, thereby mediating them;
- One can read the structure of the built landscape and make explicit its order and underlying logic; the landscape offers variable opportunities and constraints to its inhabitants.

Synthesising the theoretical notions of typo-morphology with the conceptual device of urban tissue in analytical practice involves a process of reconstruction and discovery. Malfroy (1998: 30) notes that “the internal structure of built form (buildings, towns, or regions)

is never given from the start but must be discovered or invented, through intensive work developing new hypotheses and techniques for analysis” and proposes a “*méthode de la lecture urbaine [qui] consiste essentiellement dans une technique de repérage, par comparaisons, de régularités et d’irrégularités formelles, et à leur mise en système*” (1986b: 129). “As a theoretical concept,” the notion of urban tissue as an object of study “grew out of the slow process by which significance was attributed to a reality that, while it lay in full view for all to see, had remained interpreted as chaos” (Malfroy, 1998: 24). The use of the term ‘urban tissue’ has its roots in the Italian *tessuto urbano* and the French *tissu urbain*, and is increasingly displacing the more generic ‘urban fabric’ which has an array of socio-cultural and non-material connotations.



2-1: Urban tissue broken down; streets, parcels (top), and buildings. The line on the street (below) represents tram and freight tracks embedded in the public right of way.

For practitioners, careful study of the urban fabric can shed light on the compatibility of potential redevelopment ideas with the permanent traces inscribed in a site through history. Such an approach to urban design can allow for a continuation of that history by means of a projet urbain that, through its reconstitution of the urban fabric – the parcels, streets, and building possibilities – offers significant potential for weathering unexpected transitions in a site’s functional and economic life. Morphological analyses figure prominently in two studies examining routes of entry into the cities of Québec and Montréal, which advocate for a deeper comprehension of the structuring effects of autoroute infrastructure. In the former case, Larochelle and Gauthier et al call for a comprehensive restructuring of the urban fabric as a means for correcting past deformations along the studied routes: “Chacun des projets majeurs qui affectent la forme d’un tissu urbain existant devrait être appuyé sur une analyse rigoureuse de la morphologie et de la syntaxe du cadre bâti dans le contexte de l’intervention” (2002: 44). In the latter case, Gariépy et al suggest apprehending “la dialectique entre l’autonomie des parcours d’entrée comme objets et les liens qui sont à tisser avec les paysages,

*de même qu'avec les éléments repères ou emblématiques*" (2006: 235). Both studies recommend that the Ministère des transports du Québec undertake a new approach to infrastructure planning that privileges the urban fabric often scarred and disfigured by these routes of entry.

## Putting morphological theory into operation: methodology

In order to theorise the built environment as a structure with a legible logic and order, urban morphologists have turned to the notion of exploring the *storia operante* – the 'operational history' – of the city, resorting to a particular vocabulary to identify a variety of observable spatial and temporal patterns. In order to introduce these concepts, ahead of the following chapter's analytical discussion, the following paragraphs provide an overview of the most prominent terms in this operational vocabulary. In keeping with a conception of the city as an ever-mutating structure made up of multiple, inter-related component sub-systems, the terms and concepts discussed below encapsulate both static and dynamic phenomena. Following Malfroy, the possibility of reading coherent patterns in space is coupled with the possibility of identifying regularities in temporal transformation: "...in the flow of history any built object (a house or several houses together) tends to be subject to a partial conditioning from previous forms (the formative matrix) and to have a partial influence on the form of successive interventions" (1998: 29).

## A word about the notion of type

Typological analysis in morphology seeks to avoid falling into purely abstract classification while also refusing to constrain itself to purely aesthetic contemplation (Panerai, Demorgon, & Depaule, 1999: 117). In the context of agents' practices of building, Caniggia and Maffei (2001) define the type as a culturally-specific coherent system of knowledge of analogous built examples that are drawn upon in the course of building. In a more theoretical and analytical context, Moudon situates consideration of type within morphology, resulting in what should be considered a typomorphological approach, offering "a working definition of space and building types" (1994: 290). Though particular activities can be associated with particular building types, the key distinctions are morphological, as "the relation between form and use is not [necessarily] fixed" (1998: 130) and are most meaningfully apprehended within a particular built landscape (Panerai et al., 1999). A variety of urban elements can be classified by type: buildings, open spaces, parcels, routes, and infrastructure. Panerai defines type in a practical and operational manner: "...un type est un objet abstrait, construit par l'analyse, qui rassemble les propriétés essentielles d'une catégorie d'objets réels et permet d'en rendre compte avec économie" (1999: 120-122). The resolutely grounded methodology Panerai sets

out for developing a typology – inventory, classification according to observed differences, elaboration of (Weberian) ideal-types, and finally their placement in relation with each other – and practiced by Gauthier (1997; 2003) constitutes the backbone for this thesis’ treatment of the different component sub-systems detailed below.

## Urban tissue as a conceptual device: a list of terms.

Derived from Caniggia and Maffei (2001), MRG Conzen (1960; 1968), Malfroy (1986a; 1986b; 1998), Panerai (2004; 1999), and Mangin and Panerai (1999).

Component sub-systems	Principal variables	Inter-relationships	(Trans)formative processes
Buildings	Dimensions	Relative position	Aggregation
Parcels (plots)	Configuration	Polarity	Densification
Routes	Modularity	Nodality	Restructuration
Infrastructure		Centrality	Variance (time)

### Component sub-systems

The urban fabric of the city is taken to be comprised of four interdependent component sub-systems.

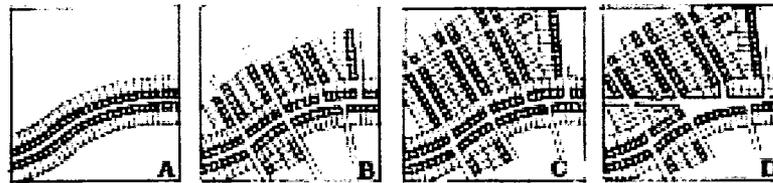
#### Buildings

The most evident and perhaps one of the most culturally visible is that of the different buildings or *le cadre bâti*, which though frequently examined on functional or aesthetic criteria, are for the purposes of urban morphology, instead based upon volumetric characteristics (of the building and its related open spaces), they include the parcel as an element of analysis, and they are considered as malleable through time. In this thesis buildings are therefore distinguished from each other on the basis of their dimensions, configuration, and modularity, as well as their relations with other component sub-systems.

#### Routes

Routes are “structure(s) apt to providing access to a place” (Caniggia & Maffei, 2001: 124). They are often also discussed in the context of *tracés*, which serve to structure and orient urbanisation. Beyond distinctions between local and metropolitan, commercial and residential, they can be morphologically categorized in the urban tissue as:

- matrix routes (*percorso matrice / parcours m*) – routes linking poles of settlement that precede and subsequently structure urbanisation;
- planned, or settling routes specifically developed for the purpose of accessing parcels and buildings – these often branch out perpendicularly from matrix routes;
- connecting routes, which link settling routes and facilitate access through the grid, and;
- breakthrough routes, which are inserted after the fact into already defined urban fabric – Haussmann's boulevards, or portions of Montréal's boulevard Saint-Joseph or portions of rue Wellington, for example.



2-2: Route types. A Matrix route; B Settling routes branching off from original matrix route; C Connecting routes link the settling routes; D Breakthrough route restructures existing tissues.

### Allotment system

For Panerai et al (1999: 75) as well as Caniggia and Maffei (2001), and MRG Conzen (1960), the city's *découpage foncier*, or the parcel system that underlies the subdivision and urbanization of agricultural land, is one of the three key constituents of urban tissue, along with the route network and buildings. The allotment system receives special mention due to its permanence and greater persistence – a phenomenon also remarked upon by Caniggia and Maffei (2001) in the European context and by Moudon (1986), Sandalack and Nicolai (2006), and MP Conzen (1990) in a North American context. As a means of understanding the historical emergence of the parcel system, which given the permanence of the parcel pattern is of crucial importance, morphological analysis must deal with the anterior agricultural allotment system. On the island of Montréal these are the *côtes* described by Beauregard (1984: 198); their importance for subsequent urbanisation has been argued by Marsan (1994) for Côte-des-Neiges and touched on in the context of the Lachine Canal basin by Desjardins (1999). At an architectural scale, De la Rue (1987: 198) and Légault (1989: 199) remark on the importance of the *côte* system and the form of its particular agricultural parcels for the development of triplex housing and urban blocks in the Plateau Mont-Royal. The French term *découpage* is particularly eloquent in the

context of morphological analysis, as it draws attention to the also crucial task of identifying and characterizing patterns in the subdivision of the agricultural allotment system as urbanization progresses.

### **Infrastructure**

One of the objectives of this thesis is to apply the concepts and techniques of urban morphology to a relatively little explored territory, the modern industrial landscape, with the object of uncovering elements and relationships of structural permanence. With this in mind, it is essential to include another component sub-system, that of infrastructure. In the context of this study, infrastructure largely refers to larger-scale elements, such as the Lachine Canal itself and the railway network that steadily and increasingly grew to permeate the industrial district. Constructed according to and to a large degree operating on logics extending far beyond the city itself, these grand technical works of great importance to the deployment of industry in the built environment constitute a component sub-system in their own right. Using morphological concepts and techniques to understand the relations between such infrastructure and the other components and sub-systems of the city sheds a new light on their history, and the urbanisation that occurred around them; rather than representing the absolute triumph of industrial imperatives and technology, they betray the structural nature of the urban landscape, with characteristic implementations and effects. For the purposes of a morphological analysis of the Lachine Canal basin, infrastructure consists primarily of:

- Railways and their attendant branches (sidings and freight yards)
- Highways and their access/egress ramps
- The canal itself, and its attendant branches (basins, head and tail races)

### **Principal variables**

These are the basic means for describing static elements of the city 'principal variables', for they are the most elementary descriptors of any of the component sub-systems. Straightforward, they include the dimensions and configuration of the object: 'What size and shape is the house?' or 'How deep is the parcel?' are questions that come to mind when considering dimension. Syntactic relations refer to the arrangement of multiple elements: questions such as 'Are houses built on a party-wall system?' or 'Are parcels oriented towards east-west streets or north-south streets?' come to mind.

Modularity is a central part of the deployment of component sub-systems in the landscape, as it refers to the systematic patterning of the urban elements that make up these component sub-systems. *“Cette notion de modularité (ou d’agglomération modulaire) des structures de l’habitat est importante car elle permet de dériver les divers ordres de grandeur comme multiples ou sous-multiples de l’unité de base”* (Malfroy, 1986b: 198). Regularity in dimension and configuration, for instance the identification of a standard parcel or block size and shape in a given neighbourhood, can be highly influential in establishing the parameters within which transformative processes in other component sub-systems can occur. The syntactic patterns set by initial development patterns and the subdivision of agricultural land exert a crucial and long-standing influence on subsequent intervention in the built landscape (Gauthier, 1997). For instance, given a particular standard parcel, aggregation is likely to take the form of doubling building width, while densification is likely to fill in only certain parts of the interior of the block. In addition to providing important clues that help to distinguish one neighbourhood from another; if a parcel module has been identified, predicting and managing these sorts of changes can become much more effective. As Malfroy observes, *“l’augmentation quantitative de la propriété foncière ne procède pas de manière continue à l’image d’un ballon que l’on gonfle mais de manière discontinue, soit par bonds successifs, par accumulation d’unités modulaires prises en bloc”* (1986b: 202).

## **Inter-relationships**

As has been stressed throughout this thesis, the component sub-systems that form the urban tissue (building forms, allotment systems, route networks, and infrastructure) do not exist in isolation from one another; they are inter-dependent and play crucial roles in the development of the component sub-systems with which they coexist. Parcels could not be created without streets, while buildings must be built on a parcel of some sort. Processes of change, too, bear witness to this interdependency: the densification of the building stock is generally informed by the initial dimensions and configurations of parcels, even when new construction involves merging or subdividing. Such merging or subdivision, in turn, is frequently guided or influenced by the configuration of the route network, which makes some parcels more suitable for subdivision than others and some locations better than others for particular building forms.

Attributes pertaining to relative position are some of the more geographically compelling aspects of the urban fabric. When examining the relative position of an object, one must ask ‘Where are the factory buildings in relation to the canal?’ or ‘Do particular architectural traits such as commercial space tend to occur in certain locations on the urban block , for instance

corner lots?’ Relative position can serve as a means of indicating spatial variance, that is to say the variation of a type of urban element, such as a building, due to its position within the urban tissue or one element’s (again, such as a building) situation within another (perhaps a narrow lot) which can entail variation from the standard type in order to take advantage or adapt to such particular circumstances.

Polarity and nodality refer to the organisational focal points present in urban tissue which act in a structuring manner at different scales. For example, a bridge over the canal is a type of node in that it is a focal point – an ‘event’ or exceptional occurrence – in the route network. Routes leading to that point are more likely to be the focus of the surrounding parcel system, as they are more likely to be intensively developed and less likely to have secondary façades. Centrality plays into this dynamic as well, as a route or a node can be central (polar) within – or peripheral to – a given urban district, with important repercussions for the structuring of the urban tissue in that district. The Lachine Canal, for example, plays this logic in two contradictory ways: regionally and industrially it is a central nodal axis, with a succession of nodes at its locks; whereas locally and residentially it is a peripheral anti-nodal axis, forming a very distinctive edge between two neighbourhoods. These properties are in constant flux as the geography and experience of the city changes: the peripheral city gate of one century can become the bustling, centrally-located square of the next.

### **(Trans)formative processes**

For Malfroy (1986b: 128-129), morphological analysis makes use of three principal interconnected processes as a means to conceptually englobe the logic of urban growth:

#### **Aggregation**

Aggregation refers to the grouping together of elementary units – buildings or parcels, blocks or entire neighbourhoods, depending upon the scale of analysis – into ensembles of a greater coherence. For instance, the grouping of dwellings into a triplex, parcels into a block, or blocks into a district constitute aggregation. Such processes generally result in modular formations, wherein the larger grouping can be broken down into smaller, repetitive modules, visible through their consistent repetition. In the following analysis, the term aggregation is used principally as a verb to refer to the process, while the product of aggregation is typically referred to as a block, a row of housing, or an industrial complex, depending on the circumstances.

## **Densification**

Densification refers to the exploitation of growth opportunities within the existing elementary units. At the scale of the individual parcel, this could refer to the addition of extra storeys to a building, the construction of rear-lot housing or other ancillary structures, while at the scale of a block or district, it could refer to the building up of a former alley or of public space. Such processes can often be identified by virtue of their subordination to the larger unit within which they are found. If aggregation involves autonomous elements organised more globally, densification results in dependent and non-autonomous elements constrained within an elementary unit. It's interesting to note that the French term for an ancillary structure is a *dépendance*, given that it in some sense, as a non-autonomous element, it is dependent upon the principal structure of the parcel.

## **Restructuration**

The densification described above naturally hits the limits imposed by the existing elementary units within which it occurs. Restructuration refers to transformative processes which result in a new coherence being established at another scale, for example the merging of parcels, the resizing of blocks, or the enlargement of routes. Such processes are interpreted through the identification of contrast and deformation; contrasts in scale (dimension) and geometry (configuration) between anterior and posterior states of the urban fabric being analysed, as well as the deformations or alterations imposed on the anterior state by the posterior, and vice versa, thereby revealing contradictory organisational logics.

## **Temporal variance**

The notion of temporal variance refers to the identification of changes in classified types through time. Identified types can be compared through time and related to one another on the basis of similarity. What Caniggia and Maffei (2001: 54) term the typological process serves as an analytical means for articulating the temporal linkages – relations of derivation – between urban elements, based on the notion of morphogenesis, where current configurations re-enact part of previous configurations and contain the seeds of future ones; the urban tissue thus acts as a morphogenetic matrix through time. Due to the staggering cultural, economic, and technological diversity present in the Lachine Canal basin, this study doesn't attempt to draw strict lines of temporal variance between elements in the urban fabric, but it does, however, offer comment on observable progressions and tendencies, such as the formation of particular types of industrial complexes and sectors, and their geographic and temporal situation.

## Scales of change and agents' intervention

Based on a rigorous study of San Francisco's Alamo Square neighbourhood, Moudon echoes Malfroy's observations regarding the hierarchical nature of agents' ability to intervene in their environment. Building on themes in the work of Rowe and Koetter (1978) and Newman (1972), Moudon uses the notion of spatial structure to touch on this phenomenon: "[t]he physical elements of the different scales [of the built environment] do indeed correspond to different territories, which are or should be used, owned, or managed by different kinds of people - for example, individuals and small groups in rooms and small buildings, large groups and small groups in rooms and small buildings, large groups and communities in city blocks, and both individuals and communities in streets" (Moudon, 1986: 132). In addition to highlighting the differential control agents (with varying degrees of economic, cultural, and technological power) can exercise over a variably-scaled built environment, Moudon notes that the pace of change also varies with scale. "Generally, the smaller the scale of the physical environment, the more continuous and imperceptible the change. And the larger the scale, the slower - and more radical - the pace of change" (Moudon, 1986: 133).

Continuing in this vein, Malfroy distinguishes between larger, planned interventions and *mutations capillaires* or incremental changes. He posits an uneven continuum between the two where "*[d]ans le premier cas, les opérations impliquent la mise en marche de mécanismes très lourds (concertation politique ou application d'un acte d'autorité, mobilisation de moyens financiers considérables, de techniques hautement spécialisées, etc.) et s'étendent sur la longue durée; dans le second cas, le chantier est presque une affaire privée, conduite entre individus et à court terme*" (1986a: 204). Through the course of urbanisation, these two types of change continually alternate in complementary ways, rendering the idea of a wholly 'organic' or a wholly 'planned' city a falsehood: "...le processus de formation des structures de l'habitat est un processus alterné, où actions individuelles et interventions collectives entretiennent des rapports de complémentarité" (Malfroy, 1986a: 206). The resulting patchwork of changes – some incremental, some structural – is described by Moudon (1986: 134) and by Rowe and Koetter (1978) as

<b>Incremental interventions</b>	<b>Planned interventions</b>
Durée of daily life	Longue durée
Individual or small family/firm decisions	Complex political coordination
Within individual means	Mobilisation of significant funds
Basic, common knowledge	Specialised, technical knowledge
Individual	Collective

a collage, by Grame Shane (2005) as recombinant, and by Banham (1971) and Conzen (1960) as a palimpsest, attesting to the validity of a non-intentional or *structuralist* interpretation of urbanisation.

## Privileging a relatively autonomous built landscape: morphological research agendas and initiatives

As part of a series of country-specific articles for the journal *Urban Morphology*, Gilliland and Gauthier examined Canadian contributions to the study of urban form, highlighting a significant research agenda, which they characterise based on the dual framework described above (cognitive-normative; internalist-externalist). According to Gilliland and Gauthier “[t]he most significant contributions to the study of urban form in Canada have come from two largely isolated camps: first, architects/planners, mostly from Québec, who examine form as a relatively independent system and work in the tradition of the so-called ‘Italian school’ of process typology; and secondly, predominantly Anglophone urban and historical geographers who deal with built forms and urban morphogenesis as a product of external forces” (2006: 51). As a conclusion, Gilliland and Gauthier remark that these two traditions appear to be coming together – citing new interdisciplinary work by researchers such as Dufaux (2000), Luka (2005), Sandalack and Nicolai (1998, 2006), and Vachon (1994; Vachon, Luka, & Lacroix, 2004). It is my hope that this thesis, drawing on contributions from both – the wealth of historical urban geography as practiced by the likes of Lewis and the theoretical grounding offered by the more internalist work of Gauthier (though clearly favouring the latter, more internalist approach), will be situated in this context.

One other intertwined contextual issues is worth pointing out at this time: that of how this thesis relates to the notion, brought to prominence by the scholar Françoise Choay, of the modern city, and a corresponding preoccupation with urban morphology’s relative neglect, as a discipline, of the modern, (post)industrial metropolis, a critique articulated by Albert Lévy (1999). Françoise Choay (1969) links urban modernity with the industrial revolution and arrives at a distinction between modern and pre-modern that is rooted in a “new relationship with respect to the urban complex” stemming from a “loss of partial conscious control and of implicit subconscious control.” Where in the pre-modern city, “the citizen in the process of inhabiting his city is integrated into the structure of a given society at a specific moment in time, and every plan that might exist corresponds implicitly to that structure which it both institutes and controls,” citizens of the modern city “experiencing the urban phenomenon

came to consider it as something alien. They no longer felt inside the process and determined by it; they remained outside, observing the transformation with the eye of the spectator” (Choay, 1969: 7-9).

Remarkably, Choay’s definition also follows the emphasis placed by Williams (1977) on process and transformation. The modern city is not principally a set of forms, but a way of experiencing and relating to the built landscape. Two aspects characterise the modern city for Choay: “First, there is the agent of the break, namely self-conscious reflective process out of which came, through a series of problematic propositions, the actual concept of the city (and especially in the case of pre-urbanism and urbanism, the associated concept of the countryside). Secondly, there is the objectivising of urban space, for the first time conceived as a value in itself; a status made possible only by the semantic reduction to which the urban agglomeration was subjected as a consequence of the Industrial Revolution. Urban space ceases, in fact, to be implicitly related to significant social systems” (1969: 109). Choay’s narrative of a sort of pre-urbanism yielding to a more reflective set of artefacts and practices, fusing material and ideal, is similar to the distinction made by Muratori between spontaneous and critical consciousness and leads me to believe that the modern city necessitates an emphasis upon the ideal as a means of understanding the thought and rationales behind city-building that does not occur in a spontaneous manner. In this thesis, I make use of the idea of the modern city as a heuristic device for conceptualising forms and practices of urbanisation that are increasingly explicit; the product of critical, conscious reflection and increasingly mediated by transaction and commodification.

Drawing attention to the emergence of a contemporary type of urban fabric, Lévy highlights a shift from “a closed fabric...in which the links between the different elements (plot, street, constructed space, and open space) formed a system (the system of urban architecture), to a peri-urban fabric which is open and fragmented, with autonomous and atomized elements which do not relate to each other” (1999: 81). For Lévy, the corresponding increase in the importance of functional links (as opposed to architectural links) means that transportation infrastructure plays an ever-increasing role. The predominance of traditional sites and fabrics as subjects of morphological research is thus a worrying trend for Lévy, who cites various French research that has attempted to deal with exurbia – to which I would add the work of the researchers of Université Laval’s Groupe interdisciplinaire de recherche sur les banlieues (Vachon et al., 2004) – that stand out amidst a generalised lack of attention to the modern urban fabric. Lévy suggests focusing on transportation infrastructure – the freeway network, in particular – as a means for

addressing what at first seem like completely atomized urban landscapes, ascribing to it a “dominant role” as the “principal agent” of contemporary urban change (1999: 82). While Lévy frequently refers to the freeway, the focus in this thesis will fall more upon the railway, which I will argue represents an earlier phase of a similar transformation in the logic of the urban fabric.

Echoing Lévy’s suggestion that morphologists seeking to better apprehend the industrial city would do well to direct their gaze to its transportation infrastructure, Choay notes that “In Europe and the United States, the scales did not tip in favour of the industrial system until the (eighteen) forties, with the development of a new form of communication, the railway. The railway is the major technical invention that brought into play the new forms of production and promoted the growth of large urban concentrations. From 1840 on, railway and capitalism were to develop hand in hand, and having weathered the crises of the years around 1848, the ‘railways became the new economy’s most powerful weapon,’ causing the new urban type to prevail” (Choay, 1969: 10-11). If this assertion, and thus Lévy’s suggestion to morphologists, could be confirmed by a ‘primary source,’ it would be the words of Thomas Keefer, a 19th century pamphleteer described as “the engineer of Montréal metropolitanism,” (Nelles, 2000) whose poetic insistence on the revolutionary powers of the railway will be returned to in the fifth chapter’s discussion, as a means for comprehending the emergence of the modern industrial metropolis.

## Conclusion

An innovative discipline with diverse roots, urban morphology furnishes a highly suitable set of tools for the interpretation of the urbanisation, industrialisation, and regeneration of the Lachine Canal basin’s unique landscape. Stemming from a structuralist perspective on the city, the various initiatives and contributions – academic and professional – that comprise urban morphology furnish researchers with a versatile descriptive and analytical vocabulary with which to examine urban phenomena. This thesis can be situated within both the global oeuvre produced by morphological researchers and the more local work that has been undertaken that explores morphological themes in Montréal specifically. Although the majority of morphological research to date has been conducted on residential and non-specialised environments, this thesis seeks to extend the approach to an industrial landscape of significant heritage value that is currently undergoing significant transition. Building on the theoretical framework and methodology outlined in the above pages, the following chapter presents the analysis undertaken in the course of this thesis. Starting

with a reading of the urbanisation and industrialisation of Griffintown that makes extensive use of the analytical categories and formulations discussed above, the analysis goes on to develop a morphological typology of industrial complexes, sectors, and railyards, anchored in a preoccupation with the degree of integration between industrial infrastructure and urban fabric.

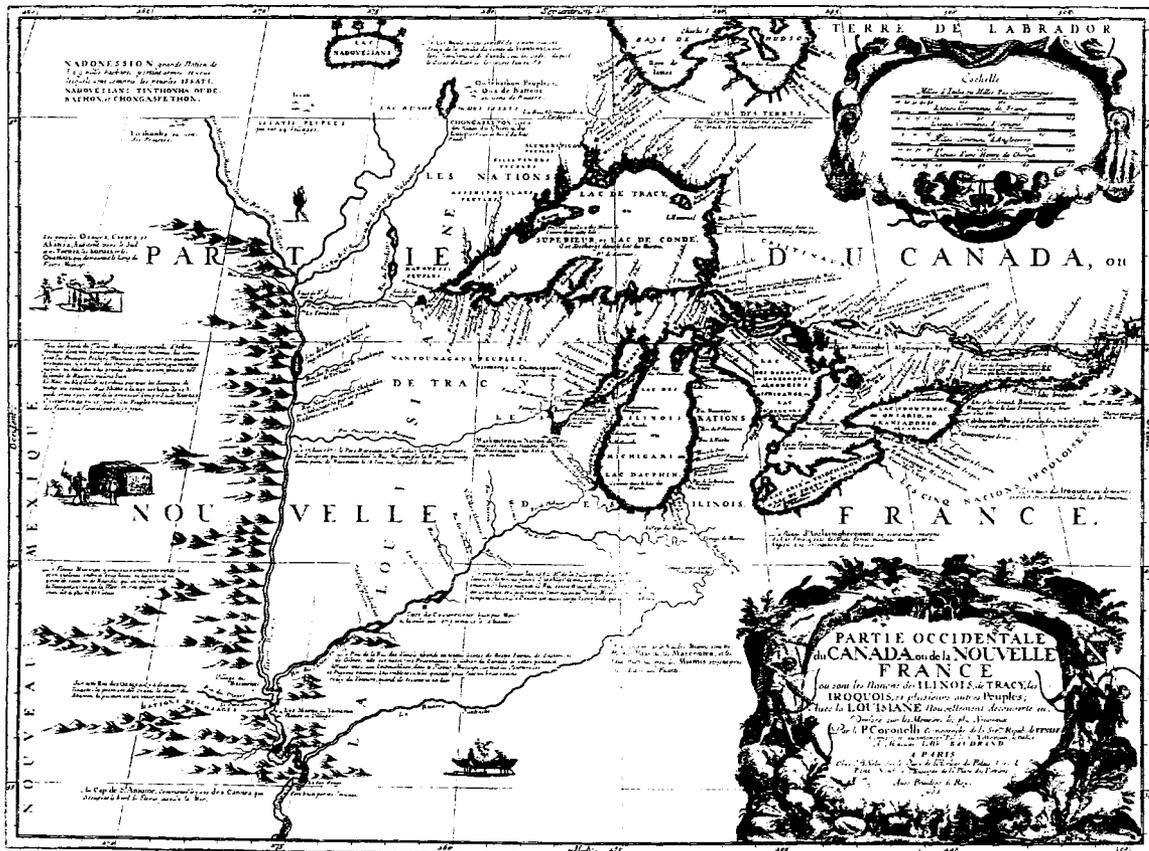
### 3. Montréal and the Lachine Canal | Chapter three Introduction

The Lachine Canal has long been more than a simple infrastructure. It was and is a sort of permanent trace in the landscape that tells of Montréal's roles and ambitions in the history of the colonisation of North America. The industrial landscape that arose along its banks was part of a larger urban transformation in which urban form began to respond not strictly to local circumstances and traditions, but to global flows of resources, capital, and immigration. The tale of the canal and the relentless push for communication between Montréal and the interior of the continent is also a narrative of a shift to metropolitanism and a fundamental change in the nature of the city, from mercantile outpost to manufacturing metropolis to post-industrial destination.

As such, the Lachine Canal has been the subject of a formidable and diverse scholarship. From its key role in the Irish experience of Montréal to its importance to the early business ventures of Square Mile luminaries such as John Redpath, the Lachine Canal has enjoyed pride of place in the historiography of Montréal. A wide range of disciplines – from archaeology and art history to geography and urban planning – have delved into the history and contemporary implications of the Lachine Canal and its murky waters. This chapter of the thesis is styled as part historical narrative, sketching an outline of the political, economic, social, and technical context of the Lachine Canal in Montréal (and in Canada more broadly) through history; and part literature review, commenting on the theoretical, practical, and historiographical contributions and insights made by students of the Lachine Canal and Montréal.

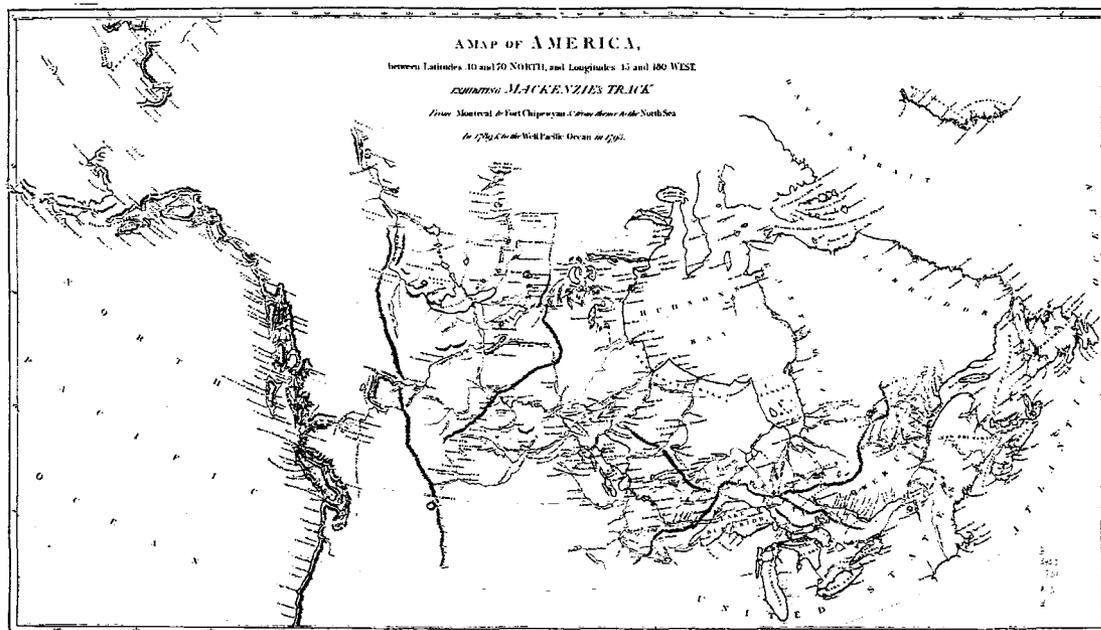
Montréal's history has always been marked by an enduring yet insecure relationship with the continent whose interior it once kept gate for. Its formidable position at the head of navigation on one of the continent's greatest rivers has endowed the city with an almost constant relevance in the project of North American colonisation and settlement, regardless of the political auspices – French, British, or Canadian – under which this immense enterprise was conducted. While current maps of Canada show a vast land that stretches from the Atlantic to the Pacific to the Arctic, bound together more by air routes, transcontinental rail lines, and major highways connecting the dots never too far from the United States border, it is important to recall that for much of its early (and pre-confederation) history, Canada was conceived of as an 'Empire of the Saint Lawrence,' to put it in the configuration of the historian Donald Creighton (Creighton, 1956). Even today,

contrary to 'up' and 'down' as references to cardinal directions on a paper map, *on descend à Québec, et on monte à Montréal ou à Toronto*. The division, prior to 1840, of the Canadian territory into upper and lower Canadas is equally revealing in this; to comprehend Montréal's position in this logic, one has to read maps not in their typical north-south orientation, but as though one was coming up the Saint-Laurent into Canada.



3-1: La Nouvelle France, 1699. Nicolas Bellin's map shows a Montréal that is gateway to the Great Lakes and Louisiana.

The axis of the Saint-Laurent has to be recognised as fundamental and multi-faceted in its enduring impact upon the development of the North American interior, the Canadian national project, and of course, upon the development of Montréal. A quick examination of cartography from the French and British regimes confirms this emphasis; first on the Mississippi and Louisiana, by the (often Montréal or Ville-Marie-based) French explorers, traders, and priests who first staked their claims to these lands – Joliet, Marquette, du Luth, La Salle; later by the overwhelmingly Scottish Montréal-based establishment – Frobisher, McTavish, and MacKenzie – and their fur trading companies, whose gaze tended to the Northwest.



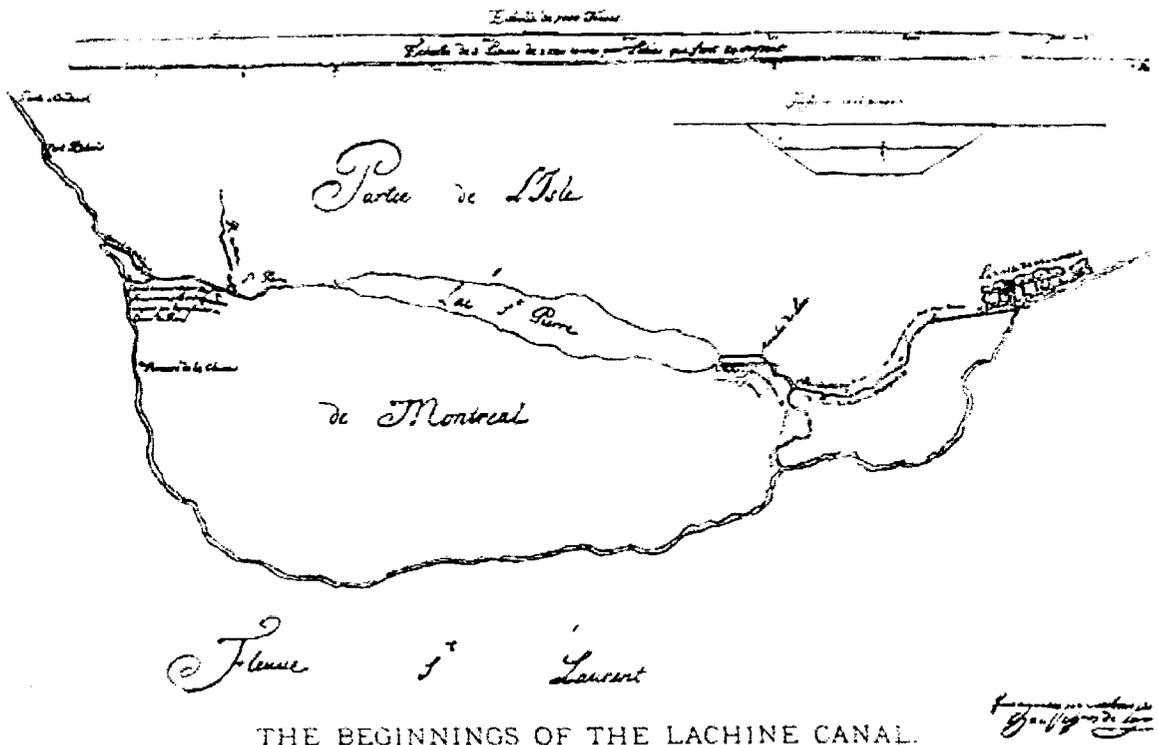
3-2: MacKenzie's voyage to the Northwest, 1801. Montréal is still the gateway, but the east-west axis of contemporary Canada has begun to replace the north-south possibilities of Louisiana and the Mississippi.

## The Early Canal

By 1689, following the 1670 efforts of François de Salignac Fénélon, François Dollier de Casson was undertaking ultimately unsuccessful work to construct a canal as a detour around the Lachine rapids. For Casson, the principal advantages of the project were transport and energy: a canal would allow canoes from other French territories around the Great Lakes to bypass the Lachine rapids and it would lay the foundation for radical expansion of the emergent complex of mills on lands held by the Sulpician order, southwest of the fortified city. The project consisted of two canals: a Saint-Gabriel canal from the Saint-Laurent to the Lac à la Loutre, and one from this now disappeared lake to Lac Saint-Louis, at Lachine. Under the Sulpicians, however, the project of Dollier de Casson ran into a multitude of problems, from reluctance amongst higher-ups in France due to construction cost overruns, to the 1689 Iroquois attack on Lachine. While the Saint-Gabriel canal project was restarted towards the end of Dollier de Casson's life, he died before work stopped in 1701 when the canal again ran into excessively hard rock (Mathieu, 2000).

Post-conquest, the British regime was not immune to the territorial pressures felt by New France. The emphasis on enhancing accessibility to the interior of the continent, on the basis of fur, faith, and fortifications, was echoed by the post-American revolutionary war concerns

of Québec merchant Adam Lymburner, and was taken up again following the war of 1812-1814 with the incorporation of the Company of the Proprietors of the Lachine Canal. This syndicate's efforts to raise the necessary capital ultimately failed, and work was taken over by the Lower Canadian government, and finished in 1825. In support of the project, Lymburner evoked the pressing need for increased military mobility along the Saint Lawrence. However, in fitting imperial fashion, it seems very likely that the deeper motivations behind this project were largely mercantile: Lymburner's interests, stretching from Upper Canada to Labrador, were routinely threatened by unstable relations with the United States during the American Revolution, as well as by American competition and intrusion for fisheries in the peace that followed (Roberts, 2000). Reinforcing the project's mercantile origins, the Company of the Proprietors of the Lachine Canal was composed largely of successful Montréal merchants seeking to better position the city in relation to an expanding Upper Canada and Great Lakes basin (Tulchinsky, 1960). In this sense, Lymburner's evocation of military mobility may be read as a merchants' ploy to secure co-operation from reluctant British and Upper Canadian governments and a classic moment of empire-building.

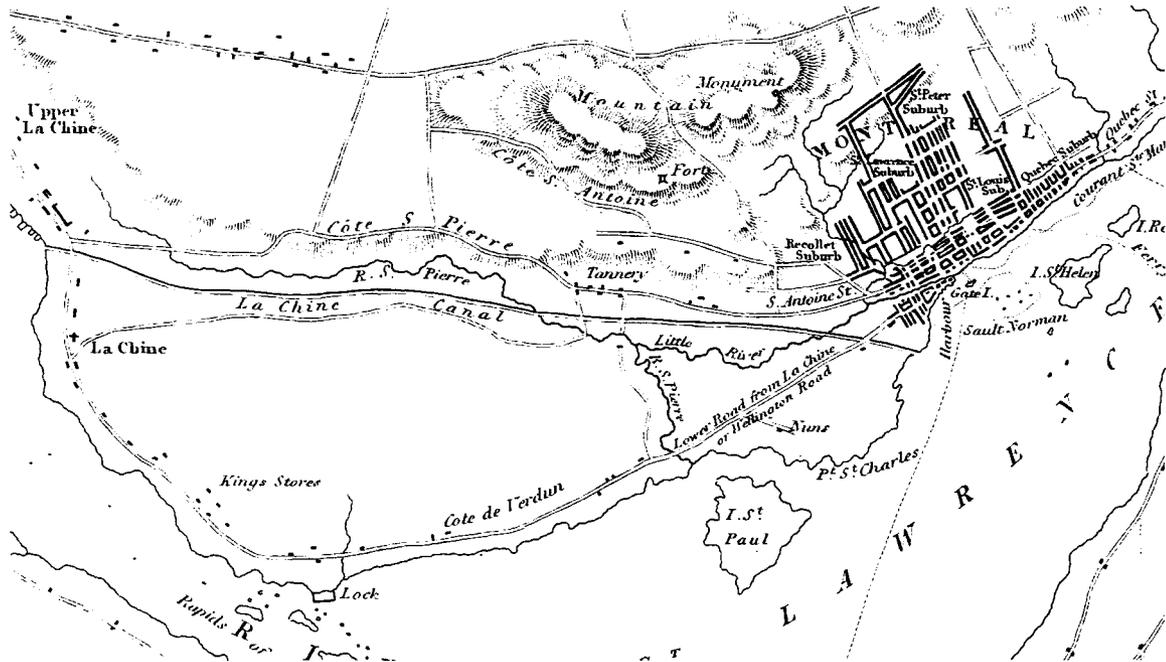


THE PLAN OF CHAUSSEGROS DE LERY, SHOWING M. DE CATALOGNE'S SUCCESSFUL CUT THROUGH FROM THE LAC ST. PIERRE TO 3-3: Early success: Gedeon de Catalogne's successful cut linked the now-vanished Lac à la Loutre/Lac Saint-Pierre (Otter Lake) with the larger Saint-Lawrence river system; Chaussegros de Lery, nd. (late 1600s).

The Proprietors accessed the London connections of Alexander Auldjo, a semi-retired merchant formerly based in Montréal in order to secure the technical expertise necessary to launch the canal project. On the recommendation of the noted civil engineer Thomas Telford, they hired Thomas Burnett on behalf of his Montréal associates (Tulchinsky, 2000a). Though they were unable to amass sufficient resources to complete the project as a strictly private venture, the Proprietors were able to convince the Lower Canadian legislature of the day to step in and fund the project to its completion. The historian Gerald Tulchinsky (1960) notes that one of the cost-saving measures adopted in the course of the negotiations between the Proprietors and the government involved routing the canal further southwest of the city, through open land including the Sulpician religious order's Saint-Gabriel Farm.

Tulchinsky remarks that the 1825 canal was conceived above all as a military transportation infrastructure aimed at reaching the continental interior, neglecting the local possibilities for hydraulic power generation: "Following the completion of the canal in 1825, there was no rush of industry to its banks" (1977: 220); indeed, many citizens appeared to use the canal in ways very similar to its contemporary, recreo-touristic vocation: "The canal graced the countryside and town through which it flowed. Along its landscaped banks, the people of Montreal promenaded on a Sunday afternoon, or went aboard the 'Jane,' for a pleasant two hour excursion from the town to Lachine" (1960: 97). Indeed, closely entwined with the military rationale proffered to speed its construction, the merchants behind the project seem to have largely seen it as a transport link instrumental to promoting trade. In a sense, this makes visible the rationale behind the dates commonly attributed to the beginning of industrialisation in Montréal being closer to the middle or third quarter of the 19<sup>th</sup> century, and, as we will see, it is during this latter period that the Lachine canal truly comes into its own as an industrial infrastructure.

According to Normand Lafrenière's (1983) periodisation of Canadian canal-building activity, the construction of Canadian canals took place in four major periods: the first, from 1779 to 1847, responded to military and emerging mercantile imperatives; the second, from 1848 to 1872, was a period of enlargement and growing capacity that coincided with the start of Canadian industrialisation; the third, from 1873 to 1959, saw Canada's, and particularly Montréal's, greatest wave of urbanisation, propelled by continued industrialisation and the settlement of Western Canada; the last phase, from 1959 onward, saw a rationalisation of canal infrastructure, with smaller elements falling into disrepair or being recast as heritage assets, and some key links being incorporated into the Saint-Lawrence Seaway.



3-4: The early Canal to the west of a burgeoning city, 1830. Note the terrestrial routes; the backbone of the island's cote system.



3-5: A view of the city from just upriver, 1840.

## The Industrial Canal

If our discussion on the canal's history so far represents Lafrenière's first phase, the renovation project undertaken by the government in the 1840s is entwined in the emergent industrialisation of the Canadian proto-state, a process with Montréal as its cradle. By the 1840s, public works and infrastructure in the Canadas were perceived to be sufficiently underdeveloped that funding was made available from the imperial government to undertake a reworking of the Saint-Laurent – Great Lakes canal system, in order to ensure better flows of goods and people to the increasingly populous Great Lakes region. Begun in 1841 but plagued by labour strife, the project was taken over by the American engineer Alfred Barrett, who had previously been involved in the Erie and Welland canal projects, in New York and Upper Canada, respectively. By 1848, the width of the canal had been increased from 14 to 36 metres, and the number of locks had been cut from seven to five (Parks Canada, 2004: 2.3.2).

This increased width, coupled with the greater elevation changes at the Côte-Saint-Paul, Saint-Gabriel, and port area locks, offered sufficient volumes of water for industrial applications of hydraulic power. In addition to widening the canal and improving its locks, Barrett insisted on the development of this hydraulic potential, going so far as to design the necessary structures – headraces, tailraces, and water supply channels. “The headraces or main channels were uncovered channels that ran along each side of the canal; their purpose was to divert some of the water and maintain it at the upstream level of the lock, while the tailraces emptied out the surplus water. Smaller channels (water supply channels) made of stonework vaulting contained one or two turbines which supplied power to various industries; additional tailraces were used to drain off the surplus water” (Parks Canada, 2004: 2.3.2). Along with basins, warehouses, and docks, these structures and improvements made it possible for industry to take advantage of the energy source. For Barrett, a New Englander likely familiar with recent developments at Lowell, Massachusetts, such infrastructure offered the government an opportunity to recoup its investment by leasing rights to the surplus water.

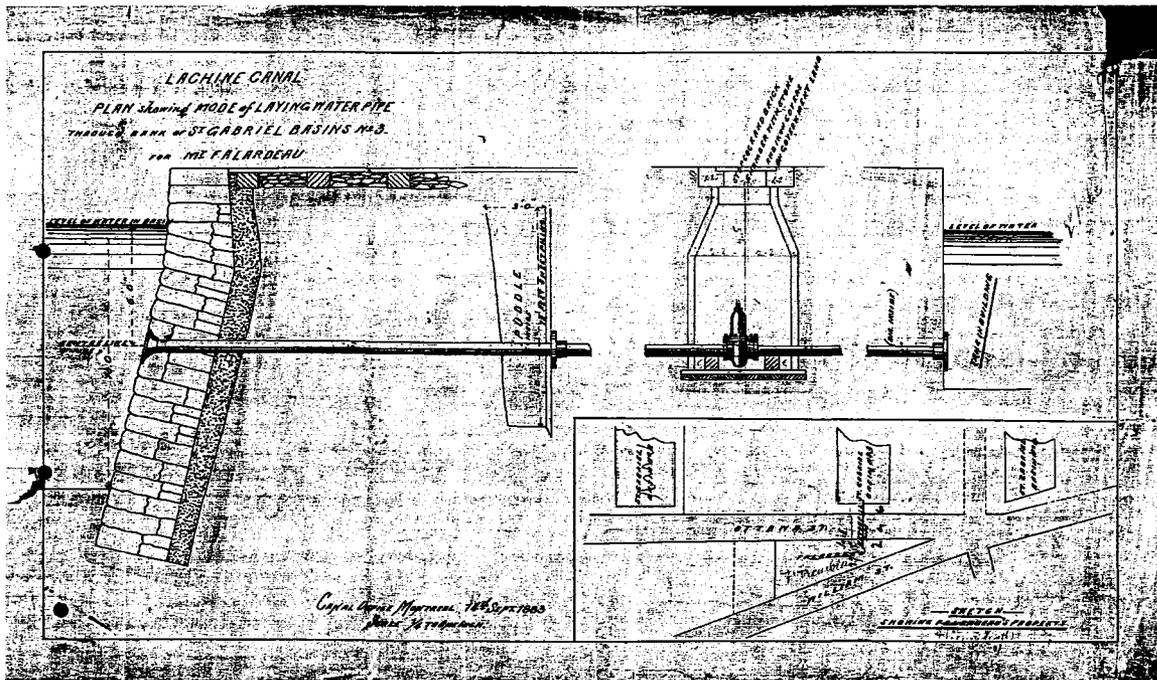
To tie this back to Lafrenière's canal-building phases, the British expertise obtained by the Proprietors in the first cycle was subsequently added to by American expertise during the second phase, which moved the infrastructure in a decisively more industrial direction than the original project. There is a certain unintentionality here, it seems, whereby one set of innovations under one logic lays the foundation for another set of innovations under

another logic. The transport canal of Montréal's merchants becomes, under the guidance of new streams of expertise and capital, a major manufacturing asset, one that goes on to play a key role in the transformation of Montréal's economy, and of course, built landscape. Across these two economic logics, the line on the map that is the Lachine Canal, not only persists but actually plays a major structural role in the unfolding of subsequent economic development.

The use of this asset by Alexander Walker Ogilvie is a telling materialisation of this persistence. Presaging the fuller-scale development of hydraulic energy on the Lachine Canal, Ogilvie and Watson's flour mill relocated to the Saint-Gabriel locks in 1837 from a more distant location near Île-des-Soeurs. Brassard and Hamelin (2000) formulate the interconnected political, demographic, infrastructural, technological, and scientific circumstances that were to fuel growth along the Lachine Canal in the 1840s as such: "New markets were developing as a result of the Crimean War, the Reciprocity Treaty, and the urbanization of Europe and North America. Westward expansion in the United States was enlarging the wheat-growing region, while the construction of railways and the improvement of canals facilitated transportation. A series of important innovations that in the long run would transform milling was made: Cyrus Hall McCormick's harvester in 1834, grain elevators in 1836, which made it possible to store grain by variety, the Hungarian process of grinding by millstones and cylinders in 1839, and the introduction of red Galician wheat into Upper Canada by David Fife in 1842. This combination of circumstances made the Ogilvie family's success possible."

While Ogilvie was ahead of the curve in adopting a Saint-Gabriel location at such an early date, he was certainly not alone in sensing the productive potential of southwest Montréal. The Sulpician religious order, seigneurs of the Saint-Gabriel domain, had been leasing mill sites at the mouth of the Lachine Canal (Windmill Point) by the early 1830s, and operating their own mills for longer still. Ogilvie was soon joined at the Saint-Gabriel locks by a syndicate of businessmen – the Saint-Gabriel Hydraulic Company. A partnership between the entrepreneurs John Young and Jacob DeWitt, the miller Ira Gould, and the influential architect and surveyor John Ostell, the Company "made immense profits by converting what had been intended as a right to use restricted amounts of canal water into a licence to use virtually unlimited quantities" (Tulchinsky & Young, 2000). Young and his associates were able to be in such a position by taking advantage of the unique political and economic circumstances of the 1840s.

In addition to the various factors mentioned above, Québec was undergoing a transition from feudal forms of territorial organisation – namely the seigneurial system, towards proto-capitalist forms – such as freehold tenure. “High on the agenda of all [anglophone] reformers was the elimination of seigneurialism, or at any rate the many rights of seigneurs that were seen to impede good capitalist relations. For example, under seigneurialism landed property could not be owned or sold outright, as it could under the terms of British land tenure, but was subject to a variety of feudal dues such as cens et rentes and lods et ventes, which were the bane of anyone attempting to make a profit on land transactions. Accordingly, the Special Council passed an ordinance in 1840 permitting censitaires (people who had acquired land from seigneurs) to terminate their ongoing financial obligations by making one assessed payment” (Macleod, 2003: 170-171).



3-6: Industrial water intakes along the Lachine Canal; At the hydraulic poles, so much water was being used by industry that water levels for shipping were frequently in danger of falling below minimum.

Often interpreted as a consequence of the unrest that flared up in the form of the 1837-1838 rebellions, the Ordinance of 1840 restricted seigneurial tenure on the island of Montréal, placed increasing pressure on the Sulpician Seminary of Montréal. The seminary, which had been relatively successful in co-existing with the international merchant elite associated with Montréal’s position in the staples trades, such as fur, was experiencing

increasing difficulty in the emergent industrial capitalist order. The seminary was given a period of twenty years to dispose of their seigneurial landholdings, including the Saint-Gabriel domain (See Young, 1986: 54-60 for further detail).

The seminary's shift from seigneurial prominence in Montréal's economic life to ecclesiastical importance in the city's spiritual and social life was achieved with the help of various professionals – notaries, surveyors, lawyers, politicians – who assisted in negotiations with government, the collection of overdue *cens et rentes*, and in the surveying of land to be commuted, or sold. It was in this latter role that John Ostell entered the picture at the Saint-Gabriel locks. "From the early 1840s he was the preferred surveyor of the influential Séminaire de Saint-Sulpice, for which he provided a variety of services including representation in disputed cases relating to the commutation of land tenure. He subdivided the seminary's lands along the Lachine Canal in the period 1842 to 1845, creating more than 500 town lots" (James, 2000). At this stage, Ostell appears to have drawn on his familiarity with French surveying techniques,<sup>1</sup> and the ambiguously large town lots he laid out, arranged in two rows back to back, produce an allotment system and constitute an urban artefact with roots dating back to the French regime (Gauthier, 1997, 2003). Ostell's Griffintown lots were different than the urban parcels elsewhere in the city; their relatively larger size and their regularity offered particularly good conditions for warehousing and industry. When these lots were slow to sell in an 1845 auction, perhaps due to economic sluggishness in 1840s Lower Canada, Ostell invested in the property himself. In the early 1850s he, along with his partners in the Saint-Gabriel Hydraulic Company, continued this strategy, paying "bargain prices for lots of surveyed seminary lands near the St Gabriel lock, which they bought up for purposes of industrial land speculation and development" (James, 2000).



3-7: John Young, 1862; Port commissioner, entrepreneur, politician. Young was a major force in development around the Saint-Gabriel locks.

## Industrial urbanisation

But the Company's activities went far beyond mere speculation, as they did more than simply 'flip' the hydraulic lots they acquired. Initially awarded five hydraulic lots capable of powering twenty millstones, this was subdivided into 120 millstones worth of power over

twenty lots (Lewis, 2000: 115), leased to many of Montréal's largest new manufacturing firms. In addition to assembling, leasing, and managing the land necessary for the creation of a new industrial district, the Company also extended financing to manufacturers looking to set up shop and its members pursued their own business ventures: Ostell in particular was deeply involved in the area, as surveyor, designer of John Redpath's Canada Sugar Refinery, and the Saint-Ann's church in the nearby Griffintown district. Many of the early manufacturers who established themselves along the Lachine Canal in the middle of the 19<sup>th</sup> century were recently-arrived Americans, whose interventions in the Lachine Canal landscape gave rise to the moniker 'Little Lowell' to describe the increasing buzz of activity (Marsan, 1994: 172). The case of Frederick Harris, who arrived in Montréal in the early 1850s, is instructive in this sense. With capital loaned by Ira Gould and John Young of the Company, Harris established the three storey Saint-Gabriel Cotton Mills on one of their hydraulic lots at the Saint-Gabriel locks. Harris was one of the first textile manufacturers in Montréal – an industry which rose enormously both absolutely and relatively in the following half century, particularly along the Lachine Canal (Tulchinsky, 2000b).



3-8: John Ostell, 1876; Surveyor, architect, businessman. Ostell's work with the Sulpician Seminary of Montréal resulted in Griffintown and Pointe-Saint-Charles' distinctive street layouts.

Rather than a simple extension of existing proto-industrial activities that had been emerging in the Griffintown sector, west of the walled city, or in the village of Saint-Henri des Tanneries, new investment in manufacturing was largely in new firms; for Tulchinsky, "the opening of [the Lachine Canal's] power potential was not simply an advance in the industrial development of the city. It marked an entirely new departure in the city's economic history by making possible a rapid acceleration and diversification of industry" (1977: 222). However, some of this new wave of manufacturing came from adaptations made by already established Montréal merchants, who engaged in the classic mode of economic growth



3-9: A panorama of the city's industrial corridor, looking up towards Mont-Royal, 1896.

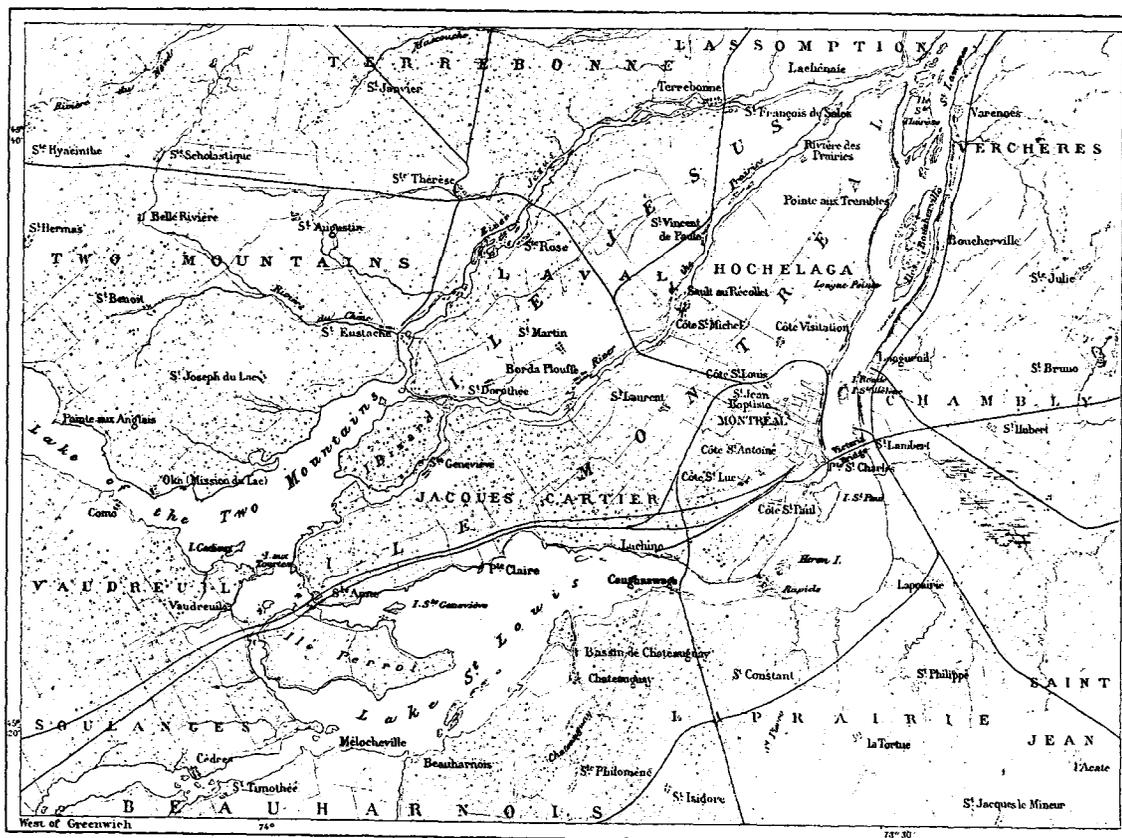
– import replacement – discussed by Jane Jacobs (1969). In Côte-Saint-Paul for instance, the transition from mercantile to manufacturing in that community's largest firm, the hardware wholesalers Frothingham and Workman occurred in 1853, when the firm added manufacturing to its thriving import activities.



3-10 The Canal gave the city's harbour an interior, which was soon heavily industrialised; 1875.

The industrial corridor that took shape around these hydraulic complexes did so rapidly from the 1850s onward. Robert Lewis notes that though it was a peripheral "agricultural area at midcentury, in 1861 Canal's firms accounted for more than a quarter of the city's rent" (2000: 106). In this way, the Lachine Canal manufacturing district "represented the fusing of place-bound links with geographically shifting capital. In each cycle of growth new territorial nodes consisting of new forms of modern plant design, technological innovation, and factory methods were superimposed upon the metropolitan landscape" (2000: 259). Railways were crucial to the structuring of

MONTREAL AND ITS ENVIRONS.



3-11: Canada's metropolis. By 1890, the city was at the centre of a vast network of rails reaching as far as the Pacific. Several lines paralleled the Canal, reinforcing its regional status as a vector of industrialisation.

this environment, as a means of linking “firms to one another and (integrating) individual sites, districts, and the entire metropolitan area into one functioning entity” (Lewis, 2000: 264-265). This growth, though slowed by the challenging economic circumstances of the 1870s and 1880s, continued vibrantly in the period from the early 1890s to the First World War as Western Canada received increasing settlement and export markets thrived. Development extended further west, through Saint-Henri and Côte-Saint-Paul towards LaSalle and Lachine, increasing in scale and scope.

## Entering a period of decline

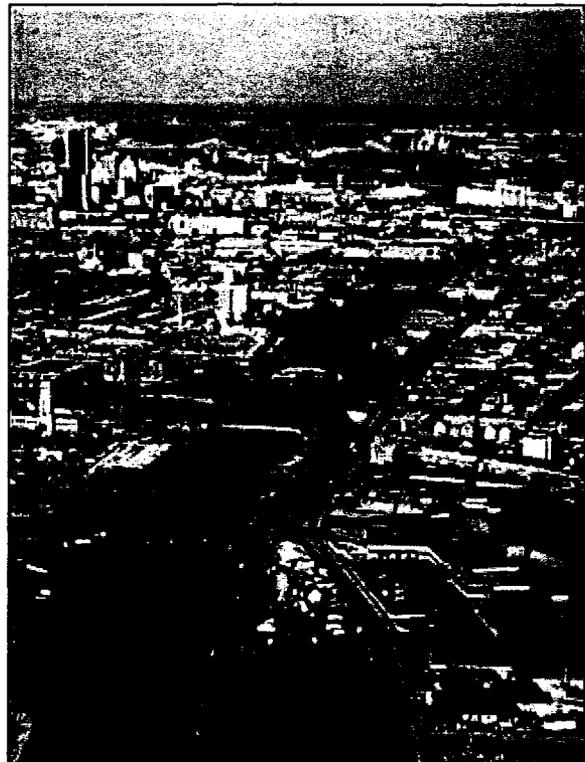
The working-class neighbourhoods of Saint-Henri, Pointe-Saint-Charles, Petite-Bourgogne, and Griffintown, through which the canal runs for much of its course, have been dramatically shaped by the canal’s presence, and industry. The canal, like the railways that followed, was part of a larger continental system that lay at the basis of the colonization and settlement of western North America, and whose infrastructures, industries, and built landscape need to be understood not just as an urban tissue particular to Montreal, but as the manifestation of a continental scale of territorial and economic development. This is equally true of the canal’s slow decline through much of the 20<sup>th</sup> century, as the fortunes of the area were swept up by broader changes in the western economy, including the deindustrialisation that was so hard felt in Montréal. The canal underwent a series of significant changes following a gradual relative decline from the 1920s onward as industrial geographies shifted at scales from regional to global. A relative decline was felt as industries shifted to more modern locations elsewhere in Montréal (along the CP beltline separating Rosemont from the Plateau, further west to Lachine and Lasalle, later on to suburban locations made accessible by highway infrastructures), while a starker absolute decline was experienced due to shifts at the continental scale following the 1959 opening of the Saint-Lawrence Seaway and at the global scale as industries shifted increasingly offshore.

In the 1960s, construction debris from Montréal’s métro system was used to fill in the triangular turning basin immediately downstream of the Wellington Bridge. No longer a vital link in the Great Lakes shipping network, some industries near the Lachine end of the canal continued to receive shipments by barge until the early 1970s, when it was finally closed to navigation and turned into a park under federal jurisdiction, emphasising a peculiarly semi-natural state, almost as though the canal was being recast as a folly; an uneasy mix of tourism, ruins, and official government history. This newfound tranquility and recasting as a landscape of consumption (as opposed to production) is being highlighted by all three

levels of government for its potential as a catalyst for the controversial revitalisation of nearby working class neighbourhoods, emphasising a peculiar natural state. In some sense, it is as though we are witnessing the re-launch of the 'Jane', though the canal's landscaped banks now include romanticised industrial ruins, and towpaths have ceded their place to bike paths.

The death knell of the Lachine Canal, its filling with metro construction debris in the early 1960s, was portentous of the plight of its manufacturing complex and adjacent neighbourhoods. The métro was above all a symbol of a new Montréal – a service metropolis oriented towards the world. If the Montréal of 1880-1930 became Canada's industrial and financial metropolis, (Gournay & Vanlaethem, 1998) at Expo 67 it presented itself as an intellectual, artistic, corporate, and tourist centre of global proportions (Fournier & Lortie, 2004). In the architectural magazines, the attention was on innovative infrastructure for housing and consumption – Habitat 67 and Place Bonaventure, while locally interest was focused on the expansion of the highway network (which drew industry away from the core) and the redevelopment of the city centre for cultural and institutional purposes, with new universities, broadcasting complexes, and a Vieux-Montréal (once the preferred head-office location of many Griffintown and Lachine Canal manufacturers) more-or-less abandoned to tourism.

The 2002 reopening of the Lachine Canal for navigation by pleasure boat marked a major step in a long process of renovation works, under the auspices of a partnership between the Ville de Montréal and the federal government, particularly Parks Canada. Projects ranging from the 1970s creation of a bicycle path the length of the Canal to the excavation of the flour basins and the triangular basin at the foot of Peel street have triggered a veritable frenzy of redevelopment – characterised by the Ville de Montréal as being “accompanied by irreversible actions that are obliterating meaningful testimonials to the area's history.



3-12: Recast as a linear park, the Canal is now a sort of friche urbaine, as vegetation takes over in the absence of industry; nd. (1990s).

Construction of residential complexes has occasionally led to privatization of land along the Canal that runs counter to public-domain restoration efforts” (Montréal, 2004: 9). With projects stretching from Côte-Saint-Paul in the west to the Windmill Point mouth of the Canal in the east, ranging from small-scale renovations or the construction of cooperative housing on part of an urban block to (controversial) proposals for a contemporary art museum, circus facilities, and a casino, the Lachine Canal now occupies a prominent place in the discursive world of Montréal urbanism.

The challenges of southwest Montréal’s decline and revitalisation have been met head on by a remarkably engaged community. It was in Pointe-Saint-Charles that the first community clinic, a precursor to the Québec-wide network of Centres locaux de services communautaires, and it is in the southwest that one of Montréal’s most active Corporations de développement économique communautaire, the RESO, is based. The RESO’s ‘Rapport synthèse sur le forum du canal de Lachine’ (2001) expresses the potential emergence of a new economic climate, emphasising creative industries, the maintenance of a shrinking industrial base, and strategies for maintaining affordability and socio-economic diversity in a gentrifying neighbourhood.

## 4. Two analytical narratives | Chapter four

### Introduction

This chapter presents two analytical narratives rooted in the analysis of historical context, theoretical perspective and methodological vocabulary elaborated in the previous chapters. Drawing on the notion of the city as a structural phenomenon – non-intentional, collective, socially and temporally diffuse – this chapter undertakes a reading of the urban tissue of the Lachine Canal basin. The first of the two analytical narratives examines the urbanisation of Griffintown, the southwest's first industrial district, by highlighting the elements, relationships, and transformative processes that characterise Griffintown's urban tissue. The second analytical narrative takes a closer look at the industrial complexes throughout the eastern Canal basin – from Côte-Saint-Paul in the west to Windmill Point in the east. After this second narrative develops a typology emphasising the degree to which industrial complexes are integrated with the surrounding urban tissue, it proceeds to examine the history and morphological composition of the different industrial sectors and railyards.

Though they tackle different aspects of the phenomenon of southwest Montréal's industrial urbanisation, these two analytical narratives are linked together by an underlying preoccupation with the integration of specialised industrial infrastructures, complexes, and sectors within the broader urban tissue. Such an undertaking is somewhat innovative. In contrast to studies focusing on the aesthetic qualities of industrial architecture – usually most appreciated once it has fallen into, as Banham (1986) terms it, 'picturesque ruin' – and the thorough body of work that has been produced on the morphology of residential environments, both generally and in southwest Montréal specifically (Dubois, 2005), these two analytical narratives seek to systematically explore the logic of a North American industrial district through a morphological reading of its elements, relations, and processes, with a particular emphasis on the variable degrees of integration between industrial infrastructure and the urban tissue, in terms of the correspondence that specialised, industrial forms show with the non-specialised, largely residential urban fabric.

The reading of the city presented in the following pages is inherently a work of interpretation. This chapter is preoccupied with presenting this take on urbanisation, industrialisation, and regeneration, the implications of this analysis are explored more fully in the fifth chapter; the discussion presents a more interpretive discussion that emphasises the implications of these readings for our understanding of industrial urbanisation in a theoretical sense, and for heritage and regenerative planning in a practical sense.

# Urbanisation and industrialisation in Griffintown: reading Griffintown's urban tissue

## Introduction

Early urbanisation in the Griffintown area seems to have three principal aspects, namely two tensions between different settlement forms. The first of these tensions is between vernacular and planned settlement forms emanating from two different underlying territorial systems. Beaugard's study of the *côte* system on the island of Montréal reveals a significant border between two systems of landholding just south of present day rue Notre-Dame (1984: 51). To the north, the typical seigneurial pattern prevails, anchored by the *côte* Saint-Antoine further up the hill, in what is now Westmount. To the south, however, the pre-urban landscape is marked by two large entities: the *ferme* Saint-Gabriel, and the *fief* Nazareth. Significant differences emerge when these two systems are compared, particularly in terms of modularity and in terms of processes such as aggregation and densification. In some respects, due to the positioning of rue Notre-Dame in such close proximity to this fault line, this tension foreshadows a tension between the differing scales and morphological characteristics of residential and industrial urban tissues that marks the history of the Lachine Canal. Rue Notre-Dame, with its high-street functions, its historic role as a multi-purpose and very urban matrix route, and its regional importance – it has always been one of the key routes to Lachine, even in the tramway era – makes for a centralizing nodal axis of very different character in comparison with the Lachine Canal. While Notre-Dame is centralizing and nodal in relation to the residential urban tissues which it serves as a spine, the Lachine Canal does the same at a regional scale, serving as a centralizing nodal axis for industrialisation but acting as an edge or periphery to adjacent residential neighbourhoods.

Indeed, even within the *fief/ferme* system, distinctive forms of urbanisation took root. While the *fief* Nazareth was largely developed as an extension of the typical Montréal street grid, with the earliest blocks (on the east side of the CN viaduct and the autoroute Bonaventure) coming to be known as the 'Faubourg des Récollets.' A long-standing property line, rue de la Montagne (formerly McCord) separates the *fief* Nazareth from the Sulpician's Ferme Saint-Gabriel, and emerges as an important dividing line between the continuation of the Montréal grid and the creation of new forms linked specifically to the canal.

The area to the west of rue de la Montagne appears to show a greater tendency to change structurally depending on the configurations of buildings and basins, at least until 1879. The platting proposed by Ostell doesn't seem to get fully executed, while the triangular section

immediately north of the basins goes from four to two blocks between 1879 and 1949. East of McCord, the only analogous restructurations are when the railway is pushed through to the port, resulting in the creation of rue Brennan. Even the CN viaduct and the autoroute Bonaventure more or less follow the existing street grid and parcel pattern.

The second source of tension is contained within the industrial sphere itself. While at a regional scale, the Lachine Canal is a strongly centralizing nodal axis for the industrialisation not just of Griffintown, but of the entire southwest of Montréal, it is not without internal variation. Within the Griffintown district, the Saint-Gabriel locks hydraulic pole is at the core of a very different sort of urban tissue. Its primarily manufacturing-oriented attractiveness contrasts greatly with the areas of Griffintown immediately eastward, where canalside urbanisation is related far more to transshipment and warehousing, resulting in a quite different parcel modularity, building vocabulary, and a different means of going about aggregation and densification.

The physical traces left by the distinction in uses between the Saint-Gabriel locks area and the basins (Saint-Gabriel and Flour) area prevail to this day; the basins had an enormous impact on adjoining urban tissue, encouraging the development of vast spaces for materials handling. While the locks area is densely covered with buildings of a variety of forms, and has relatively little open space, the basins area has minimal building and large open spaces. In a sense, there is a morphological expression of the split between production and transshipment or materials handling (*manutention*); the Saint-Gabriel basins were used for lumber and coal, while the locks area was a focal point in the hydraulic energy system. The two areas both have somewhat irregular parcel and street patterns and are both 'coarse grain', but the configuration of buildings and open spaces differs significantly. In a sense: water as energy encouraged dense building configurations and water as shipping route encouraged discrete buildings and open spaces. This notion of infrastructure exerting an impact on the urban tissue can also be extended to the transportation infrastructures that followed the canal, the railway and the autoroute; the rails in the 1879 map show this going further into the urban tissue along Wellington near the Peel basin. This appears (by looking at the 1949 and 2005 maps) to have continued even after the canal lost its significance as an energy source. The placement of the Canada Post sorting facility, while surely having much to do with the fact that it was already government-owned, seems to continue this trend, as it was a transshipment facility (though not connected with the water). It was likely connected more with the autoroute Bonaventure, as is the replacement facility in Pointe-Saint-Charles.

The element of government ownership and the limited spread of the Ostell group's interest in Saint-Gabriel land (they only wanted land where they could exploit the hydraulic energy) likely also comes into play here. The tight subdivision of Ostell and Co's St-Gabriel pole thus contrasts with a vast area left vacant until prior to the public sector development of lumber and coal transshipment basins, greatly expanding the interface between continental water-borne transport and local, road-borne transport, and rebuilding the freight entry to the city in a much more specialized fashion.

As a means for more precisely understanding the system that underwent the tensions and transformations described above, the following pages catalogue the composition of Griffintown's urban tissue. In presenting a reading of Griffintown's urban tissue that identifies its constituent elements, their inter-relationships, and (trans)formative processes, this analytical narrative attempts to identify a structure of urbanisation and industrialisation of the built landscape by profiling the component subsystems of Griffintown's urban tissue. With this in mind, the analysis highlights elements such as the route network, parcel structure, infrastructure (water and rails); and buildings, and their principal variables, such as dimension, configuration, and in the case of parcels and industrial complexes, modularity. The reading goes on to explore the inter-relationships between these components, and the (trans)formative processes by which they emerge and change through time.



4-1: Griffintown, 1801; Largely agricultural, parcels are beginning to be subdivided along the matrix routes.



4-2: Griffintown, 1825; The fief structure is still intact, though eastern Griffintown sets the tone for things to come.



Griffintown 1846 0 62.5 125 250 375 500 Meters  
 4-3: Griffintown, 1846; Ostell's scheme confirms the importance of the Canal.

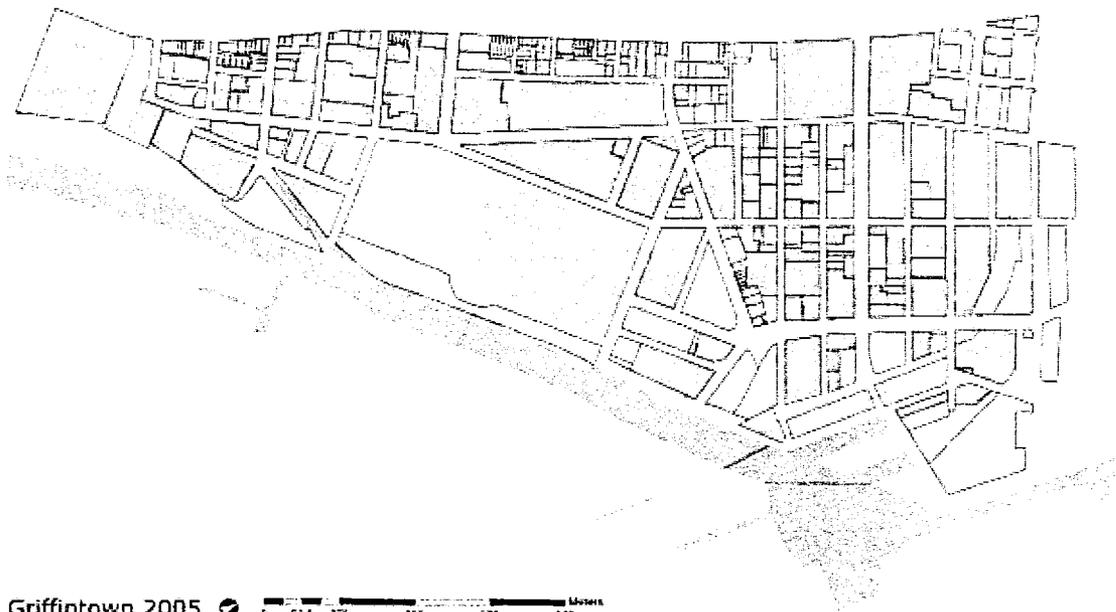


Griffintown 1879 0 62.5 125 250 375 500 Meters  
 4-4: Griffintown, 1879; The Saint-Gabriel locks complex takes shape and industry grows in scope near rue Wellington.



Griffintown 1949 0 62.5 125 250 375 500 Meters

4-5: Griffintown, 1949; The industrial canal at its peak in terms of both transshipment and production.

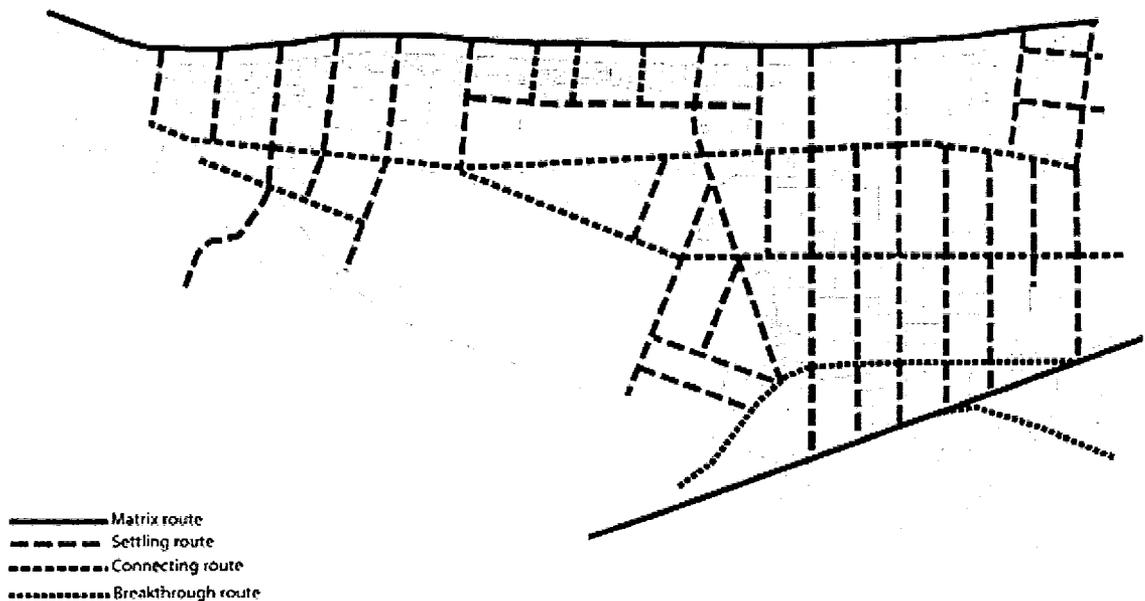


Griffintown 2005 0 62.5 125 250 375 500 Meters

4-6: Griffintown, 2005; Consolidation and retreat, as Griffintown comes to house fewer, but larger buildings.

## Elements/constituent subsystems

### Routes



Griffintown 2005

4-7: Route types in Griffintown, 2005; Solid lines-matrix routes; largest dash-settling routes; medium dash-connecting routes; fine dash, breakthrough routes.

### Matrix routes

Three matrix routes (see Caniggia and Maffei (2001) and Larochelle and Gauthier (2002) for precise definitions) cross the Griffintown territory, linking Ville-Marie with points west: Saint-Henri and Lachine. One of these routes, Notre-Dame, takes a fairly direct line to Lachine, roughly parallel with the canal, while the others take 'upper' – Saint-Jacques – and 'lower' – Wellington – lines. In addition to topographical and north/south distinctions, this division into upper and lower also reflects the historical existence of two centres above the Lachine rapids – Upper Lachine, which is present-day Lachine; and Lower Lachine, which is in the territory of present-day Lasalle, near the entry for the aqueduct. All three, however, exhibit a structuring influence not just on Griffintown's territory, but on the entire southwest of the island of Montréal.

- Notre-Dame – route to Lachine, subsequently paralleled by the canal; the western extension of the Chemin du Roy leading to Québec City
- Saint-Jacques – upper Lachine road, a 'high road' passable in winter and spring
- Wellington – route to Verdun and to Lachine via the band of lakeshore settlement dating back to the French régime

### **Settling routes, connecting routes**

By and large, the pattern of settling and connecting routes is straightforward. In eastern Griffintown – the section formed by the old fief Nazareth and subdivided under the auspices of Mary Griffin – the settling routes run perpendicular to the rue Notre-Dame and rue Wellington matrix routes, while the connecting routes (William and Ottawa) run parallel. Established early on, this pattern changes relatively little through time, aside from settlement and infill development (splitting of parcels along the connecting routes so as to increase frontage opportunities), addresses tend to be on the matrix and settling routes in a fairly regular and consistent urban structure.

West of rue de la Montagne, the western half of the Griffintown district – subdivided from the ferme Saint-Gabriel by John Ostell in the 1850s – has a much more complex structure. Though Ostell's original scheme was quite legible in some respects – unlike eastern Griffintown, it was explicitly anchored to the Canal and the basins as an industrial matrix route – it recommended some major changes to the status of the connecting routes mentioned above. In western Griffintown, rue William and rue Ottawa became settling routes, accompanied by rue Bassin and rue Olier. The north-south settling routes of the Côte-Saint-Antoine territory (rue Saint-Martin, rue Richmond, rue Guy) saw the reverse configuration occur, becoming connecting routes once they crossed rue William.

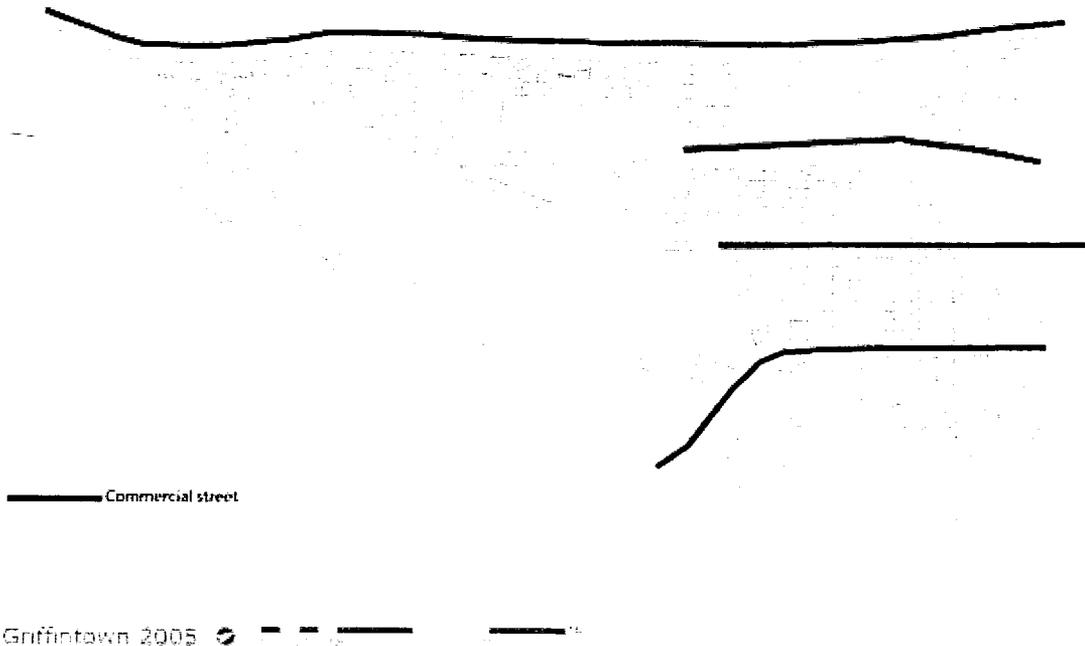
Following the multiple configurations of the Saint-Gabriel basins, and their ultimate filling and conversion for use by Canada Post as a massive sorting facility, this structure, with its 'east-west, parallel with the Canal' structure, is still distinct from that of eastern Griffintown, though even it – as evidenced by Ostell's original plans – was originally informed by the residential tradition and spatial configurations, though with a large parcel size well suited to warehousing and industry. Subsequently it has seen its legibility in that sense radically transformed as the scale of transshipment facilities grew to occupy entire blocks, thereby blurring the distinctions between settling routes and connecting routes.

### **Breakthrough routes**

Griffintown counts two breakthrough routes – streets (or passages) that have been cut through existing blocks. One, Brennan street, was occasioned by the arrival of the GTR and the necessity of connecting their Pointe-Saint-Charles yards with the port. This restructuration involved the creation of an angled street leading from the Wellington bridge to the port, along which new and unconventional building-parcel relationships could take root, reflecting the need to accommodate the infrastructure and the industrial opportunities a

railside location offered. The Brennan street axis lost its railway function after 1949 and was truncated by the construction of the Bonaventure autoroute in the 1960s, though it has since been restored in an effort to improve connectivity between Griffintown and the Faubourg des Récollets, on opposite sides of the highway.

The second breakthrough route, Smith, or Wellington street, was a rationalisation of a previous matrix route, with Wellington street being rerouted along the Smith street alignment, which was subsequently straightened and widened. Smith street was only partially created by 1879, through the lower part of the blocks between Ottawa and Wellington from Murray to Colborne. By 1890, its fuller alignment, also incorporating the block-long Saint-James' lane between Dalhousie and Ann streets, was in place, though still relatively narrow and somewhat irregular in routing. By 1949, as part of a restructuring of the arterial road network in the Griffintown area (together with Colborne and Notre-Dame streets) prior to the implementation of a new tunnel under the Lachine Canal, Wellington street was rerouted to follow the alignment pierced by Smith street. The alignment was straightened, with a large curve put in at the foot of Saint-Ann's church to link up with the Wellington tunnel. In its latest incarnation, the Wellington tunnel has been replaced by a bridge built to highway design standards.



4-8: Commercial streets in Griffintown; Note that these streets tend to occupy the 'short' side of the block and are those with the highest accessibility.

## Commercial street formation

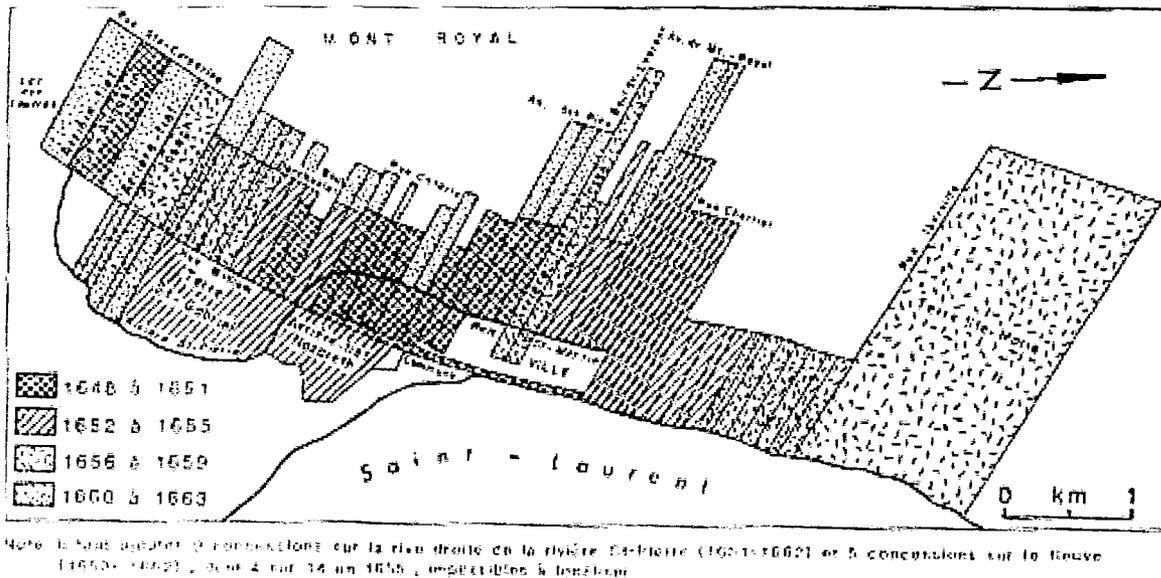
Commercialisation occurred unevenly on the territory of Griffintown. Though principally on the three matrix routes, the presence of commerce was most prominent on rue Notre-Dame, though also present to a lesser extent on Wellington and Ottawa streets. This echoes a Montréal tendency to commercialise streets that run against the dominant grain of the grid (in Montréal, the long blocks are usually oriented in a distinctive northeast/southwest fashion, inherited from the seigneurial agricultural land pattern that runs perpendicular with the Saint-Lawrence river). Presumably, such streets profit from improved network integration in a space syntax sense (Hillier & Hanson, 1988), an abundance of higher-profile corner locations, and a generally higher concentration of traffic. Since long and coherent east-west streets are less common (many such streets run for only a handful of blocks), they can thus be supposed to be more intensively-used thoroughfares. The fact that two such routes in Griffintown, rues Notre-Dame and Wellington, are also matrix routes, reinforces the above comments by virtue of their historical advantage as nodal axes.

Rue Notre-Dame was the first urbanised route, with detached dwellings as far west as rue Guy by 1825 and a concentration near rue McCord as early as 1825. There is somewhat of an equivalency of development along rue Wellington by 1825 as well (with some lots facing it at the corner of Duke or Nazareth), but not to the same extent as rue Notre-Dame. It is likely that rue Notre-Dame was the more trafficked of the two, as it was the direct route to Lachine and Saint-Henri as opposed to swinging south through Verdun and along the river, which had no major poles of settlement along the way to Lachine. There is fairly significant densification (build-out within the modules, without restructuration) along rue Notre-Dame between 1879 and 1949, whereas along Wellington, where the commercial mix seems to have become a bit more industrial, it looks like there is a greater tendency towards aggregation across parcels, with buildings therefore consisting of multiple lot modules, for instance at the corner of Colborne (Peel)/Wellington, which is not a typical characteristic for a commercial street.

There are a few lots facing Ottawa by 1846 in the western part of Griffintown, between Colborne and McCord streets. These correspond to the typical module, which isn't the case in the eastern section of Griffintown subdivided by Mary Griffin, where it seems likely that there was a splitting of lots along connecting routes. In the western section, this parcel orientation seems more intentional due to its correspondence with the typical parcel module. By 1949, it's Ottawa street that is the most clearly defined by a strong wall of buildings and that conserves the most small buildings – characteristic of neighbourhood commerce.

## Parcels

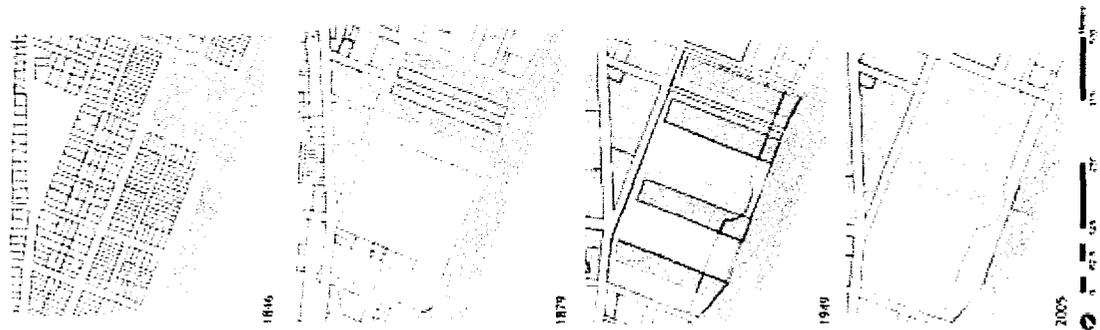
Griffintown is at the southern edge of an important *frontière foncière*, or property limit, with the southern limits of the fiefs Saint-Augustin and Saint-Joseph, both attached to the Petite Côte-Saint-Antoine at their northern limit, meeting the domaine (ferme) Saint-Gabriel and the fief Nazareth – the grid platted for Mary Griffin (see figure 4-9). Six different parcel modules can be identified. While this section of the analytical narrative does discuss their transformation (largely through aggregation), the section of this analytical narrative dealing with (trans)formative processes tackles these transformations in more detail.



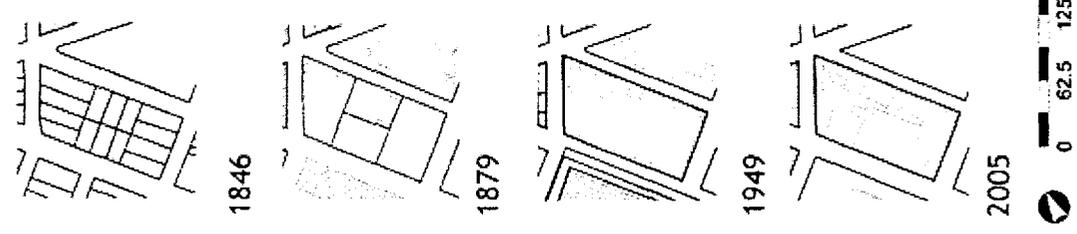
4-9: Early seigneurial concessions and fiefs. Note the stark division at left, which roughly follows rue William.

In the fief Nazareth, the typical parcel module is approximately 10x30m (33x98 imperial feet or 30x92 French feet). Frequently aggregated into groups of two and often more; this process usually occurs with parcel modules lying side-by-side, but aggregation can also involve the fusion of parcels ‘through’ the block to the next street. Such aggregation appears to be considerably more widespread in the area east of present-day rue Peel, which could be considered as being further from Griffintown’s residential pole, centred on the Saint-Ann’s church, constructed in the late 1840s. These parcels have a strong modularity which is reflected through aggregative processes: double and triple modules involving the aggregation of adjacent parcels are common, and also complemented by ‘through’ block aggregation, involving parcels with addresses on different streets.

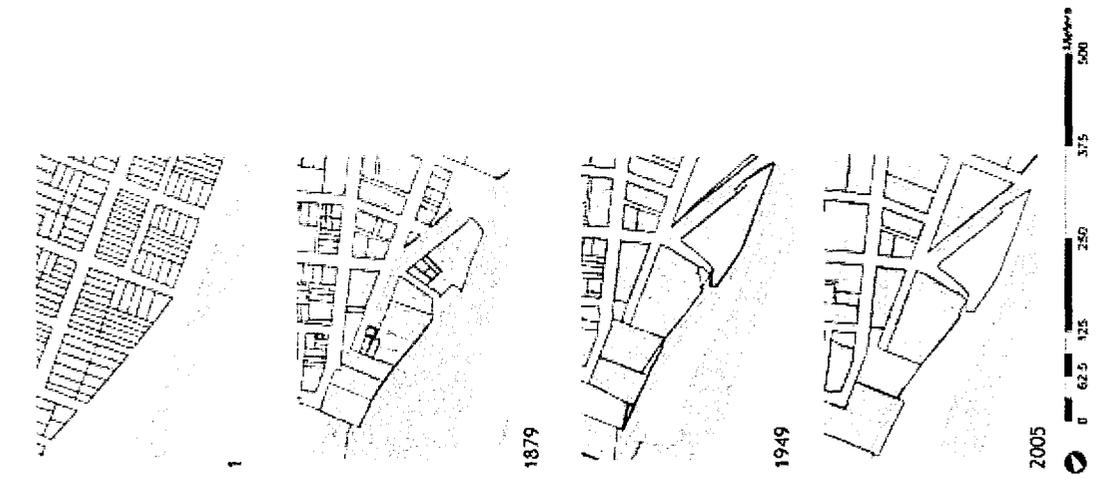
In the areas of the ferme Saint-Gabriel focused on the basins, the original 1840s Ostell subdivision consisted of two basic parcel modules, one, near the original square basin and facing the Canal, measuring approximately 6x30m (20x98 imperial feet or 18x92 French



4-10: The Saint-Gabriel Basins block.



4-11: Block bounded by rues du Séminaire, Saint-Augustin (Rioux), Bassin, and Ottawa.



4-12: North of the Saint-Gabriel Locks.

feet) and extending through the block; the other, inland, measuring approximately 12x25m (40x82 imperial feet or 36x77 French feet) and extending to the mid-block (see figure 4-11). Though demonstrating a keen insight of the relationship between city and water, these were rapidly discarded as the area's scale shifted dramatically when it became the site of a major transshipment complex centred on the Saint-Gabriel basins. Though cast aside as explicitly available parcel modules in favour of a larger scale, these modules – particularly the latter – remained crucial determinants of block size, as witnessed by the block between rue du Séminaire, rue Saint-Augustin/Rioux, rue Bassin, and rue Ottawa, which though now occupied by one large structure, is still broken up into parcels reflecting these origins.

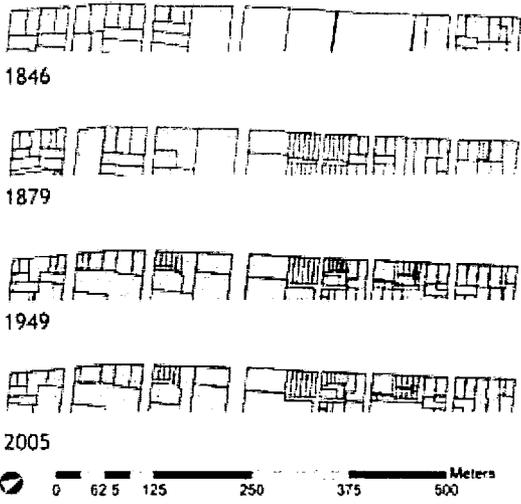
In the areas of the ferme Saint-Gabriel focused on the hydraulic basins (the Ostell/Young development), there are two typical parcel modules (see figures 4-11 and 4-12). The first, the hydraulic parcels developed by the Ostell-Young consortium along the north side of the locks, has a typical module of approximately 40x65m (131x213 imperial feet or 123x200 French feet). The depth of these modules is highly variable due to the curve of the Canal and the unusual alignment of rue des Seigneurs, yet their width is generally 40m. Further removed from the water – and crucially, not in the realm of hydraulic parcels – yet still part of Ostell's subdivision plan, the Saint-Gabriel locks area has a different typical parcel module, measuring approximately 6x25m (20x82 imperial feet or 18x77 French feet). These very narrow parcels were later almost entirely aggregated into larger groupings, often double modules, which were widespread as early as 1879, but also into much larger complexes, which span as many as seven adjacent modules. The small block dimensions in this sector result in a variety of irregular aggregations through the course of time - over a relatively long period as initial uptake was slow - though this module remains at their base.

In the Côte Saint-Antoine area of Griffintown, along the rue Notre-Dame matrix route, the typical parcel module is approximately 10x30m (33x98 imperial feet or 31x92 French feet). Along rue Notre-Dame these modules are rarely aggregated into groups of more than three, in great contrast to the significant aggregations visible elsewhere in Griffintown.

These modules have been crucially important for the subsequent transformation of Griffintown's urban tissue. In the fief Nazareth, the modules have been the structure according to which densification took place. It appears that parcels were first occupied by one or two buildings at the front of the lot with (largely wooden) ancillary structures at the

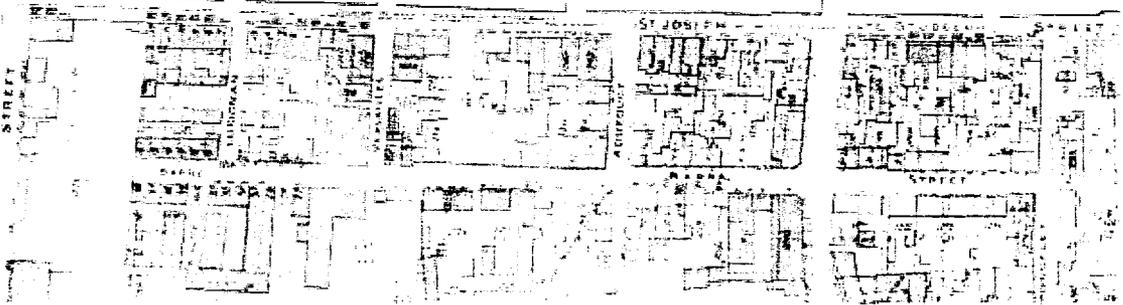
rear. Subsequent densification and aggregation involved larger industrial buildings expanding either across the width of the block or along one of its sides, with significant densification, sometimes to the point of leaving no space unbuilt at all.

At the Saint-Gabriel locks, where the hydraulic pole was developed by a syndicate led by John Ostell and John Young, the modules have been the structure according to which significant densification occurred. Hydraulic power was made available by diverting water from the channel of the old (pre-1840s) canal to a mill race. Parcels were arranged in a deep/narrow configuration so as to allow for as many water users as possible. The module is particularly well-defined to the west of the locks, where densification has filled many of the original parcels.



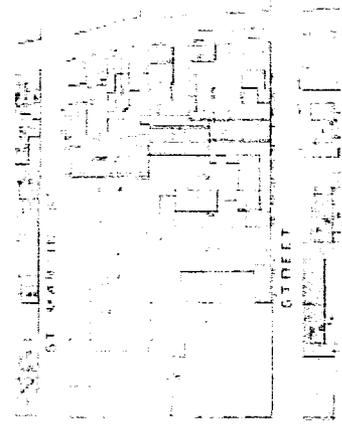
4-13: Parcels belonging to the Côte-Saint-Antoine area, from along rue Notre-Dame.

Along the Notre-Dame matrix route, the modules have also been structurally important, and can be distinguished from the remainder of Griffintown by their more vernacular form. Along the southern side of Notre-Dame, minimal opportunities existed for expansion of land holdings – the northern boundary of the Fief Nazareth and the Ferme Saint-Gabriel were close at hand – thus prompting a less regular parcel module. In some cases, parcels stretch quite deeply, to the boundary between the Fief/Ferme and côte systems, while in others, the introduction of secondary streets such as Barré or Lusignan streets (see figure 4-14) adds considerable variation even as it is clear that attempts were being made to impose a more consistent – and smaller – parcel module on the tissue.



4-14: The area along rue Barré marks the transition between fief and cote and has a distinctive pattern of densification due to the insertion of smaller secondary streets, such as rue Lusignan; 1890.

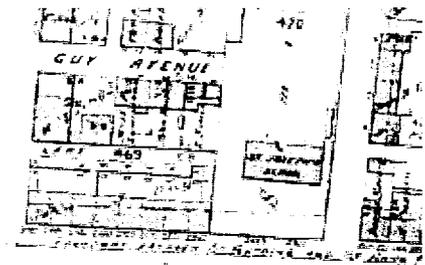
On the north side of the street, although the arrival of the GTR's Bonaventure freight terminal would wreak havoc with the built tissue in the blocks stretching upwards from Notre-Dame, a similar attempt to impose more consistency in terms of block width and a smaller, more regular parcel module can be observed as one travels westwards. Interestingly, along Notre-Dame, though there is significant densification, comparatively little aggregation appears to have taken place, perhaps suggesting that space along that important thoroughfare was far more difficult to aggregate (through the grouping of parcel modules) than space somewhat further away (for instance, the block bounded by Richmond, William, ND, and Saint-Martin - see figure 4-15), though some exceptions exist, such as the row built on John Day's set of eight adjacent parcels in 1890 at the corner of Notre-Dame and Guy (see figure 4-16).



4-15: The block bounded by Richmond/William/Notre-Dame, and Saint-Martin; 1890.

### Buildings

Buildings vary greatly across Griffintown's territory and appear to be at least partially conditioned by the parcel modules identified above as well as by their relationship (or lack thereof) with major infrastructures such as the Lachine Canal. Specialised buildings are more likely to be concentrated in proximity to such infrastructures, but not in an even way. Due to differences in both purpose and in the parcel structure, there are significant distinctions between the warehousing buildings erected on the territory of the Saint-Gabriel farm around the four Saint-Gabriel basins and the manufacturing buildings erected at the Saint-Gabriel locks. Such warehousing and sawmilling operations, in addition to a preponderance of lumberyards in close proximity to the canal can be plausibly explained by the prominence of water as a means of transportation in the 19<sup>th</sup> century and the need for a reliable source of water in case of fire. The basins, as a trans-shipment facility, are thus the key interface between the city and outlying regions as raw materials enter the city, to be transformed immediately or prepared for shipment to more distant markets.



4-16: John Day's rowhouses, built on a set of eight adjacent parcels; 1890.

### Contrasting locks and basins, factories and warehouses

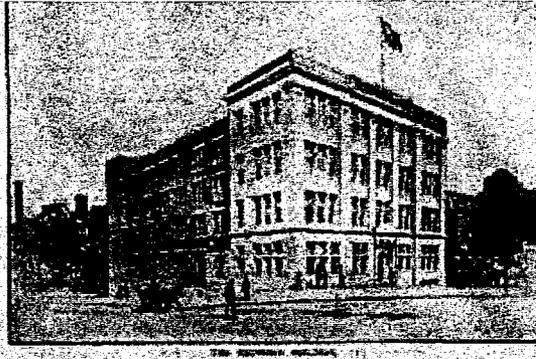
Saint-Gabriel locks	Saint-Gabriel basins
<ul style="list-style-type: none"><li>• Manufacturing</li><li>• Significant densification</li><li>• Brick/stone</li><li>• Smaller parcels and blocks</li><li>• Smaller footprint</li></ul>	<ul style="list-style-type: none"><li>• Transshipment, warehousing</li><li>• Retention of open space</li><li>• Wood</li><li>• Larger parcels and blocks</li><li>• Larger footprint</li></ul>

### Specialised buildings

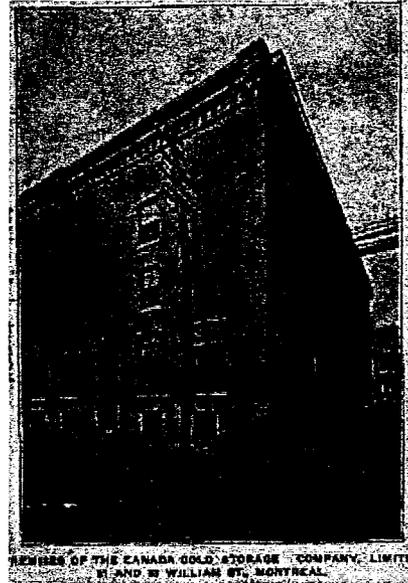
The Griffintown district is home to a wide variety of specialised buildings. The industrial building stock has emerged over a long period, from the earliest quayside stone warehouses and small brick foundries to the sheet metal and gigantic scale of a building like Canada Post's sorting facility, there is a significant degree of architectural diversity in the district. Though this thesis' interests lie in the realm of the urban tissue and not in the architectural characteristics of its buildings, the following pages catalogue images of relevant building types into two groups as a means for gaining a better understanding of the internal contrasts of the district, namely the spatial distinctions between manufacturing and transshipment and their divergent relationships with the Canal.

Griffintown's urban tissue once hosted a thriving, largely Irish residential neighbourhood amidst its industrial complexes. In the latter half of the 20<sup>th</sup> century, conscientious efforts were made, through zoning and expropriation, to remove the residential component from the district. The residential building stock is a compelling feature in two respects. First, as a component aggregated into what this thesis terms 'urban-integrated industrial complexes' general, non-specialised, urban building played an important role in the early industrialisation of Griffintown. Second, as a component that was to a large degree, 'wiped off the map', the spaces left behind by residential buildings – largely between 1949 and 2004 – are now among the most feasible sites for small-scale urban regeneration.

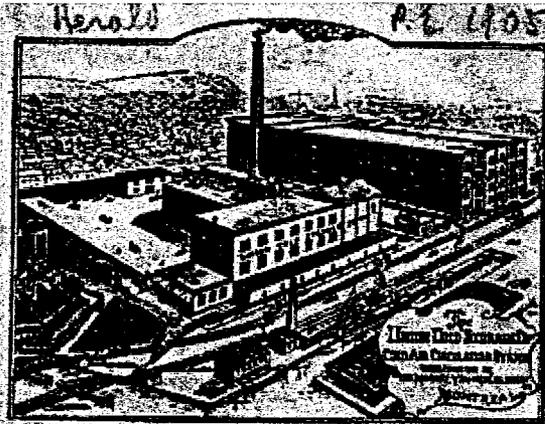
Warehousing in Griffintown appears to have been more concentrated in the eastern, gridded part of the district, that laid out by Charland. Buildings are somewhat specialised, in terms of the ornamentation of the facade, but otherwise, their unique structures are relatively similar in terms of volume and height to typical commercial or residential buildings in the neighbourhood.



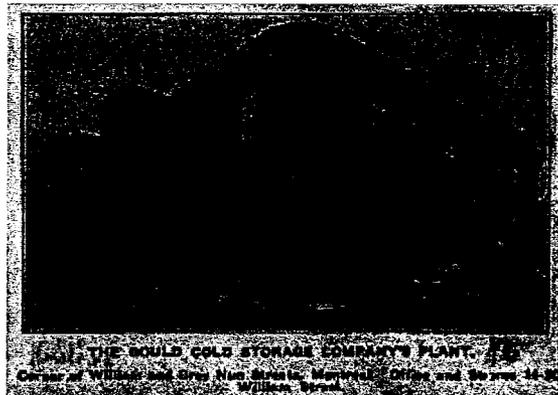
4-17a: Redmond Wholesale



4-17b: Canada Cold Storage



4-17c: Union Cold Storage



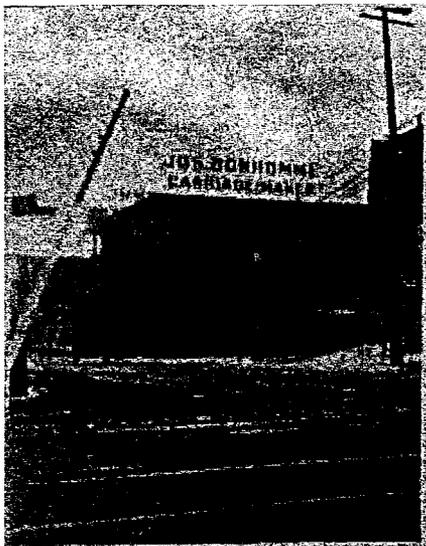
4-17d: Gould Cold Storage



4-17e: J Wentworth Hill



4-17f: Outdoor sawn lumber storage near the Saint-Gabriel basins



4-18a: Jos Bonhomme, carriage maker

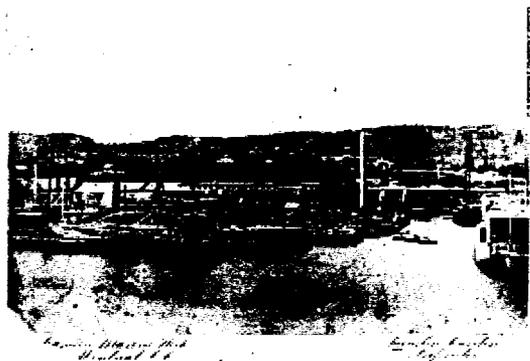
Griffintown's manufacturing sector, largely concentrated at the hydraulic pole at the Saint-Gabriel locks, is characterised by structures that tend to be more distinguishable from the general residential fabric, though in many cases these can be seen as an adaptation of residential building types, and in almost all cases, an adaptive repurposing of the residential block pattern that conserves much of its modularity. These range from groupings of adjacent former residences with afterthought smokestacks to modern daylight factories.



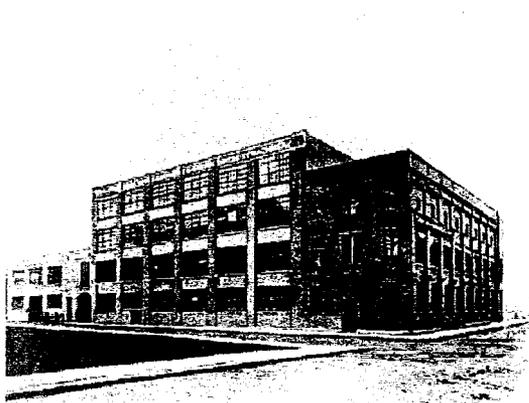
4-18b: The Phoenix Foundry



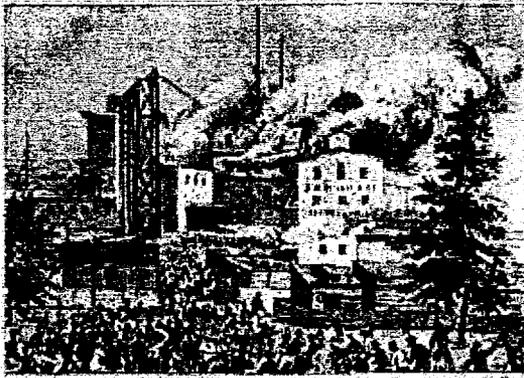
4-18c: Montreal Street Railway powerhouse



4-18d: At Augustin Cantin's Canada Marine Works, the product was stationary, while work processes shifted around it.



4-18e: The Darling Foundry; now home to Quartier Éphémère, an contemporary art venue.



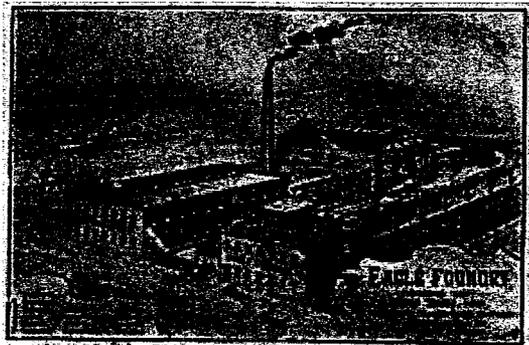
4-18f: Flammability in grain storage facilities was a major factor in the development of the silos that came to dominate the city's waterfront and serve as such vivid inspiration for European modernists.



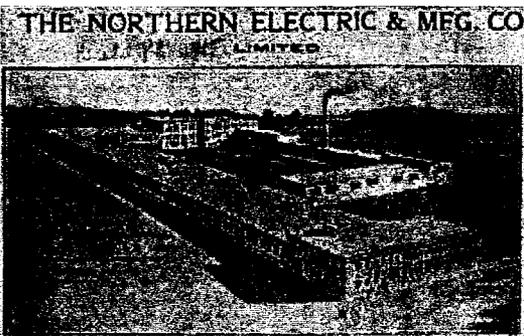
4-18g: Fitt's Steam Bakery; Griffintown has a long tradition of hosting businesses that serve the adjacent urban core.



4-18h: Gardner and Son's novelty works; A factory complex that works with the scale and modularity of the residential block.



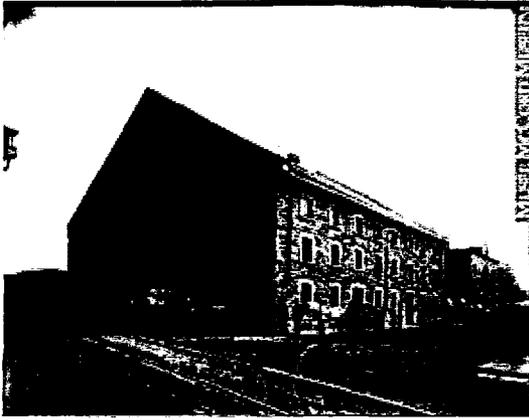
4-18i: Eagle Foundry; Note the increasing industrial specialisation of buildings towards the rear of the site, away from the street.



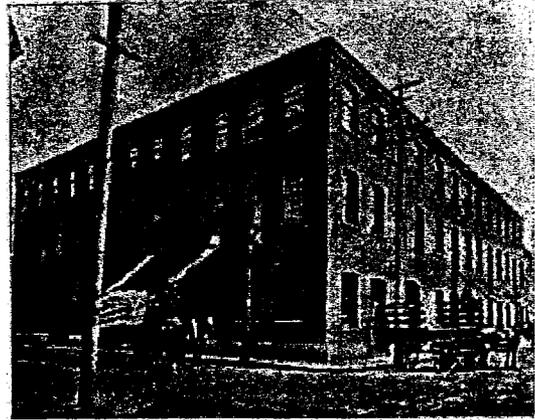
4-18j: The Northern Electric's home prior to the massive plant in Pointe-Saint-Charles; an almost archetypal urban semi-autonomous complex (corner Guy and Notre-Dame).



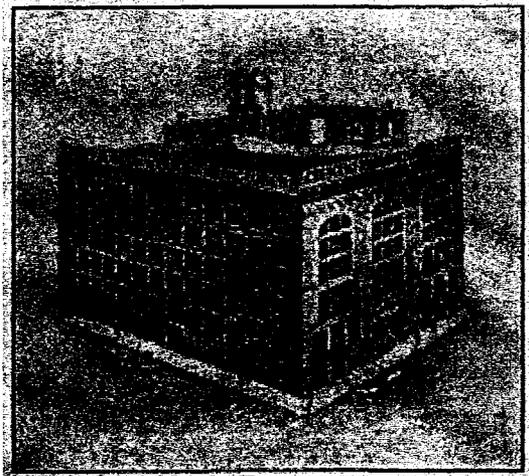
4-18k: Clendenning Foundry; Residential buildings are integrated into an industrial complex (145-179 William).



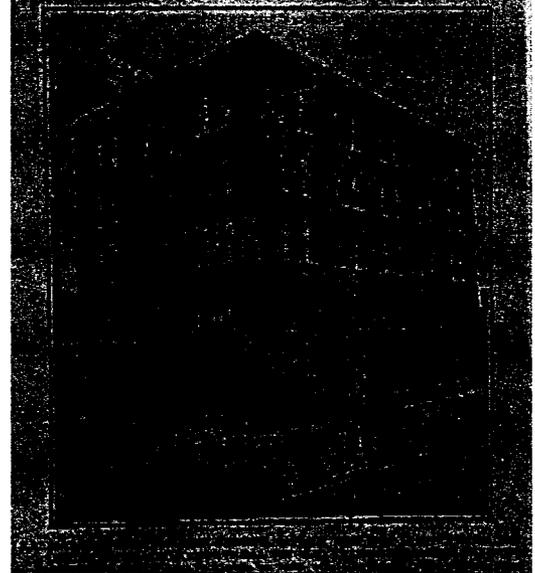
4-18l: Williamson factory; on Brennan, near the Flour basins.



4-18m: GJ Esplin's mill and box factory; note the deliveries interface with the second floor. 109-119 Duke street. The lumber yards were at various locations throughout eastern, gridded Griffintown.



4-18n: Crescent Manufacturing; William corner inspector.



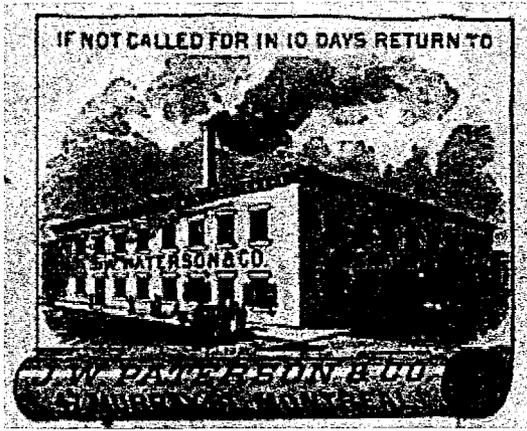
4-18o: Martin-Senour; The Chicago firm's Montreal factory was on Inspecteur, but was already planning to depart for facilities in the city's north.



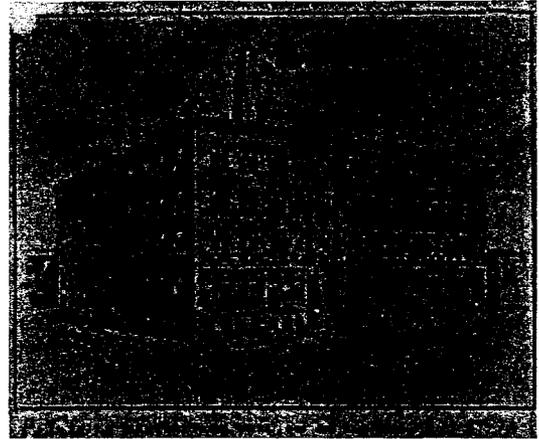
4-18p: Canada Paint; an illustration of the dense industrialisation at the Saint-Gabriel locks. The Canal was an attractive water source for many dye and paint manufacturers.



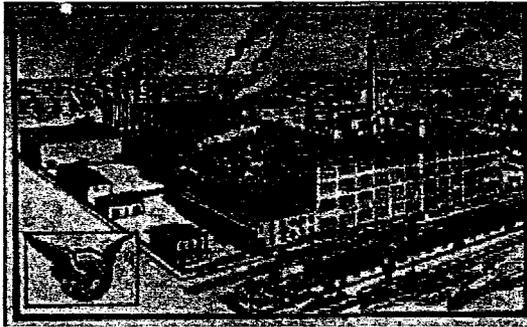
4-18q: A rear view of the Wire and Cable Company's works on Lusignan. Note the extensive fenestration on the second storey - a sort of daylight factory within the block.



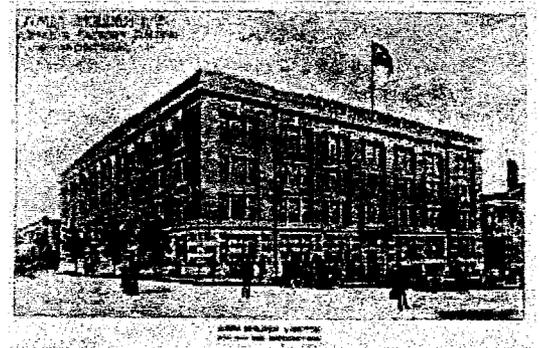
4-18r: JW Patterson, manufacturer of construction papers (tar paper, shingles) relocated to this set of one and two storey 'substantial' brick buildings on rue Murray from rue de la Commune. A few decades later, the exodus would be from Griffintown.



4-18s: IT Bell factory, rue de l' Inspecteur; makers of fine footwear.



4-18t: Island City Paint and Varnish Works; Note the prominence accorded to the factory's ability to interact directly with the railway and the water, through large doors at street level.



4-18u: Ames-Holden boot and shoe manufacturers; A combination of office and factory.

Dubois (2005) identified a variety of residential building types as part of a comprehensive typo-morphological study of Montréal's Southwest. The 2005 morphological study of the Arrondissement Sud-Ouest identified five residential building types in the Griffintown area, almost all of which could be termed synchronic variants – newer building types current at the then urban periphery, yet also fitted to Griffintown's older and already established urban tissue (Caniggia & Maffei, 2001: 76), thus occasioning variation from the type so as to adjust to constraints (parcel dimensions and configuration, for example) particular to the neighbourhood.

- *Three storey duplex*, primarily found in parts of northern Ste-Cunégonde and along the tracks in Pointe-Saint-Charles, but secondarily in Griffintown east of Mountain.

- *Triplex with interior stairs*, which has a similar distribution to above, although also primarily located further west, in areas near the Turcot interchange and in parts of Côte-Saint-Paul.
- *Apartment building*, primarily found in the square Richmond area and further west, as well as along the Canal in the Saint-Ambroise sector. Secondly, it's found in Griffintown west of rue de la Montagne, from the Canal up to rue Notre-Dame.
- *Mixed use building*, found primarily along matrix routes (rue Notre-Dame) and the most important commercial settling routes. Interestingly, in Griffintown, its distribution is identified as stretching all the way from rue Notre-Dame south to rue Barré, but stopping a block west of the ÉTS, where the urban tissue changes dramatically in the square Chaboillez area. In the past, the rivière Saint-Pierre and the industrial complex of the Dow brewery served to distinguish this sector, currently marked by the restructurations imposed by the autoroutes Ville-Marie and Bonaventure, and the redevelopments around the ÉTS campus.
- *Commercial building*, which follows a similar pattern to the above, but with a larger (secondary) distribution throughout most of the territory of Saint-Henri.



4-19: Residential building types according to Dubois (2005). Three storey duplex; Triplex with interior stairs; Apartment building.

## Infrastructure

Infrastructure has had an immense impact on Griffintown, from the construction of the first canal in the 1820s to its upgrading and industrialisation in the latter half of the 19<sup>th</sup> century, and from the growth of the railway network to the implantation of the autoroute Bonaventure, Griffintown, like many inner-city neighbourhoods, has accommodated a large degree of metropolitan infrastructure on its relatively small territory.

### Lachine Canal

The effects of the Lachine Canal have been multiple in Griffintown, but in terms of its impact as a structuring axis for industrial growth, or a vector of industrialisation, there have been two distinctive sets of consequences. As a transportation infrastructure, it has attracted significant transshipment activities, largely (though not exclusively) in the vicinity of basins, such as the Flour Basins at the foot of Peel street, or the set of four Saint-Gabriel Basins. The urban tissue surrounding these areas – the deployment of particular building types, the orientation and modularity of the parcel structure, and the characteristics of the route network – are in large part distinct from more general urbanisation elsewhere in Montréal due to their coarse grain. On the other hand, where the canal provided a hydraulic energy potential, such as at the Saint-Gabriel locks, a very different, much finer grained urban tissue emerged, with a tendency towards smaller parcels, a denser building coverage, and a tighter, more permeable block structure.

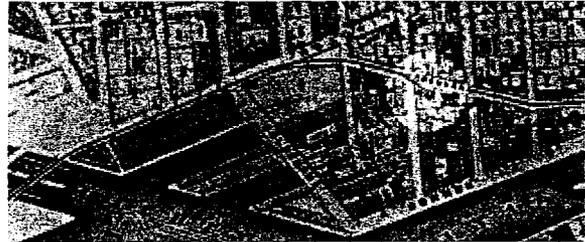
A stronger edge between the neighbourhoods of Griffintown and Pointe-Saint-Charles could not easily be imagined. In that sense, it's easy to qualify the Lachine Canal as a peripheral/anti-nodal axis. However, in its latest incarnation, as a recreational amenity, the canal is now an axis in a new sense, serving as an attractor for residential redevelopment – whether through renovation of existing structures or new construction – and tourism. The success of this transformation or repolarisation is highly uncertain and seems unlikely, given the divergence between the canal's status as a structuring axis at a regional (and until recently, industrial) scale, and its impact as an internal periphery within the city, separating distinct residential tissues.

### Rail

The implantation of rails in Griffintown has taken a variety of forms that vary according to their integration with the surrounding urban tissue, though almost all of them imply restructuration of some degree.

Along Brennan street, when the breakthrough route was created to allow the Grand Trunk Railway (GTR) to connect its Pointe-Saint-Charles yards with the port, the rails took the form of an in-street freight railway, not impeding any crossings and with very little substantial infrastructure other than the rails themselves. Business along the route could and did connect to the infrastructure, making it more than just a through route.

Along the north bank of the canal itself, the GTR also ran a spur line, branching off from its mainline just west of the Atwater market. Terminating in the midst of the Saint-Gabriel hydraulic complex, this line ensured the continued viability of milling operations on the Pointe-des-Seigneurs and has certain formal links with the GTR's spur line to the 'Mammoth Elevator' on Windmill Point, dating to the 1870s.



4-20: Brennan street 1879, highlighting the Grand Trunk's connection with the Port.

The third railway presence in Griffintown is the CN viaduct. Built to connect the nationalised Canadian Northern and Grand Trunk railway systems by extending the Canadian Northern's tunnel under Mont-Royal to the industrial southwest, the viaduct was a key component of a metropolitan network that largely bypassed the by then declining Griffintown district.

By the time the CN viaduct had split Griffintown from Vieux-Montréal and the faubourg des Récollets, the city core had by and large shifted to the 'New Town' centred along Sainte-Catherine street. However, this shift still left Griffintown disconnected from the city's business centre due to the presence of the Bonaventure freight depot. Though lying just outside Griffintown's limits per se, the huge facility – at their 1949 peak the yards stretched from square Chaboillez in the east to what is now boulevard Sir-Georges-Vanier, with a width of what would otherwise often have been three city blocks. The impacts of this infrastructure were twofold – while the freight terminal



4-21: The CN Viaduct in the 1940s.

attracted a variety of transshipment businesses and some industries, such as slaughterhouses and bakeries, it had a decisively constraining effect on Griffintown's expansion to the north. Even as the area has been largely renewed under the guise of 'Little Burgundy' and long vacant parcels near square Chaboillez begin to see construction with the growth of the École de technologie supérieure (ÉTS), the coarse grain of the urban tissue in this area remains intact in the form of very large parcels and blocks.

### Highway

Three infrastructural elements warrant particular mention in this discussion. The bridge over the Lachine Canal at rue Wellington, can be interpreted as an extension of the regional highway network; along with rue Bridge it forms highway

112 which connects Montréal with the south shore via another southwest landmark, the Victoria Bridge. Characterised as "*un projet autoroutier en ville*" (Bodson, 2001), the design implemented in the late 1990s espouses a more highway-oriented design, particularly in its treatment of square Gallery and the important intersection with rue de la Montagne, which in some sense forms part of the parvis of the former Saint-Ann's church. A continuation of the restructurations first launched with the rerouting and then widening of Wellington and Colborne (now Peel) streets, this infrastructure had major impacts on the adjacent square Gallery. Where an initial proposal suggested the re-establishment of Dock street and thus the creation of a stronger linkage between rue Wellington and square Gallery and a more urban treatment of the intersection with rue de la Montagne, the final project bypasses the square and largely ignores the symbolic and landmark potential of the intersection with rue de la Montagne. The restructuring of this area is taken up in further detail in the 'restructuration' section of this analytical narrative.



4-22: The GTR's Bonaventure Freight Terminal, between Notre-Dame and Saint-Jacques streets. Condominium towers would eventually occupy the site.

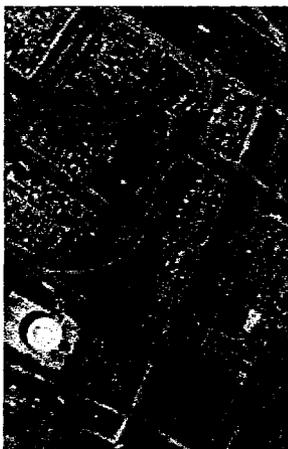
The other elements of highway infrastructure in Griffintown are larger in scale, more closely tied into a regionally-scaled network, and less compromising in their relations with the local urban tissue. They are also more celebrated and figure more largely in the discourses surrounding Griffintown's revitalisation. First, the autoroute Bonaventure. Built through a partnership between the Ville de Montréal and the federal government in the lead up to Expo 1967 – for which Pointe-Saint-Charles was a potential site (Fournier & Lortie, 2004: 142-

148) – the autoroute Bonaventure ensured that the rupture introduced by the CN viaduct was complete by occupying an entire city block (between rue Duke and rue Nazareth). After traversing the triangular turning basin and one of the piers at the Flour basins, the curve of the autoroute abruptly terminates several streets, creating an enclave out of a once highly central waterfront area. Though plans exist for the removal of the elevated highway, it has gained considerable persistence as a tracé in only a few decades, in tandem with a widened avenue University and boulevard René-Lévesque. Proposals for its re-urbanisation suggest schemes such as a tunnel under the triangular turning basin and various configurations for prestige office space in or along the rue Duke/rue Nazareth blocks north of rue Wellington (Pratte et al., 2006; Société du havre de Montréal, 2004, 2005). The mechanisms of this restructuration and its repercussions are discussed at greater length in the section of this analytical narrative dealing with (trans)formative processes.

Second, the autoroute Ville-Marie, which though underground, has had significant impacts, particularly in the square Chaboillez area. Dating from 1972, the project included a major entrance immediately east of the square, which entailed a major restructuring concomitant with the closure of the Bonaventure freight depot and the connection of rue Peel and rue Colborne. This highway infrastructure essentially reconfigured square Chaboillez



4-23: The autoroute Bonaventure compounded the CN viaduct's impact as a barrier between Griffintown and the historic centre.



4-24: The autoroute Ville-Marie's entry ramps drastically affected square Chaboillez.

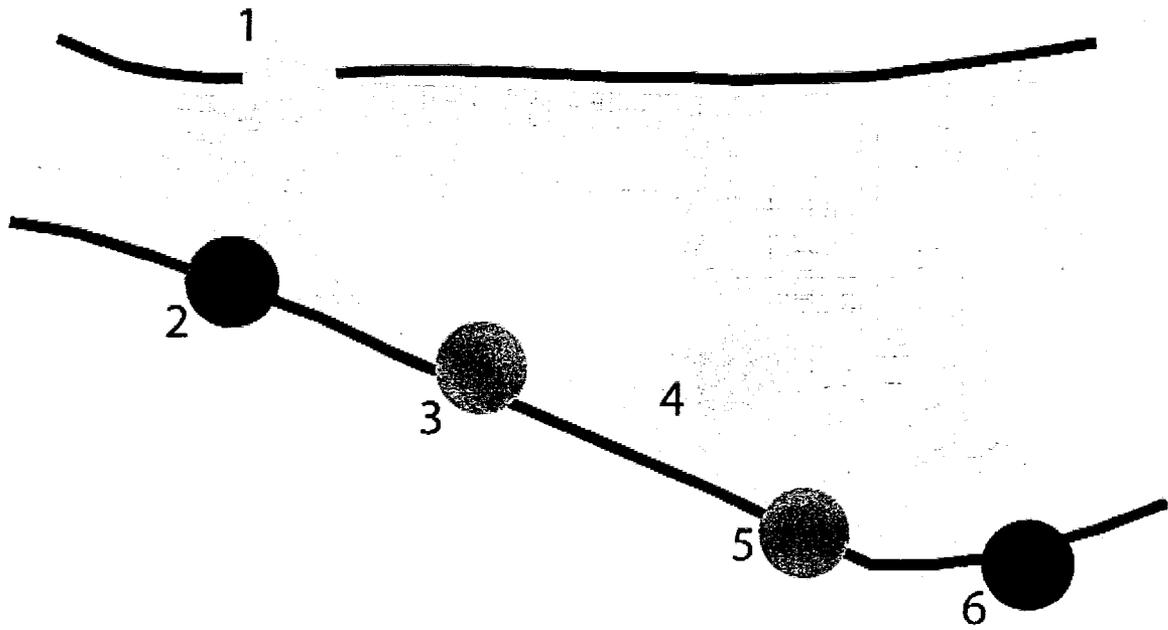
so that it became an exit space for commuters approaching the tunnel from either rue Notre-Dame or rue de la Cathédrale uptown via a generously-curved tunnel entrance.

### **(Inter)relationships**

#### **Polarity/nodality**

The map below (figure 4-25) indicates the key nodes in Griffintown's territory. The lighter-shaded circles highlight the position of residential nodes (1- Methodist and Presbyterian churches at the corner of rue Notre-Dame and rue des Seigneurs; 4- Saint-Ann's church) that are the hearts of residential settlement in

the district, both on matrix routes (Notre-Dame and Wellington, respectively). The darkest-shaded circles highlight Griffintown's two hydraulic energy poles (2- Saint-Gabriel locks; 6- Windmill Point), while the medium-shade circles highlight the district's transshipment nodes (3- Saint-Gabriel basins; 5- Flour basins (at the foot of Peel)).



Griffintown 2005 4-25: Poles, nodes, and axes on Griffintown's territory.

### Axes

The Griffintown district has a somewhat complicated axial structure (figure 4-25, above). Of three axes, two are centralising/nodal, Notre-Dame and Wellington streets. These streets, both matrix routes, have been the focal axes for densification processes – from attracting the earliest settlement to being the first areas in which parcel subdivision and the pioneering of settling routes took place. The third axis, on the other hand, is the Lachine Canal. While certainly a peripheral axis in residential terms – the canal acts as a formidable barrier between Griffintown and Pointe-Saint-Charles across the water – the Canal was also Canada's most dynamic industrial corridor for much of its history. For transshipment and manufacturing, the Lachine Canal acted as a compelling centralising axis, though in an industrial sense, and on a metropolitan and even regional scale that in many ways contributed to a contradictory barrier effect in terms of Griffintown's urban tissue, but also – as the third narrative relates in greater depth – on the national and even continental scales.

## **(Trans)formative processes**

### **Aggregation**

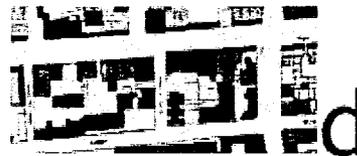
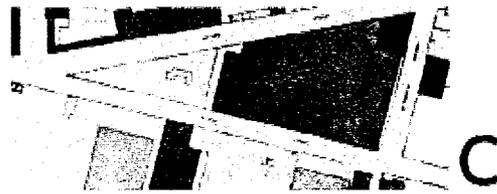
Throughout Griffintown, parcel aggregation has been an important transformative process. In the eastern part of Griffintown – that subdivided by Charland on behalf of Mary Griffin and corresponding largely to the former fief Nazareth – parcel aggregation in the course of industrial complex formation has altered a significant portion of the urban tissue. Two types of aggregation, that of adjacent parcels within a single pertinent strip (the band of parcels along one side of a street) into double, triple, or even quadruple modules, and that of ‘through’ block aggregation involving the fusion of parcels on opposite sides of a block. The latter process appears most frequently along rue Smith and rue Wellington, in the vicinity of the Flour basins, while the former process is quite widespread. In western Griffintown, the areas subdivided by Ostell near the Saint-Gabriel locks – the hydraulic pole – and the transshipment node centred on the Saint-Gabriel basins also show significant aggregation of parcels, though with different characteristics. North of the Saint-Gabriel locks, aggregation has involved the fusion of parcels in a similar way to the process observed in eastern, gridded Griffintown. At the transshipment pole, however, massively-scaled aggregation has resulted in extremely large parcels – the entire Saint-Gabriel basins site (the recently-closed Canada Post sorting facility) – occupies one such parcel, while the blocks immediately north and east of the site involve the fusing of parcels into aggregations ranging from three to as many as ten (near the corner of rue Saint-Augustin and rue Bassin).

Parcels and streets are aggregated into blocks in a very coherent form in the gridded, eastern part of Griffintown. Further west, due to presence of canal-related infrastructure, this pattern becomes less coherent. Immediately west of McCord street, blocks become much more irregular in order to accommodate the Saint-Gabriel basins, while near the Saint-Gabriel hydraulic pole, the grid is offset due to the small space between Notre-Dame street and its blocks, following from a more standard, seigneurial pattern, and the Canal, along which parcels were arranged by Ostell to take advantage of the hydraulic potential

Along the Notre-Dame street matrix route, there are some vernacular block forms which represent an attempt to more densely urbanise – through aggregation – the small strip of land below Notre-Dame that is still part of the more standard, seigneurial pattern, and not part of the Fief Nazareth or the Ferme Saint-Gabriel. In contrast, the pattern to the north of Notre-Dame is much more regular and similar in rhythm and dimension with the Montréal standard. These streets and parcels, and the blocks into which they are aggregated, allow for a much denser settlement pattern along the Notre-Dame matrix route, which as a nodal axis,

would have in itself been an attractant for settlement - especially given its role as the leading route out of the west end of the city.

Many of the industrial buildings described above are aggregated into what can be termed urban integrated industrial complexes, in which multiple buildings are arranged together to facilitate production. Visual evidence suggests that these are composed of multiple buildings built at different points in time, often with different purposes in mind. Some of the buildings in the complexes have the appearance of the residential buildings mentioned in Dubois' typology (2005), but are grouped together in a new way. Certainly these aggregations are conditioned by the parcel and route pattern – the urban block – but there are particular and distinctive arrangements for two reasons: they're usually grouped around a significant open space; and they usually include at least one specialised industrial building, geared towards either manufacturing or warehousing. These aggregations become increasingly specialised and non-residential (in form) as one progresses through time and, through space, further west along the Canal. The specific typological relations (of temporal variance) between the most urban integrated industrial complexes in eastern Griffintown, near the city walls, and those situated further west (largely built in the twentieth century) will be taken up further later on in this chapter, in the second analytical narrative.

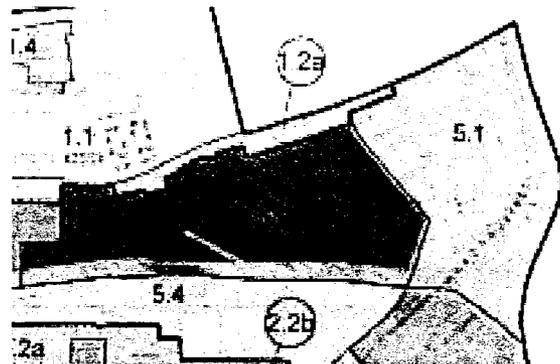


4-26: Griffintown's block types; a- the standard urban block in eastern, gridded Griffintown; b- the more compact blocks of the Saint-Gabriel locks hydraulic pole; c- the blocks of the transshipment node west of Mountain street; d- the more vernacular blocks along the rue Notre-Dame matrix route, outside of the fiefs.

As part of a morphological study of Southwest Montréal, Dubois (2005) classified portions of the urban tissue into '*unités de paysage*' based on the prevalence of common formal characteristics in terms of street, parcel, and block layout, as well as the distribution of particular architectural types. He classifies all the industrial areas in the Sud-Ouest as '*aire de paysage 5*', and break Griffintown into two *unités de paysages* (landscape units) – '*Griffintown est (5.1)*' and '*Griffintown ouest (5.2)*'. The boundaries of these two together

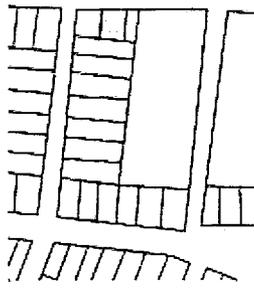
correlate almost precisely with the study area of this analytical narrative, though they exclude the parcels on both sides Notre-Dame as their dividing line follows the southern *contrada* limit of Notre-Dame (which is treated as its own *unité de paysage*), a distinction based presumably on industrial/non-industrial distinctions that loosely follows rue Barré – though the coarser grained industrial urban tissue that emerged south of rue Barré clearly did so on a residentially-scaled and –configured substrate. The following paragraphs comment on these aggregations and their emergence.

Stretching from rue de la Montagne to the autoroute Bonaventure and corresponding largely with the territory of the former Fief Nazareth, Dubois observes that in Griffintown Est, early industrial development was linked to the removal of the fortifications and the recreation of rue McGill as a prestigious address. This transformation, favouring offices and retailers (though there were still warehouses

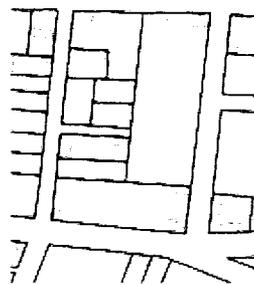


4-27: unités de paysage in Griffintown, according to Dubois (2005).

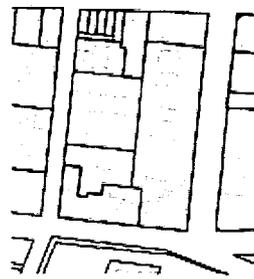
and a rail terminus) may have pushed lower-order activities further out. A key feature of this *unité de paysage*, for Dubois, is the massive aggregation within the allotment after the Second World War; noting that while it's still possible to find the original lot modules on many of the Griffintown blocks, but observe that these are in large part subsumed within larger parcels. Though the report goes on to state that “[n]ous retrouvons donc des parcelles de formes et de dimensions irrégulières sur chacun des îlots” (2005: 5.1.2), these irregular dimensions appear to conform to aggregations of the established parcel module. The report includes an interesting comment on the repercussions of this high degree of parcel aggregation: “[e]n raison de la grande transformation du parcellaire de Griffintown Est, la promotion d’un paysage résidentiel similaire à celui présent avant les restructurations est difficile” (2005: 5.1.8); however, given Griffintown’s proximity to the CBD, this formulation perhaps dodges the more crucial issue of how this inherited structure can accommodate denser forms of housing or mixed-use redevelopment without compromising the integrity of the more permanent aspects of its urban tissue, such as the street grid and the relatively fine grain of Charland’s 1801 allotment system.



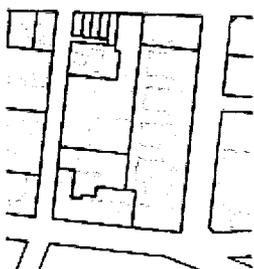
1846



1879



1949

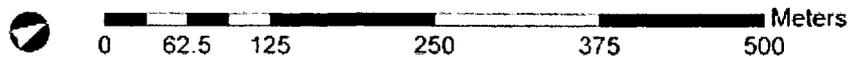


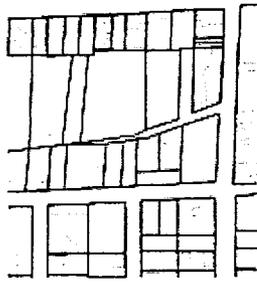
2005

Stretching from rue de la Montagne west to the Robin Hood flour mill, the Griffintown ouest *unité de paysage* is characterised by a parcel structure and street grid that are anchored to the canal. The synchronisation between Griffintown ouest and the canal prompts Dubois to refer to the historical roots of the area as a vast urban planning and allotment project (*projet d'aménagement et lotissement*) undertaken in the late 1840s under the supervision of the architect and surveyor John Ostell. While the report considers this as one *unité de paysage*, it includes both the hydraulic pole at the Saint-Gabriel locks and the transshipment pole at the Saint-Gabriel basins. While both areas are distinct from eastern, gridded Griffintown, they have important differences from each other due to the different roles they played in the industrial complex: the manufacturing tissues, with far more densification and ground coverage in comparison with the warehousing tissues, were - and continue to be - quite distinct from one another in important ways, including their relationships to the canal. Manufacturers using the early hydraulic lots required extra infrastructure in the form of head and tail races parallel to the Canal, whereas warehousemen required quay and wharfage space along basins that were perpendicular to the Canal.

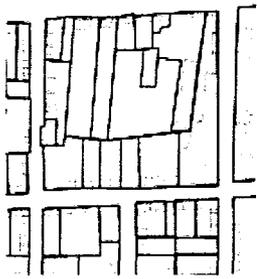
#### Densification

Examples of densification, or the filling of parcels or blocks by buildings without occasioning any restructuring Malfroy (1986b: 128-129), abound in Griffintown. Occurring horizontally (through increased ground coverage) and vertically (through the erection of additional floors), it is a phenomenon that also operates at a variety of scales – from individual parcels to entire blocks. Examined horizontally, which is the focus of this study as accurate building height information was not always

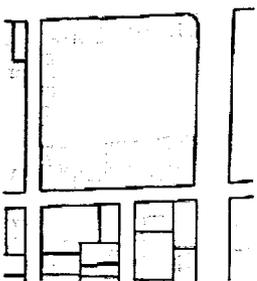




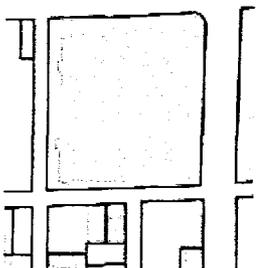
1846



1879



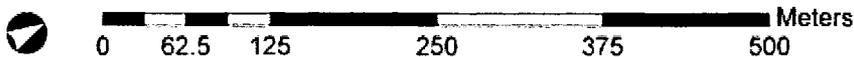
1949

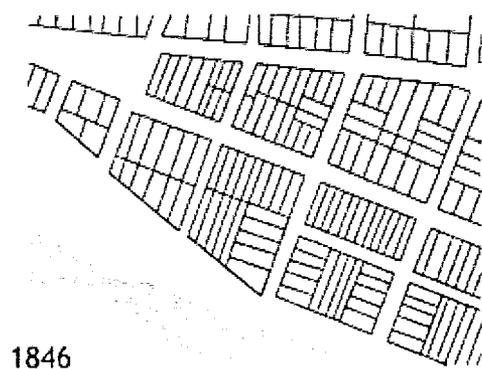


2005

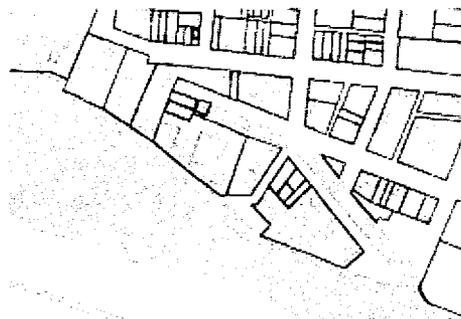
available, densification largely takes two distinctive forms depending upon the parcel organisation and the degree of aggregation present in a given piece of urban tissue, such as a block. Where a large number of contiguous parcels – up to an entire block in some cases – are available, densification may involve the filling of the whole block or the majority of the available parcels. The Northern Electric (Northern Electric) complex at the corner of rue Guy and rue Notre-Dame, which progressively fills up almost the entire block in stages from 1907 to 1949, or the blocks immediately north of the Saint-Gabriel basins, which by 1949 house incredibly large warehouse buildings, are examples of this. In cases where individual parcels retain their integrity – suggesting a more diffuse ownership pattern – densification may occur through the addition of secondary buildings, such as rear-lot housing or sheds.

The ÉTS block shows how densification in a ‘deep’ block can work: the perimeter block is built up, while deep lots coming from Notre-Dame (a legacy of its status as matrix route and of the boundary of the ferme Saint-Gabriel/Fief Nazareth and the Côte Saint-Antoine agricultural patterns) are in some cases significantly built up. The ÉTS in its current incarnation is extremely dense, though not in a way that continues that past pattern; the division between seigneurial and fief agricultural forms is subsumed within a single building that occupies the entire block, while the significance of rue Notre-Dame as a matrix route is expressed only at the corner with rue Peel – the remainder is merely a lateral façade.

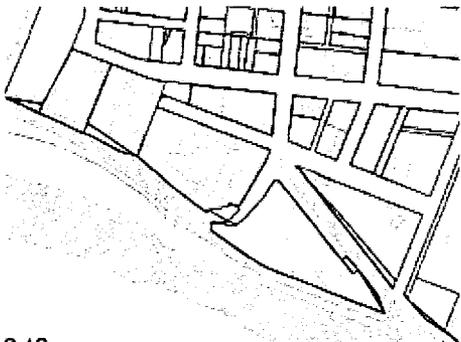




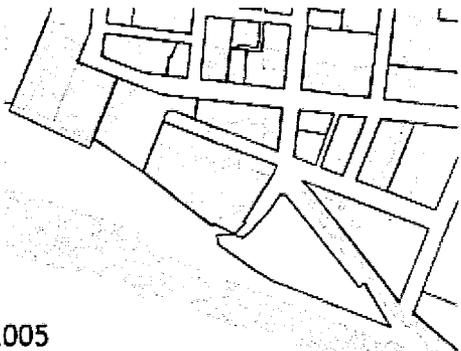
1846



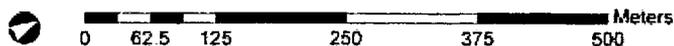
1879



1949



2005



Selected factories and warehouses have filled many of the plots in the gridded, eastern portion of Griffintown, for example, the block between rue Nazareth and rue Shannon south of rue Ottawa. To a lesser extent, this extends southward to the flour basins and the rue de la Commune frontage of the Canal. Many of the parcels in these blocks are significantly built up by 1907, with many rear-lot structures in wood and brick and a very tight internal open space system unique to each parcel (as opposed to block-wide). This densification was subsequently completely derailed by the restructurations brought forth first by the CN viaduct, the effects of which are seen on the 1949 map, and the autoroute Bonaventure, the effects of which are seen in contemporary satellite imagery.

There is also significant densification in the area between rue Canning and rue des Seigneurs, which looks like it makes an interesting transition from residential building forms to industrial ones from 1890 onwards. The semi-irregular block pattern – with far more street frontage in a comparable area than the blocks from rue des Seigneurs to rue Guy – facilitates intensive ground coverage. The Saint-Gabriel hydraulic pole, particularly the area between William street and the Canal, west of Richmond, also shows significant densification, with the canal frontage appearing to take priority over the rear frontage, which is somewhat difficult to understand (even now) in terms of how rue

4-30: Densification at the Saint-Gabriel locks hydraulic pole.

Basin and rue William come together. If any area had a principal front on the canal, this was it, though this has now been discarded with the filling of the old canal (hydraulic channel). The street wall is still largely in place (with one fairly large exception), but the canal is now quite far away and the space thereby liberated has not been included in the public park as of yet.

Densification also takes place by means of the erection of secondary structures on standard (and also non-standard) parcels. Up until 1912, growth can be observed in the rear of standard parcels, either as dwellings or as sheds for light industry, storage, or stabling horses. By 1949, there appears to be a precipitous drop in the number of these buildings. Carey (2002) examines four explanations for this decline,

noting that it was more severe in the city's west end (including Griffintown) than in the east: municipal regulation, the switch from a 40x105 to a 25x80 foot parcel, the expansion of the city centre (in commercial, industrial, and infrastructural terms), and suburbanisation, finding that though municipal regulation was relatively tolerant of rear-lot housing in the 40x105 foot parcels, it largely precluded such dwellings following the switch to a 25x80 foot parcel. In terms of city centre expansion, Carey finds that while transition to non-residential use prior to 1900 often involved a process of aggregating multiple residential buildings to form a new complex – thus conserving rear-lot structures – after 1900 the tendency switched towards wholesale transformation through demolition and substitution of new buildings. Carey adds that with extensive suburbanisation in the early 20<sup>th</sup> century – new districts such as Rosemont and Villeray in the north, or Ville-Émard in the Southwest – the increase in the housing stock limited the market for rear-lot dwellings.



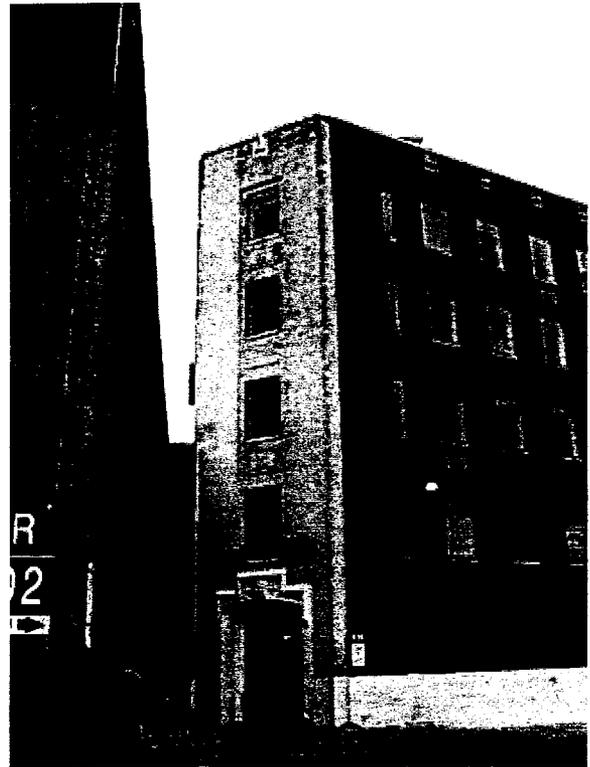
4-31: Outdoor storage (principally of lumber) at the Saint-Gabriel Basins.

Another interesting phenomenon to be considered in the industrial context is a sort of reverse densification for industrial purposes: from 1912-1949, privately-held open space becomes increasingly important in the makeup of industrial complexes. There seems to be a polarisation occurring, where parcels are either built at full ground cover or they are left mostly unbuilt, though presumably (and photo evidence suggests so - see figure 4-31, at right) they were intensively used for materials storage, transshipment activities, fleet storage,

etc. The block between the Saint-Gabriel basins and the Saint-Ann's church just west of rue de la Montagne is a great case of this phenomenon, as it's identified (on the 1949 map) as being used for storage purposes, has a wall, and appears to be linked to the adjacent basins.

### Restructuring

This thesis focuses on two types of restructuration in Griffintown: one involving the route network, which in practice implies the introduction/elimination/widening of particular streets and infrastructure; the other has to do with the railway and canal infrastructure and its *a posteriori* insertion into the landscape. Restructurations can be read as a balance between anterior and posterior states (Malfroy, 1986a), that is to say that the restructuration can be interpreted in light of the impact of the insertion (be it a street widening, a new railway line, or a highway) on the urban tissue, but also in light of the urban tissue's impact on the insertion and its particular characteristics, or the degree to which it has been forced to conform to the pre-existing urban tissue. The following pages discuss elements of restructuration in the Griffintown district, first grouped into issues related to the introduction, disappearance, and widening of streets; the second, on the introduction, disappearance, and expansion of infrastructure.

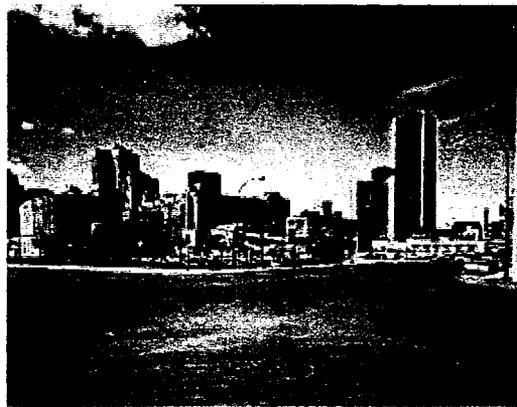
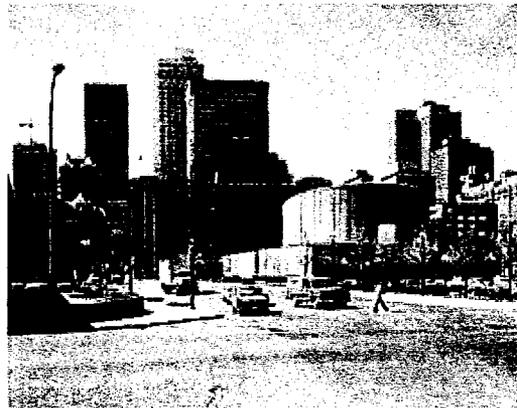
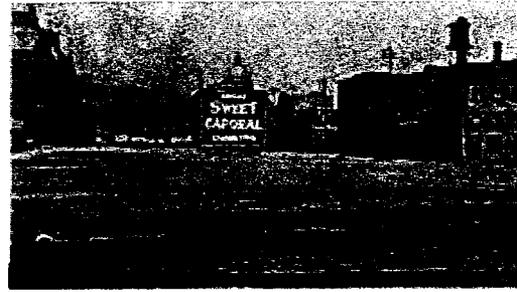


4-32: Paco Building; syntactically modified (in terms of its relationships with the neighbouring building and the street) by the realignment of Wellington street.

In the triangle north of the flour basins there is an almost complete restructuration as the area finds itself becoming an enclave due to the viaduct and the freeway (warehousing buildings take over). The Wellington street realignment is an interesting case, making what is a very strong axis in that entire part of the city (all the way through Pointe-Saint-Charles, as well) do a derivation to correspond to the Charland grid. A better illustration of vestigialism in the urban tissue and of the inter-relationship between building and street could not be found than the building at Wellington and Nazareth, where the addition follows the 'new' Wellington, while the old building still follows the old alignment. There appears to be somewhat of a reduction in the legibility of the rue Wellington matrix route at this

point, particularly as the axis is disrupted precisely where it is overshadowed by two other major restructurations, the autoroute Bonaventure and the CN railway viaduct.

The widening of rue Colborne (present-day rue Peel), which only affected one series of pertinent strips: those on the west side of the street. The notion of Peel being an important and unified (in some sense) connector between Uptown and Griffintown is a more recent phenomenon. There's no evidence to indicate that Colborne was anything different from the surrounding streets, though certainly rue Windsor, as it went up the hill, did have a certain importance, as home to the Canadian Pacific's main passenger station and an established route up the escarpment. The previous Colborne/ Windsor interface, square Chaboillez, has become something completely different, and though the rails are gone, the area still has to contend with the disruptive infrastructure of some major Ville-Marie access ramps. In fact, the emergence of a cluster of large facilities and institutions in that sector (Centre Bell, Planétarium, ÉTS, proposed Expos stadium) suggests that this area, occupied in large part by derelict railyards, less than desirable and technically challenging escarpment land, and later on the connections with the autoroute Ville-Marie, is a sort of internal periphery



4-33: Square Chaboillez; 1911, 1910, 1960s.



1846



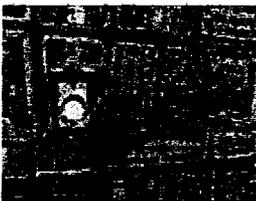
1879



1907



1949



2005

uniquely suited to offering large sites that would otherwise be prohibitively expensive or virtually impossible to assemble in closer proximity to the CBD.

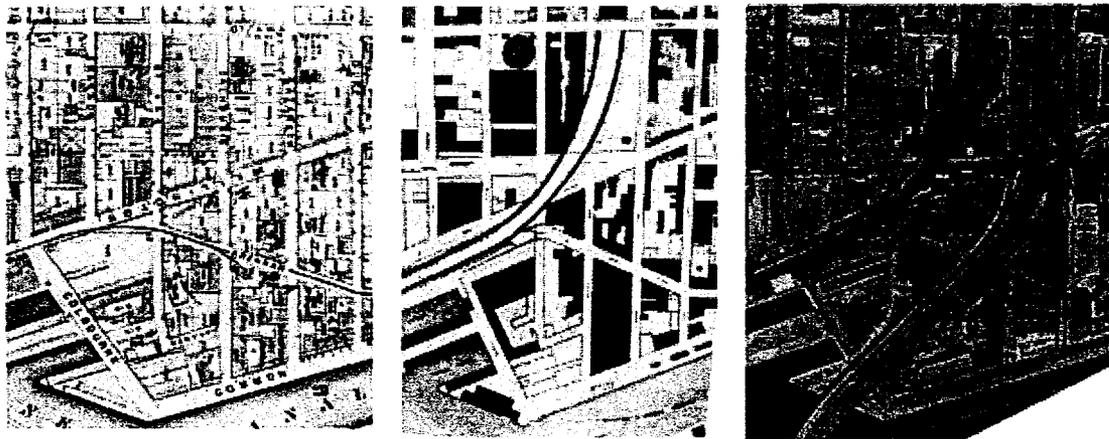
As recently as 1949, Colborne/Windsor had an intricate junction via what must have been a bustling Chaboillez square (the station and freight depot forecourt – see images), while post-1949 the square progressively lost its historic, industrial meaning (no more station or freight depot) and though the square and the Peel axis had been significantly rationalised, the decline of the surrounding faubourg tissue – in large part due to the autoroute access ramps and the widening of ND – and the insertion of the planetarium (which really makes it not a square at all), have resulted in difficult times for this square.

However, the Colborne widening preceded the reconfiguration of Chaboillez square and the unification of Windsor/Colborne into 'Peel'. It seems likely, judging by common dimensions and timing – as well as the fact that the Colborne widening stops abruptly at Wellington – that the Colborne widening was part of a larger coordinated restructuring initiative that included the rerouting and widening of Wellington and the construction of the Wellington tunnel, likely geared towards accommodating increasing automobile traffic related to the Victoria Bridge and truck use along the Lachine Canal. This operation left the blocks on the west side of Peel street extremely narrow for the Southwest, though of a fairly standard width in comparison with blocks in the Plateau Mont-Royal district, for instance.

The current contrast between the north and south sides of Notre-Dame street is a testament to past restructuring that involved only the north side of the street, that which bordered on the GTR's Bonaventure freight yards. As with the restructuring of Colborne street, the unbalanced nature of this operation makes for an uneven streetscape, which was in turn amplified

4-34: Chaboillez square mapped through time; 1846, 1879, 1907, 1949, 2002.

by the scale of the urban renovation projects undertaken to replace the freight yards. A wholesale reconfiguration of the 'Petite-Bourgogne' neighbourhood along the western stretch of Notre-Dame street's Griffintown section, while along the eastern stretch, a long-standing collection of vacant blocks, a proposed baseball stadium, the transformation of square Chaboillez into a more or less regularly-dimensioned block containing the Dow Planetarium, and the infrastructure of the Ville-Marie and Bonaventure autoroutes marked the street.



4-35: The 'Dalhousie Triangle' square mapped through time; 1879, 1949, 2002.

The introduction of the CN viaduct and the Bonaventure highway represent among the most interesting cases of restructuring in Montréal. In the case of the railway, the viaduct represents a dedicated infrastructure where before it was acceptable to combine railway with street. In fact, for a long time, both in-street (Brennan) and viaduct railway coexisted, though they betray very different ways of organising the railway in the city: on the surface, it's possible to include frequent and multiple spur lines into specific industries within an urban block pattern; the elevated viaduct was more about inter-city travel and providing access for a metropolitan network – it's part of a system where the freight yards are in Côte-Saint-Luc and industries are along lines such as those heading for Montréal Nord, rather than yards and industries integrated into the urban tissue. The CCUM siding is an exception to this, though it is perhaps indicative of what may have resulted in more quantity had the viaduct been constructed earlier. The highway is also part of a larger, limited-access, and much more hierarchical logic, spread out over a vast territory.

One of the most important impacts that the viaduct and the freeway had was to make rue de la Commune (between Mill and Peel) a somewhat restricted enclave, at least until Peel was passed under the viaduct in the early 2000s. This area was restructured in a big way as a result of the new infrastructures; what was before a simple continuation of the Charland

grid, straight to the water, became a quite complicated collage of parking, ancient warehouses. The area, the 'Dalhousie Triangle,' is a palimpsest of multiple restructurations linked to the introduction of infrastructure:

- Brennan street was pierced in order to connect the GTR from Pointe-Saint-Charles to the port (1870s); Consequence for the tissue: introduction of a non-orthogonal street and the arrival of new possibilities for building alignment due to technical constraints of the new infrastructure;
- The viaduct was pierced to allow CN to have an Uptown presence and to allow them to connect their Canadian Northern and Grand Trunk systems (1940s); as a consequence for the tissue, the link between the 1801 Charland grid and the Flour basins is severed, Dalhousie street is cut in two, reducing access to the Dalhousie Triangle;



- The Bonaventure autoroute was built as part of efforts to modernise Montréal and to provide a seamless, modern gateway between the City and Expo (1960s); Consequence for the tissue: there are virtually no connections between the Charland grid and the Dalhousie Triangle (which, we should remember, was part of the original Charland grid) between Duke and Peel, excepting Brennan. In fact, there are almost no streets at all in the triangle any more, and only three buildings remain of a once-thriving warehouse location. It has only been since the early 2000s that Brennan was 'reinstated' as a link between the old port and Griffintown, as part of the same initiative as the rue Peel-rue de la Commune reconnection.

The restructurations imposed by the CN viaduct and the autoroute Bonaventure are an excellent case in point of Malfroy's notion that restructurations can be read in terms of a feedback loop, consisting of both the influence of posterior on anterior (the effects

4-36: The Saint-Gabriel Basins mapped through time; 1846, 1879, 1912, 2002.

of the intervention on the pre-existing urban tissue) and of anterior on posterior states (the influence of the pre-existing urban tissue on the intervention). In the course of the restructuring imposed by the CN viaduct and the autoroute Bonaventure, the Griffintown street grid is substantially altered, while both the viaduct and the autoroute do conform to it in their further approaches to uptown. Clearly, however, anterior is more affected by posterior than vice versa, though the nature of the vehicles is an important consideration, as rail sidings were always far more limited than the extensive reconfiguration of street space and elimination of building stock that was undertaken to accommodate highway-related automobile traffic.

The Saint-Gabriel basins go several different incarnations before disappearing altogether. Their return figures consistently in contemporary redevelopment schemes. In 1846 there is one square basin, the centrepiece of a larger urban project platted by the architect and surveyor John Ostell. Surrounding parcels are structured to take advantage of the basin's location, oriented perpendicular to the water. The intent may have been for businesses to benefit from the single-parcel blocks by having one front on the basin (via a public quay), the other on the neighbourhood's internal street network.

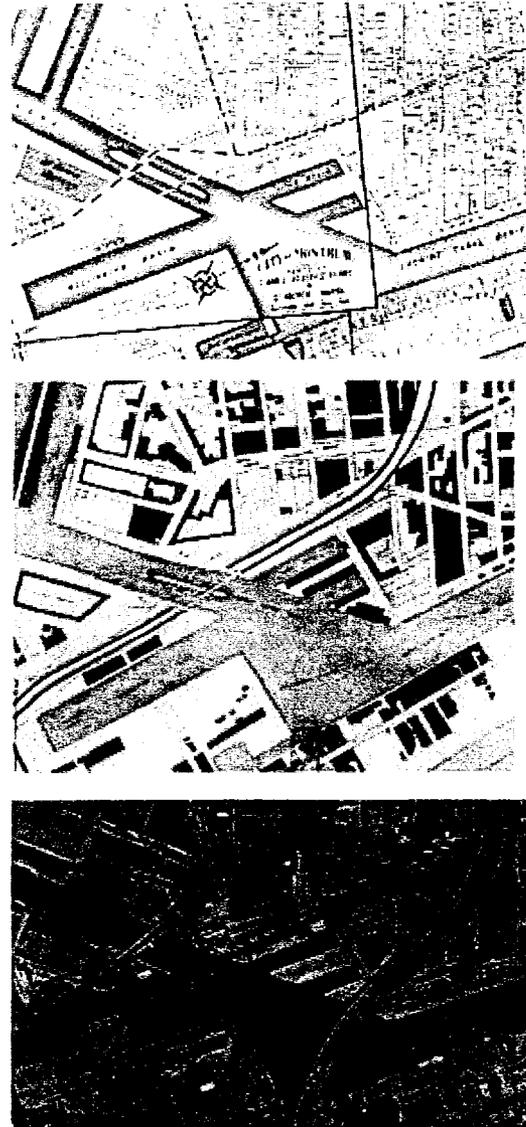
By 1879, two rectangular basins have replaced Ostell's initial configuration. This arrangement provides significantly more quay frontage and injects value into a greater portion of Ostell's 1846 urban project. It's important to note that these basins are the key *raison d'être* for the majority of the eastern section of the ferme Saint-Gabriel that doesn't form part of the hydraulic complex; the previous square basin didn't do much for the blocks at the interior of this relatively large area, while the 1879 rectangular configuration appears to address the larger needs of the *projet urbain* to a better degree, and seems to promote warehouse development in the block between William and Ottawa. It seems as though this would have been a less likely outcome had the square basin been retained.

By 1890, the two basin configuration has been extended westwards across the site to total four rectangular basins. This scheme extends the advantages and configuration of its predecessor, adding to the linear footage of transshipment space, and from notes and remarks on the maps, it appears that it was a planned and intended extension of that first double rectangular basin concept. One notes that the interbasin quay is significantly wider in this second incarnation, and that where the eastern edge of the basin site affords a public quay (likely exploited by the warehouses in the adjacent block), the western edge is contained within a block and doesn't provide for a public quay. It's possible that demand

for warehousing facilities and so forth was less prominent in the sector just west of the Saint-Gabriel basins due to the proximity of the hydraulic pole and the manufacturing cluster that it occasioned.

After 1949 all of the basins are filled to make space for a Canada Post sorting facility. The massive scale of the block is retained, though Canada Post adopts an office-park like appearance, with landscaped parking, and truck access from all sides. Once the creation of basins established a large scale for a parcel, block, or group of blocks, this state of affairs was largely maintained when redevelopment – either postwar industrial or postindustrial commercial – occurred, as was the case elsewhere along the Canal – for instance, Augustin Cantin’s Canada Marine Works which became Robin Hood Flour, or the GTR’s Atwater Yard which became a large format, ‘big box,’ grocery store.

The Flour, or Peel, basins (note that Peel has only been used to refer to the combination of Colborne and Windsor streets at the foot of which the basins lie since the latter half of the twentieth century) have also been substantially altered since their introduction, particularly if one also considers the triangular turning basin. Particularly interesting is their changing relationship with the area of Griffintown to their north. In the 1907 map, they gave directly onto the area’s major thoroughfare. Two events between 1907 and 1949 resulted in this relationship being dramatically severed. First, the restructuring of Wellington street, a change that moved the basins from a prime position – next to a natural focal point (the Wellington bridge) and alongside one of the Southwest’s most important matrix routes, which afforded direct access to other thoroughfares across Montréal via Mountain and McGill streets. The basins were



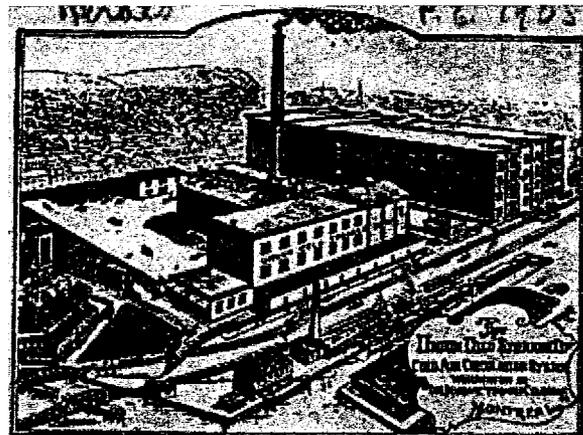
4-37: The Flour (Peel) Basins mapped through time; 1907, 1949, 2002.

thus far more directly integrated into the 1801 Charland grid, by virtue of a cement factory (The Canadian Portland Cement Co, see figure 4-38) that allowed for waterside access at Mountain and Colborne streets and served as an interface between the tracks and the water. This location choice by a cement company is interesting, in that the cement industry requires a- significant loads of raw materials (aggregate, water, etc..) and b- rapid means of delivering its perishable product to building sites throughout the city. Given the presence of the Canadian Portland Cement Co, it seems likely that this location had such attributes.

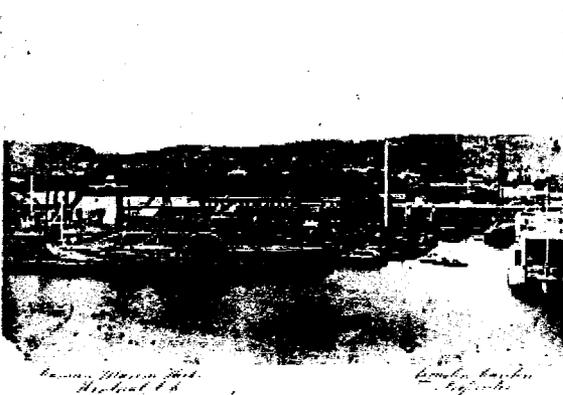


4-38: Canadian Portland Cement Co, Wellington street across from the Flour Basins, 1901.

The restructuration of rue Wellington and the relative marginalisation of what became rue Smith, in combination with the construction of the Wellington tunnel, resulted in the creation of Gallery square, (see figure 4-39, next page) which appears to have had its roots in the open space at the corner of Saint-Léon and Mountain streets. Reconfigured into a landscaped cover for the tunnel entrance and the setting for an art déco chalet and ventilation structure, the square was subsequently compromised by the bridge that replaced the tunnel, which severed one of its sides and left it an enclave cut off from the surrounding tissue and the canal. Gallery square, perhaps, is in microcosm, what the Bonaventure/Viaduct triangle experienced at a larger scale.



4-39: Union Cold Storage and Gallery Square; note the prominent position of Saint-Ann's church.



4-40: Augustin Cantin's Canada Marine Works, 1855.

Second, the construction of the CN rail viaduct cut off even this downgraded link between the basins and the 1801 Charland grid to the north in its entirety. While the CN viaduct, once it makes its final northwards

approach to the Gare Centrale, is actually a relatively permeable structure (it prevents no east-west streets from passing under) aligned with the Griffintown block system, by the flour basins it is but an earthen berm without permeability. Subsequently, the basins had their northern access points removed at both Mountain and Colborne/Peel and were not even related to the relatively secondary street (Smith) that carried the railway siding connecting the Grand Trunk with the old port, but were hidden behind a berm. From this point it seems justifiable to interpret that the basins became more a part of what would become the 'Vieux-Port', accessed primarily by de la Commune, than with the 1801 Charland grid to the north. The arrival of the Bonaventure expressway, of course, restructured even that relationship.

The basins at Augustin Cantin's Canada Marine Works, perhaps by virtue of their proximity to the Saint-Gabriel hydraulic pole, have an entirely different logic than the basins discussed previously. One of the basins is not a basin at all, but would more accurately be described as a dry dock. Bélisle et al (1992) makes note of this type of manufacturing set up and counts it in a three part typology of production facilities found along the Lachine Canal. Rather than goods descending vertically through a multi-storey factory or moving horizontally through a single-story factory, at a facility like Cantin's Marine Works dry dock, workers and tasks would move around the finished product. Therefore, one observes a basin that is essentially a manufacturing facility, as opposed to a transshipment facility.

### **Scales of change and agents' intervention**

In a sense, the (trans)formative processes that are observable throughout Griffintown can be interpreted through a spectrum with small, incremental transformations at one end and larger, planned interventions at the other. The aggregative formation of a block can serve to illustrate the latter scenario. In eastern Griffintown, the subdivision of the Fief Nazareth into parcels serviced by a street grid was certainly a planned intervention. The corresponding aggregation of vernacular buildings into an urban-integrated type industrial complex (such as the Cunningham and Wells) however, is perhaps more incremental or gradual in nature. The restructurations occasioned by the CN viaduct and the Bonaventure autoroute also constitute planned interventions. Griffintown's convergence between vernacular and gradual processes of aggregation and densification and more consciously planned, swifter processes of restructuration, is striking. This is a deep coexistence: vernacular and planned processes are both involved in producing even a simple element of the urban tissue, such as a block, where the parcel layer is the conscious product of a trained surveyor and the grouping of adjacent buildings into one complex the incremental product of a growing industrial firm.

The process thereby manifests an alternative to purposeful development practices and a more spontaneous engagement with the urban tissue, while building on the earlier relatively large scale, planned intervention.

## **Conclusion**

Industrialisation has marked the Griffintown district in profound ways. The routing of the Lachine Canal through the territory of what could otherwise have been a relatively unremarkable faubourg launched a set of transformations that took a unique form. Distinctive processes of aggregation and densification related to spatially separated and functionally distinct links with the water – for hydraulic power or transshipment – conditioned the districts' development. Where these processes ran into limits, major restructurations were occasioned, largely surrounding the implantation of major infrastructures such as the railway, changes to the configuration of the canal and its basins, and the arrival of the autoroute in the mid 20<sup>th</sup> century. The effects of these restructurations are still being felt today and are central issues for contemporary urban planners and designers seeking to revitalise Southwest Montréal. The Canal arrived with the formation of the faubourgs but marked an important juncture as land in the corridor was packaged for speculation and a variety of industrial and residential modes of territorial occupation took hold.

## The second narrative: a typology of industrial complexes

### Introduction

The remaining narratives in this chapter extend their gaze to the canal basin as a whole. This second one in order to examine the increasing specialisation of industrial complexes and to explore the means by which such specialised elements are integrated into the urban tissue as a whole. Relatively early in its industrialisation, the Lachine Canal was given the moniker 'Little Lowell,' in recognition of the concentration of mills and factories that clustered to this birthplace of Canadian industry. But these facilities, as the different industrial building types highlighted in the previous narrative suggest, were not uniform – in their individual characteristics nor in their relations with their surroundings. And if the story of industrial architecture during the late 19<sup>th</sup> and into the 20<sup>th</sup> century is largely one of form becoming increasingly tightly tethered to function – the work of Albert Kahn comes to mind – there was significant variation in the strategies adopted by industrialists seeking to improve and expand their production and warehousing facilities.

The architectural historian Reyner Banham characterises early 20<sup>th</sup> century industrial architecture as a "mixture of conservatism and adventure" (1986: 50). In his words, "[h]ardnosed patrons and the architects who served them conserved traditional usages that were still serviceable. They had no ideological axes to grind, no revolutionary postures to maintain, even if they knew - as Ransome did at the end of his life - that revolutions in industrial architecture had been wrought. Piecemeal, the dynamics of building in a market economy at a time of rapid technological advance would produce every aspect of an architectural revolution except the revolutionary intent. The rationality of the economic/ industrial system that these architects served, required of them - as a daily commonplace - innovations as constant as any European futurist of the day could demand as prerequisites for some distant but desired utopia" (Banham, 1986: 53). But it also required the pragmatic conservatism to which he frequently alludes throughout 1986's *Concrete Atlantis*.

Drawing on this variability inherent to industrial architecture, Robert Lewis notes that rather than a wholesale adoption of the hyper-rationalised factory – Ford's River Rouge model – many firms "chose selectively from a range of possible factory layouts and design features, and their strategy met with success" (2001: 668). Innovative design elements introduced at the beginning of the twentieth century, from new materials and goods handling devices to a more cellular (and horizontal) layout made possible by the increasing use of electricity, were not, however, adopted uniformly across the board: "for pragmatic reasons

relating to their production strategies, they customized the ways cell-based layout, machine sequencing, and material-handling equipment were incorporated into their buildings” (2001: 673). Even more crucially for the premise of this thesis, was the preponderance of renovation and adaptation of existing facilities, due in part to financial constraints, but also due to what Lewis terms the *neighbourhood effect*. Citing the case of a Philadelphia locomotive firm, Lewis observes that their decision to rebuild in the inner city as opposed to relocating to a suburban greenfield was rooted “not only in the partners’ fiscal conservatism and their diversion of capital to machine technology; Baldwin managers were reluctant to abandon their investment of both capital and know-how in the existing plant and, importantly, in the surrounding neighbourhood, with its varied labour pool” (2001: 677).

If River Rouge was but a sort of ideal type identified and lauded by the “triumvirate of industrial architects, engineers, and manufacturers” (Lewis, 2001: 682) lavishing their advice on firms engaged in a broad spectrum of practices, from the most incremental renovations to, indeed, the construction of leading-edge suburban plants, then, this thesis proposes to apprehend the Lachine Canal’s industrial complexes according to the degree to which they are integrated with their surroundings – or conversely, the degree to which they are truly autonomous machines for production whose form is minimally structured by the surrounding urban tissue. Indeed one of the principal challenges faced by an application of morphological techniques to a more modern and industrial urban tissue is an increased tendency away from a cohesive urban tissue and towards the autonomy of its elements. But as with Lewis’ industrialists, cities hardly adopted the mores of the Charte d’Athènes wholesale (Panerai, Demorgon, & Depaule, 1999: 93). Rather, the variable (and never complete) autonomy of the factory building or of transport infrastructure can be interpreted as the base for a typology of industrial complexes and infrastructures. Key to the contemporary challenges faced by planners and designers, the degree to which such facilities are (or aren’t) integrated into or structured by the urban tissue can serve as a valuable means for classifying and analysing urban form. Adopting such an approach suggests the possibility of arranging the Lachine Canal’s industrial complexes along such a continuum.

The operative question central to such an exercise is ‘To what degree is the complex structured by the syntax present in the surrounding area?’ The text below outlines a typology of industrial complexes on this basis, emphasising the relation of each type and its components with the surrounding and prevailing urban tissue – the degree to which the complex is structured by elements such as parcel modules or block structures, followed by a description of its spatial distribution within the Lachine Canal basin and examples. It’s

crucial to keep the notion of a continuum in mind, as this three-element typology does not in the least imply the existence of three discrete types of industrial complexes, but rather seeks to punctuate and illustrate a continuum of different approaches to the relationship between urban tissue and industrial complex.

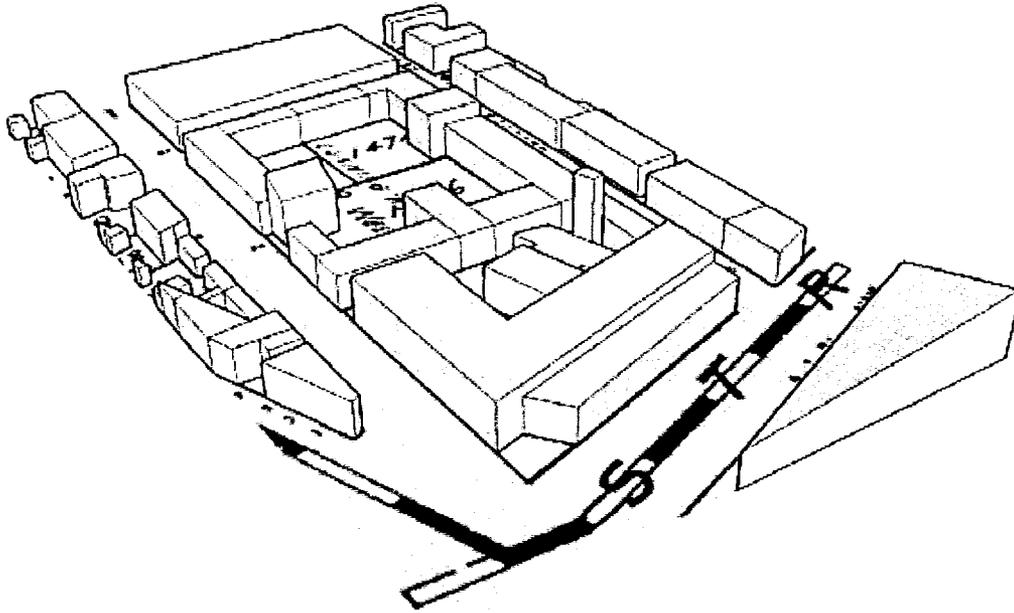
### **A continuum of industrial complexes**

At one end (typically the eastern, early end), *urban integrated complexes* formed largely of aggregated residential buildings forming a perimeter around an industrially-used open space, with maybe one or two specialised industrial buildings that are not markedly different in terms of configuration and syntactic relations (it's principally their façade, or maybe their height that differ). These complexes are structured principally by the parcel and route pattern (which together form the urban block) and by the *mode d'implantation* of the traditional, non-specialised buildings, frequently residential in origin, that were aggregated in order to form them. Some of the complexes in the eastern, gridded portion of Griffintown (east of rue de la Montagne) fit this description, such as Cunningham and Wells (immediately north of the cold storage warehouse at rue de la Montagne and rue Wellington), a cartage firm.

At the other end (typically the western, later end), are planned, *unified, autonomous complexes* that represent specialised industrial projects that are less aggregate in nature than their ancestors, both in terms of a typically reduced number of buildings, but also in terms of a decreased modularity in terms of their components. These complexes, particularly if they are liberated from the urban block (as they are west of Saint-Henri, along the Canal – Saint-Ambroise) – but never the parcel – are more often found along major infrastructures (canal, rail) and often end up as between one and three buildings that create a perimeter complex, with some secondary structures in the courtyard or outside, depending upon the relationship with the street. At their apogee, these complexes become what one sees with the Lasalle Coke, where a vast area is taken up for the onsite movement of freight cars, trucks, and the outdoor stockpiling of raw materials.

## Modelling the continuum

### Type 1 – Urban integrated



4-41: An urban-integrated industrial complex (Cunningham and Wells/Union Cold Storage).

#### Relations with other structures:

- Structured by the parcel and street pattern together (ie by the urban block)  
Infrastructure connections largely facilitated through public space – on-street railway sidings, street-based quays, etc.
- In contrast with the urban semi-autonomous type complex, the ad-hoc type complex is usually strongly structured not just by the urban block, but in terms of its own composition and modularity (such complexes are often serial in nature – made of more or less interchangeable components), the effective parcel module plays an important structuring role;
- Often a gap is left at some point in the perimeter, or porte-cochères are provided to connect the courtyard with the external street network

#### Components

- Evolve piecemeal through the aggregation of common, residential buildings, with the gradual appearance of more specialised buildings in their midst
- Cellular aggregation of parcels and residential-type buildings  
Courtyard configuration is common and a major organisational principle

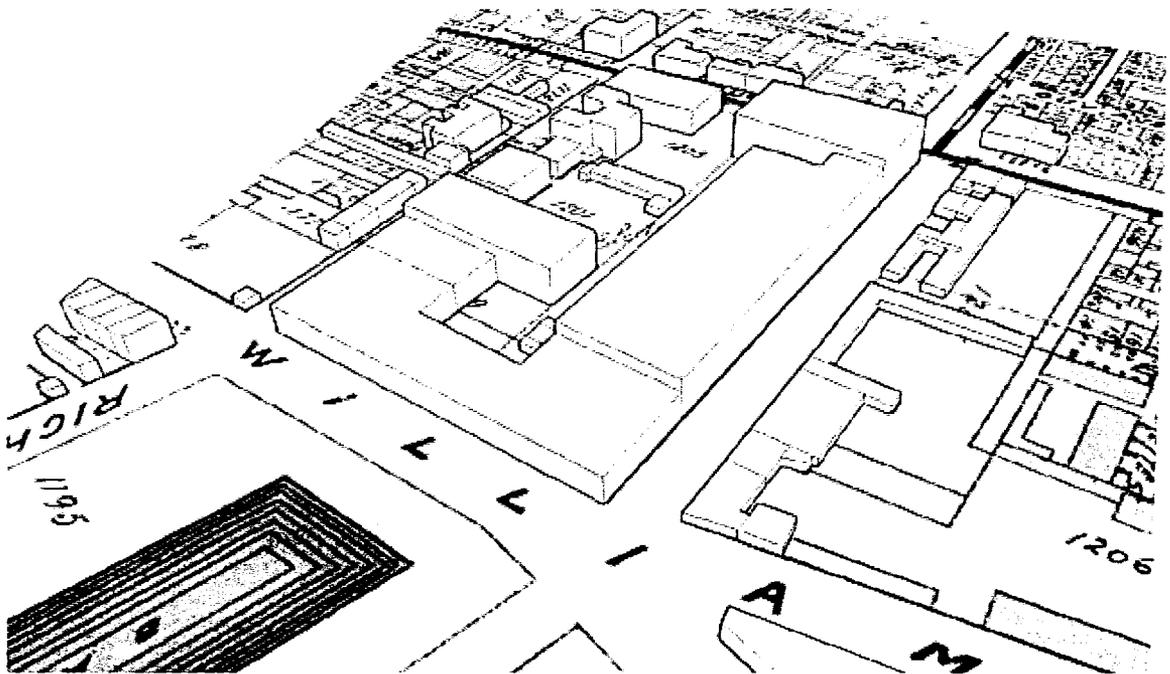
### Location and distribution

- Tendency to be located further east, and to date from earlier periods;
- Frequently in close contact with residential tissues

### Examples

- Cunningham and Wells (between Murray and Young streets, at the corner of Wellington) 1907;
- Union Cold Storage (same location and dates as above).

### Type 2 – Urban semi-autonomous



4-42: An urban semi-autonomous industrial complex; The Northern Electric (Nordelec) factory at the corner of Guy and Notre-Dame streets, 1907.

### Relations with other structures:

- Partially structured by the parcel and street pattern together (ie by the urban block); the street pattern is vastly more influential than the parcel pattern, however.
- Such complexes will often take up a half block or more and are thus no longer necessarily modular with respect to the parcel system, but are still bound by it in terms of their boundary with the rest of the block.

- Their modularities begin to depart from those of the residential urban tissue, differentiating themselves from the dimensional thresholds and configurations of domestic space, while infrastructure connections increasingly take place on the complex's own property, as opposed to on the street.

#### Components

- Declining importance of the perimeter block- buildings and open spaces are no longer necessarily arranged in a courtyard configuration, though this is still common;
- Buildings are much larger than in the ad-hoc type complex and usually span the equivalent of multiple parcel modules (though without necessarily being structured by these).

#### Location and distribution

- Still often located in residential tissues, but usually at their margins, where the residential tissue comes into contact with an industrial infrastructure;
- Frequently found where regular block sizes/shapes give way to more irregular patterns for other (ie topographical) reasons.

#### Examples

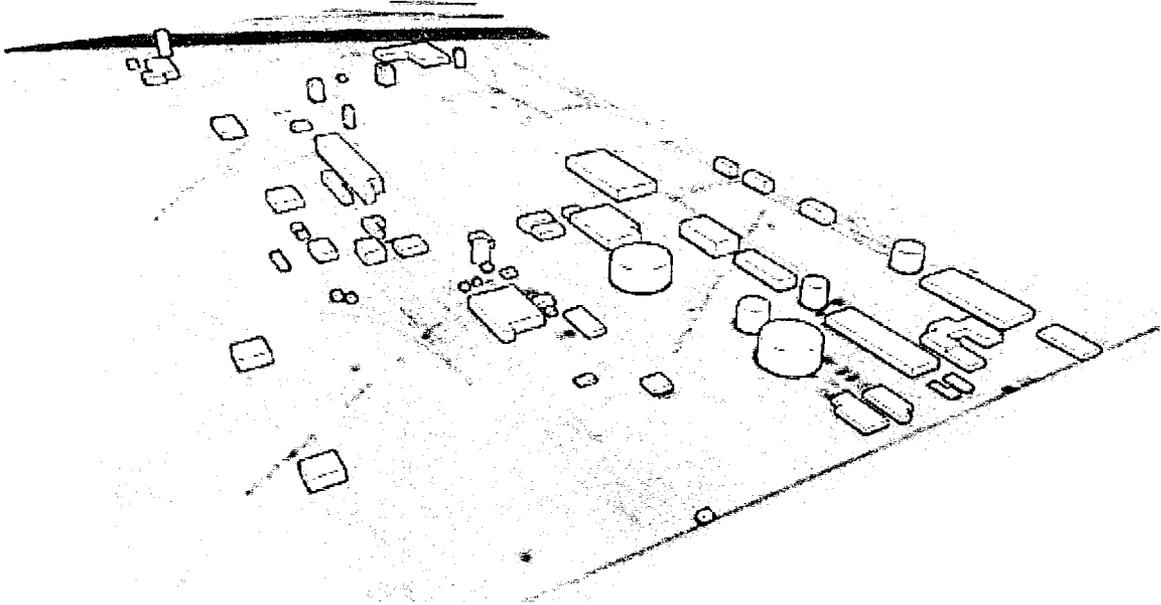
- Northern Electric corner Guy/Notre-Dame)
- Montreal Light Heat and Power (Ann/William)

### **Type 3 – Unified autonomous complex**

#### Relations with other structures

- Structured largely by connections with infrastructure (canal and rail) and the underlying agricultural allotment system; such complexes usually go beyond being structured by entities such as the urban block or the subdivided urban parcel pattern but are still conditioned by the underlying agricultural holdings;
- In the case of the Lachine Canal, this usually involves the regrouping of several 'strips' of seigneurially-organised land – the long and narrow units, attached to a côte or a watercourse that characterise settlement in Québec; more than the one to three ordinarily present in an urban block structure;

- Infrastructural relations are paramount and typically arranged throughout the site, with infrastructure and specialised buildings often closely interacting (ie a rail spur enters a building, or a crane/grain hose goes over top of the canal/railway);



4-43: A unified autonomous complex; the Lasalle Coke plant on the Canal's south bank west of Ville Emard, 1949. Buildings respond largely to the configuration of the multiple railway sidings that penetrate the site, and to the technical needs of coke production, overlaid on the original agricultural pattern of the Cote-Saint-Paul.

#### Components

- The components of the unified, autonomous complex are virtually all specialised and not aggregated in a cellular/serial way
- The arrangement of components is done in accordance with the needs of production/warehousing access and the perimeter block/courtyard form has almost completely disappeared, ceding its place to a complex and highly variable pattern of built and open spaces;

#### Location and distribution

- These complexes tend to be further west, though they have precedents in the Windmill point hydraulic complex (however, that area was still structured in terms of a street and urban parcels) and variants in the major grain elevators erected by the port commissioners and the railway companies;

## Examples

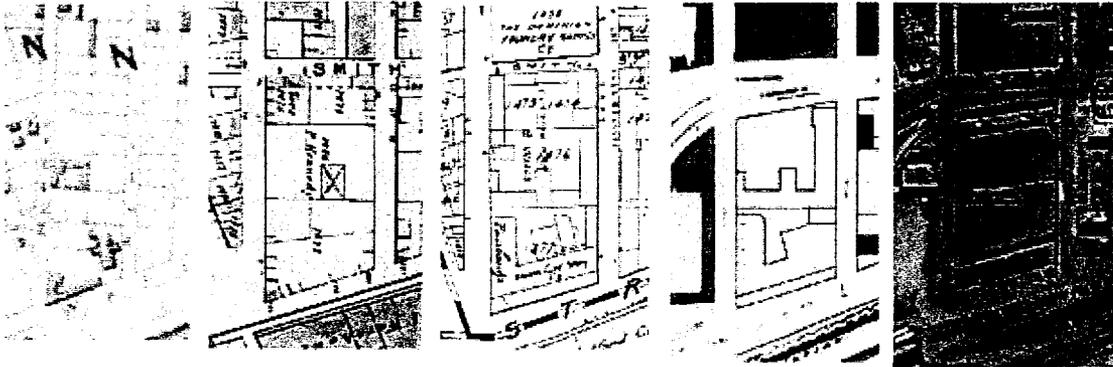
- This type of complex merits two examples as there are two principal and fairly distinctive manifestations in the Sud-Ouest's territory: those linked primarily to the Canal, and those linked primarily to the railway network;
- Lasalle Coke, which is tied to both the canal and the railway – in terms of property lines to the canal, which it also links to via its crane – but in terms of its internal structuring it is more tightly linked to the railway.
- Buildings are arrayed according to their place along the network of sidings that penetrate the site, while roads are defined by dashed lines, white on white, undefined by any built forms.

## The spectrum examined

The former example, that of the Cunningham and Wells cartage firm's compound, typifies the perimeter block/courtyard approach and is telling of the close connection between such complexes and the urban tissue in which they are situated. Interestingly, the complex arose on a site that, in 1846, was composed of double modules (the equivalent of two generic residential parcels), perhaps resulting from proximity to the nearby flour basins south of Wellington. Barely urbanised, the Cunningham and Wells site contained only one parcel with buildings, one along the street and two along the back. The site changed fundamentally when Smith Street was pierced through the long blocks between Wellington and Ottawa, transforming what had once been mid-block parcels into a location accessible from three sides. By 1879 then, these new corners had been taken advantage of, hosting buildings on two separate (double module) parcels. Another quadruple-module parcel lay adjacent, with one large building at its centre. Though Smith street seemed set to be widened in 1879, this had not yet occurred by 1907, when the site was occupied by Cunningham and Wells, who laid claim to the quadruple module and the two double module parcels.

Cunningham and Wells was hit hard by the widening of Wellington street and its re-alignment in accordance with the tunnel project that eviscerated Gallery Square. Losing much of the northern double-module parcels, the site was reduced to two built-up sides, along the south and east, while the open courtyard was left exposed to the street. The site has

been reconfigured post-1949 to accommodate a more recent industrial building that follows precisely the alignment of Wellington street, but that still involves loading/unloading in the public sphere through an indented truck bay supposing trucks being docked in the street.

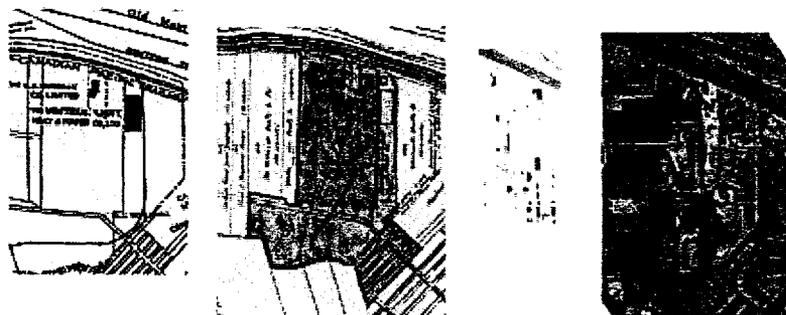


4-44: Cunningham and Wells/Union Cold Storage mapped through time; 1846, 1879, 1907 (left side), 1949, 2002 (above).

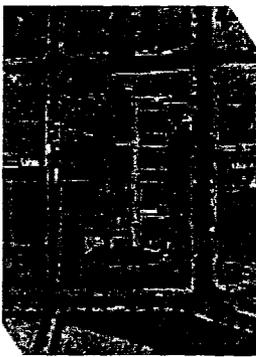
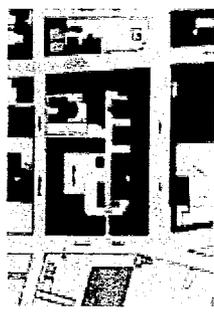
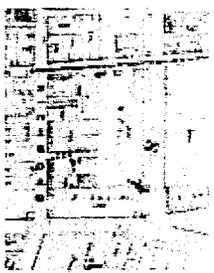
The latter example, that of the Montreal Coke Manufacturing (more popularly known, along with its landmark canal-side crane, as the Lasalle Coke), is revealing in that it occupies a part of the western reaches of the Côte-Saint-Paul that was eventually incorporated into Ville Lasalle. It's a significant côte in that it is the one that opens up the space between the falaise Saint-Jacques (Côteau Saint-Pierre) and the river, or between the upper and lower Lachine roads. Made immensely more valuable by the construction of the Canal and the drainage of the Lac-aux-Loutres (or the Petit Lac Saint-Pierre), the Côte-Saint-Paul eventually became the backbone for a series of increasingly larger factories, warehouses, and even entire neighbourhoods (Ville-Émard, for instance) in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, culminating in complexes like the Lasalle Coke or the Mount Royal Spinning (1912).

At Montréal's western edge – the Lasalle Coke isn't even in Ville-Émard, the westernmost extremity of pre-merger Montréal – the site spreads over the several seigneurial tracts that define its shape – and

is virtually exurban in character. Chosen due to the abundant land supply and the agglomeration of nearby customers – Desloges (2003: 14) cites the Simmons mattress company in particular



4-45: The LaSalle Coke plant west of Ville-Emard; 1914, 1919, 1949, 2002.



– the site is structured according to the gas-making workflow. A canalside conveyor tower unloaded boats and distributed raw coal into two long rows of heaps, with a thermal powerhouse and a gazometer at opposite ends of the site. Virtually all other buildings are but accessory in nature and distributed as part of an interconnected system of enclosed conveyors. By 2004, the complex has virtually disappeared in a greatly changed Lasalle which emerged as a postwar suburb.

Complexes such as the Northern Electric (at its Guy/Notre-Dame location) or the earlier incarnations of the Redpath and adjacent industries when rue du Canal was still a functioning entity (prior to 1949) fit somewhere between these two poles. While the building's configuration is informed by the urban tissue in the area in terms of being contained by the block and taking a perimeter/courtyard form, its non-serial construction as one building all along Guy is of a new scale that differs significantly from the aggregations of smaller, non-specialised buildings that characterise the earlier, urban integrated

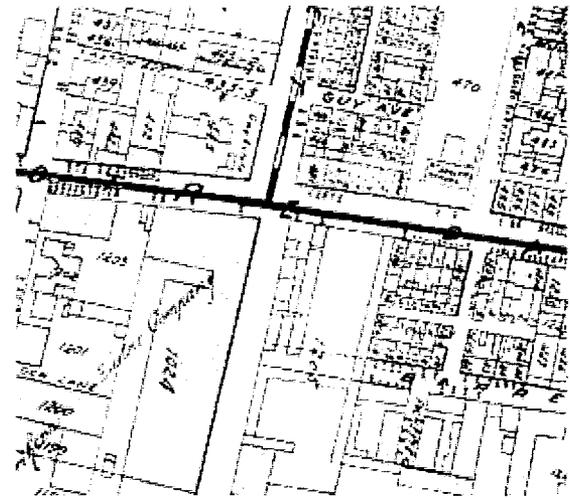
Type	Urban integrated	Urban semi-autonomous	Unified autonomous
Example	Cunningham and Wells 1907	Northern Electric – Guy/ND 1907	Lasalle Coke 1949
Transport interface	On street	On street and in-house	In-house
Structured by	Block and parcel	Block, some parcel	Rural 'meta-parcel' (seigneurial strip)
Frequent uses	Cartage, small inventory distribution	Production/assembly of smaller goods, often inputs for other businesses	Bulk materials transformation, major production/ final assembly

4-46: The Northern Electric factory at the corner of Guy and Notre-Dame streets; 1846, 1879, 1907, 1949, 2002.

complexes. Their tendency towards increased size also opened opportunities for increased in-house transport interfaces, though not yet of the scale offered by the unified autonomous complexes.

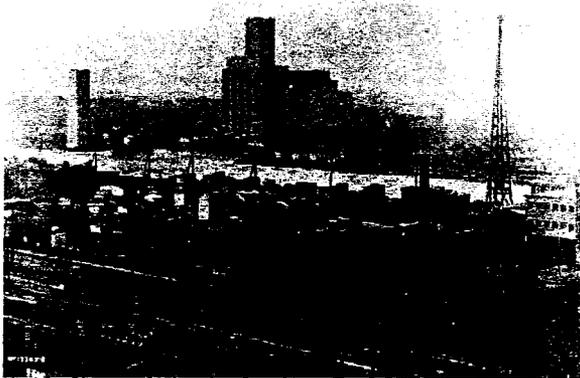
## Transshipment and transformation

Even within the second, urban semi-autonomous type industrial complex, differences emerge when the divide between transshipment and manufacturing is considered. At the corner of Guy and Notre-Dame, two neighbouring complexes illustrate this phenomenon. On the southwest corner, the Northern Electric company has taken up much of the block, leaving only its northwest quarter, which contains housing and general mixed-use urban buildings along Notre-Dame. On the southeast corner of the intersection lies the Dufresne et Frères lumberyard, occupying a parcel of roughly a half-block in width. In contrast to the Northern Electric though, much of the parcel is left vacant, presumably for the stocking of lumber – even a short stretch on the southwest’s most important street, Notre-Dame. One small brick or stone building on Notre-Dame is augmented by several wooden sheds of various shapes and sizes, largely occupying the site’s perimeter. Rue Guy appears to correspond to a break in the allotment system between differing patterns, that



4-47: Manufacturing and transshipment on either side of rue Guy, south of Notre-Dame, 1907.

was subsequently recast as a dividing line between sectors of manufacturing (which tend towards more substantial buildings that cover a greater amount of the ground plane) and transshipment, which are minimal in terms of built coverage and privilege open space.



4-48: Shearer's lumberyard on the near (south) bank, Ogilvie's mill on the far bank. Note the Canadian Pacific Railway's Saint-Patrick street yards in the foreground.

Desloges (2003: 14) remarks that Lachine Canal enterprises, by virtue of their extensive interconnectedness, did not require vast warehousing facilities, particularly as the truck became increasingly widespread. Much

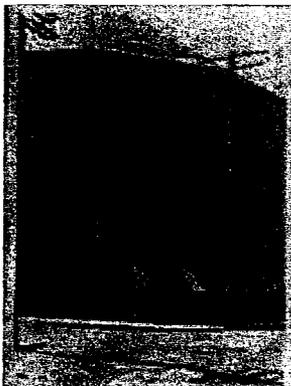
of the warehousing and transshipment that can be observed along the canal can be roughly divided into two categories: small carting enterprises such as Cunningham and Wells that presumably engaged in the ferrying of intermediary products between enterprises or depots for the commercial sale of construction materials such as lumber; and major bulk goods terminals such as grain elevators or coal wharves and towers, and the large mills and factories that punctuated the district.

## The emergence of industrial complexes

Between 1846 and 1949, we are witness to a complex and differentiated process of industrial urbanisation in southwest Montréal. The emergence of industrial forms in this period follows varied trajectories, largely inline with the three-part typology of complexes described above. In the paragraphs below, I examine this emergence as a means to shed light on the city-building know-how that found its expression in the course of ever more specialised and, to a degree, non-urban industrial complexes.

The first industrial complexes apparent on Hopkins' 1879 map are largely of the first, urban/integrated type discussed above. At around this time, industrial forms really began to penetrate the 1801 Charland grid. This phenomenon can be first remarked on Cane's 1846 map, where aggregation and densification are most prevalent in the eastern, gridded part of Griffintown (the 1801 Charland grid) between McGill and Dalhousie streets. Densification is most evident in the form of accessory buildings extending into the rear of the parcel, and a marked aggregation of the parcels themselves into larger units. But at the periphery of the regularized 1801 Charland grid, on sites close to the Notre-Dame and Wellington matrix routes, close to the flour basins and to the west of the Haymarket – this latter on a newly channelised creek – more complex and specialised structures are beginning to emerge, associated with the Dow Brewery and the transshipment functions of the flour basins.

While there are some larger buildings in this area, the bulk of construction consists of



perimeter blocks formed by aggregations of smaller buildings. Larger buildings became increasingly frequent, though this densification of the urban tissue is still largely modular in nature, with most newly large-scale buildings taking the form suggested by two or even, in some cases, four or more parcels. Some cases, like the City Gas Works (rue Ottawa, between rue Ann and rue Dalhousie) stand out for the sheer degree to which they dominate a single urban block, while others, like Theodore Hart and David

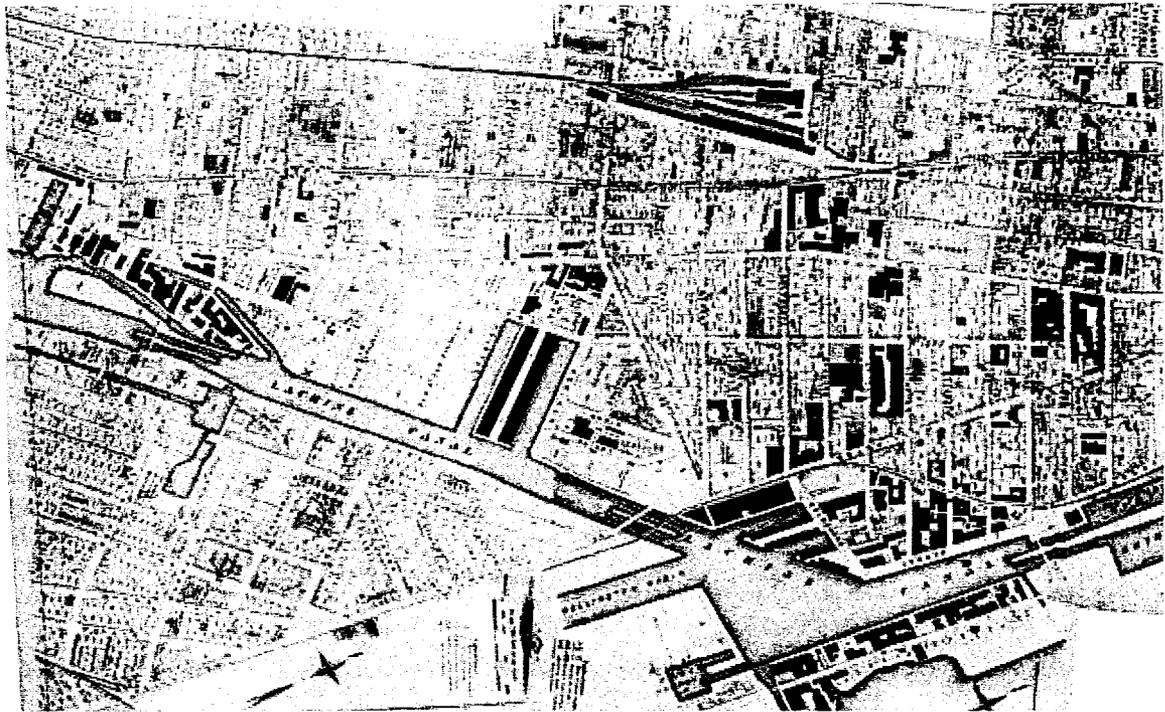
4-49: The City Gas Works.

Morrice, display the new phenomenon of one business occupying parcels on several blocks. In the cases of Hart and Morrice, these holdings correspond with both quayside and railside parcels, ideal for an integrated transshipment operation geared towards multi-modality. (Note that Hart and Morrice are in the triangle between the viaduct and the Bonaventure, between Colborne and Dalhousie, on the 1879 Hopkins map). Various foundries (between Ann and Shannon, south of Ottawa), planing mills (Esplin, corner Duke and Ottawa), and small manufacturing establishments (Stove and Scale works, between Duke and Nazareth south of Ottawa; Annett O'Connor Machine factory, between Prince and Duke at Wellington), round out the picture by occupying anywhere from one to three parcels.



4-50: The Clendenning Foundry, example of industrial integration into the urban landscape.

These larger complexes that emerged in slightly more singular locations at the periphery of the regularised 1801 Charland grid (east of Mountain), took advantage of larger parcel and block sizes to adopt more unorthodox site configurations, often in close proximity to major infrastructures, such as the Bonaventure freight depot, the basins of the Lachine Canal, and the hydraulic channels at the canal's Saint-Gabriel locks. On a large 'L' shaped block that was a former creek bed, the Dow brewery and the Clendenning foundry make their homes in a series of irregular (though mostly rectangular and not grossly wider than the average parcel

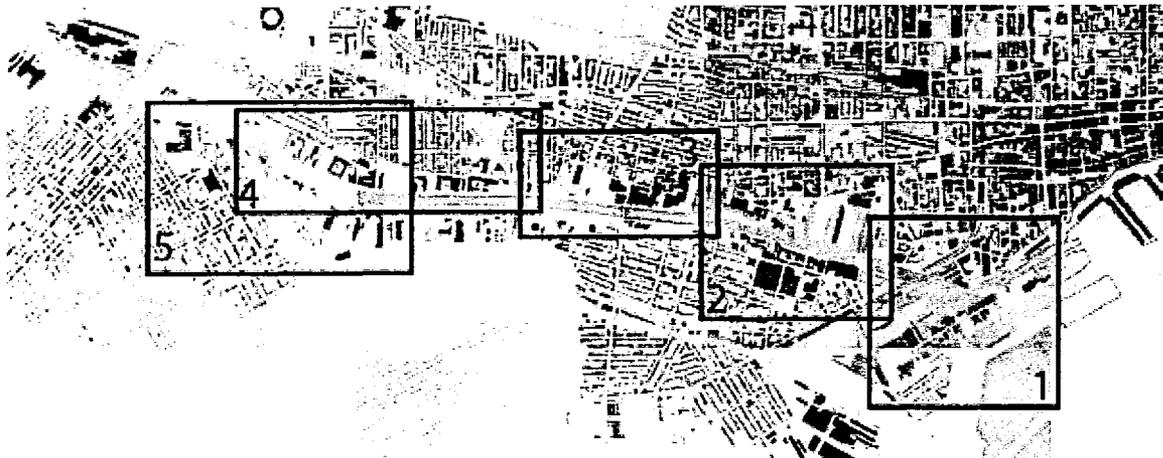


4-51: Industrial complexes of Griffintown and Windmill Point (lower right), 1879. Note the two hydraulic poles (Saint-Gabriel at middle left and Windmill Point at lower right).

in the 1801 Charland grid) stone and wood structures that form an interconnected series of courtyards and a largely continuously-built up perimeter. Dow even goes so far as to occupy both sides of rue Colborne, a move the ÉTS is set to echo at the present time.

### **Industrial sectors – agglomerations of complexes**

As one moves further through time and further west, a more coherent type of industrial sector begins to emerge. Precursors of this can be seen at two locations along the eastern part of the canal – at Windmill Point and at the Saint-Gabriel locks, where industrial expansions to the city were planned and implemented as part of an initiative to exploit the hydraulic energy potential created when the canal was enlarged in the late 1840s. But it is with the developments pioneered by industrial capitalists such as Alexandre Delisle, John



4-52: The studied industrial sectors arrayed along the Canal; From east to west, 1- Windmill Point; 2- Saint-Gabriel; 3- Sainte-Cunegonde; 4- Saint-Ambroise; 5- Cote-Saint-Paul; 1949.

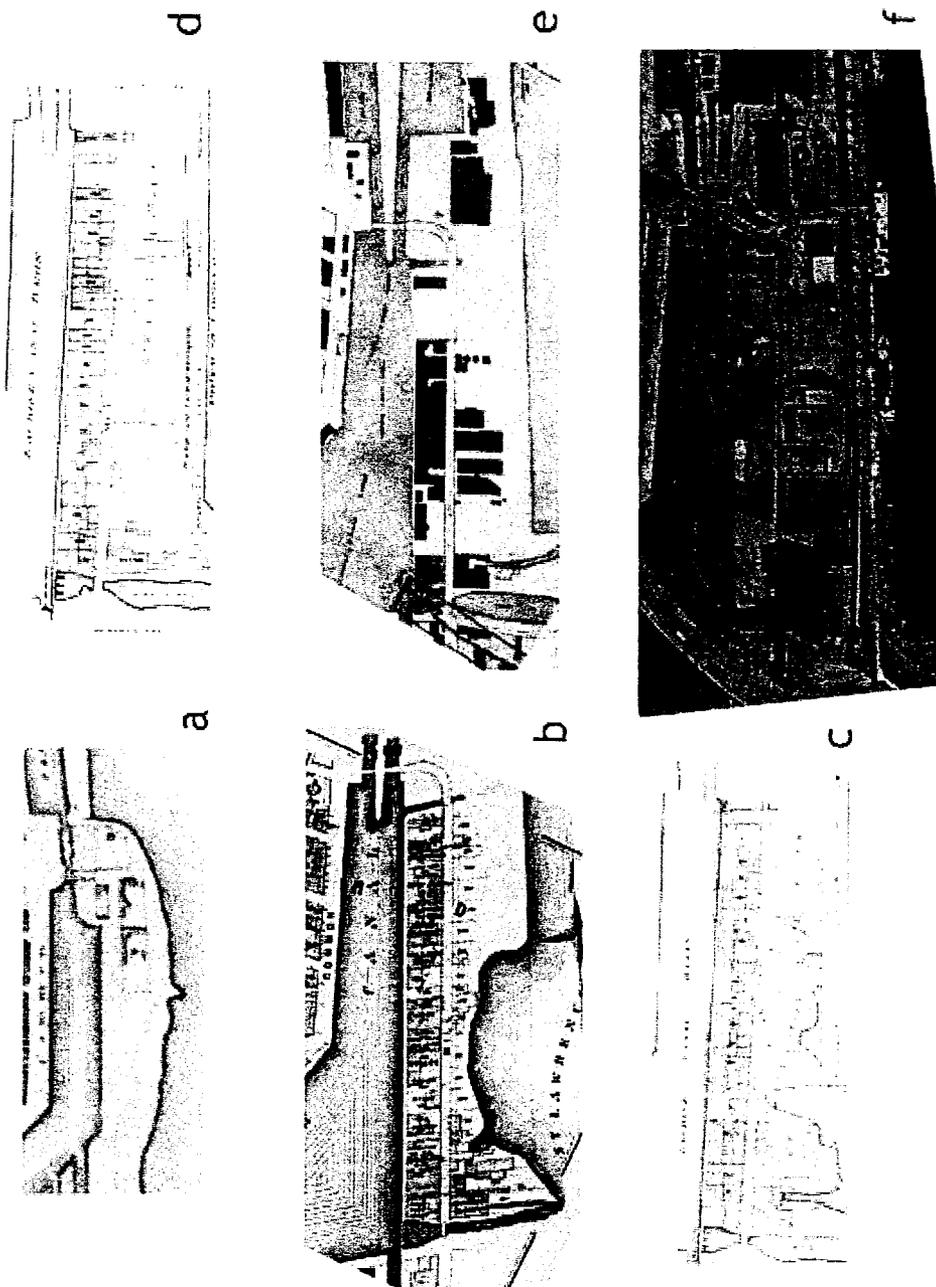
Frothingham, and William Workman, which would become the suburbs of Saint-Cunégonde and Côte-Saint-Paul, that the notion of a specialised industrial district took a fuller form, which was to be realised more completely in the Saint-Ambroise and Turcot sectors of the canal in Montréal as well as the sector passing through Lasalle.

### Windmill Point hydraulic pole

#### History and evolution

Located on a narrow spit of land separating the first reach of the Lachine Canal from the Saint-Lawrence river, the Windmill Point hydraulic pole exhibits a novel relationship juxtaposing regular urban parcels with a port-like relationship with the water. This sector can be read as an extension of the port (also a federal, or non-municipal jurisdiction) and is shaped in large part by the maintenance and exploitation of the level difference between the second canal reach and the river. It's no coincidence that it was at this point – interface between canal and port, hydraulic pole, that some of the most sophisticated and specialised transshipment infrastructures emerged, namely elevators and mills. By 1879, no fewer than five such structures existed, dominating the sector. Due to the site constraints in the sector, namely the existence of only one street (rue Mill) lined by two strips of regular parcels (one of which had yet to be fully reclaimed from the water), industrial complexes aggregated adjacent parcels and engaged in significant densification within these parcels. By 1890, both the Montreal Warehousing Company and Peck Benny and Company had developed substantial complexes that in addition to the practices mentioned above, made use of parcels on both sides of rue Mill.

Goad's 1912 atlas depicts a similar situation, though with an important restructuring. The Harbour Commissioners added a wharf on the river side of the sector, allowing for railway access to all complexes along rue Mill, presumably rendering the case for complexes spanning both sides of the street even more compelling, as the 1912 map also marks the first appearance of a structure crossing the road. At this point, Mill street has its most consistent framing; an almost uninterrupted street wall with brick/stone/concrete buildings to the north and wooden structures to the south. This state testifies to significant horizontal densification that occurred in tandem with the aggregation of parcels into ever larger complexes. By 1949 this situation was no longer sufficient and many of the complexes were



4-53: Windmill Point mapped through time; a- 1846; b- 1879; c- 1890; d- 1912; e- 1949; f; 2002.

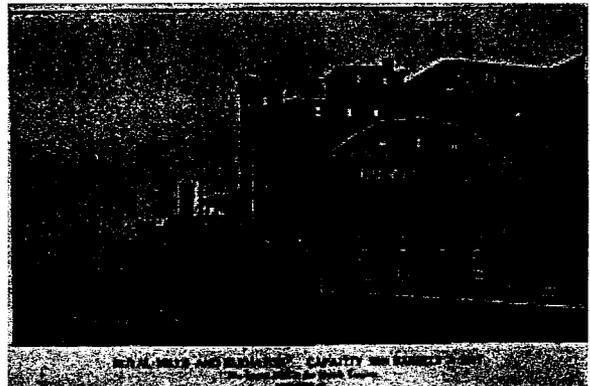
levelled to provide room for transshipment between rail and boat involving fewer but larger elevator complexes and an increased amount of open space suitable for marshalling trains and accommodating the elevators' movable legs. By 2004, Windmill Point was dominated by the dormant 'Silo no 5' complex, a few functional elevators at its western end, and the site for an annual tourism-oriented landscape architecture exhibition, located on fill.

### Morphological composition

#### Elements

Only one street, Mill, which can be seen as a settling route but also as an important thoroughfare from port to Pointe-Saint-Charles, the GTR yards, and Victoriatown or Goose Village. A regular and highly modular parcel system, with similar dimensions to the standard urban parcels in southwest Montréal present in non-specialised residential settings.

The sector was created as a means to exploit the new Canal infrastructure and the hydraulic energy potential it created, thus the Canal's second reach and the two lock structures at Windmill point were critical to the sector's emergence, as was its location on the western edge of the Port of Montréal. As land was filled towards the south, increasing railway access to the site made the emergence of major grain elevators (from the Commissioners' 'Mammoth Elevator' in the 1870s to the Silo No 5 in the 1960s) a possibility and re-oriented the sector away from manufacturing.



4-54: Ogilvie's Windmill Point mill. Flour gradually came to dominate the sector.

#### Spatial syntax

The Windmill Point sector is, as with many industrial components of the city, simultaneously nodal yet peripheral. As the entry to the Lachine Canal and an alternate route for trains passing from port to yards, capable of handling transshipment involving trains and both ocean-going and lake vessels, it certainly was a hub of southwest Montréal's industrial machine, on the scale of the city and region and considered in industrial terms. But as a collection of large industrial buildings clustered along an ominous corridor of a

street, it was the entity separating the residential neighbourhood of Victoriatown or Goose Village from the city, and thus simultaneously also constitutes an internal periphery within the urban tissue of the city.

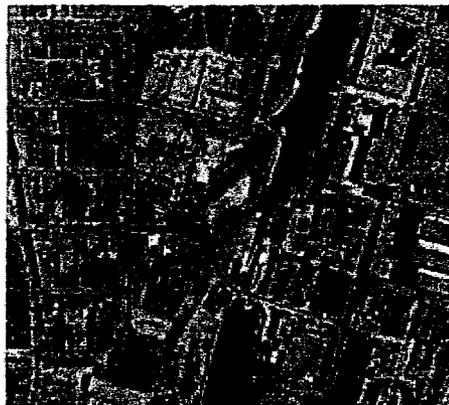
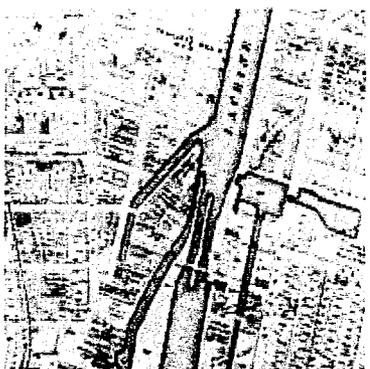
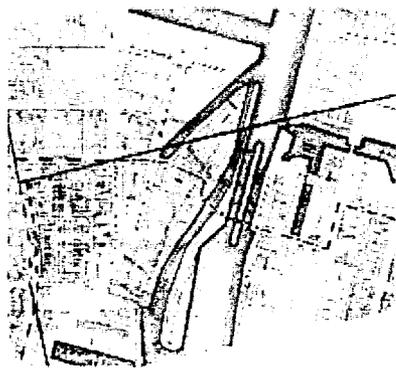
#### (Trans)formative processes

The Windmill Point sector saw significant aggregation and densification, as firms enlarged their operations both on groups of two to five or more adjacent parcels, or even spanned rue Mill and expanded on its southern side. Densification was also rampant, particularly in the 1879-1890 period, though ground coverage declined significantly between 1912 and 1949 as open space for cargo marshalling became more important and structures became taller as their footprints shrank. Grain elevators, with their vertical silos and need to interact with both marine and rail traffic, had a much different relationship with the ground plane than did works producing engines, nails, or spikes. The restructuring of the southern extent of Windmill Point to suit these transshipment needs was part of a greater scheme geared towards affording greater flexibility as the port expanded westwards with the creation of the Windmill Point basin. While this fundamentally altered the nature of activities and buildings in the Windmill Point sector, its basic configuration – two rows of specialized industrial parcels centred on rue Mill – was little changed.

#### Saint-Gabriel locks hydraulic pole

##### History and evolution

Surveyed by John Ostell on behalf of the Sulpicians in the 1840s, the Saint-Gabriel hydraulic pole has two distinct halves. The southern part, in the Pointe-Saint-Charles district, consists of a very regular urban block pattern, consistent with that first laid out by Ostell. Even the Canal's southern hydraulic channel was fit carefully into the middle of the block between Canal and Saint-Patrick streets. Ostell's plan for the Saint-Gabriel locks area clearly indicates the Canal's structuring influence, with three blocks between Canal and Saint-Patrick on the south bank and the whole north bank basin, adjacent parcels and blocks, responding to its orientation. Interestingly, the 1850 plan indicates not the actual physiognomy of the Canal but rather the limits of its property. This flexibility, and the space around the curve of the old Canal alignment – which subsequently became the northern hydraulic channel – is where the most specialised and irregular forms took shape. Based on a similar logic to the one operating at Windmill Point, but with less regularity in terms of the parcel structure, buildings were sited to take advantage of the elevation change between the Canal and the mill race underneath rue Basin. On larger parcels, however, aggregation



4-55: The Saint-Gabriel locks hydraulic pole mapped through time; Upper: 1846, 1879, 1890, 1907; Lower: 1912, 1949, 2002.

was a less prominent tendency, though densification certainly was. By 1879 all parcels were occupied, with a range of industries present, using raw materials from wood and iron to grain and marble. The landmark Ogilvie flour mill, with parcels on both sides of present day rue des Seigneurs, was certainly the landmark of the sector. By 1890, Ogilvie's mill, McDougall's foundry, and Smith's hat factory still share the distinctive triangular point, but the arrival of the Montreal Woolen Mills Company on the west side of Canal street is emblematic of an increasingly intensive building footprint, echoed also at John McDougall's car wheel works further west. 17 and 22 years later, Pinsonneault's 1907 and Goad's 1912 atlases indicate remarkable stability in this sector, with some increasing densification, but little aggregation and no decline in built coverage. But by 1949, the western end of the sector was more densely built than ever, housing the works of Drummond McCall and Co., the Canada Paint Company, and the Canadian Paperboard Company – three establishments where in 1879 there had been at least eight – the area had also seen significant aggregation as parcels were combined to house these larger enterprises. Meanwhile, the triangle had been entirely consolidated into one parcel and reduced to a single building, that of the McDougall foundry, which operated as Hall Engineering until the early 1990s.

On the Canal's south bank, similar processes were occurring, though much more tightly circumscribed by a more resilient block and parcel structure. Along the southern hydraulic channel in 1879 could be found a variety of enterprises, mostly relating to the lumber trade (Shearer's Sash and Door factory, Marland and Watson's saw works) though also including a small tool factory. Immediately downstream, John Redpath's Canada Sugar Refinery was one of Montréal's largest industrial complexes upon its 1854 opening. By 1879 the Redpath complex consisted of two parallel rows of buildings along Canal and Saint-Patrick streets, with several other buildings occupying a relatively open courtyard, with extensive unbuilt landholdings on the adjacent inland block and next to the Priest's Basin, where the firm's in-house cooper shop was housed. By 1890, the complex had taken the form of a perimeter block, with only a small opening at the corner of Saint-Patrick and the outlet for the Priest's Basin. Construction had begun on the inland block, with two massive buildings in 'third of a block' modules – one spanning the entire block and fronting Saint-Patrick street, establishing a distinctive and high-walled industrial streetscape. By 1912, the massive wooden shed occupying Redpath's property along the Priest's Basin had been split into three and reinforced, while the inland block had been largely vacated. See figure 4-55 on the following page for a cartographic depiction of these transformations.

The adaptability of the subdivision techniques that were used, and the urban blocks and standardised parcels that they encompassed, for both residential and industrial use is made clear on the south bank of the Saint-Gabriel locks area through the early twentieth century. The southern blocks – further from the canal – become tightly closed perimeter blocks populated by row housing, duplexes, and triplexes, while the northern blocks nearer the waterway consolidate their industrial role, hosting firms such as Stelco, Redpath, and a half-block Canadian Pacific Railway sorting yard. By 1949, significant densification and restructuration had consolidated the industrial presence on Saint-Patrick street, with the arrival of the Northern Electric complex, larger sheds built on former Redpath open storage areas, and an expansion of the industries along the Canal's south bank, between the Redpath and Saint-Patrick square. Following the closure to navigation of the Canal, and its partial filling at the nearby triangular turning basin, these interventions were not questioned, and the absence of Canal street was perceived as a benefit, ensuring a car-free linear park space, which was subsequently equipped with a bicycle path and verdant landscaping.

#### Morphological composition

##### Elements

Streets play distinctive roles in the Saint-Gabriel industrial sector, split as it is by the Canal into two distinct halves, yet connected by McGee's Bridge. On the north side, the Notre-Dame matrix route skirts the sector – though settling routes branching off from it (from Canning to Richmond) are crucial – the bulk of the northern side is structured by the Canal itself. Infrastructure is crucial to reading this landscape – the differentiation between the more specialised parcels responding to the Canal in their size, orientation, and configuration and the more regularized, urban parcels fitting into the block pattern set by the Notre-Dame matrix route (and the irregular strip between Basin and William streets that brings these two units together) are part and parcel of the integration of the Lachine Canal into the city in a way that is at its most intensively urbanised and built-up at this hydraulic pole.

On the Canal's south bank, the urban grid – its orientation already determined by the Canal by virtue of Ostell's 1850s subdivision plan – in some sense eschews the idiosyncrasies of the north bank. The Saint-Patrick settling route, though not immediately adjacent to the Canal, serves as the key land route – taken in strictly spatial terms, the waterside 'côte' of this 'industrial seigneurie' – along which the bulk of industry is clustered. Though regularised urban parcels grouped into blocks of familiar size and configuration (though

deep in comparison with the New Town above the escarpment, for example) predominate, the blocks along the southern hydraulic channel and the Priest's Basin are largely intact and unsubdivided, housing several large enterprises.

#### Spatial syntax

As a hydraulic pole and the site of McGee's Bridge, the Saint-Gabriel locks were a highly polar position, and not just from the industrial perspective. Multiple churches at the corner of rue des Seigneurs and rue Notre-Dame in Sainte-Cunégonde and proximity to the village core that emerged on rue Centre street at rue Island in Pointe-Saint-Charles testify to this, as does the more intensively built-up cluster of manufacturing that emerged around the locks, in contrast to the more space-hungry (and thus usually more peripheral) transshipment and warehousing activities that emerged to the near east and west. The Canal is however, a decisive barrier between the Pointe-Saint-Charles and the Griffintown/Sainte-Cunégonde neighbourhoods, with far-reaching implications that are still of key importance.

#### (Trans)formative processes

Significant aggregation and densification occurred along the north bank of the Canal, where a band of specialised industrial conditions prevailed in the space where the canal-oriented grid and the rue Notre-Dame-oriented, less specialised grid met, just east of the Cantin shipyard. In the northern, rue Notre-Dame/Côte-Saint-Antoine based grid, densification occurred in two ways; the growth of perimeter blocks composed of aggregated smaller buildings was juxtaposed with the construction of larger industrial structures that spanned multiple parcels or stretched the width or length of an entire block. In the southern, Canal based grid, slight aggregation occurred early on, with industries taking two or three of the original parcels, followed by a slow densification that peaked in 1949. The small block and parcel sizes in the transitional strip between rue Notre-Dame and the Canal may have led to a dense tissue faster than in a more open or spacious setting, by virtue of the juxtaposition of both perimeter block and industrial slab densification.

On the south bank of the Canal, these two types of aggregation and densification were less tightly fused, with more purely industrial slab densification on aggregated parcels along rue Saint-Patrick and the Canal, while perimeter blocks were consistently formed in the residential tissue further south towards the Grand Trunk, though on the same street pattern and parcel structure. In terms of infrastructure, two in-street railway systems – one for freight, a Canadian Pacific spur line that ran the length of the Canal, from Saint-Patrick Square to western LaSalle, the other for urban mass transit, which ran along rue Centre in

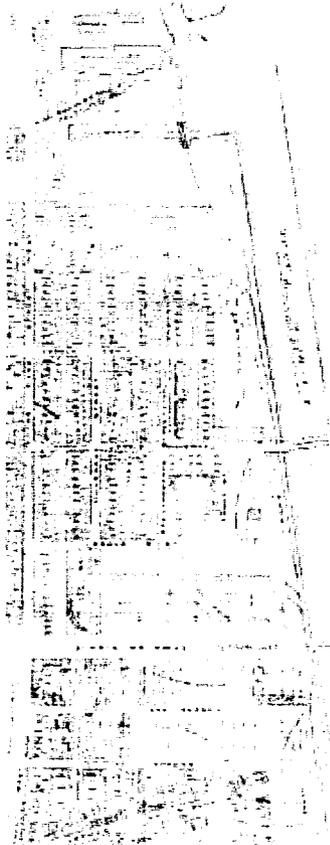
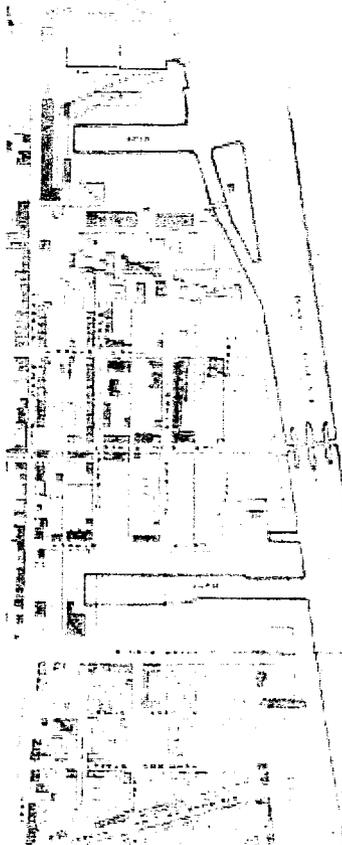
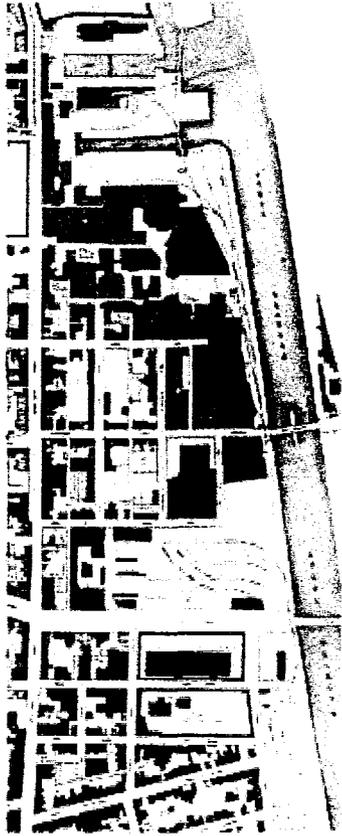
Pointe-Saint-Charles – may have gone a long way in establishing a pattern of twin axes (one for freight and industry, one for people and residential life), in an otherwise fairly uniform street and parcel structure that characterizes northern Pointe-Saint-Charles.

The remarkably coherent and adaptable framework of parcels, streets, and blocks that managed to seamlessly flow from serving the needs of a working class residential quarter to providing the armature for one of Montréal's heaviest industrial sectors, had started to unravel by 1949. The restructuration of rue du Canal, which ran for several blocks between the outlet of the Priest's Basin and square Saint-Patrick, and the partial or full closures of rue Richmond, rue Montmorency, and rue de Condé streets leading towards the canal marks a turning point and a movement towards a differentiation of the grid into industrial and residential sections, with different standards in terms of size, configuration, and connectivity, permeability within the neighbourhood as a whole. But as square Saint-Patrick lost its last vestiges of a residential scale in the mid 20<sup>th</sup> century, redevelopment projects in the late 20<sup>th</sup> and early 21<sup>st</sup> centuries included the conversion of parts of the Redpath and Shearer complexes to office and residential use, though there is still a significant industrial presence on both sides of the canal at the Saint-Gabriel locks. With the disappearance of the freight siding and the tramway and the introduction of a new axis of leisure in the form of the Canal's linear park, these redevelopments are occurring in a transitional phase in the balance between forms and activities for the Point's urban tissue.

## Sainte-Cunégonde

### History and evolution

Pioneered by the entrepreneurs and developers Alexandre Delisle and William Workman, who purchased much of the former municipality's territory from Frédéric-Auguste Quesnel in the 1860s, Sainte-Cunégonde is commonly characterised and analysed in terms of being a product of what Poitras and Bérubé (2004) term Southwest Montréal's *période de création des infrastructures municipales*. Recognised as a parish in 1875, constituted as a village in 1876, and annexed by Montréal in 1906, Sainte-Cunégonde's growth was fuelled considerably by the arrival of industrial complexes belonging to firms such as Augustin Cantin's Canada Marine Works and the Steel Company of Canada.



4-56: Sainte-Cunégonde mapped through time; At left: 1890, 1912; at right, 1949, 2002.

Spottily developed by 1890, perimeter blocks were beginning to emerge north of rue Duvernay, while closer to the canal, scattered saw and planing mills occupied both the regularised grid of urban blocks as well as the more open parcels immediately adjacent to the Canal. The Stelco complex was relatively contained, with a high proportion of wooden structures along the Canal and up the middle of the site.

The period from 1890 to 1912 saw significant densification in the areas closer to rue Notre-Dame, as parcels were increasingly built up. Construction often extended to the rear of the parcel, whether in the form of wooden ancillary structures – work and storage sheds or rear-lot housing. In areas closer to rue Notre-Dame, the perimeter block was consolidated, by means of systematic infilling of the rear sections of corner parcels, presenting a closed public façade and a more private block interior accessed by alleys, some of which were beginning to take on autonomous names and street designations, for instance, avenue Fabien. This period also saw the implantation of several industrial complexes along the Canal – the Rutherford sash and door factory and the Redfern lumberyard and sawmill – as well as expansion of the Stelco complex. By 1912, the replacement of the Brewster basin by the GTR's Atwater yards was also complete, consolidating the quayside emphasis on transshipment functions.

The 1949 Ville de Montréal land use map reveals a strengthening and rationalisation of the structure present in 1912. Perimeter blocks near rue Notre-Dame are more clearly defined, with fewer ancillary structures – these began their decline across the territory of Montréal in this period, while the Stelco complex and the more industrial parts of Sainte-Cunégonde, along the Lachine Canal, are somewhat more intensively built-up.

If the village's heart was originally marked by the *église* Saint-Joseph, at the corner of Notre-Dame and Richmond streets, its hands and feet ended up firmly planted along the Canal, to the west of Cantin's shipyard. Where the Notre-Dame matrix route runs closely parallel with the Canal, the Sainte-Cunégonde area hosts another pole near the Charlevoix bridge, in which denser, manufacturing-oriented activities were brought closer to the water, though for different reasons than at the Saint-Gabriel hydraulic pole. As with the grid in Pointe-Saint-Charles, there is a transition between industrial blocks near the Canal and more residential ones further away, with a similar distinction between densification by means of industrial slab construction and the aggregation of smaller units into coherent perimeter

blocks. However, the sheer scale of the Stelco facilities and a very different type of interface with the GTR spur line along the canal's north bank result in a significantly different urban tissue, one which has had significant implications for contemporary redevelopment.

### Morphological composition

#### Elements

Sainte-Cunégonde is characterised by a stark contrast in scale between its two predominant building types. While composed primarily of perimeter blocks formed by aggregations of working-class housing and mixed-use (residential/commercial/small workshop) it also hosted some of the largest industrial complexes along the Canal, such as the Stelco. A standard urban residential parcel – the basis of the perimeter block – also served as a structuring element in the organisation of the larger industrial complexes, such as the Dominion Wadding and the Stelco, with several of the buildings in the Stelco complex fitting neatly into multiples of this parcel module. Infrastructure, including the rue Notre-Dame tramway, the Canal, and the GTR's canalside spur line, were also important in establishing twin nodal axes in the area - rue Notre-Dame and the Canal.

#### Spatial syntax

As with the southern bank of the Canal near the Saint-Gabriel locks hydraulic pole in Pointe-Saint-Charles, there is a dual character to development, with the emergence an industrial axis – the Canal and the GTR spur line – and a residential axis – the Notre-Dame matrix route. An important difference with the Stelco site, and perhaps one of the factors that permitted its important inland expansion (along with the precedent set by Cantin's adjacent Canada Marine Works) was the threading of railway sidings northward, perpendicular to the Canal, through a residential block structure, complemented by industrial buildings that by and large responded to that pre-existing grid.

#### (Trans)formative processes

As an example of a Sainte-Cunégonde industrial complex, the Stelco site appears to be variably structured by a combination of infrastructure (rails and the Canal), streets, and parcels. Its interface with the Canal and the GTR's siding seems to be one of warehousing – large wooden structures in combination with large open spaces – while the more inland part of the site is a mass of brick structures, some with their own internal courtyards, organised around a railway siding, the extension of rue Duvernay, and an unofficial extension of rue Dominion south of rue Notre-Dame. In addition to this, buildings tend to occupy multiple

parcels and eschew street rights-of-way, even when these are part of the Stelco complex. On the blocks east of rue Vinet, this leads to a tight cohabitation with the residential tissue. Densification largely occurred within this framework; courtyard-based buildings on the Stelco site were filled in, while many of the open spaces on that same complex, close to the Canal or along its internal corridors, were also built up – the pertinent strips on both sides of rue Tracy and the area southwest of the corner of rue Sainte-Cunégonde and rue Vinet are exemplary of this process.

In terms of restructuration, the Sainte-Cunégonde sector hasn't seen a significant degree of restructuration, excepting the construction of the Atwater tunnel in the 1950s. Two significant changes have occurred, however it is uncertain that they represent changes that go beyond the basic processes of aggregation and densification. The transformation of the Brewster basin from docks to big box retail via railyard, though profound in socioeconomic terms and as testimony to the deindustrialisation of the Lachine Canal (concomitant with the 'rebirth' of the Atwater market), is only partially a restructuration. Although founded on an underlying and largely unrealised residential spatial order, the basic industrially-scaled configuration is maintained, no changes are made to the street grid (regrettably, perhaps), and the fundamental relations between the large-scale, more organic aggregations of parcels into individual complexes versus the more serial aggregation of parcels into perimeter blocks by means of a smaller, residential-scale building type aren't fundamentally challenged. A proposal put forward by the GRAU (Bodson, 2001) to better integrate the tunnel approach into the sector's block structure and to consolidate the Atwater market's relationship with rue Notre-Dame as a continuous public space on the scale of the residential block pattern, but was ignored. The dismantling of the Stelco complex verges perhaps closer to a restructuration, as the industrial modes of densification along the mill's internal corridors and the open warehousing spaces along the Canal was followed by a process of aggregation geared towards the formation of perimeter blocks. However, given that the seeds of these perimeter blocks were already encoded into the Stelco complex, through the street network and parcel structure, it's a particular form of restructuring: an underlying residential spatial order (block and parcel sizes) served as the framework for a massive industrial complex, which was subsequently dismantled and redeveloped as a residential neighbourhood, still maintaining that original structure. The introduction of new building types and the switch from organic densification of open spaces to serial aggregation into perimeter blocks is certainly a distinctive.

The one firm case of restructuring in the Sainte-Cunégonde sector – the introduction of a breakthrough route in the form of the rerouted avenue Atwater, complete with tunnel – is vivid, but also rooted in precedent. The routing of the north bank tunnel approach is situated on a block that, like the neighbouring one hosting the Atwater market – but unlike the identical blocks further west – housed a single industrial complex, always transshipment related. In 1890 it hosted the Dominion Ice House company, in 1912 Pauzé et fils, and in 1949 by the Halladay and Dubé lumberyard. Taking advantage of this particular set of circumstances – a fully aggregated block (in terms of parcels) with very low density – avenue Atwater was routed around the market block to the east and sunk under the Canal. Though the market was always situated in somewhat of an enclave – between railyard and lumberyard, the new curving configuration of avenue Atwater had a significant impact on its northward connection to the rue Notre-Dame matrix route, and seemingly irreparably altered the urban tissue along Doré and Bérard streets and Greene avenue – replacing a set of blocks that, by virtue of their high permeability, had seen significant densification (though offset somewhat by the post-1912 decline in secondary structures) and had developed a fine-grained mix of uses, with a large-scale intersection complete with stacking lanes, attenuated somewhat by a creative landscaping intervention, but without any corresponding restructuring of the underlying parcel structure.

## **Côte-Saint-Paul**

### **History and evolution**

In the early 1850s, William Parkin constructed a hydraulic channel along the south bank of the canal, creating a spit of land serviced by quayside rue Saint-Patrick. In this area, at the bottom of a slight slope, a specialised industrial area developed around Frothingham and Workman's hardware manufacturing complex. As settlement climbed the hill, avenue de l'Église served as the residential community's nodal axis. By 1890 a fairly significant industrial sector had developed, including eight factories – producing blankets, shovels, horse nails, tools, bells, files and springs, hats, and axes – drawing hydraulic energy from the elevation change between the head race and the main Canal. A couple of blocks up the hill, along the avenue de l'Église (Côte-Saint-Paul) axis, urbanisation was still in its early stages, with most structures being rectangular in footprint, freestanding, and wooden. By 1912 the industrial mix had expanded to include wire and agricultural implements along four flumes connecting the head race and the main Canal. These industrial parcels hosted larger buildings, but with similar building-parcel relations. The most important change in the industrial sector was the completion of rue Saint-Patrick, forming a quay-like space on the Canal's south bank. Urbanisation in the residential sector up the hill was more substantial by



4-57: Côte-Saint-Paul mapped through time; Top left, 1890; middle, 1912; lower left, 1949; right, 2002.

1912, though still in patchwork fashion, perhaps reflecting speculation on future industrial growth following the arrival of the CPR's Saint-Patrick spur line. This speculation seems to have been prescient, as by 1949, the map shows the arrival of the GTR, whose yards complex completes the severing of the quayside industrial sector from the residential district up the hill.

By 1949 it seems clear that residential urbanisation is destined for the blocks west of avenue de l'Église and towards boulevard Monk in Ville-Émard more so than the blocks closer to the Côte-Saint-Paul industrial sector, which had its head race truncated at the first flume, ceding the filled right-of-way to the Canadian Pacific, whose Saint-Patrick spur line had previously run alongside. The other three flumes have disappeared by this time, though the complexes that they structured are relatively unchanged save for the construction of a few secondary structures in their courtyard spaces. New complexes that have emerged to the east of the core of the Côte-Saint-Paul industrial sector – Canadian Power Boats, Crane, Congoleum, Sun Oil, a new, larger facility for Cunningham and Wells, and Imperial Oil – are of a much vaster scale than the older complexes, and lack the courtyard configuration characteristic of the structuring influence of the hydraulic flumes. These complexes face the Canal and in some cases make extensive use of it (for instance, the Canadian Power Boats basin) have large open spaces coupled with large, often oblong buildings, are connected to the GTR in back and the CPR in front, and are removed from both logics governing the rest of Côte-Saint-Paul's urban tissue; they are neither organised around hydraulic flume based parcels nor on the residential street grid. Instead, they occupy a narrow enclave between the Canal and the aqueduct formed by land and ponds that was the last remnant of the Sulpician order's holdings in Southwest Montréal. However, while the size and shape of the buildings appears conditioned almost entirely by the technical and economic needs of the individual firms, their orientation in an almost 'seigneurial' (in spatial terms) relation to both the Canal and the GTR siding seems to suggest a larger-scaled parallel to the Saint-Ambroise industrial sector across the water.

The 2002 Navurb images reveal an industrial landscape in turmoil. Both railways have pulled out, leaving a significant portion of the blocks between Cabot and de Roberval streets vacant – reinforcing the fissure between the avenue de l'Église residential axis and the Saint-Patrick street industrial axis. The introduction of autoroute 20 in the 1960s continues and emphasises this rupture, while the Saint-Rémi tunnel, which bisects the industrial sector without offering it any additional connectivity, seems to confirm its perceived obsolescence. However, compared with 1949, there appear to be significantly more buildings, particularly

in the blocks between Cabot and Dunn streets, while the larger complexes that emerged between 1912 and 1949 to the east of Dunn and Angers streets – earlier characterised by the relative lack of secondary or ancillary structures – have a larger footprint than before as a result of various expansions.

## Morphological composition

### Elements

One of the most distinctive elements to be found in the Côte-Saint-Paul industrial sector is the canalside parcel structured by the hydraulic flume. Wider than both the standard urban residential parcel and the industrial parcels across the Canal along Saint-Ambroise street, this flume-based parcel and the industrial complexes that it structured seems to be unique to Côte-Saint-Paul, though it bears some resemblance to the mid-nineteenth-century era hydraulic lots along Mill street in the Windmill Point sector. The post-1912 complexes to the east, sandwiched between the Canal and the aqueduct, are also unique in their departure in terms of scale, a lack of consistent parcel module, and the absence of a superior structure such as a block to give them greater form. The draining of the Lac-aux-Lôutres had an enormous influence on the ability to lay out relatively large industrial parcels and to operate at a sufficient scale that created the opportunity to introduce a planned separation between industrial and residential parcel and block types.

In terms of infrastructure, the Côte-Saint-Paul sector is perhaps one of the clearest expressions of a hydraulic complex, with a well-defined head race and a particular parcel/complex module (the flume-based parcel) by which to structure industrial urbanisation. Coupled with the reinforcement of the elevation-based distinction between residential and industrial by the insertion of the CPR and GTR's spur lines and autoroute 20, Côte-Saint-Paul presents a sort of microcosm of the different impacts infrastructure and industrial-residential tensions have exercised across the territory of the entire Lachine Canal.



4-58: The autoroute comes to Côte-Saint-Paul, 1969.

## Spatial syntax

As with the Sainte-Cunégonde and Saint-Gabriel sectors, the Côte-Saint-Paul sector also shows a similar tendency towards a biaxial structure, with avenue de l'Église - the Côte-Saint-Paul - as the residential axis and Saint-Patrick street (or rather the Canal and Head race themselves) as the industrial axis, which was reinforced by both railways.

## (Trans)formative processes

All of the transformative processes can be observed at work in Côte-Saint-Paul. Densification within the flume-based industrial parcel and through the expansion of the larger complexes just further east; aggregation to some degree within a perimeter block formation in the residential axis, though not with the same clarity as in the other sectors, due to a less vigorous residential densification process.

Restructuring, in large part due to the implantation of railway and freeway infrastructure, is probably the most prominent transformative process to have occurred in Côte-Saint-Paul. However, an examination of restructuring in Côte-Saint-Paul must also include the filling of the head race, the completion of Saint-Patrick street, and the Saint-Rémi tunnel project. This area was later penetrated by both the GTR and the CPR, but what is perhaps most interesting, and a testament to the perceived obsolescence of the area as an industrial sector by the mid 20<sup>th</sup> century, is the Saint-Rémi tunnel project, which runs non-stop between de l'Église and Saint-Ambroise, bisecting the industrial strip without servicing it.

## Saint-Ambroise

### History and evolution

Rue Saint-Ambroise is an interesting street. Starting from Atwater avenue and continuing to the Côte-Saint-Paul, it's a specialised industrial street laid out to serve uniquely deep and wide lots with railway and canal access, and is in many ways a distinct urban project that, though tightly woven into the social and economic tissue of Saint-Henri and the Village Turcot, represents a departure from that tissue in a physical sense. Though fully subdivided by 1890, the relatively small band of land along the Canal's north bank had only three tenants – the Merchant's Manufacturing, which would become in turn Dominion Textile, and Hodgson's Pipe Mill, and a small nondescript ice house. But the armature of the industrial sector and its peculiar relationship with Saint-Henri was by then in place.

Much of the Saint-Ambroise urban project was the work of a syndicate including JL Cassidy, Sir Louis-Amable Jetté, T Arpin, A Laflamme, and Victor Hudon, who already owned a successful cotton mill on the other side of town (see Rielle NMC map, 1870s). Represented by George Washington Stephens and James Evans, this syndicate leveraged lands amassed by the former's father, a successful hardware merchant (Jedwab, 2000). Extensively involved in municipal politics and well-supported by the city's business community, Stephens was renowned for his calls for fiscal responsibility during a period of significant expansion at the municipal scale. The activities of this group attracted attention at the federal level, when Jetté – who had recently defeated Sir Georges-Étienne Cartier for a seat in parliament – came under fire for speculation along the Lachine Canal: "In March



4-59: Saint-Ambroise mapped through time; 1870, 1890, 1912, 1949, 2002.

1875 Jetté was taken to task by the Conservatives for his involvement in a questionable deal. Informed of the imminent widening of the Lachine Canal by the federal government, in April 1874 he and some prominent Liberal colleagues, including his brother-in-law Laflamme, had acquired some lots along this waterway for \$102,000. The group had then instigated speculative activity in order to inflate the value of their properties, which were sold that autumn at quadruple the purchase price. Jetté maintained in the House of Commons that he and his associates knew nothing of the plans to widen the canal when they bought the land” (Normand, 2000).

To judge by the built results in 1890, all of this action was mere speculation, but it laid the foundation for what by 1912 was a strip of several large industrial complexes – Standard Chemical, Canada Malting, Dominion Textile, Alaska Feather and Down, Dominion Flour Mills, Stelco, Montreal Carriage Leather, and Dominion Cartridge all joined the mix – stretching from the CPR’s Atwater yard to the Côte-Saint-Paul. While some industries are located on the north side of Saint-Ambroise, on standard residential parcels, the vast majority are on the south side, served by the Canal and the GTR’s spur line, and accommodated by a special parcel module – wider than four regular residential parcel modules. In spite of these dimensions, the typical industrial complex in this sector occupies at least three adjacent parcels. This is a significant change of scale, from residential blocks



4-60: The Saint-Ambroise sector pre-urbanisation, 1870.

and parcels to industrial scale serviced lots no longer bounded by an urban block, responding more to technical requirements such as hydraulic power availability or the turning radius of railway cars, than to more traditional urban forms such as blocks or residentially-suited parcels.

After 1949, deindustrialisation sets in. From the GTR mainline to square Sir-Georges-Étienne-Cartier, industrial activity ceases entirely and the siding adjacent to the canal is removed. While some complexes, such as the Dominion Textile plant, are converted to new uses, including the McAuslan brewery, others are replaced by new residential construction in the 2000s. Subject to rigorous study by the Ville de Montréal (Bodson, 2001; Montréal, 2000) – the Saint-Ambroise sector figures prominently in their plans for the revitalisation of the Lachine Canal – the square is extended right to the water, while a new street, rue Léa-Roback stretches for two quayside blocks just eastward. West of the square not much has changed, save for the Saint-Rémi tunnel, and a significant number of the parcels are vacant or abandoned.

### Morphological composition

#### Elements

Comprising two distinctive parcel modules – residential and industrial – the Saint-Ambroise sector also has a range of industrial complexes with very different building types. On one end of the spectrum are a handful of industrial complexes on the north side of Saint-Ambroise that occupy an aggregation of residential parcels, while on the south side of the street, complexes tend to be larger and occupy an aggregation of industrial parcels. These larger complexes, however, are still somewhat structured by the divisions imposed by these parcels. The Standard Chemical complex's aggregation of two parcels by 1949, starting from one in 1912, is indicative in this respect. However, this structuring relationship between parcels and industrial complexes is somewhat ambiguous in this sector. While it can be said with certainty that the complexes south of Saint-Ambroise can be clearly distinguished from their neighbours on the north side of the street by virtue of their scale and in terms of their relations with the urban tissue – dominated by open spaces, a lack of party walls – it is difficult to assess the degree to which these larger complexes are consistently structured by the larger industrial parcel module. Firms may have already purchased adjacent parcels for future expansion needs; the extent of the lands owned by the Stephens and Evans syndicate suggest the possibility of such a strategy.

In terms of infrastructure, the setup is in a sense the inverse of that which prevails in the eastern portion of Côte-Saint-Paul; in the Saint-Ambroise sector, the complexes have their addresses on an inland street (Saint-Ambroise) and tend to have extensive courtyards as an interface with the Canal and the GTR spur line. In fact, the relationship between industrial complex and the spur line is of some interest in terms of the parcel modularity of the

complexes. There appear to be two means by which complexes could access the GTR spur line: first, they could presumably (un)load cars one at a time while trains slowly passed their parcel on a siding traversing multiple parcels. This approach is used by several of the larger complexes, such as the Simmons mattress factory. Second, a complex could host a siding that branched off the main spur line in a perpendicular fashion, towards the north. This approach is used by some of the smaller complexes with limited east-west space, such as the Canada Malting and Coal shed immediately east of the Simmons mattress factory, and appears to be the rationale for the form of the Standard Chemical complex; it's also a major feature of the main Stelco complex in the Sainte-Cunégonde sector. In the case of the coal shed, it appears that two parcels are used, one for the structure itself, and the adjacent one to accommodate two sidings. The Canada Malting and the coal shed also appear to be the only industrial complexes along this stretch that interface directly with the Canal, though the parcels are all oriented to address both the city street network (through rue Saint-Ambroise) and the Canal simultaneously, though by the time most development occurs the emphasis is placed on interfacing with the railway siding that occupies the former tow-path right of way.

#### Spatial syntax

Saint-Ambroise street, industrially speaking, appears to be a centralising vector of industrial urbanisation, but as the reorganisation of the urban tissue west of square Sir-Georges-Étienne-Cartier suggests, it had an anti-nodal impact in terms of the westward expansion of Saint-Henri's residential area. Within the industrial complexes on the south side of Saint-Ambroise street, there appears to be a convention which involves orienting the principal façade towards Saint-Ambroise street and the variably open courtyards towards the canal and railway, in a sense echoing this split polarity.

#### (Trans)formative processes

The industrial complexes of the Saint-Ambroise sector resemble those across the Canal in the eastern portion of Côte-Saint-Paul in that the scale of the original constructions left relatively little room for aggregation or densification. Aggregation was integrated into the projects from the start by comprising multiple parcel modules, while densification occurs principally through the addition of new wings within a particular complex. The Dominion Textile or Merchants' Manufacturing complex at the sector's east end is an illustrative example of how such densification takes place on an aggregation of multiple parcels. In 1890 a principal building aligned with Saint-Ambroise with five secondary buildings along the canal and further east. By 1912 it is formed by seven interconnected buildings spanning both

sides of Saint-Ambroise – a rare exception to the sector’s north-south dichotomy, occasioned by the presence of the GTR’s mainline – and includes significant additions to the principal building.

The most striking instance of restructuration in the Saint-Ambroise sector occurred between 1890 and 1912. The reorientation of streets west of de Courcelle street following the creation of square Sir-Georges-Étienne-Cartier is an interesting restructuration that can be read in two ways. First, as a response to the conversion into a park of the former site of the West End Abbatoirs and an oil refinery, the switching of residential streets reflects a change in polarity as the square emerges as one of the bourgeois address par excellence in Saint-Henri. In that context of residential space, even if there remained two north-south blocks between the square and the reoriented streets (judging from the stark edge to development on the 1890 map, it seems likely that this was developed as a distinct and separate property), the east-west axis of Notre-Dame took precedence over connectivity to the canal.

If the above explanation can be characterised as a ‘pull’ effect, it can be argued that a complementary ‘push’ effect could also be perceived. Residential connectivity with the canal was no longer seen as an asset in comparison with the square at the heart of Saint-Henri, and had in fact been largely precluded by virtue of the Saint-Ambroise industrial sector urban project. The barriers presented by a wide strip formed by a channelised river (Saint-Pierre), an industrial thoroughfare, a set of deep industry-specific parcels, and the GTR spur line had the effect of distancing residential Saint-Henri from the canal. In a sense, reorienting the streets towards the square was an early tentative towards a functional separation between residence and industry, expressed through the street grid.

Other restructuration in the area could include the Saint-Rémi tunnel, which linked the Saint-Ambroise sector with autoroute 20 and parts of western, residential, Côte-Saint-Paul (but not the industrial sector across the water!) and the construction of the Turcot interchange, which effectively ended the westward expansion of Saint-Henri and separated it from the Turcot yards.

## Railyards in Montréal's southwest

### Introduction

As one of the key infrastructures in the transshipment process, railyards were a major element in the built landscape of southwest Montréal. Though their functions range somewhat, their basic technical and functional requirements are usually fairly similar. Whether a yard for sorting or storing trains or a facility for discharging cargo into the city or for its intermodal transfer, the basic logic of multiple parallel tracks with some space alongside or at the end for freight handling activity remains relatively constant. Taking its cue from the earlier notion that one of the most crucial distinguishing characteristics of an industrial complex is the degree to which it is integrated into the surrounding urban tissue, this section examines the southwest's railyards according to a similar schema – urban integrated, urban semi-autonomous, and unified autonomous. The notion of restructuring used in this discussion needs to be interpreted as more of a notion expressing the insertion of a rupture in the general pattern of the urban tissue, whether that rupture was introduced a priori or a posteriori to the urbanisation of the yard's surroundings. While this is not fully equivalent to Malfroy's elaboration of the term nor of its use above, the condition being described is sufficiently analogous to justify this use.

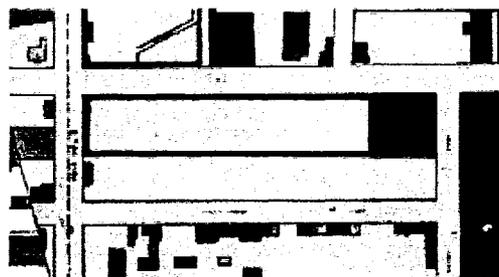
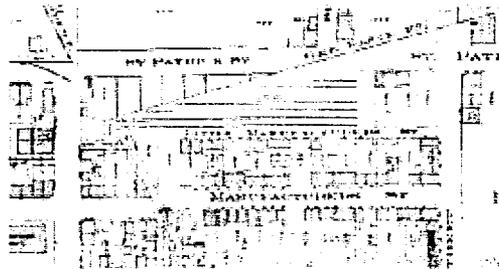
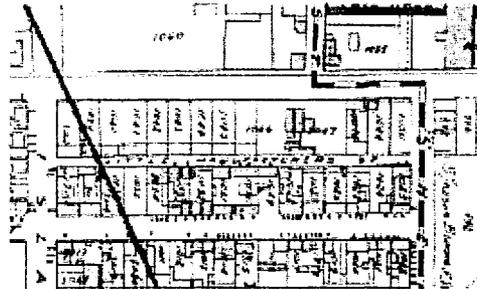
### Urban integrated

The urban integrated yards are those where the form is determined almost entirely by the surrounding urban tissue, particularly the pattern of streets and blocks. These yards generally fit into already established urban parcel, street, and block patterns and have little impact in the form of restructuring, rather occasioning aggregation, densification, and clearing open spaces in adjacent blocks for industrial use. These yards are frequently attached to spur lines that are implanted in existing urban tissue, whether via an in-street right-of-way, like the Canadian Pacific Railway's spur line along Saint-Patrick street in Pointe-Saint-Charles, or a separate right-of-way threaded through an existing parcel matrix, as is the case with both the CPR and GTR spur lines in Côte-Saint-Paul, or on tow-path-like rights-of-way along the quaysides of the Canal.

Though they do not involve significant restructuring, these yards still have an impact on their surroundings, in terms of aggregation and densification processes or their reverse. The CPR's Pointe-Saint-Charles yard, sandwiched between Little Manufacturer's and Saint-Patrick streets first appears on the map in 1912. By 1890, the adjacent block, immediately south of Little Manufacturer's street has built coverage on all but two parcel, oriented

largely towards Manufacturer's street to the south, with some exceptions. By 1912, the number of buildings fronting onto Little Manufacturer's street has increased from two to five, two of which include means for courtyard access from the railyard – via a porte-cochère and an unbuilt passage between two buildings. By 1949 however, not only is the entire block vacant, but for a small freight office at its far west end, but Little Manufacturer's street has disappeared from the map.

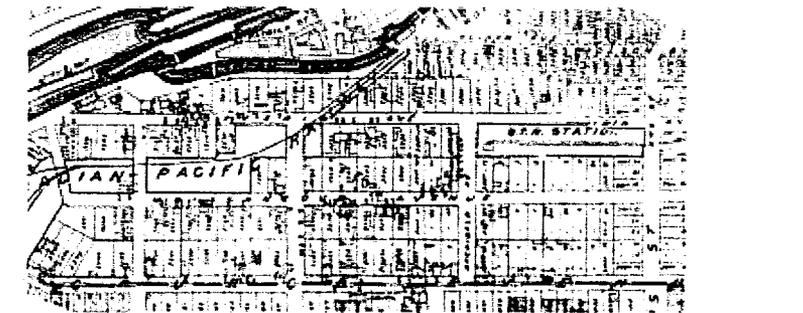
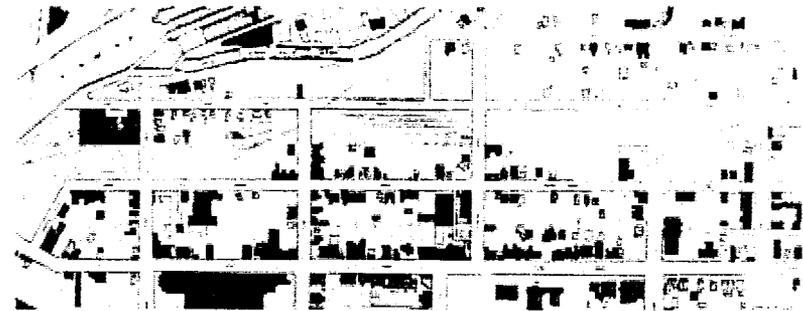
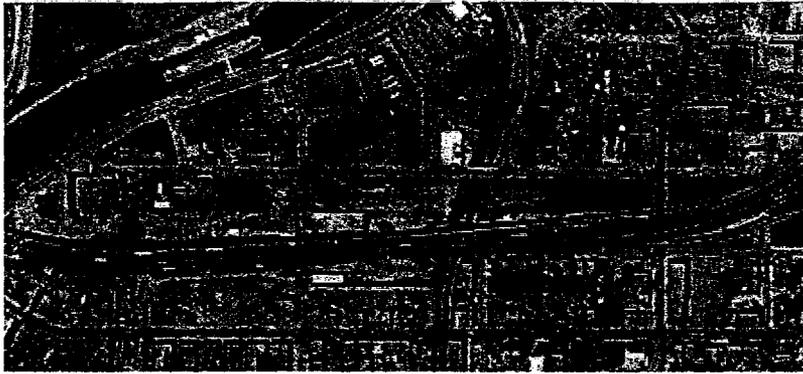
The CPR and GTR yards in Côte-Saint-Paul are both similar to the example above. The CPR yards, in fact, are even part of the same spur line as those in Pointe-Saint-Charles. First appearing on the map in 1907, the yards occupied a somewhat unstable part of Côte-Saint-Paul, between the industrial axis of the canal and (somewhat later) Saint-Patrick street, and the residential axis of avenue de l'Église. On a curve, the CPR yards form an aggregation of five parcels on the west side and three on the east of the block formed by avenue Dufferin (now Cabot), rue Maisonneuve (now de Roberval), rue Eadie, and rue Hadley. The GTR yards, on the other hand, occupy only a half block, between rue Archibald (now Laurendeau) and Angers streets, along avenue Dufferin (now Cabot). Other than the aggregation of parcels into a block, both sites have seen very little densification or aggregation of



4-61: The Canadian Pacific Railway's Saint-Patrick street yards in Pointe-Saint-Charles; From the top, 1890, 1912, 1949, 2002.

buildings, a situation which prevails in 1912 when together, only six of twenty-three parcels have buildings of stone or brick. By 1949 the GTR's yards extend north of rue Laurendeau to rue Eadie, while the CPR's yards extend northwards, along the curve towards rue Saint-Patrick and the Canal without, however, occasioning significant change in the aggregation or densification of buildings or parcels alongside, save for a large facility at the northwest corner of Hadley and Cabot streets.

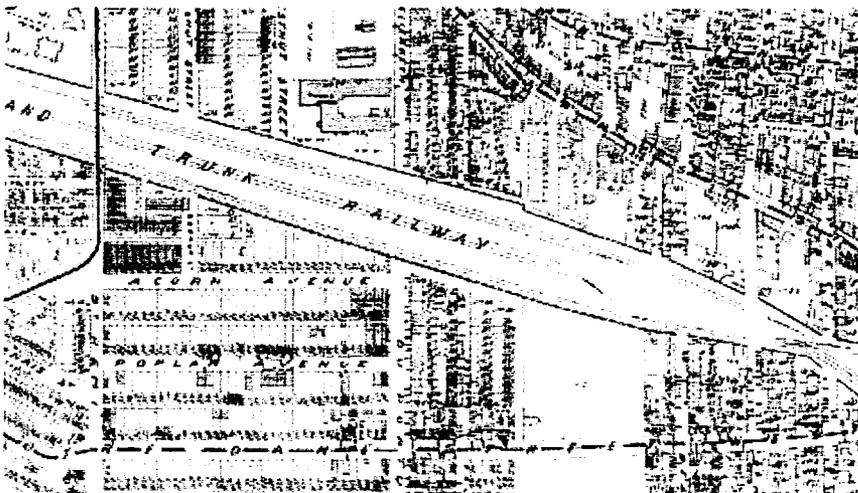
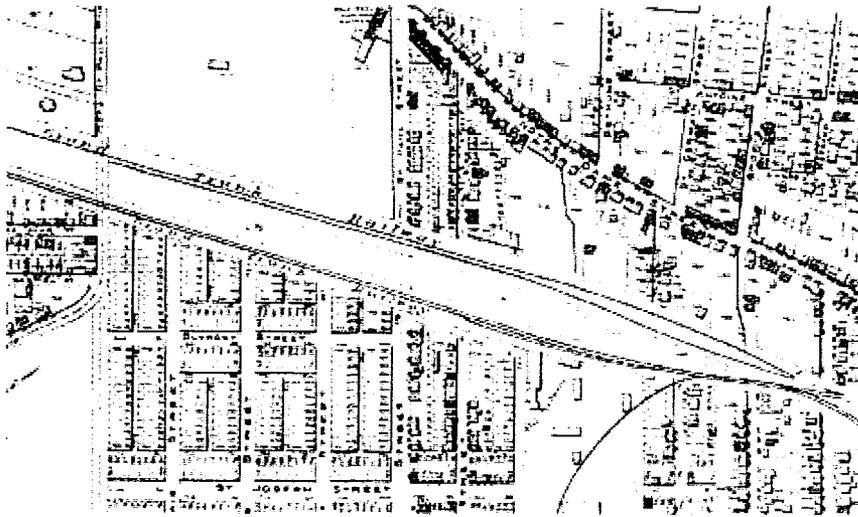
In all three cases, by 2004 the rails have been pulled up or paved over and the yards have disappeared. In Pointe-Saint-Charles the land is largely vacant, save for a small building sitting on three parcels at the yards' former west end. In Côte-Saint-Paul, their disappearance is linked to the restructurations imposed by the arrival of autoroute 20, which largely borrows the traces left by the vanished railway infrastructure. Where space has been left, the land is largely used for outdoor storage and a recycling depot operated by the Ville de Montréal. In both cases the weakening of the industrial axis of Saint-Patrick street and the Lachine Canal has been exacerbated by the removal of the spur line and the railway yards, without a strong resurgence in the residential axis, thus leaving a sizable void to be filled by low-density industrial activities or vacant land. The re-conceptualisation of the canal as an axis for recreation and tourism, along with the conversion of some parts of the industrial axis to residential use, may result in these sizable aggregations of multiple parcels – up to two blocks long – being put to new uses. In Côte-Saint-Paul however, the presence of autoroute 20 remains a significant barrier between the residential axis of avenue de l'Église and the former industrial axis of the canal and its hydraulic pole.



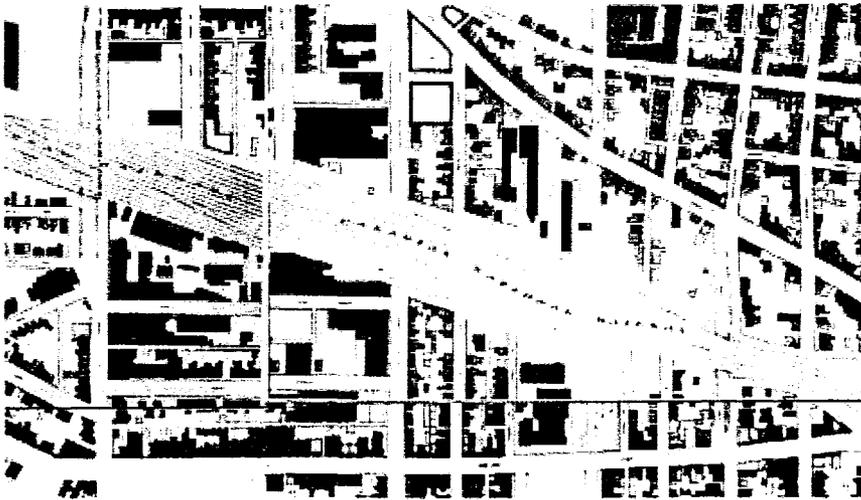
4-62: The CPR and Grand Trunk Railway's Côte-Saint-Paul yards. The CPR's facilities are to the north, the GTR's to the south. From left, 1890, 1907, 1912, 1949, 2002.

## Urban semi-autonomous

The urban semi-autonomous yards are those where the form is somewhat determined by the surrounding urban tissue, but the yard's shape and relations with its context involve a somewhat larger degree of restructuration due to a lack of precise correspondence between the two. Frequently this involves the orientation of the infrastructure – such yards are often 'out of alignment' with respect to the parcel and street grid in terms of being roughly perpendicular to the pattern of 'long blocks' as well as being at a different angle. These yards frequently predate the surrounding urban tissue – the urbanisation of which is frequently importantly structured by their configuration and presence. This distinguishes them from the 'urban integrated' type of yard, which though it also structures its surroundings, does so in a way more related to their presence than their configuration. Two of the four examples in southwest Montréal are attached to the GTR mainline – the Bonaventure freight terminal and the Saint-Henri yards – while the other two are scarcely removed from it and are themselves conforming to the orientation of the Canal.



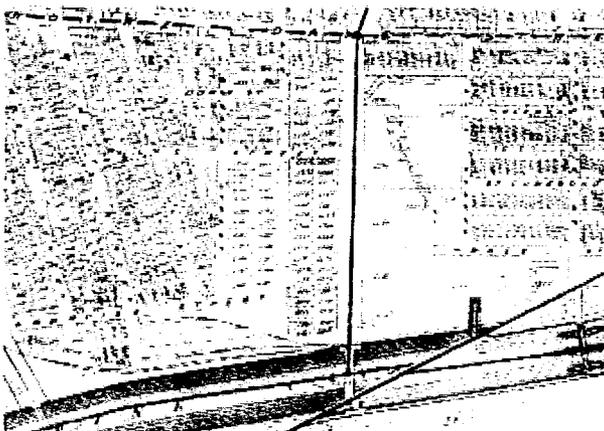
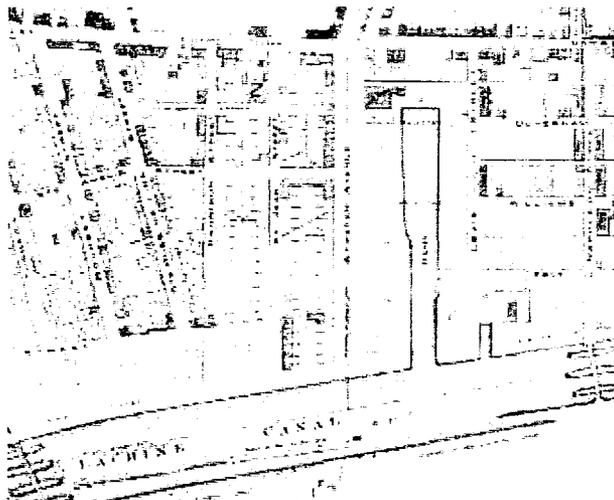
4-63: The GTR's Saint-Henri yards; the complex emerged in the space between two formerly competing railways and had marked effects on the urban tissue of its surroundings. From the top, 1890, 1907.



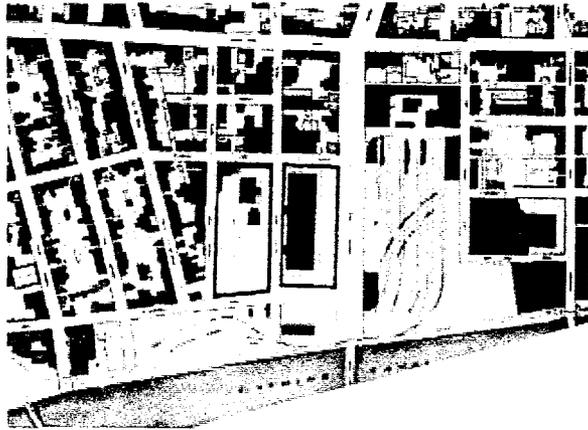
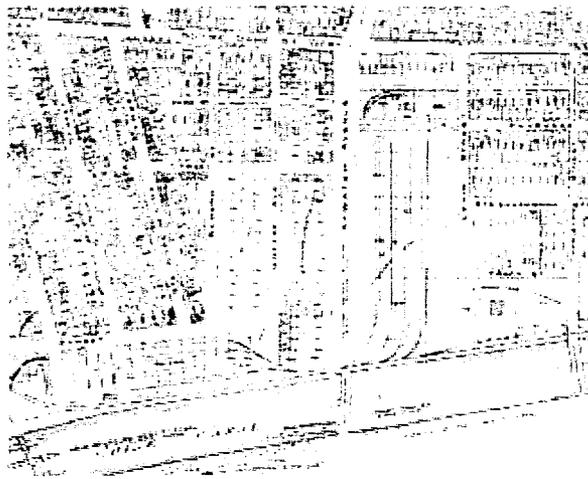
4-63: The GTR's Saint-Henri yards; the complex emerged in the space between two formerly competing railways and had marked effects on the urban tissue of its surroundings. From the top, 1912, 1949, 2002.

The GTR's Saint-Henri yards derive their location and configuration from the historical twinning of the old railway to Lachine. The space between the two main lines – still visible as late as 1907 – was filled in and used as a yard when the GTR assumed control of both. By 1912 though, the full extent of the yard is evident and the empty spaces in the middle have been filled in by more tracks. The yards don't appear to have a significant structuring impact on the surrounding urban tissue in that the street grid and parcelling system is largely determined by the previous seigneurial colonial land subdivision system. The yards do, however, have a significant impact on the built tissue of the blocks to the south of the yards towards Dagenais avenue. Industrial complexes in these blocks, though neither the parcels nor the streets are adapted to the presence of the tracks in any way (de Courcelles street is still a level crossing in 2007, though Saint-Rémi follows a tunnel under the tracks), take advantage of the nearby yards through a system of sidings that branch off the main yard along Acorn street. The particular form of aggregation and densification here is all the more striking given that it occurs in an urban tissue that was reoriented away from the Saint-Ambroise industrial sector and the Lachine Canal. While most of these streets are residential – from Dagenais south to Sainte-Émilie streets – the residential parcel modules and block widths are adapted for industrial use near the yards through the introduction of specialised building types that diverge from the residential footprint in terms of length and a tendency to traverse rear lanes and thus stretch across complete blocks. By 2004, these blocks still display significant industrial densification (principally the filling of open courtyard spaces) and conserve an example of aggregation of industrial buildings within a residential tissue.

The Atwater yards, hosting tracks from both the CPR and the GTR, were located immediately east of the GTR's mainline crossing of the Lachine Canal and were the southern and eastern neighbours (respectively) of the Atwater market. The CPR's southern yard first appears in the 1907 map, predating the market, yet coming after the filling of the Brewster basin and its subdivision into whole-block parcels. While on the nearby residential blocks (largely to the northwest) densification in the form of rear-lot structures is striking between 1890 and 1912, the blocks immediately adjacent to the yards – between Berard street and Atwater avenue – remain largely vacant. By 1949 the market is ensconced between the two yards and a block devoted to an ice house and outdoor storage. The GTR's eastern yard, which first appears on the map in 1912, occupies the space left behind by the filled-in Brewster basin. Stretching over a superblock the size of three ordinary ones, it is directly connected to the Redfern lumberyard and William Rutherford's sash and door factory. By 2004, the removal of the railyards is followed by the construction of a condominium complex, a big box grocery store and a parking lot on the same footprint.

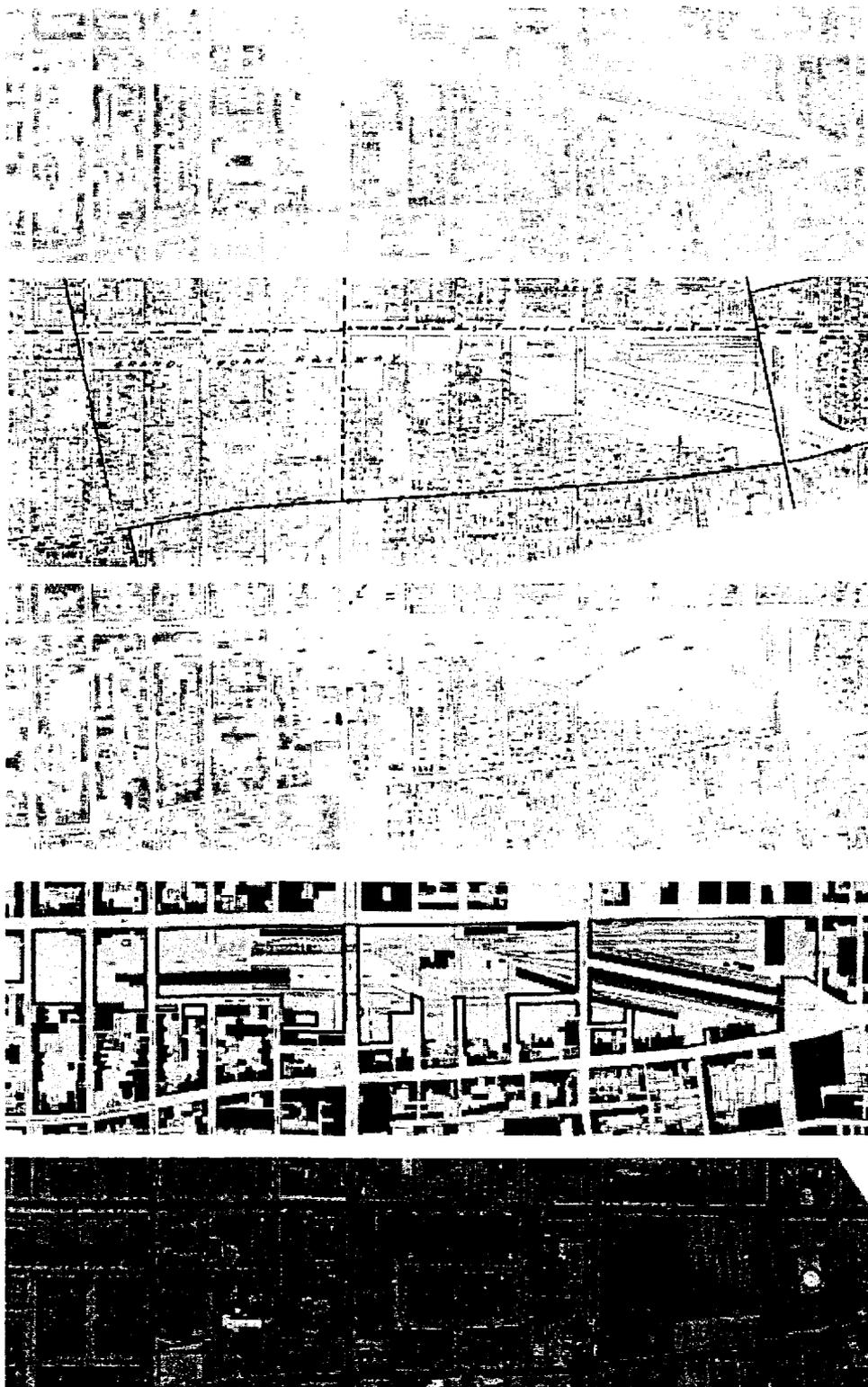


4-64: The CPR and GTR's Atwater yards. From the Brewster basin to a big box, the scale remained remarkably distinct from the surrounding residential blocks, yet neatly packaged in the residential framework. An excellent example of the dialectic between residential and industrial forms along the Lachine Canal. The GTR's Saint-Henri yards; the complex emerged in the space between two formerly competing railways and had marked effects on the urban tissue of its surroundings. From the top, 1890, 1907.



4-64: The CPR and GTR's Atwater yards. From the Brewster basin to a big box, the scale remained remarkably distinct from the surrounding residential blocks, yet neatly packaged in the residential framework. An excellent example of the dialectic between residential and industrial forms along the Lachine Canal. The GTR's Saint-Henri yards; the complex emerged in the space between two formerly competing railways and had marked effects on the urban tissue of its surroundings. From the top, 1912, 1949, 2002.

The GTR's Bonaventure Freight Terminal (see Notman panorama), which at its peak in 1949 stretched from boulevard Georges-Vanier in the west to square Chaboillez in the east, is another example of an urban, semi-autonomous type of railyard. Though they conform to the block layout, they impose a different and vaster scale upon it, in a sense echoing the escarpment above as a filter allowing only select streets passage between the cities above and below the hill. The Bonaventure Freight Terminal arguably acted as a the barrier to the northward aggregation and densification of the urban tissue anchored by the Notre-Dame matrix route – which is now marked by a contemporary north-south dichotomy in the contrasting forms of urban renewal and historic conservation lining the respective sides of the street. Following the path of the first railway on the island of Montréal, the yards stretch from Versailles street to Chaboillez square in a relatively consistent form, with tracks fanning off from the main line to the north and south. Between 1912 and 1949, the configuration of the yards themselves changes dramatically, with a significant westward expansion. Although from 1890 onwards industrial activities are increasingly present in the blocks between Notre-Dame and the yards, there is little restructuration, or even aggregation into industrially-scaled complexes evident in these areas. The 1949 map does, however, show a freight terminal significantly larger – especially in the western and southern directions – than in 1912, with multiple long sheds and overpasses for key north-south streets. Chaboillez square, with the loss of its station functions in favour of the new Gare Centrale in the business centre has also changed, as Railroad street has been integrated into the freight compound and serves as a gated 'lobby', offering connection with both Saint-Jacques and Notre-Dame streets.

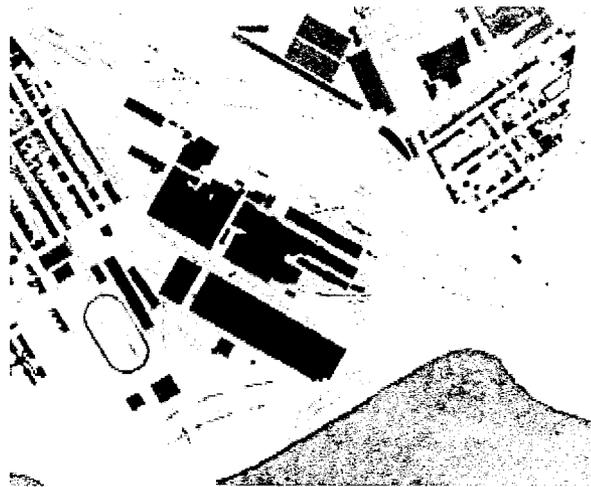


4-65: The GTR (and subsequently CN)'s Bonaventure freight terminal occupied a massive swath between Griffintown and the uptown city centre. Following its postwar closure, it became the site for a series of new housing initiatives, introducing a variety of urban (and less urban) housing forms into the CBD. From the top, 1890, 1907, 1912, 1949, 2002.

## Unified autonomous

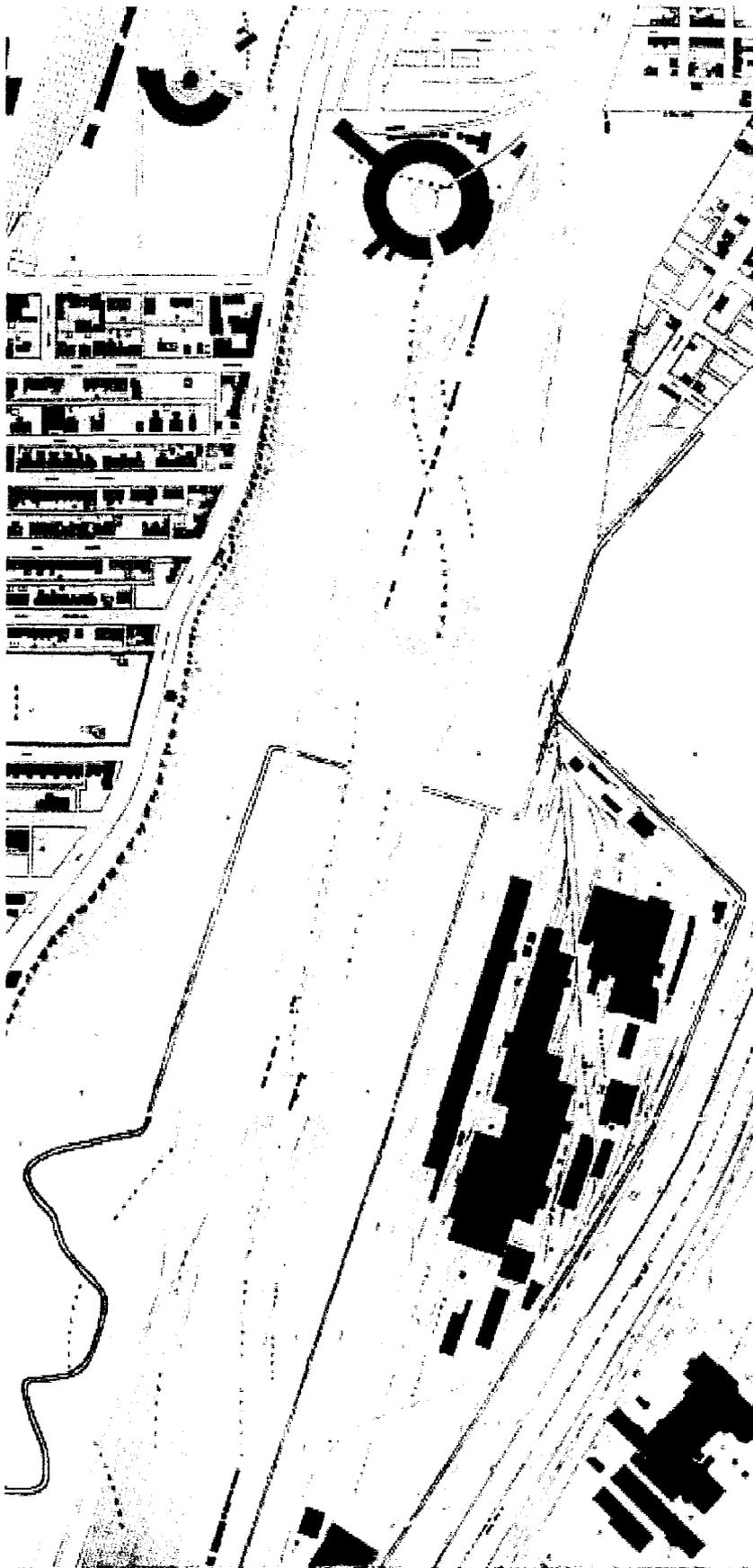
The unified autonomous yards, like the unified autonomous industrial complexes, are largely independent of the urban tissue and conditioned principally by the agricultural framework upon which they are sited. Even a posteriori, though they act as significant poles in the metropolitan framework, they have little structuring impact on the level of urban tissue. The two examples in Southwest Montréal, the GTR's Turcot and Pointe-Saint-Charles yards, demonstrate this perhaps contradictory notion. While it seems that the contemporary shape of residential Pointe-Saint-Charles is largely circumscribed by the territory of the yards, much of the limits of the southern Point's residential sector were defined more by the edge of the Saint-Laurent river – the yards were expanded on subsequent landfill – than they were by the yards themselves.

The original land purchase for the approach to the Victoria bridge and the shops, is still largely the boundary between the GTR's yards and the neighbourhood.



4-66: The GTR's Pointe-Saint-Charles yards and shops predated (and to a degree encouraged) the industrial urbanisation of the city's southwest. Arranged in relation to the GTR's mainline across the Victoria Bridge, their most significant alterations were more a matter of interacting with the growing port (via Brennan street) than an interplay with residential tissues or urban forms. 1949.

In the second case, the GTR's Turcot yards, the infrastructure is almost totally isolated from an urban tissue of any kind, again drawing upon the underlying agricultural framework in a manner similar to the Lasalle Coke across the Canal as well as drawing upon the geomorphology of the site, as the yards were built on land reclaimed from the Lac-aux-Loûtres wetlands. Separated from Notre-Dame-de-Grâce by the Saint-Jacques escarpment and from Ville-Émard and Lasalle by the Canal, the yards' configuration is largely determined by the orientation of the GTR's mainline to Lachine and beyond, its extent defined by the barriers of the Canal and the escarpment, only slightly altered by the routing of autoroute 20 and the Turcot interchange.



4-67: The GTR's Turcot yards, a massive complex including the Canada Car factory (buildings at centre left). Occupying the site of the former Lac-aux-Loûtres (Otter Lake), the yards, when aligned with autoroute 20 and the Canal, powerfully attest to the importance of the Lachine Canal corridor. Disused by the end of the 20th century, the fate of the yards and the relationships between the urban fabric that will replace them with the escarpment and the Canal was an emergent topic in the early 21st century.

## Conclusion

The analytical narratives presented in the course of the above pages elaborate a complex system of urbanisation, industrialisation, and regeneration. Presenting a multi-scaled take on the evolution of southwest Montréal, this chapter attempted to provide a structural reading of the urban tissue by focusing on the Griffintown district and developing a typology of industrial complexes and railyards across the eastern Lachine Canal basin. This approach highlighted several themes central to the particular evolution of industrial Montréal.

Notable among these themes is the conceptualisation of Griffintown's urbanisation, industrialisation, and regeneration as a process characterized by shifting between manufacturing, transshipment, and residential projected different structural imperatives onto the urban tissue and created vastly divergent conditions over the course of more than 150 years, with considerable contemporary repercussions. This dynamic tension or balancing between competing forms of territorial occupation must also be expanded to include the notion, active within the Griffintown district and throughout the eastern Lachine Canal basin, that a biaxial structure in which the Canal itself, at a more citywide or regional scale, coupled with adjacent infrastructures and industrial roads, can be thought of as an industrial nodal axis funnelling industrial development that is mirrored by a more locally pertinent, urban, residential centralising nodal axis formed by a variety of streets at the hearts of various neighbourhoods, namely rue Notre-Dame, rue Centre, and avenue de l'Église.

The second important contribution of the above analysis is the situation of the eastern Lachine Canal basin's industrial complexes on a continuum according to the degree of their integration with the surrounding urban tissue. Drawing from the work of Robert Lewis (2001) and Reyner Banham (1986), the second analytical narrative's development of a typology on this basis expanded on the distinctions made in the first narrative's analysis of the Griffintown district between tissues of manufacturing and transshipment. By drawing attention to the often incremental and integrated character of industrial complexes – highlighting their roots in aggregations of elements of non-specialised urban tissue, from residential parcel modules to the residential buildings themselves, the second narrative traced a process of increasing specialisation and decreasing integration as time progresses and, by and large, distance away from Vieux-Montréal increases.

Expanding such an analysis to the emergence of the Lachine Canal basin's industrial sectors – Windmill Point, the Saint-Gabriel locks hydraulic complex, Sainte-Cunégonde, Côte-Saint-Paul, and Saint-Ambroise – the previous pages explored in greater detail the local specificities of the tensions between industrial axis and residential tissues, the particular elements and (inter)relationships characteristic of each sector's urban tissue, and most crucially, the unfolding of (trans)formative processes of aggregation, densification, and restructuring in the various sectors.

The last section of this chapter expanded this approach to arguably the most crucial transshipment infrastructures in the southwest, the railyards. More so than the Canal, the southwest's railway infrastructure still fulfills its original purposes, though in a form considerably scaled back from the heights attained in the middle of the twentieth century. Extending throughout (and beyond) the urban territory, the railway meets the city most intensively through its railyards. Indeed, as the railway overtook the canal basins and quays as the city's key trans-shipment interface, a unique synthesis between different technologies and scales of urban materials handling was developed, with a complex layering of infrastructures with distinctive ways of relating to their urban surroundings. The culmination of this mixture, the grain silo, is the product of this interaction, mixing basin and rail. Adopting an approach to the classification of railyards according to their degree of integration with the surrounding urban tissue, this last section revealed that railyards entrained significant and particular (trans)formative processes, namely aggregation and restructuring.

The following chapter consists of a three part discussion that takes the salient points from the above analysis and examines their implications on several fronts: in terms of the practices necessary to address brownfields regeneration and heritage preservation; in terms of what a morphological analysis of Southwest Montréal reveals about the relation between urban tissue and continental projects of economy and infrastructure; and finally, in terms of the conceptual and practical roles urban tissue can play as a mediator of political-economic forces.

## 5. Discussion | Chapter five

### Brownfields and urban heritage

#### Introduction

Economic restructuring and deindustrialization have left large tracts of frequently contaminated land and obsolete industrial buildings underused or unoccupied. The redevelopment of such areas and facilities, often located at symbolic locations in close proximity to city centres, for post-industrial purposes is high on the urban planning and policy agenda in the West. The term brownfield redevelopment was coined to designate these urban conversion operations, which are often seen as a desirable and more sustainable counterpoint to greenfield development entailing the urbanization of agricultural or forested land on the suburban periphery. As is argued in the second chapter, in Canada and North America, the question of brownfield redevelopment has been, for the most part, discussed solely from environmental or economic development and real-estate perspectives. Such predominantly technical and technocratic perspectives, discourses, and policies offer pertinent vantage points and address critical issues but they can be too narrow and they may fail to address the historical and cultural significance of these sites of production; landscapes that testify to the historically important urban experience of generations of migrants and immigrants who settled in close vicinity of their industrial workplaces. This first section of the discussion attempts to go beyond the monumentalisation of industrial ruins towards a fuller urban regeneration practice that builds on the heritage of the entire urban tissue.

Our current inability to situate brownfield redevelopment policies in a broader cultural and historical framework allows for the irreversible destruction of an inherited built landscape whose heritage value is not yet fully recognized. In some cases this insensitivity paves the way for *tabula rasa* redevelopment that produces landscapes suffering from economic, cultural, and spatial disconnects in relation to the urban neighbourhoods that form their surroundings. Even when brownfield redevelopment efforts entail maintaining and converting old industrial buildings, fragmentary knowledge of the complex historical stratification underlying landscapes of industrial production and their contiguous residential neighbourhoods contributes to the generation of impoverished redevelopment schemes. Overly technocratic planning approaches result in culturally disembodied and spatially atomised urban environments and reduce them to landscapes of consumption. This discussion introduces the expression 'culturally disembodied built landscapes' to evoke a commodified built environment, the production of which is predicated on exchange value

determined by property investment as opposed to use value determined by inhabitants' activities and habits on the one hand, and one that is severed from locally-generated cultural models for urbanisation on the other. Through knowledge generated by an approach that integrates the study of urban forms, i.e. urban morphology, this discussion proposes a new path for conceptualising the heritage value of these landscapes and avoiding such disembodiment and atomisation, and their economic and cultural ramifications.

The previous chapter's morphological reading of what is perhaps Canada's most important brownfield redevelopment sites, the Lachine Canal basin in Montréal suggests that public policy and planning could benefit from an approach that considers the industrial landscape as a component of an active urban material culture: the culturally meaningful concrete objects (Frantz, 1998: 791; Grassby, 2005; Hodder & Hutson, 2003) that constitute the city, and a collective product enacted in the historical *longue-durée*. This approach finds its roots in urban morphology, a research tradition focusing on the evolution of urban forms (i.e. morphogenesis), examining the consistency and resilience of built space in the face of social, political, and economic systems and structures, and the historical sedimentation of urban artefacts by unveiling the mechanisms of transformation and conservation that affect the evolution of a built environment. The knowledge hence produced, which stresses the structural and genetic qualities of the city-building collective effort while shedding light on the production of home grown cultural models of urban habitat (Moudon, 1994), could prove invaluable for the production of post-industrial landscapes that resonate with the culture, history, and urban experience of local populations and that truly contribute to rejuvenate the adjacent inner-city districts whose fates were so intimately tied to the rise and fall of the urban industrial machine.

This section of the discussion calls for a leveraging of morphological knowledge in order to suggest a matrix capable of guiding regeneration efforts and opening the door to new solutions to planning, policy, and design challenges common to regeneration projects. It ends with a discussion of the promise of this approach, emphasising its potential to address two closely connected issues: cultural disembodiment and spatial atomisation, and their manifestations in the reduction of redeveloped sites to landscapes of consumption and heightened unevenness in the effects of revitalisation.

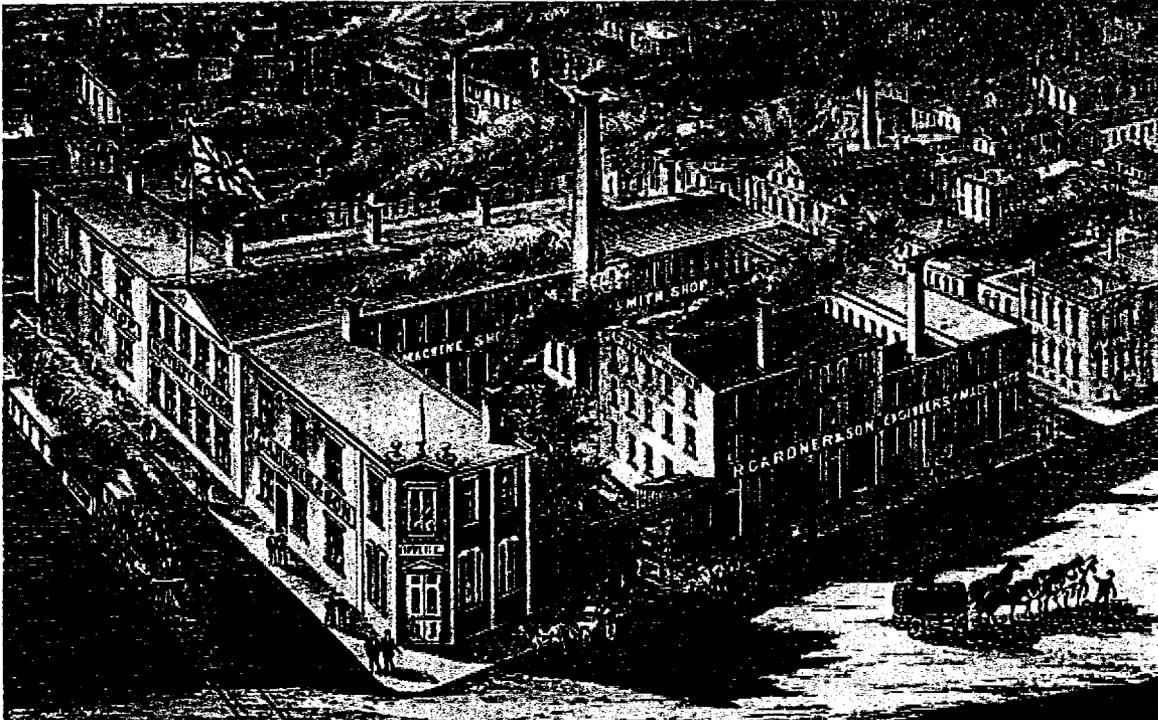
## **Brownfields, urban transformation, and morphology**

The semantic pairing of the terms brownfield and greenfield, while downplaying barriers related to fiscal, liability, and technical issues, evokes a blank-slate imagery that obscures the richness of derelict industrial sites in terms of heritage and traces of still-relevant material culture. In addition to the economic and cultural disconnects pointed to by the above critics, this knowledge deficit has spatial and physical ramifications in that it facilitates redevelopment practices that can rupture irreversibly with the material culture embedded in the urban landscape, a source of significant meaning and important spatial connections for the surrounding neighbourhoods and their populations. Even when the historical significance of past sites of industrial production is recognized as an asset, the tendency is to instrumentalize this heritage value through a commodification of the built landscape that drains it of most of its historical substance. Once it is recognized that brownfield sites are not *tabulae rasae* or blank slates, but rather significant repositories of urban industrial heritage, the challenge becomes one of translating these qualities into a concrete planning, policy, and design substance. The Swiss urban morphologist Sylvain Malfroy puts forward the notion that the regeneration of derelict industrial areas should indeed be understood as “a work of completion” (1998a: 141), in that such sites are embedded in the surrounding urban tissues and bear the traces of a long sedimentation of urban material culture that could inform and guide contemporary actions.

The industrial urbanisation of the Lachine Canal basin testifies to this sedimentation process in a highly expressive way (Bliek & Gauthier, 2006). Unfortunately, recent redevelopment in the area illustrates no less eloquently the risks of a predominantly instrumentalist and entrepreneurial governance approach with a technocratic focus to reduce a complex multi-layered and multifaceted space into an impoverished landscape of consumption, culturally disembodied and spatially atomised. The following sections discuss how the previous chapter’s morphological reading of the Lachine Canal basin’s urban tissue could contribute to a reform of our brownfield redevelopment policies and practice.

The spatial history documented in the previous chapter showed how industrialisation along the Lachine Canal took place in two waves, followed by deindustrialisation and an ongoing post-industrial development wave. Through both the adaptation of residential urban tissues to industrial use – from the Acorn street area in Saint-Henri to much of eastern Griffintown – and the consistent presence of urban-integrated type industrial complexes which involve

the aggregation of residential-scale parcel and building elements, the landscape of production has always been characterised by a complex interplay involving the emergence of a specialised industrial spatial order and a pre-established residential spatial order.



5-1: The Gardner Novelty works, an 'urban-integrated' type industrial complex, is an excellent example of the interplay between residential and industrial forms, mixing technical imperatives with residential vernacular and block layout.

In the first wave, industrial development was largely informed by vernacular architecture and residential settlement patterns, including masonry and carpentry techniques reminiscent of the affluent houses and institutional buildings in Vieux-Montréal (see figure 1, above). The configurations of and relationships between the street network and allotment system, as well as the spatial deployment of buildings, were hardly distinguishable from their counterparts in the old city. The second phase witnesses the gradual adaptation of architectural forms to then emergent industrial imperatives, a process marked by increasing specialisation and complexity in the architectural forms and spatial arrangement of industrial facilities. This second phase took place on ground already laden with the traces of the first phase, resulting in a distinctive dialectic between industrial and residential spatial orders. This dialectical relationship between traditional extensions of the largely residential, non-specialised city and the introduction of specialised urban elements related to the needs of industry and continental transportation is visible on maps produced as early as 1846 (see figure 2, below), and becomes increasingly pronounced with further industrialisation. A historically-grounded reading of urban form along the Lachine Canal reveals the permanence

of the agricultural route and subdivision pattern (Beauregard, 1984; Desjardins, 1999) and makes visible the coexistence of vernacular and planned characteristics in its subdivision and urbanisation.



5-2: Cane's 1846 map indicates the emergent urbanisation of Griffintown; note the cluster of larger port-related industrial structures to the east of the Flour Basins, just across the Canal from Windmill Point.

As the Canal district industrialised, the structural nature of this residential, or non-specialised, spatial order is increasingly apparent, furnishing particular spatial opportunities and constraints to the agents of industrialisation and their projects, akin to a structural framework that informs development. Early urban extensions, such as Griffintown and the north-eastern portion of Pointe-Saint-Charles are largely continuations of a familiar residential landscape: the dimensions and configurations of streets and parcels, and the deployment of most early building types were common across much of central, working-class Montréal (Legault, 1989; Young, 1986). Later developments, particularly those further west at the Saint-Gabriel locks, in Saint-Henri, and in Côte-Saint-Paul, on the other hand, make a break with these precedents, deploying streets, parcels, and building types unconventionally, in terms of dimension, configuration, and the relationships between these urban elements. Rather than reflecting vernacular practices of non-specialised urbanisation, dating back to the French regime (Gauthier, 2003), this emerging landscape responds to

new imperatives, accommodating particular technologies, (hydraulic and coal-fired) energy sources, and production processes. The characteristics of this new landscape might be more dependent upon the transshipment or production needs of particular businesses (the creation of a quay- or track-side staging area, or the need to access hydraulic energy or to store coal supplies) than upon spatial models that have their roots in the residential tradition; an ensemble of parcel and house dimensions and configuration informed by specific dwelling habits and domestic requirements, with rows of dwellings that frame in familiar ways the space of sociability constituted by the street. It is in these landscapes that the urban semi-autonomous and unified-autonomous type industrial complexes emerge, and in which the imposition of spatial needs relating to the exploitation of hydraulic energy or transshipment infrastructure take prominence.

The earliest urban-integrated industrial complexes and the sectors they defined – Griffintown and the Saint-Gabriel hydraulic pole – were characterised by processes of aggregation and densification that were by and large the industrialisation of a residential (or non-specialised) urban tissue. The previous chapter's analysis highlighted the degree to which complexes such as the Cunningham and Wells were integrated into the urban tissue and in large part were issued from the aggregation of largely vernacular, non-specialised buildings. At the scale of the industrial sector, it seems that much of the landscape produced under the auspices of emergent industrial necessities and spatial requirements had already been subdivided and prepared for urbanisation (even if unbuilt) according to this earlier residential spatial order, resulting in a long and fluid dialectic. This relationship is expressed throughout the Canal district in the form of unique arrangements of industrial complexes, in which numerous facilities responded to the particular framework provided by a residential street and parcel configuration. In an era of de-industrialisation and conversion to residential and recreational uses, the opposite can now take place: the layout of residential projects can respond to the street and parcel configurations of superseded industrial complexes.

From a morphological perspective, the spatial characteristics of the industrial landscape along the Canal are conceived of as the diffuse and collective result of a complex interplay between the long-standing vernacular practices of urbanisation and the introduction of new technologies, energy sources, and production processes. The traces of this interplay and their meanings, inscribed deep in the landscape can be at the core of the planning and design of any brownfield redevelopment projects in such a context. The following paragraphs detail the contribution such knowledge can make towards the resolution of two important

issues associated with brownfield redevelopment projects: the tendency towards a cultural disembodiment or disconnect, and their spatial atomisation or rupture in relation to their material and social surroundings.

### **New readings of urban industrial heritage**

Brownfield redevelopment projects are often promoted as major initiatives at the scale of local communities and entire metropolitan regions. The attainment of objectives related to broader revitalisation and economic development strategies (for instance the de-stigmatisation of afflicted communities or the attraction of reinvestment to surrounding neighbourhoods) can be hampered by a redevelopment approach that fails to take into account the historical traces inscribed in the site and that are at the core of its economic, cultural, and spatial linkages with the surrounding city. This is often recognised by economic development strategies related to the project, particularly those that involve civil society and social economy actors that deal with issues of employment and housing. For these efforts to be genuinely successful however, we argue that reconfiguration must take into account the underlying logic of the landscape, as it has emerged from the neighbourhood through history. For Dubois et al, the recovery of these historical traces is crucial to the successful redevelopment of the Lachine Canal basin: *“La perte des principaux éléments qui formaient le paysage industriel du XIXe siècle, notamment les bassins des chantiers maritimes, diminue la qualité patrimoniale de l'ensemble de cette unité de paysage, notamment en raison d'une perte de visibilité et d'accessibilité au canal de Lachine”* (Dubois, 2005: 5.2.6).

The ability to read and draw from this logic in guiding contemporary transformation is crucial to avoiding cultural disembodiment and spatial and material atomisation in redevelopment projects, and to avoid disconnects between the new project and the material culture of the city and its inhabitants. Rather than a blank slate, redevelopment can be rooted in and contributes to the spatial patterns of its urbanised surroundings. The disappointment expressed by civil society and social economy actors in the Lachine Canal basin in Montréal (see RESO (2001), for example) speaks to a lack in current brownfield redevelopment practice that takes the form of economic exclusion, cultural disembodiment and spatial atomisation. Research and analysis that reads the historically and collectively produced spatial logic underlying the industrial landscape can provide the key to brownfield redevelopment that is truly contextualised and meaningful for its residents.

A look at redevelopment along the banks of the Lachine Canal can clarify this point. This area has been affected by the recent redevelopment of the Redpath sugar refinery, designed in the early 1850s by the architect and surveyor John Ostell (James, 1985). Ostell was also responsible for the platting of many of the surrounding blocks on behalf of the Sulpician religious order (Young, 1986), in a configuration parallel to the Canal characteristic of most urbanisation on the residential fringes of Montréal; indeed, many of the new parcels and blocks were originally occupied by typical dwellings. As industrialisation progressed, factories and transshipment facilities grew increasingly large and specialised, though they remained contained within Ostell's mid-19th century street grid and the relationship between factory and canal was expressed through a normal street, though home to particular uses related to transshipment and observing maritime activity. After 1949 however, Canal Street and the northern end of Montmorency and Condé Streets were closed, and more recently, the grassy canal bank was converted into a linear park and bicycle path, detached from the neighbourhood-wide public space system it once belonged to, even though not a hospitable public space from a recreational or scenic point of view.

The Lachine Canal has seen high levels of public investment: from 1997 to 2002, the federal and municipal governments invested over \$100 million (Montréal, 2004: 231) in an effort to transform disused industrial infrastructure into a 're-naturalized' recreational amenity, historical interpretation site, and magnet for economic revitalisation. Despite these substantial capital infusions, the current redevelopment paradigm prevents the successful integration of much of this new park into the public space networks of surrounding neighbourhoods, constraining the diffusion of economic spin-offs and impeding neighbourhood access to the new amenity. While most commentators commended the preservation of old industrial buildings, such as those of the Redpath sugar refinery, and more generally the residential revitalisation of the canal's formerly industrial banks, many community members expressed serious concerns about the economic disparity induced by an influx of residents espousing a 'loft-living' (Zukin, 1982) lifestyle that the vast majority of the local population do not relate to and could ill afford. These very serious issues are in fact symptoms of a deeper cultural disruption, with a spatial dimension. Transforming the inherited industrial landscape involves an inevitable 'recoding,' but too frequently this results in spatial configurations and material arrangements that are at odds with earlier industrial and residential spatial logics and cultural models that prevailed at its formation and through later transformations.

Industrial complexes such as the Redpath refinery, which gradually developed as an increasingly specialised ensemble, integrated emergent technologies (new production processes, connections to railway sidings, coal storage yards) and cultural models with a pre-industrial residential morphological and material culture matrix largely ignored in the current wave of redevelopment. As evoked earlier, industrialisation, though propelled by a capitalistic effort of continental proportions and its technological imperatives, had to adapt to the local spatial and material conditions and was as such inevitability building upon the vernacular building traditions and knowledge systems, particularly in its initial stages. Knowledge of the spatial structure that conditioned industrialisation could help to make the most of the significant opportunities created by contemporary capital inflows. In its current configuration, the linear park along the banks of the canal largely represents a lost opportunity. Recapturing the linear park along the banks of the canal as a public space that is an integral part of the entire neighbourhood's system, in terms of accessibility and meaning requires that the rules governing the spatial syntax of the public collective space and its relations with the private realm be uncovered and then enacted.



5-3: The Redpath complex was one of the city's largest buildings upon its completion. It formed the core of a complex that extended as far as rue Centre, Pointe-Saint-Charles' residential spine. Converted to 'lofts', its relationship with the Canal has changed dramatically.

Such an approach is not evident with the Redpath refinery (see figure 3 above), as with much of the course of the redeveloped canal, lined by large and often fenced properties that turn their backs to the new park, rather than creating a more active and formal interface in which the principal façades frame the major public space, and the spatial transition between the private realm and the park is mediated by a public street. What is particularly unfortunate with this example is that the initial subdivision of the land, as informed by a previous residential tradition that generally included a public street running along the canal; a set of spatial relations between buildings, street and canal perfectly congruent with

contemporary needs. Similarly, the residential retooling of the industrial complexes gradually built on a residential substratum could gain incredibly in cultural pertinence and historical appropriateness when informed by the underlying residential spatial logic active at its origins.

In most circumstances, redevelopment did not entail such attempts at reconnecting with the site's morphogenesis, with the notable exception of the Stelco site (see figure 4 below), located on the north bank of the canal in the Sainte-Cunégonde sector, which rehabilitated the residential parcels and blocks that structured the site's industrial configuration.



5-4: The Steel Company of Canada's works in Sainte-Cunégonde, 1949 (left) and 2002 (right); The residentially-structured urban tissue at the base of both the industrial complex and its subsequent redevelopment remains clear and constant.

The transformation of Sainte-Cunégonde can, in a sense, be read as a sort of non-traumatic restructuring, congruent with the structural permanences of the site. Though the vocabulary of building types has changed dramatically, as has the pattern of uses and activities, the bulk of the urban tissue – especially its most permanent elements, such as the parcel structure and the street grid – has remained intact and continues to structure the sector. Last chapter's analysis points to the Stelco and to Sainte-Cunégonde as examples of an industrial complex and sector structured by a combination of a residential parcel module and abundant connections to continental infrastructure. Redevelopment in the late 20th and early 21st centuries continues this phenomenon, with a hybrid combining perimeter block densification with the renovation and adaptive reuse of select industrial buildings. The eastern limit of this regeneration paradigm is demarcated roughly by the Robin Hood flour mill at the boundary between Sainte-Cunégonde and Griffintown. A legacy of the longstanding industrial scale of activities on that parcel – it got its start in the 1840s as Augustin Cantin's Canada Marine Works – it has conserved that character and provides an imposing and difficult to break-down counterpoint to the dismantling and regeneration of the Stelco complex.

A similar duality of outcomes occurs in the Saint-Ambroise industrial sector, where two projects, side-by-side, demonstrate the need for caution in adopting a planning approach based solely on maintaining the established balance between industrial and residential spatial orders. The approach adopted for the extension of square Sir-George-Étienne-Cartier to the canal, including the development of the adjacent parcels, suggests that a requalification of the Saint-Ambroise industrial sector (the strip of land between the street and the canal) is underway, one in which supposes a the industrial scale is to be superseded by an extension of the residential spatial order all the way to the water (Léa-Roback street).



5-5: The Saint-Ambroise sector, 2002; Square Sir-George-Étienne-Cartier extends to the square while new development takes place to its east (right).

Immediately downwater (west or right, in the above figure), however, the approach to redevelopment is the opposite – an industrially-scaled residential complex stretches for the same two block equivalent, resolutely preserving the distinction between the Saint-Ambroise industrial sector and the residentially-scaled neighbourhood fabric of Saint-Henri. While maintaining the scale and form of the industrial complex is an important tribute to the history of the Lachine Canal, the more advantageous public accessibility afforded by a ‘residentialising’ approach – one that draws its structure from the adjacent neighbourhood, and Montréal’s traditional residential block configuration more generally – may be a more effective means of recuperating the industrial axis.

Given that the previous chapter’s analysis indicates that the majority of industrial sectors along the Lachine Canal are characterised by a dual-axis configuration (one residential, one industrial), this raises considerable site-specific challenges in terms of how planners and designers can integrate the Canal into residential neighbourhoods without weakening its identity and significance. On the flip side, planners and designers must also deal with

the integration with the residential axis of development occasioned by the injection of recreational and tourist values into the industrial axis. In the Redpath example, the potential embodied by a residentially-scaled substrate underlying industrial sectors could provide the means for tying redevelopment into meaningful systems of neighbourhood space, while in the Saint-Ambroise example, the tensions between industrial and residential axes is manifest and seems to be an essential factor to address in any regeneration scheme. Elaborating a matrix of urban elements and their syntax from the information provided by morphological analysis can serve to enhance the integration of new construction into a deeper system of material culture, going beyond façadism or superficial 'theming,' but structuring it in harmony with the logic that guided previous urbanisation.

## Conclusion

The policy implications of this type of urban redevelopment are a critical theme. Yet, in both academic and policy terms, the discussion is often narrowed to a relatively small number of technical and technocratic considerations. Little attention is given to the historical economic, social, and cultural significance of these sites of production that is crucial to understanding the inherited spatial framework of our cities.

This void has clear impacts on brownfields policy and particularly on the outcomes of regeneration programs and projects. One such impact is the sense of alienation and disenfranchisement felt by the populations of the urban neighbourhoods who experienced first-hand the consequences of deindustrialisation, and who are not reaping the benefits of the current wave of redevelopment. This latter claim, primarily supported by anecdotal evidence collected in the context of contacts with community organisations, still needs to be validated and clarified through further, empirical, research amongst community organisations. The goals of this section of the discussion are to explore the up-stream theoretical implications of the current conceptual framework and its lack of attention to heritage considerations, and the downstream consequences of this framework as illustrated by redevelopment projects in Montréal. This exploration is aimed at proposing a way to broaden perceptions of the opportunities and challenges of brownfield redevelopment, through the incorporation of knowledge produced by a morphological reading of such post-industrial sites.

Such a reading has allows for a deeper understanding of the historical stratification of spaces of industrial production and in particular of the historical interplay between residential and industrial forms. It reveals the existence of a *genus loci* largely attributable to

a pre-existing sets of opportunities and constraints that shaped the local enactment of global industrialisation processes. In revealing the operative potential of the traces and patterns marking brownfield sites, urban morphology can provide innovative means to address lacunae in current practices and curtail in particular their deleterious effects on the built heritage of urban industrial neighbourhoods. From the identification of parallel axes of development in canalside industrial sectors to highlighting the structural potential of a residential parcel modularity in an industrial context, a morphologically-rooted approach could serve as a cornerstone in a strategy to foster the collective reclamation of former spaces of production so that local populations can benefit from these significant investments and continue to live in an environment that holds meaning in terms of their material culture.

Even in situations when the morphological aspects of regeneration are taken into account, the cases studied in the previous chapter reveal a landscape that is fraught with the challenges posed by dramatic shifts in scale, the coexistence of multiple polarities and axes of development, and a unique, historically meaningful set of transformations that demand to be figured into contemporary planning and design schemes. The next section of this discussion treats the regional and continental importance of the Lachine Canal basin as an axis of historical permanence and significant meaning; it has held fast as Montréal's link with the North American continent through vastly different political, economic, and technological contexts, and has come to play a major structuring role in the territorial development of Montréal as a metropolis. In fact, one could say that the Canal itself was one of the key elements in Montréal's emergence as Canada's metropolis. With the regional importance of the Lachine Canal in mind, handling the specific design of regeneration projects – balancing the industrial and residential spatial orders, intervening in the spaces between the industrial and residential axes, working with the transitions between hydraulic and transshipment polarities – takes on even more importance.

Before moving on to the next section of the discussion, I would like to end with a quote from the Swiss morphologist Sylvain Malfroy, who sums up these high stakes in an eloquent fashion:

“The reuse of these ‘blighted’ areas poses very serious problems in the choice of operative criteria for the contextualization of new interventions. This is so because interventions in these areas necessitate a choice between a more radical restructuring and improvement at the scale of the entire agglomeration or adapting the site to its context with small-scale development that plays a part in

the dynamic functional equilibrium of the area and its network of social spaces established over time. On the one hand, to take this second choice for a large site might prove insufficient for realizing its potential as a node or pole within the hierarchy operating on the scale of the entire city. On the other hand, to work on these large areas, taking for granted their quantitative and qualitative transformation relative to the city as a whole, is to gamble on the progress of history and potentially to precipitate the disintegration of entire portions of an urban area.

Efforts to deal with urban blight have met a challenge in the design of replacement tissue, because both the idea that various small-scale parts might be 'interwoven' within the area and the methodology for large-scale restructuring to take advantage of the real forces of transformation of the city remain controversial" (Malfroy, 1998b: 24).

# The Lachine Canal as an interface between Montréal and the North American Project

An exploration of the tensions between vernacular and modern as demonstrated in Southwest Montréal... how does the city incarnate the paradoxes of modernisation, and how can Montréal's industrial infrastructure be seen as a large-scale heritage asset?

## Introduction

Through the concepts of permanence and resilience it is possible, I think, to accord a sense of continuity and integration to the implementation and expansion of such a dramatic element of transportation infrastructure. Innovations in transport are often thought to be revolutionary in their situation on the built landscape and their character. What the railways in southwest Montréal offer is an indication to the contrary; that when seen through the lens of permanence offered by Rossi (Rossi & Eisenman, 1982) they are a continuation in a long line of projects with the design of accessing upper Canada and the interior of North America, albeit with a technological twist. And when the surrounding environment, the metropolitan morass of George Herbert Ames's city below the hill, which seems at first glance to demand a new way of being read (research on the Großstadt and the shift from Mietskasernen to Siedlungen or the creation of Tony Garnier's Cité Industrielle in architecture and planning) and a new way of being lived (the classical sociological works of Max Weber, Georg Simmel (Sennett, 1969; Simmel, Frisby, & Featherstone, 1997), and the sociology of the Chicago school) is considered in light of Moudon's idea of resilience in the face of substantial change in the built landscape of the twentieth-century American city, it becomes possible to think of the city as a process that fuses the ideal and the material; Maurice Halbwachs' (1980) collective memory with Saverio Muratori's typological process (Malfroy, 1986). Muratori's view of the built landscape as a palimpsest of human culture already embodies this fusion, but in the modern city and in the North American context particularly, the infrastructures of urban industrialisation need to be conceptualised as a highly eloquent expressions of heritage available due to its interactions and structuring impact on the surrounding urban fabric.

This section of the discussion puts forward the argument that southwest Montréal's industrial infrastructure, and especially the Canal and the railway network, are something beyond the merely picturesque ruins of an industrial era we now romanticise. Rather, they are one incarnation of a unique fusion between ideal and material, between collective consciousness and material permanence. As a hub for the settlement and colonisation of the North American interior, southwest Montréal was, in a sense, un *passage obligé* through

which a variety of practices of urbanisation were funnelled. The cosmopolitan mix produced by varying sources of city-building knowledge, from the subdivision of hydraulic energy clusters to the layout of elite residential squares, and from the aggregation of residential buildings into small foundries to the specialised design of immense industrial complexes is testimony to the status of the Lachine Canal basin as a privileged interface between Montréal and the world. The Lachine Canal basin is the materialisation of Montréal's collective efforts to position itself as the gateway to a continent through successive political, technological, and economic paradigms. Southwest Montréal has the legacy of being a privileged site of interface between local and global and as such is uniquely endowed with a palimpsest of savoir-faires of urbanisation, industrialisation, and now, regeneration.

The railway infrastructure of southwest Montréal represents the local, urban interface of empire and the bricks-and-mortar connection between city and continent. The Lachine Canal basin is a landscape marked by centuries through which this connection between city and continent has achieved some degree of ideal permanence or resilience – that is what the district is for – and the varying technological and economic means of achieving these aims have added up into a sort of palimpsest of North American colonialism. We need to see these traces – the materiality of old locks, tow paths, railyards, elevators, factories – but also the less tangible but equally real configurations, polarities, tensions, axes, (trans)formative processes – as perhaps the most eloquent testimony to Montréal's place in North America, and to work with them, and recognise them as the incredibly valuable cultural heritage that they are.

This recognition isn't about preserving these industrial infrastructures or freezing them in time, but rather it's about understanding their structuring qualities and the fact that they are but the most forceful manifestations of a continental axis that predates them and is part of the collective consciousness, expressed through the permanence of the Lachine Canal tracé. Far from a call to monumentalise or freeze these infrastructures in a state of either restored educationalism or pastoral ruin, the notion this section of the discussion seeks to explore is that of a leveraging of the longstanding structuring powers – the permanence – of such infrastructure. Synthesising the new political-economic imperatives of contemporary regeneration with the historic permanence and considerable resilience of previous infrastructures presents the opportunity to recognise heritage by working with it.

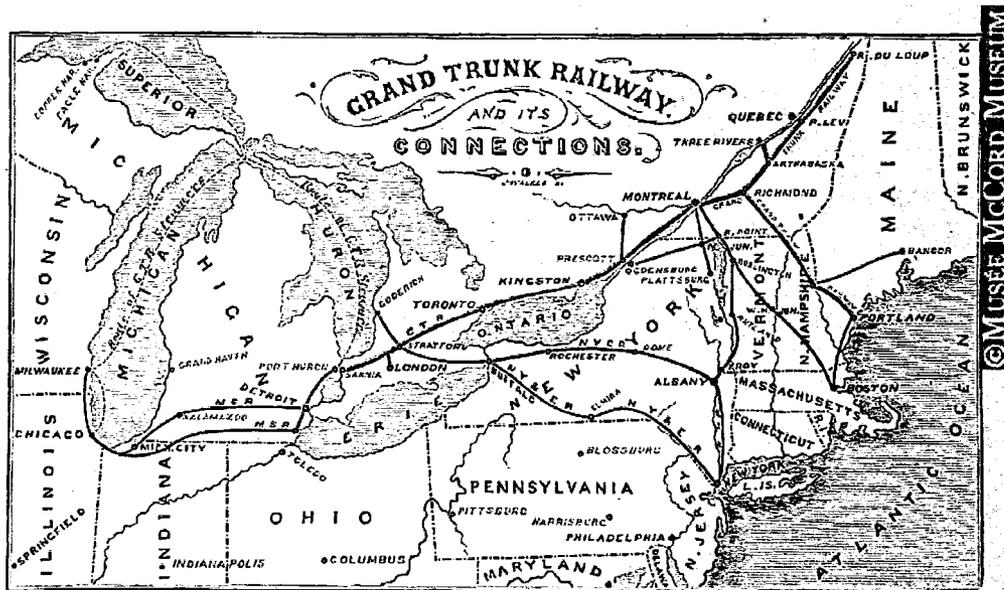
The paragraphs that follow outline a short history of the ideas underlying railway development in Montréal with a view to situating the Lachine Canal basin's network of railway infrastructure as an interface between the *savoir-faire* of local urbanisation practices and the projects of continental settlement and global economic integration. This section of the discussion then proceeds to draw on the previous chapter's analysis – particularly the segment on railyards – to propose an interpretation of the southwest Montréal's industrial heritage that focuses on the dialectic between vernacular city-building knowledge and specialised, technical infrastructure with remarkable and significant structural implications that belie a longstanding interplay of ideal and material permanence along this historic tracé.

### **A short history of railways in Montréal**

The first railway built in Montréal was not actually built in the city but across the river, as a portage line connecting two important shipping channels, the Saint-Laurent and Richelieu Rivers, at Laprairie and Saint-Jean. Part of an important first phase of railway building that also included the Saint-Lawrence and Atlantic, the intent was to establish a connection with American markets to the south and with ice-free ports to the east. The second round of railway building, which included lines such as the Montréal and Lachine, the Lake Saint-Louis and Province, and the Saint-Lawrence and Ottawa Grand Junction, was preoccupied with gaining access to the commerce of the interior. For Gerald Tulchinsky, the continuity between the expansion of railways along the same axis as the Lachine canal and the larger Saint-Lawrence system is clear: "Just as the Lachine Canal a generation earlier had provided the vital link for a Canadian canal system along both the Saint-Lawrence and the Ottawa-Rideau routes, the Montreal and Lachine Railway anchored the westward growth of Montreal's railway system in the forties and fifties" (1977: 169).

Tulchinsky makes explicit the connection between Montréal's pursuit of railway connections and the problems posed by navigational difficulties along the Saint-Laurent: "The Montrealers who first took up the challenge of railways and of ocean-going steamships were above all attempting to solve the problems created by the inadequacies of lower Saint-Lawrence River transportation, just as their predecessors had advocated the construction of the Lachine and other canals in the upper section of the river." Considering the eastern railways, Tulchinsky sees the other side of the same equation, that of securing Montréal's place in a continental system of resource development, colonisation, and global trade. "There was hard economic reasoning behind their promotion of railways down to the northeastern US, which they viewed as a short land bridge to the Atlantic" (1977: 27).

Montréal's history is that of a staging ground for successive pushes west, and of a proving ground for the development of a territorial know-how – the *côte* system – that was widely exported, from Manitoba to the Gulf of Mexico. The pre-industrial history of the city –referred to by Tulchinsky in the paragraph above – was one of adventurers and traders, largely French and Scots, as the maps in chapter two, the gravestones on the higher grounds of Mont-Royal's cemeteries, and place names and an entire territorial system the length of the Mississippi can attest. But as the city transitioned from a mercantile economy to an industrial one, and as the settlement of North America increased in intensity, the city found itself competing to maintain its privileged position as an economic hub and sought, through investment in railway infrastructure, to affirm its role as the gateway to the continental interior and its 'natural' hinterland, ahead of the lake port of Buffalo, and the ocean port of New York, linked to the interior by the Erie Canal system.



5-6: By 1850, Montréal was a major hub, linking the Great Lakes with the Atlantic, and connecting the Canadas with New York, Boston, and a burgeoning American economy. Transport links were so well-established that the Confederate general Jefferson Davis was able to spend time in the city as an exile (see plaque on the west side of the Bay department store, Montréal).

But beyond economic positioning, it's important to consider the high drama of railways and the promise of transcendence of local idiosyncrasy that came with them as they opened up North America. The relentless westward push of the frontier in pursuit of, south of the border at least, manifest destiny and the comprehensive systems of land clearing, subdivision, occupation, and urbanisation is well expressed in the works of historians and geographers such as Gilbert Stelter and Alan Artibise (1979; 1984), William Cronon (1991), Frederick Jackson Turner (1963), and John Reys (1965; 1979; 1981). The project of colonising,

settling, and ultimately – at least to an extent – urbanising, the continent amounts to an enormous undertaking, and it marked not just the landscape of the West, but also inscribed significant traces in the landscape of southwest Montréal, Canada's interface with this globally significant process.

The driving engine of much of this transformation, the railway, was much more than a simple technology. A force of continental standardisation and the advent of a new global rationality, the railway was a civilising instrument of the highest order, the prime tool of empire and colonisation. More locally, the civilising power of railways was evoked in the writings of Thomas Keefer (Keefer & Nelles, 1972). Keefer, an engineer, was far more prominent for his pamphleteering on behalf of a variety of railway interests, as well as his eventual agitation for the professionalisation of engineering, than he was for any particular project he undertook (though the Montréal aqueduct bears his signature), and has been described as “the engineer of Montréal metropolitanism” (Nelles, 2000). The writings of Keefer shed much light on the modernity that they brought to Montréal and can serve as both a rationale for the necessity of understanding their infrastructure and related complexes as a continental, if not global, phenomenon inscribed in local urban tissue, as well as a text with singular interpretive value for the aforementioned task. Like Keefer more than a century earlier, Choay (1969) ascribes a large role in this process to the railway; describing the role the railway played in the genesis of the modern city and rational, capitalist society across the West, Choay observes that “[i]n Europe and the United States, the scales did not tip in favour of the industrial system until the (eighteen) forties, with the development of a new form of communication, the railway. The railway is the major technical invention that brought into play the new forms of production and promoted the growth of large urban concentrations. From 1840 on, railway and capitalism were to develop hand in hand, and having weathered the crises of the years around 1848, the ‘railways became the new economy’s most powerful weapon,’ causing [a] new urban type to prevail” (1969: 10-11).

In 1850, as a promotional document for the Montréal and Lachine railroad, Keefer published “The Philosophy of Railroads,” a document that “stands as one of the most rousing hymns to railway promotion ever penned. Its immediate object was to turn Montreal’s attention away from local railways and projects connecting the city by rail to seaboard ports towards a strategic linkage with Toronto, thereby allowing Montreal to outdistance its American rivals for control of the interior trade. But in its rolling cadences and literary allusions, Keefer’s prose transcended the immediate commercial objectives of his Montreal patrons to make a soaring general argument linking railways to the material improvement

and moral perfection of man" (Nelles, 2000). Keefer makes several points that can be understood through the lenses of persistence and resilience, while positively incarnating the collective memory of Montréal and its continental aspirations.

For Keefer, the railway is the instrument of modernisation par excellence. It is no mere means of transportation, but a means of transcending the purely local and becoming metropolitan, modern, and part of a larger world. He states: "modern improvements have enabled the Locomotive to clamber over mountains and penetrate the most remote corners of the land; there is therefore no limit to the number of its auxiliary branches, which can be multiplied and extended until their ramifications give the required facilities to every wharf and every warehouse - to the solitary mill or factory, or to the most neglected districts as an outlet to otherwise worthless products" (Keefer & Nelles, 1972: 14). As the above passage evinces, the railroad is not just a ribbon of steel; Keefer derides the Champlain and Saint-Lawrence as a curious experiment for its distance from Montréal and bemoans its lack of interconnected vision. For Keefer, the railroad is a system, one that integrates the local into the continental or global, and one that brings a whole set of facilities and built landscapes with it. In this sense, the railroad cannot be isolated or thought of strictly as a discrete infrastructure, or as Keefer notes in his criticisms of the Montréal and Lachine railroad, at the time a small portage railway.

In his essays, Keefer espouses railway construction as a means of making Montréal continental. Throughout his espousing of railway expansion and specifying of the necessary complementary infrastructures, Keefer remains keenly aware of the social and economic implications of the railway. His concrete proposals for linked docks and sidings making use of hydraulic energy are intimately connected with an understanding of Montréal's local rivalries with south shore villages and Québec City, and the city's regional rivalries with inland ports of the Great Lakes, such as Buffalo, and New York City, with its Erie Canal system. As a mechanism of collective memory, Keefer's writings echo earlier concerns over the accessibility of the Great Lakes basin via the Saint-Laurent, and the need for Montréal to establish its role as metropolis to that hinterland in the most modern fashion possible,



5-7: Thomas Coltrin Keefer, engineer, author, businessman. Known more for his pamphleteering and his role in the professionalization of engineering, Keefer made important contributions to framing the impact railways would have in Canada generally, and in Montréal specifically.

as a railway hub. In recognising the limitations of the Montréal and Lachine railroad and insisting that it form the core of a system destined to reach ever farther westward, Keefer situates contemporary railway building activities in the same dynamic as the construction of the first Lachine Canal; these endeavours, admittedly of significant local importance, could only see true success as part of a larger system integrated with the whole of the Great Lakes basin. From this, I would argue that it follows that local transformations occasioned by these infrastructures must be understood at a similarly large scale, while recognising the specificity of their configuration as affected by the morphology of the local built landscape. Keefer's writings situate the Lachine Canal corridor as something not built by, for, or according to Montréal's specific local identity, but as a response to continental imperatives, making use of international expertise from Europe and the United States.

Histories of the railway have much knowledge to offer on the proliferation of the Canadian network, its role in the settlement of Western Canada, and the resource-industrial network that they solidified on a continental scale. When, as is the case with Tulchinsky's work *River Barons*, they connect the development of the railway with the major territorial and political-economic tendencies present in the development of Montréal, they are a useful indicator of what could be termed 'ideal persistence;' rather than being solely the physical persistence of a specific plan element, the railways reaching out from Montréal to the interior are also products of the persistence of a certain remarkably consistent idea of Montréal's relationship with North America and Europe – that of hub, entrepôt, and trans-shipment point. What these histories often offer less of though, is knowledge on the impact and context of this massive growth in infrastructure at a local level, in terms of urban tissue. For this admittedly large change in scale we must turn to the analysis of maps and historical record. The following paragraphs address the transformation of southwest Montréal from a sleepy rural periphery to a continentally significant industrial suburb. While examining urban tissue involves a rather large change in scale from a reading of the history of North American railways, it is crucial to conceptualise the evidence not strictly in the morphological terms of the Muratorian or Conzenian traditions, (Moudon, 1994) but to keep in mind the larger persistences of collective memory and the continental, if not global nature of the modernisation that can be observed in the built landscape of industrial south west Montréal.

## Drawing on the analysis

Several aspects of the urbanisation and industrialisation of Griffintown documented in the previous chapter suggest that the district evolved as a particular hybrid of vernacular and specialised forms of urbanisation; a situation with significant impacts for the modernisations enacted through industrialisation and regeneration. The Notre-Dame street matrix route and the settlement patterns alongside, coupled with the co-presence of gridded, eastern Griffintown developed from Charland's subdivision plan and the more open, transshipment-oriented western section of Griffintown are all distinctive urban landscape units whose permanence derives in large part from their occupancy of different underlying agricultural parcels: the Côte-Saint-Antoine, the ferme Saint-Gabriel, and the fief Nazareth. The permanence of these distinctions is remarkable, especially in light of the transformations the Lachine Canal basin saw through the 19th and 20th centuries. Though industrialisation touched all three of these areas, it did so variably, in that certain areas – the ferme Saint-Gabriel – saw more specialised, less integrated, industrialisation, while others – the fief Nazareth and the rue Notre-Dame axis – saw less specialised, more integrated industrialisation. Processes of aggregation and densification in these latter areas were more influenced by the vernacular, pre-modern structure of the urban grid (itself largely a product of the agricultural armature). Early industrialisation in Montréal – part of the modernisation of the mercantile economy – took forms that were tightly woven into the existing urban fabric, such as the aggregation of smaller residential parcels and buildings into small foundry complexes. The introduction of the railway fits squarely into this paradigm, both within Griffintown and beyond, in other reaches of the Lachine Canal basin.

The creation of Brennan street, a restructuration of the urban fabric undertaken in order to afford the GTR access to the port, is an excellent case in point. This was a fairly dramatic transformation, with considerable regional repercussions, as it established a firm rail link between the port, the Lachine Canal basin, and the mainline infrastructure of the GTR – including the Victoria bridge and the Pointe-Saint-Charles shops, tying southwest Montréal into an industrial network stretching from Chicago to Portland, Maine. Given the continental significance of this undertaking, it's worth noting that the industrialisation of the blocks along Brennan street was nonetheless a transformation marked largely by the permanence of the underlying urban fabric – the basic parcel modules and street network remained intact and formed the basis for aggregation and densification processes. Throughout Griffintown, such coexistence between vernacular and specialised urban forms can be observed, though as industrialisation progresses and its scale increases, the balance between vernacular and specialised tilts towards the latter. The restructurations imposed

by the construction of the CN viaduct and the autoroute Bonaventure, for instance, are much more disruptive of the underlying vernacular urban fabric, especially in the immediate vicinity of the Flour basins.

This dialectic between vernacular and specialised urban forms flows into another part of the previous chapter's analysis. The notion of conceptualising industrial complexes according to their degree of integration with the urban fabric betrays the existence of a degree of interplay in this sense. Only in exceptional cases could industrialisation imply a complete reconfiguring of the built environment to suit a new set of technical and economic requirements. For the most part, much like the continuity of the Canal as a structuring axis through political, economic, and technological change, the industrialising urban fabric retained much of its integrity. Similarly, the varied impacts of urban railyards discussed in the last section of chapter four's analysis indicates that a variable degree of integration exists between infrastructure and urban fabric, and that, depending upon the placement of the infrastructure in relation to the industrial and residential axes of development in a particular industrial sector, processes of aggregation and densification in the surrounding urban fabric can diverge quite significantly, with important consequences for regeneration.

As the analysis extends to encompass the eastern Lachine Canal basin more broadly, such variation and the resilience of underlying patterns in the urban fabric remain evident. As the Canal persists in fulfilling its role as link with the continent through the transition from mercantilism to industrialism – going from fur trade thoroughfare to industrial shipping channel – the wave of industrialisation that sweeps along its banks is anything but a uniform repurposing of the urban landscape to meet the needs of a new paradigm. Instead, remarkable variation can be observed along the Canal's banks, as hydraulic and transshipment poles developed with differentiated characteristics, within Griffintown and beyond. The hydraulic basins of Côte-Saint-Paul, the Saint-Gabriel locks, and Windmill Point are all remarkable concentrations of a different kind of industrialisation that emerged at particular points along the Canal, due to the availability of hydraulic energy. As the railway network and the wider distribution of coal-fired and eventually electrical machinery extended the range available to manufacturing operations throughout the southwest, these poles still remained distinct punctuations in the urban landscape.

As conductive lines for the placement of manufacturing and transshipment – activities that were crucial to consolidating Montréal's economic and political place as a hub for its continental hinterland – the infrastructure of industrialisation has had a significant impact

on the urbanisation of the city's southwest. The resulting hybridized urban fabric, a montage of vernacular patterns and specialised industrial infrastructures, complexes, and sectors, is marked by the interaction between the traditional, localised city-building knowledge and practices and the spatial strategies of increasingly larger industrial enterprises tapping into a continental and global economy. The next section of this discussion goes into further detail in the context of Saint-Henri, including the Saint-Ambroise industrial sector, examining one community's transition from rural village to industrial suburb.

## **Saint-Henri**

A comparison the 1866 Fortifications Survey with the insurance atlas prepared by Pinsonneault in 1907 allows us to trace the evolution of the industrial landscape that grew along the railway lines and the Lachine Canal in the vicinity of Saint-Henri during the late nineteenth and early twentieth centuries. In order to understand the modernisation these documents present, these are read as a depiction of urban fabric (or tissue) in the formulation of Malfroy (Malfroy, 1986; 1998b), and the changes they depict are interpreted through the concepts of permanence and resilience, formulations of Rossi (Rossi & Eisenman, 1982) and Moudon (1986), respectively.

Saint-Henri's transition from tannery village to industrial suburb has interesting implications and suggests a view of the city as a dynamic process in which the permanence or persistence exhibited by certain features – significant tracés or major infrastructures – is complemented by a resilient underlying urban fabric composed of streets, parcels, and buildings. The 1866 Fortifications Survey presents evidence that the agricultural allotment system documented in maps produced by Jobin in 1834 remains in existence through a period of rapid urbanisation. The orientation of the fields, the côte structure, and the empty spaces occasioned by marshy or hilly areas unsuitable for development remain intact, if somewhat more intensively subdivided and bisected by an enlarged Lachine Canal and the twin rail lines of the Montreal and Champlain and the Grand Trunk railways. An examination of maps by Henry Hopkins in 1879 and Charles Goad in 1890 shows a process of modernisation in which existing primary elements are reconfigured and adapted to suit the new practices of the modern industrial city.

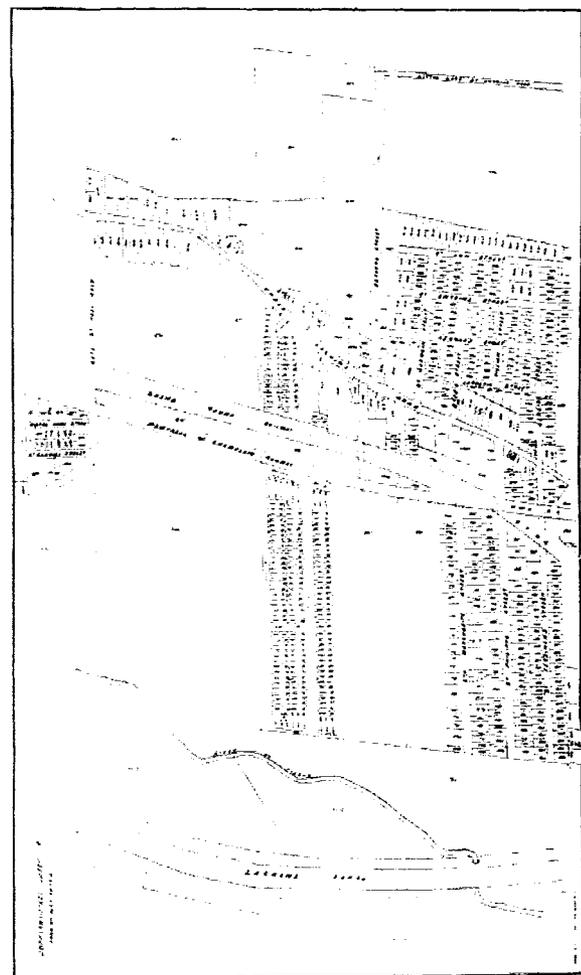


5-8: Saint-Henri in 1866; The correspondence between the future square Sir-Georges-Etienne-Cartier and the agricultural pattern is evident, though significant restructuring will be needed to bring rue Notre-Dame south of the tracks and preparing for industry along the Canal.

In Saint-Henri, the industrialisation of the railway corridor had significant consequences for the modernisation of the built landscape, a modernisation that is revealing for its use of primary elements and the resilience of the allotment system. Saint-Henri-des-Tanneries figures prominently into accounts of the incipient industrialisation of Montréal. First an agricultural village on the edge of the Saint-Gabriel farm, it became a site of artisanal production in leatherwork and slaughtering before taking in piecework organised out of the urban production centre in Old Montréal. With the retrofitting of the canal to provide hydraulic power and the arrival of the railway, an array of industrialisation opportunities allowed for a transition to industrial production.

At the time of the 1866 Fortifications Survey, the matrix route of the village of Saint-Henri-des-Tanneries, Notre-Dame street, after crossing to the north of the tracks, heads up the Saint-Jacques escarpment. By 1890, in Goad's insurance atlas, there is evidence of a reasonably large residential subdivision, replete with Edwardian blocks of the sort found in the New Town on the southern slopes of Mount Royal on the western edge of built-up Saint-Henri. The central street of this area, Saint-Joseph street, is cut-off by an oil refinery and an abbatoir. By 1907 the entire situation has changed. Within the same agricultural plot grouping, the proposed subdivision has been rotated 90 degrees and Notre-Dame street rerouted to continue through its middle and continue as the main east-west artery north of the canal. The finishing of the large industrial block results in what becomes Square Sir-Georges-Étienne Cartier, which is capped by a major church and a small rail yard. The northern end of the subdivision, closest to the GTR, ends up hosting industrial structures accessed by railway sidings using Acorn street.

So here we have a vignette in the creation of the modern industrial city, where rather than an abrupt break with past conditions there is a remarkable adaptation of past structures for contemporary incarnations of a long-standing purpose: domination of the interior of the continent through commerce, shipping, and industry. Conceptualised through the phenomena of permanence, it becomes possible to see these striking changes as remarkably ordered; first, by the persistence of the agricultural allotment system and the deeply entrenched grid which guided Saint-Henri's occupation of the surrounding rural landscape, and second, by the primary elements of the railway and the canal's catalytic effect on industrial location. In this sense, the physical transformation of



5-9: Saint-Henri in 1878; Development begins on the far side of the square. Note the contrast between the band of parcels along rue Saint-Jacques (angling northwest above the tracks and the larger-scaled blocks to the northeast and south.





5-11: Saint-Henri in 1907; The square is ready to be transformed, the Saint-Ambroise industrial sector has seen major construction, rue Notre-Dame has adopted its current configuration, south of the tracks, and the 'tree' blocks (Acorn to Elm) have taken shape, industrially and residentially.

What is especially interesting about Lewis's thorough description of the industrial urbanisation process is the way in which it operates as an extension of tendencies being expressed in the already existing city; in terms of practice, there is a shift from artisanal to industrial forms of labour and production "(b)uilding on a history of petty commodity production in the older district of Griffintown;" while in terms of land subdivision and development, "(t)he West End hive of industry forming after 1850 did not suddenly appear on the urban landscape but emerged from an earlier pre-industrial form of manufacture." Overall, the picture that is painted is one of a similar imperative adapting formally in a

rather spatially contiguous and temporally blended manner. Lewis conceptualises the west end industrial district as an agglomeration “rooted in linkages operated at several geographic scales” (Lewis, 2000: 242) and in this sense it can be understood as the physical manifestation of the connection between Montréal, global raw material markets, shipping lanes, railway networks, and the relationships of local producers, merchants, and financiers; the expression of Montréal’s place in North America and the world.



5-12: Saint-Henri in 1949: The Saint-Ambroise sector is increasingly built out, while the square is lined with housing. Note also the use of the ‘tree’ blocks (upper left) for both industrial and residential purposes.

So what happened in Saint-Henri, the shift from a relatively compact rural and proto-industrial village on the outskirts of Montréal to an important industrial suburb physically and economically integrated into the larger metropolis, with distinctive and functionally divided parts (the specifically and intentionally industrial area along Saint-Ambroise street) is part of what Lewis discusses; it was a process. For Rossi, “everything must express as faithfully as possible the particular life of the collective organism. At the basis of this organism that is the city is the persistence of the plan” (Rossi & Eisenman, 1982: 51). This longevity of the Saint-Laurent axis is expressed physically through the Lachine Canal and the Grand Trunk Railway, while in the collective memory, it endures as a continentally recognised site for trans-shipment and then manufacturing activity.

Furthermore, the growth of Saint-Henri from sleepy suburban village to one of Canada's largest industrial complexes cannot be seen to have its genesis in any kind of natural growth or development of Montréal. Rather, it is the product of continental forces that were consciously harnessed by Montréal's elite at the urging of people like Keefer and their own pocketbooks, and then structured by both the physical permanences in the built landscape (the rural allotment system, for instance) and the collective memory of Montréal's place in the continent and relationship with the ever-expanding hinterland (thus the need to push into upper and then western Canada). The adaptability of the settlement in the face of social, economic, and technological change is in large part, I would argue, a manifestation of the resilience of its urban tissue in corresponding to the permanences of its place in the North American historical context.



5-13: Saint-Henri in 2002; The square extends to the Canal, with adjacent residential redevelopment to the east (right).

What makes this possible is the collective memory as conceptualised by Halbwachs (1980), and resilience as conceptualised by Moudon (1986). On an ideal level, it seems as though it is collective memory is what permitted the retention through multiple regimes,

technologies, economies, and political climates, of the goal of becoming the entrepôt and the trans-shipment point for the interior of North America. On a more material level, it appears that the structures of the urban fabric: the vocabulary of building types, the street grid, and especially the allotment system, were instrumental in permitting the necessary flexibility to continue to fulfill the objectives ingrained in the collective memory in spite of some significant changes in industrial, political, technological, and economic organisation. The ability of the railways to make use of public streets, such as Acorn street, to route sidings and the ability of industrialists to erect factories on multiple residential lots both testify to the adaptability of the urban tissue and its ability to accommodate different functions.

Rossi's notion that "the city is something that persists through its transformations, and that the complex or simple transformations of functions that it gradually undergoes are moments in the reality of its structure" (Rossi & Eisenman, 1982: 55-56) must be read both in terms of morphology and collective memory in order to comprehend the modernisation generally described by Choay and specifically experienced in Saint-Henri. Such a formulation allows us to perceive seemingly dramatic shifts in the infrastructures and urban fabric of the Lachine Canal corridor as connected expressions of a remarkably constant economic and political drive on the part of Montréal to position itself as Europe's gateway to the North American interior, and vice versa. This is crucial, as it also permits the reading of the morphology of the industrial built landscape in a manner that avoids technological determinism and seeks a deeper logic. Form is not predicated upon manufacturing or transportation technology – though it responds to these – rather it is connected with a deeper tendency towards establishing control over the North American continent and ensuring Montréal's place in that larger system, which has certainly been shaken through deindustrialisation and uncertainty over the city's place as Canadian metropolis.

But to remove these phenomena from the influence of a local spatial structure on the basis of their modernity is in my eyes problematic. It strikes me that there is a relationship with local structure, especially in a context such as that of Montréal, which inherited a pre-industrial land subdivision system, must exist. In view of resolving this tension between the hyperbole of railway modernism that would be universal and morphological particularism that cannot provide complete explanations for the industrial landscape, I have chosen to turn to Moudon's notion of resilience at the scale of agricultural parcels, blocks, and lots. The particular configurations of industrial equipment, certain railway infrastructures, and even civic monuments and residential subdivisions, though phenomena that must be understood in the terms described above, are implemented in ways that create an urban tissue specific

to Montréal. It might be fruitful to consider the modern North American city as a sort of montage created by many collaborators through time, in the sense of Malfray's ideas of urban tissue as a properly structural product. What gives the industrial landscape of the Lachine Canal basin such exceptional heritage value is its situation as interface between local and global, and the resulting urban fabric that fuses local vernacular tradition and savoir-faire with the technical and political-economic exigencies of continental networks. There are material and ideal continuities in the urbanisation process, which is also true of the traditional city, but as the ideal continuities and the collective memory of what the city is take on a continental dimension, the material continuities and material artefacts take on an autonomy of form that cannot be understood in a purely local way, but rather as a montage of global tendencies over a locally-rooted vernacular armature.

If modernisation can be described in such terms, as a montage of global and local, often concentrated in particular areas of the city, then the evidence presented above suggests that an emphasis is warranted, especially in North America, upon the continental and global currents of colonisation, industrialisation, and trade that were often of primary importance in defining the collective memories of cities and of fixing the primary elements of their built landscapes. This is a question with some interesting implications for the study of the modern city in terms of methodology, study area, and how processes of urban transformation can be conceptualised. Thinking about cities as 'modern' is potentially problematic, as is amply noted by Rossi, among others, but there are some useful distinctions that can be so made. For Françoise Choay, the modern city is characterised by things no longer being implicit and all-encompassed in one semiotic system or structure corresponding with the other social systems. It now becomes an explicit object that is experienced as alien and strange, to be analysed, lived, and exploited in an objective manner (Choay, 1969). This has two consequences; first, there is a fracturing of local coherence, which can no longer be perceived to be as determining or unified as a generative primary element. Plans can and are rapidly and substantially changed or new building types or infrastructures introduced in manners that can no longer be characterised as a slow, internal evolution. Second, urban space begins to take on an intrinsic value; it becomes an object (that may be perceived speculatively) that "ceases, in fact, to be implicitly related to significant social systems" (Choay, 1969: 109). Expertise, in canal or railway building for instance, no longer comes from local precedent, but is hired from England or the United States; these are the economic and physical points that such projects connect, why should this not figure in culturally and technologically?

This could, through further research along the lines of that done by Bernier and Salée, (1992) be linked with the dismantlement of the seigneurial system, the rise of urban property as a speculative, tradable good, and the ability to enlist engineers, architects, and financiers to alter the city in ways that, though they represent a complete rupture with the local system, do correspond to a now larger structure, that of colonialism, settlement, industrialisation, and globalisation; that of the grain-producing machine stretching from Alberta and Kansas to south-western Ontario, and funnelling through the various lakeheads to the increasingly gargantuan port of Montréal en route to Europe. In the modern city, the major question is relating to international markets; in Canada, this implies to a large degree the receiving, producing, processing, and shipping goods for export markets, as opposed to questions of local production. In some ways this was a natural transition for Montréal to make, as its roots in the fur trade and colonisation of Canada naturally lent it to long-distance commercial relationships and thus it has never been a 'subsistence city,' but this is a break with the tighter pre-modern city. The preoccupation with developing Montréal's connection with the Ottawa/Great Lakes hinterlands and ensuring that the city/port was the hub in connecting that with ocean shipping and Europe was a near constant obsession.

Fundamentally, I would like to conclude this section of the discussion by observing that trying to see industrial urbanisation as the modern, non-local implementation of long-standing tendencies rooted in the collective memory and possessing generative persistence occurring in an already established morphological matrix (urban tissue, the agricultural allotment system, and the earliest matrix routes) with a certain degree of resilience and structure demands a view that reconciles the city's overall history in terms of its place in the world and its 'destiny' as Rossi would put it, with the principles and logic of its urban tissue, as Malfroy would put it. Only an approach that synthesises the two can give an accurate view of the urban process.

## Built landscape as a mediator of political-economic forces

Variability in the reconfiguration of urban residential environments has raised questions concerning the interaction of neo-liberalism with specific local and regional contexts. This section of the discussion presents an understanding of the particularity of contemporary residential reconfiguration in the Lachine Canal basin by considering the historical and spatial emergence of its built landscape as a structure influencing the outcomes of economic strategies and forces. By drawing on the morphological analysis of the previous chapters, this discussion attempts to reveal how contemporary processes of residential redevelopment in the Lachine Canal industrial district can be viewed as an outcome of a dialectic between structural permanencies present in the built landscape and prevailing economic forces which privilege privately-funded, internationally-standardised development models. By unveiling the role of the built landscape as a structure mediating neo-liberal privatisation and privatism, the following pages suggest that the analysis of patterns in the urban structure can serve as a means for comprehending local and regional nuance in the enactment of neo-liberal transformation, especially in cases of the reconfiguration of residential environments. The built landscape, considered structurally, offers a variably malleable and uneven set of opportunities and constraints for the realisation of neoliberal privatism, and thus exercises a mediating effect.

### **Privatism and understandings of urban neo-liberalism**

Neoliberalism has been one of the most important factors in urban transformation in the past three decades and as a theoretical construct has contributed greatly to our understanding of the contemporary city. Neoliberalism can be thought of as "...a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional context characterized by strong private property rights, free markets, and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices" (Harvey, 2005: 2). Central to the discourses and practices of neoliberalism is a marked privatism and recurrent emphasis upon the space occupied by private agents within the market. As the geographer David Harvey observes, "...it seeks to bring all human action into the domain of the market" (2005: 3). Neoliberalism's privatist bent is frequently expressed through policies of deregulation, privatisation, state withdrawal.

In the urban setting, globalization is a prominent lens for interpreting contemporary political-economic change. Based on a study of globalisation and territorial planning initiatives in Buenos Aires, Crot surmises that “[w]ithin the geographical field, urban research has granted globalization centerstage, based on the observation that the city constitutes the strategic site where global forces are more intensively felt and may be more concretely grasped” (2006: 228). Neo-liberalism is tightly entwined with the reconfiguration of urban consumption – metaphors of the city as an ‘entertainment machine’ (2002) inhabited by a footloose and demanding ‘creative class’ (Florida, 2002) flocking to globally recognised flashpoints of gentrification (Smith, 1996; Zukin, 1982, 1998). But it also has impacts in the realms of governance, finance, and economic development, through instruments such as private-public partnerships and business improvement districts, tax-increment financing and the privatization of public housing, and the status of tourism and consumption as the foundations of economic development strategy. What the bulk of analyses reveal is that while such unifying themes exist, their implementation and real-world forms are surprisingly complex and diverse. Adding to this discourse, Kipfer (1998: 177; Cited in Keil, 2002) offers an interpretation of Lefebvre’s notion of the ‘urban’ as a level of mediation between the global/general and the personal/lived space, thus placing the city at the heart of the lived experience of globalisation; an interpretation that in many ways resounds with the understanding put forward in the previous section (Keil, 2002).

The complexity of neoliberalism – its contingency, path dependence, contradictory nature, and its interactions with pre-existing circumstances – has been a critical issue for urban geographers. Commenting on research at the scale of individual metropolitan regions, Crot (2006: 229) states that “too few studies have recognized – other than implicitly – that globalizing pressures on cities are mediated by endogenous local institutional structures, social practices, and political decisions whose transformative power may be much more influential than globalization itself.” Indeed, many critics have noted that far from being a stable, monolithic, and coherent ideology, neoliberalism is actually far more diverse, contradictory, and adaptive. Harvey has remarked that: “[t]he somewhat chaotic evolution and uneven geographical development of state institutions, powers, and functions over the last thirty years suggests, furthermore, that the neoliberal state may be an unstable and contradictory form” (2005: 64).

For Bourdieu, neoliberalism attempts to “[bracket] the economic and social conditions of rational orientations and the economic and social structures that are the condition of their application” (Bourdieu, 1998). Despite the seeming hegemony of neoliberalism in

the contemporary world, this sort of task appears almost insurmountable. This notion of 'conditions of application' also figures into the work of many theorists seeking a more grounded approach to understanding the processes and forms taken by neoliberalism. This perspective seems akin to Raymond Williams' (1977) take on the dominant, residual, and emergent, in which the interactions between these different stages and variations. Australian geographer Pauline McGuirk's work on metropolitan planning in Sydney Australia draws upon such insights to suggest that neoliberalism needs to be understood "not as a unified coherent project, but as a series of complex and overlapping strategies" (2005: 59-60). In this sense, McGuirk suggests that neoliberalism appears to be more akin to a fractious process than a clearly-defined or discrete end-state, and that it encounters variable levels of rigidity and flexibility in the governance contexts it encounters.

The disjunctures that have accompanied the worldwide imposition of neoliberalism" are amongst its "most essential features," to Brenner and Theodore. The multifaceted, incomplete, and ongoing nature of neoliberalisation suggests to them a particular analytical approach: that of considering a diverse, multifaceted, often contradictory actually existing neoliberalism, as opposed to a static, defined, and coherent ideology (2002: 353). Such an understanding, Brenner and Theodore state, "must therefore explore the path-dependent, contextually specific interactions between inherited regulatory structures and emergent neoliberal, market-oriented restructuring projects" (2002: 349). Analysis of actually existing neoliberalism takes the "contextual embeddedness of neoliberal restructuring projects insofar as they have been produced within national, regional, and local contexts defined by the legacies of inherited institutional frameworks, policy regimes, regulatory practices, and political struggles" (2002: 349). This is a useful frame of reference for understanding the uneven implementation of neoliberal policy in both roll back and roll out forms and, we argue, the variable spread of privatism in the contemporary city.

### **Urban form as a mediator of neo-liberal restructuring**

As a means of addressing the multifaceted, complex, and above all contingent nature of neoliberalism, the bulk of research has focused upon the interactions between neoliberal reforms and the inherited set of governance networks, paradigms, and practices particular to any given city. Ward's look at Birmingham, Leeds, and Manchester, (2003) is typical of this stream of research, in that it is preoccupied with their governance more than their formal substance. Through case studies of such cities as Birmingham, Dublin (McGuirk, 2000),

Sydney (McGuirk, 2005), and Toronto (Keil, 2002), the case has been consistently made that neoliberal transformation does not proceed uniformly and does not fully replace the underlying political or cultural terrain.

Relatively few authors however, have chosen to address the specific interactions between neoliberalism and the built form of the city. In this sense, Hubbard's case study of Birmingham (1996), Hutton's work on the relationships between economic restructuring and built form in Vancouver (2004; 2004a; 2006), Turner's case study of four US Sunbelt cities (2002), and Nichols Clark et al's work on the increasing explanatory power of consumer-oriented urban amenities are rare exceptions (2002). Hubbard's (1996) work on Birmingham deals largely with the symbolic power of reconfigured urban environments in legitimating neoliberal reform, through their embodiment of and implication in place marketing and urban entrepreneurialism. Hutton goes further in connecting political economy and the urban fabric, noting the extensive engagement of the new economy in adaptive reuse initiatives, remarking on the opportunities this presents for heritage preservation while lamenting the potential for "the appropriation of authenticity for commercial...purposes" (2006: 1820).

These phenomena are all situated at the heart of the interface between the city and contemporary shifts in the political economy, seemingly confirming Leitner et al's assertion that the urban is a privileged site for the study (and experience) of neoliberal transformation. We propose to add the structure of the built landscape to the contextual embeddedness at the heart of Brenner and Theodore's notion of actually existing neoliberalism. Particularly in circumstances of urban reconfiguration, the urban fabric assumes a key and structural role in establishing patterns of variability, unevenness, and even in opening the possibility for sites of resistance and counter-hegemony. This section of the discussion suggests that the built landscape can also exercise a mediating effect, in that because it should be considered as properly structural, it is variably malleable and offers an uneven set of opportunities and constraints for the realisation of neoliberal privatism, particularly in the context of urban reconfiguration. The following pages explore the above notion in the context of contemporary regeneration along the Lachine Canal.

### **Urban form and neo-liberal restructuring along the Lachine Canal**

The analysis in chapter four suggests that the urban fabric of the Lachine Canal basin is in fact quite heterogeneous. Within Griffintown alone, several patterns of streets, parcels, and buildings coexist and are interlaced by several major infrastructures that have had

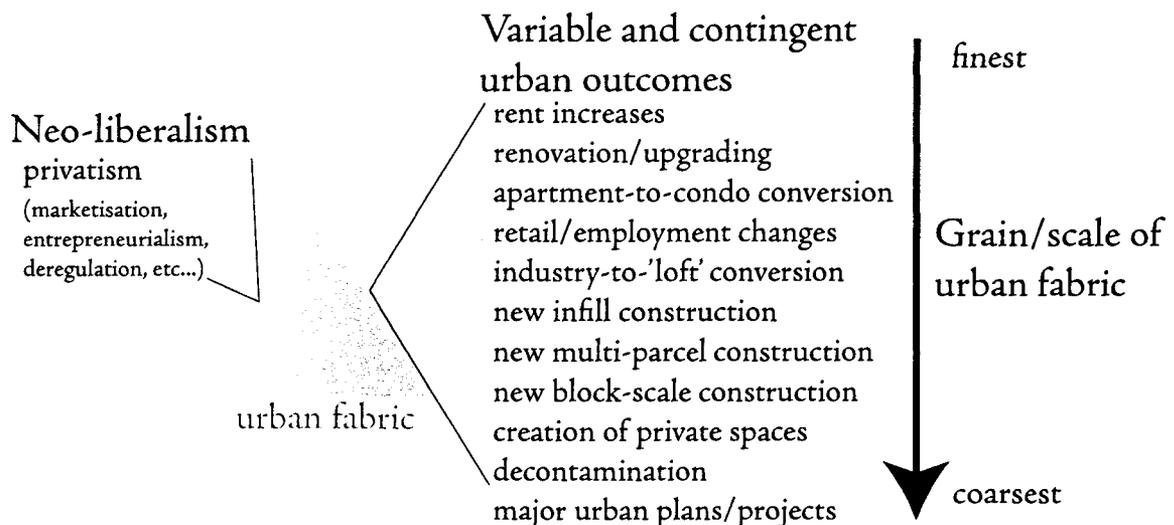
a significant restructuring impact on the district. Through the eastern Lachine Canal basin as a whole, it appears that there is a continuum upon which industrial complexes can be typologically characterised, grounded largely in terms of their integration with the surrounding urban fabric. A similar approach is implemented in the analysis of the southwest's railyards and is drawn upon heavily in an examination of the various industrial sectors along the Canal.

The three points along the spectrum of urban integration detailed in the previous chapter's analysis can be thought to roughly correspond to a sort of 'grain' existing in the urban fabric. Some areas, those that are most integrated and composed of the most tightly woven small elements – small parcel modules, small blocks, typically a permeable, gridded street network, and smaller buildings (often aggregated together into a complex in the industrial context) – can be thought of as being 'fine grained', while others, at the opposite end of the spectrum, those that are least integrated and composed of the most loosely woven large elements – large parcel modules, large blocks, typically an impermeable street network, and larger buildings (often the more autonomous type complexes in the industrial context) – can be thought of as being 'coarse grained.'

This section of the discussion puts forward the notion that such a spectrum in the urban fabric has structural consequences in terms of mediating contemporary regeneration. In the following pages, the idea is advanced that some areas are more receptive than others to neoliberal/privatist redevelopment models due to key morphological factors including the configuration of the street grid, parcel size, and the 'reusability' or 'heritage value' of buildings. This implies the existence of a dialectic between the structural permanencies of the built landscape and neoliberal/privatist redevelopment models; suggesting a conceptualisation of the built landscape as a variably malleable set of constraints and opportunities for agents of change. In this sense, morphological analysis of patterns in the urban structure can help to explain unevenness in the implementation of neoliberal/privatist regeneration models.

Essentially, neo-liberal regeneration of the Lachine Canal landscape is thus filtered twice: once through the varied practices, resources, and preferences of the various agents who are engaged in contemporary transformation, and a second time through the resilience of a highly differentiated urban fabric. This second filtering can be conceptualised as though it is a prism, resulting in a continuum or spectrum of outcomes that are, I argue, dependent to a degree upon the characteristics of the urban fabric. These variable and contingent urban outcomes range from small-scale sweat-equity renovations of existing small properties on

individual parcels to massive entertainment/private projects on the (larger) sites of former industrial complexes. In fine and medium grained urban fabrics, the emphasis tends to be on the renovation and upgrading of existing building stock, oftentimes resulting in conversion of rental properties to condominiums, along with infill construction, largely preserving existing urban block configurations and the public space of the residential street. In coarser grained urban fabrics, the emphasis may switch to private space removed from the traditional public realm.



5-14: Urban fabric (tissue) as a prism; a potential conceptualisation of how urban tissue may mediate political-economic transitions in the built landscape.

Contrasting square Sir-Georges-Étienne-Cartier with the Jardins/Terrasses Windsor (True North) complex at Notre-Dame and Peel streets serves as a useful comparison in this case. Visual surveys indicate that considerable renovation and restoration activity has taken place along the square and that the housing stock has been extensively renovated and rehabilitated. In this sense, the square is at one end of the spectrum discussed above: undoubtedly some of the once rented triplexes have been converted to condominium ownership and prices have risen. However, the public quality of the square as an accessible amenity available to all has been maintained, and in fact enhanced by recent work to extend this residential spatial order to the edge of the Canal itself.

At the other end of the spectrum, we could place the 'Jardins and Terrasses Windsor' residential complex occupies part of the former GTR Bonaventure Freight



5-15: The east side of square Sir-Georges-Étienne-Cartier.

Terminal. On a very large block between de la Montagne and Murray streets, the complex presents a long, unbroken façade to Notre-Dame street, with a smattering of chain retail. In the site's interior, the parking podium is to be covered with what the developers tout as "Montréal's largest private park" (True North Properties, 2007): roughly equivalent in size to Griffintown's principal public space, Faubourg Saint-Anne park. A semi-public pathway cuts across the middle of the site, faced by six smaller condominiums on either



5-16: True North's Jardins/Terrasses Windsor; Note the large private space on the inside of the block.

side. The Vancouver concept of towers on a smaller residential podium is thus inverted – the towers meet the street in a relatively harsh way along the public streets, while the smaller podium at the site's centre. The project ends up being almost anathema to the finer grained urban fabric of eastern, gridded Griffintown just across Notre-Dame street, and delivers virtually nothing in terms of the public realm. The land was sold by the federal government (Canada Lands Company) to an Alberta developer, True North Properties, on the basis of an ambitious proposal to create convention centre and hotel, 1250 rental apartments, and office and retail space.

Nearing completion, the project includes 978 condominiums and some retail space along Notre-Dame street. Recipient of a 2.6 million dollar subsidy from the Québec government's Révi-Sols brownfields decontamination support program, it would appear that the project is exemplary of the failures of an approach that approaches brownfields regeneration solely from the technical perspectives related to decontamination. In large part, it appears that the privatist nature of the project, with its impoverished treatment of the urban streetscape and its focus on an internal, private green space, is possible due to the scale of the parcel, assembled by the Canada Lands Company following CN Rail's abandonment of the GTR's Bonaventure Freight Terminal.

## Conclusion

Actually existing neo-liberalism involves contingency and path-dependence. While much of the existing research on the question of neo-liberal urban transformation deals with these issues in relation to institutional and political resistance and the hybridisation of reform projects, this discussion draws on the analysis presented in the last chapter to put forward

the notion that some of the particularities in the enactment of neo-liberalism can be understood by analysing the urban fabric (through history). The built landscape is partially malleable and offers variable opportunities and constraints: understood as a structure, it can be seen to mediate the enactment of neo-liberalism.

For researchers, including urban form as a factor in 'actually existing neo-liberalism' opens up new research directions, such as the links between agents of change and different elements of the built landscape (instances of control), a path explored by Gauthier (2003). This highlights the importance of urban form in the pursuit and resistance of new strategies of accumulation. Public and private sector investment in the regeneration of post-industrial landscapes is a significant feature of the contemporary political-economic landscape and a key issue in urban and economic geography. Taking the structuring effects of urban fabric in such processes and investment cycles into account can help researchers develop fuller interpretations of urban neo-liberalism and privatisation.

For practitioners, urban form can be used as a means for countering neo-liberal privatisation of space. The 'publicness' of redevelopment can be preserved/enhanced through the configuration and logic of the built landscape. Planners and urban designers seeking to leverage contemporary transformations of disused industrial sites can think of the urban fabric as a valuable tool for the reinforcement of public space and the discouragement of privatisation. In addition to thinking of the urban fabric as a valuable heritage asset – especially in light of the unique character resulting from the fusion of vernacular patterns with specialised industrial infrastructure – it can be leveraged as a tool for managing transformations and ensuring diversity, adaptability, and resilience. The smaller parcel modules and the permeable, small-blocked street network of finer grained urban fabrics appear particularly well-positioned to resist the proliferation of private spaces and to contribute to a strong and well-used public domain.

## Conclusion

This thesis sought to achieve several goals. On the theoretical front, it constitutes an attempt to enlarge the sphere of inquiry within the discipline of urban morphology by addressing some of the key urban transformations brought forward by deindustrialisation and major political-economic transitions occurring in the North American industrial city. By examining the morphological evolution and composition of the Lachine Canal basin, this thesis sheds light on the different component subsystems, inter-relationships, and (trans)formative processes that collectively compose the urban fabric (Malfroy, 1986, 1998) of a uniquely significant industrial district. In other words, although the North American industrial city is indeed the product of crisis tendencies in the production of the built environment, it most certainly is not without an autonomous and legible underlying spatial logic, one that can be read morphologically; the plan of the city is fundamentally “a past that we are still experiencing” (Rossi & Eisenman, 1982: 58).

Through a set of inter-related narratives, this thesis proposes that the Lachine Canal basin specifically, and the industrial districts of North American cities more generally, can be read as thick palimpsests (Banham, 1971) upon which projects of local and continental scale continually informed each other throughout history – in essence providing each other with the structures within which they took shape. Through the different eras of urbanisation, or moments in the history of the city – from before the industrial revolution to the revitalizations associated with contemporary economic restructuring – there is a remarkable tendency for subsequent interventions to be inserted into the already existing urban fabric. The analysis to support such an interpretation starts with a reading of the urban fabric of the Griffintown district and progressing to the eastern Lachine Canal basin more broadly; one that posits the existence of a connective structure in the industrial city that has remarkable persistence and resilience through history. The tensions exposed between vernacular urban patterns and specialised industrial infrastructures are, in chapter four’s analysis, broken down into a typology of industrial complexes rooted in a preoccupation with the degree of industrial integration into the urban fabric. Moving on to deal with entire industrial sectors, from Saint-Ambroise to Windmill Point, and the railyards that punctuate the landscape of southwest Montréal, the analysis uncovers the existence of dual axes of development in most parts of the Lachine Canal basin – along residential and industrial lines – and a complex differentiation between poles of manufacturing developed around hydraulic energy sources (along the canal) and vast areas configured around the needs of transshipment and warehousing functions.

The first chapter's literature review brought attention to a vast body of work on urban history and geography, with particular attention to work focused on Montréal. By examining the ways in which urban history and urban geography tend to downplay the importance of cities' materiality as a structuring influence on the course of agents' actions (history) and their spatial distributions (geography), the review set the stage for a discussion of morphological approaches to the city, again with an emphasis on Montréal. This discussion highlighted research that adopt what Gauthier and Gilliland (2006) term a cognitive-internalist perspective (works that seek to interpret urban form, while according it varying degrees of structural influence) and provided the necessary critical foundations for the examination of the political-economic context of contemporary urban regeneration that followed. This last part of the literature review drew attention to the rather technocratic approach taken by urban planning, particularly in the realm of brownfields regeneration - a theme which resurfaced in the first section of chapter five's discussion.

As such, this thesis offers a critical review of the scholarship that deals with the history and geography of urbanisation, industrialisation, and now, regeneration. Touching on the gaps left uncovered between the disciplines of urban history and geography, as well as the examining the problematic aspects of current practices in urban regeneration, it also offers commentary that bridges theory and practice to highlight the uniqueness of Montréal in general and the Lachine Canal landscape in particular. By critically examining interpretations of the history spelled out in chapter three, this thesis explores the potential offered by the discipline of urban morphology as a means for addressing the significant heritage left by this history and for tackling the complex problems posed by contemporary revitalisation.

Chapter two attempts to go beyond the criticisms offered in the literature review and sets up the theoretical and methodological foundations of this thesis, suggesting the potential of urban morphology as a means of inquiry that allows for more structuralist interpretations of the relationship between agents of change and the built landscape. Reviewing the theoretical contributions of various morphological researchers and practitioners - from Moudon to Muratori - the second chapter also provides a relevant and concise guide to the analyses presented in the fourth chapter, from concepts to vocabulary. The emphasis is placed, following Malfroy (1986) on the notion of urban tissue as an analytical device for understanding urbanisation as a diffuse process, outside of the control of any single

agent or the confines of any single period. This requires thinking in terms of the particular constituent sub-systems, (inter)relationships, and (trans)formative processes that characterise the portion of the city that is the object of study.

By the third chapter, the reader must be curious; 'What about the Lachine Canal? Are we going to talk about it yet?' And so, the Canal gets its due. Drawn from a wide range of sources (largely secondary), chapter three relates the history and geography of the Canal, from its earliest days on paper in the 18th century to its rebirth as a recreational amenity at the turn of the 21st. The idea behind this chapter is to set the stage for the fourth chapter's morphological analysis; to give a reasonable chronology and narrative that can complement the more specific and perhaps technical considerations explored later on. But it also offers a unique interpretation in its own right; by virtue of its interdisciplinarity and its perhaps implicit objective of reinforcing the diffuse nature of urbanisation and industrialisation (in terms of agents, periods, and paradigms technical and political-economic) it highlights the palimpsest-like nature by which a single infrastructure can lay claim to remarkable permanence and resilience.

If chapter three is largely about answering the question 'who did what, where?', then chapter four's analysis examines the 'where' in greater detail. The bulk of this thesis' contribution, the morphological analysis is roughly broken down into two 'analytical narratives' that correspond to slightly different scales. The first examines the Griffintown district in detail, 'reading' its urban tissue through time and characterising distinctions between various subareas, particularly in relation to variance in industrial activity; for example, the contrast between clusters of manufacturing and transshipment zones. The analysis highlights the historical contrast between different allotment patterns that derive from the meeting of two agricultural parcel types, the cote and the fief, as well as the interplay between two powerful axes of development: rue Notre-Dame and the Lachine Canal itself.

The second analytical narrative presented in chapter three expands the study area, taking in the stretch of canal from its eastern end at Windmill Point in the port to just above the Cote-Saint-Paul locks hydraulic pole. This second section develops a typology of industrial complexes based on their integration with the surrounding urban tissue and the degree of distinctiveness or specialisation in contrast with the typical residential patterns of southwest Montreal. This notion is soon scaled to take in the 'industrial sector' (agglomerations of industrial complexes); several example cases are examined through time in terms of their composition and transformation. Finally, the typology is applied to the railyards of southwest

Montreal. Key sites of interchange between the continental economy and the landscape of local, urban space, these facilities also show a remarkable variability in terms of their interplay with the urban tissue that surrounds and frames them.

This preoccupation with the specialisation of (certain parts of) the industrial metropolis flows into the first section of the discussion in the fifth chapter, and is at the core of much of the work presented in the fourth chapter's analysis. In a sense, much of what this thesis seeks to highlight is the progressive and somewhat incremental nature of the modernisation of the city; that the emergence of industrial complexes and vast industrial sectors was not a simple reflection of technical or economic imperatives, but rather the fruit of myriad, diffuse interactions between these new means of production and social organisation and the underlying urban tissue - often residentially scaled. As the analyses of various industrial sectors discuss conditions closer to the present, the to-and-fro character of this dialectic is brought into focus; consider, for example, the case of the Stelco works in Sainte-Cunegonde.

Chapter five's discussion, meanwhile, emphasises three closely linked interpretations of the analysis' observations. The first constitutes an attempt to go beyond the monumentalisation of industrial ruins and recommend a fuller urban regeneration practice that builds on the heritage of the entire urban fabric as a structural asset that is significant in terms of how it connects the various traces of industrialisation – among them the centrepiece of the Canal – with the working class neighbourhoods that host them. The second section of the discussion comments on the remarkable persistence of the Lachine Canal axis as a symbolic site linking Montréal with continental and global processes of colonisation, settlement, and modernisation. For this thesis, such modernisation is characterised by tensions between vernacular and modern; the discussion asks how the city incarnates the paradoxes of modernisation by drawing on chapter four's analysis – in particular the dialectic between industrial specialisation and vernacular forms of land subdivision as they impact on urbanisation processes such as the aggregation and densification of the urban fabric into industrial complexes.

This is supplemented by observations of the industrialisation of Saint-Henri and the incomplete achievement of modernity, suggesting that this was not in fact a wholesale imposition of new urban forms according to the technical and economic needs of a new industrial paradigm. Rather, this thesis supports a view that such industrial modernisation was in fact a montage of specialised infrastructures onto an existing territorial armature, with unexpected and highly uneven consequences for urban form. This dialectic between

residential and industrial, between vernacular and specialised, spatially structured by the axes of canal and rail, the poles of hydraulic energy and quay space, is at the heart of this thesis' call, in the spirit of David Hanna's work, to conceive of Montréal's industrial infrastructure and the spatial systems by which its urban form is organized, as a large-scale heritage asset. The interplay between different infrastructures and their only partial imposition of new ways of relating to their urban surroundings also plays a key role, as urban space takes on varying characteristics in relation to different trans-shipment technologies and the legacies of particular urban forms.

The last conclusions drawn from the fourth chapter's analysis consists of a commentary on the structuring impact of the urban fabric and its varying 'grains' on the execution of contemporary transformations and urban regeneration in the context of neoliberal privatism. Paralleling the typology of industrial complexes and its preoccupation on integration with the urban fabric, this thesis develops the idea that varying 'grains' of urban fabric – from fine to coarse – play a mediating role in the implementation of neo-liberal privatism in contemporary regeneration practice. Enlarging conceptions of neo-liberalism as contingent and path dependent that largely frame these aspects in political-economic terms, this thesis calls upon that discourse and stream of research to include the morphological characteristics of a city's urban fabric.

For theorists and practitioners involved in current post-industrial urban transformations, this can be a powerful tool. For theorists, such a conceptualisation opens new research paths for the interpretation of contemporary change and offers a new means of understanding how particular communities may be more or less resilient to redevelopment schemes that threaten the public realm. For practitioners, the concerns are similar, though more immediate. Echoing Moudon's call to recognise "the lot as an instrument of urban design" (1993: 31), this thesis proposes that the protection of finer grained urban fabrics may actually be a practical means for planners and urban designers to ensure that reinvestment does not contribute to a privatised city. By constraining the ability to assemble sufficiently large landholdings through the morphological composition of the urban fabric, such practitioners may in effect, be able to code the city's structural make-up in such a way that the public realm maintains primacy and prominence.

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## 8. Figures

### 0. Introduction

0-1: Ville de Montreal, Plan d'urbanisme, 2004. Map 2.6.1.

### 2. Morphology as a means of inquiry | Chapter two

2-1: Author illustration.

2-3: Caniggia and Maffei (2001); page 130.

### 3. Montreal and the Lachine Canal | Chapter three

3-1: *Partie occidentale du Canada ou de la Nouvelle France*. Du Tralage, Jean Nicolas, Sieur de Tillemon, 1699. Bibliotheque et archives nationales du Quebec (BANQ): 0002663713.

3-2: *A Map of America between latitudes... exhibiting Mackenzie's track from Montréal to Fort Chipewyan & from thence to the North Sea in 1789 & to the West Pacific Ocean in 1793*. MacKenzie, Alexander, 1801. BANQ: 0002662971.

3-3: *Montréal & Canal Lachine*. Gedeon de Catalogne. nd. BANQ: Collection Massicotte, c-33-a.

3-4: *Map of the harbour city and environs of Montreal for McGregor's British America*. McGregor's British America, 1830. BANQ: G/3452/M65/1830/M36 CAR.

3-5: *View of the City from the River*. Lach, 1840. Library and Archives Canada: R-9266-4-75.

3-6: *Plan showing mode of laying water piper through bank St. Gabriel Basins No. 3 for Mr. Falardeau*. Department of Railways and Canals, Canada, 1883. Library and Archives Canada: F/312/Lachine Canal/1883.

3-7: *John Young*. Notman Studio, 1862. Notman Photographic Archives, McCord Museum: 4160.

3-8: *John Ostell*. Notman Studio, 1876. Notman Photographic Archives, McCord Museum: 42096.1.

3-9: *Montreal from Street Railway Power House Chimney*. Notman Studio, 1896. Notman Photographic Archives, McCord Museum: Views 2936-2944.

3-10: *The Industrial Harbour, Montreal*. Walker, 1875. McCord Museum: m93050359.

3-11: *Montreal and its environs*. JS Virtue & Co, Ltd, 1890. BANQ: G/3452/M65/1890/M65 CAR

3-12: Source and date unknown. Retrieved from [http://www.caroulemontreal.com/images/album/5g\\_jpg.jpg](http://www.caroulemontreal.com/images/album/5g_jpg.jpg) (2007-03-26).

## 4. Two Analytical Narratives | Chapter four

Note: Many of the images in this chapter come from a small set of sources, and are drawn upon repeatedly. These sources (all maps) are indicated immediately below. The remainder of the figures in this chapter, which appear only once, are listed below.

1846: *Topographical and pictorial map of the city of Montreal*. Cane, James. BANQ: G/3454/M65/1846/C35 CAR gf

1866: *Contoured plan of Montreal and its environs, Quebec*. Jervois et al, 1866. BANQ: G/3452/M65/1869/C657 CAR

1879: *Atlas of the city and island of Montreal, including the counties of Jacques Cartier and Hochelaga*. Hopkins, Henry Whitmer. BANQ: G/1144/M65G475/H6/1879 CAR

1890: *Atlas of the City of Montreal*. Goad, Charles E. BANQ: G/1144/M65G475/G6/1890 CAR

1907: *Atlas of the Island and City of Montreal and Ile Bizard*. Pinsoneault, Adolphe Rodrigue. BANQ: G/1144/M65G475/P5/1907 CAR

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4-1 - 4-8: Author illustration

4-9: Beauregard (1984); page 51

4-10 - 4-13: Author illustration

4-17a: BANQ/Massicotte: 2-172-b

4-17b: BANQ/Massicotte: 8-195-a

4-17c: BANQ/Massicotte: 8-160-g

4-17d: BANQ/Massicotte: 8-195-c

4-17e: Notman Studio, 1896. Notman Photographic Archives, McCord Museum: View 2936

4-18a: BANQ/Massicotte: 2-152-b

4-18b: Library and Archives Canada: pa024629

4-18c: Notman Studio, 1894. Notman Photographic Archives, McCord Museum: 106799

4-18d: Notman Studio, 1855. Notman Photographic Archives, McCord Museum: 81154000

4-18e: Library and Archives Canada: pa024537

4-18f: BANQ/Massicotte: 8-11-a

4-18g: BANQ/Massicotte: 2-172-a

4-18h: Haberer, Eugene., 1874. McCord Museum: m97987366

4-18i: BANQ/Massicotte: 2-189-b

4-18j: BANQ/Massicotte: 4-79-a

4-18k: BANQ/Massicotte: 8-196-b

4-18l: Notman Studio, 1887. Notman Photographic Archives, McCord Museum: 83368

4-18m: BANQ/Massicotte: 2-125-b

4-18n: BANQ/Massicotte: 8-195-e

4-18o: BANQ/Massicotte: 2-172-c

4-18p: BANQ/Massicotte: 8-195-d

4-18q: BANQ/Massicotte: 2-260-a

4-18r: BANQ/Massicotte: 3-121-a

4-18s: BANQ/Massicotte: 2-174-al

4-18t: BANQ/Massicotte: 7-72-a

4-18u: BANQ/Massicotte: 2-174-c

4-19: Dubois (2005)

4-21: Source and date unknown. Canada Science and Technology Museum, CN Images of Canada Gallery (CSTM-CN). Accessible at <http://imagescn.technomuses.ca/about/index.html> (retrieved 2007-08-12)

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4- 25: Author illustration

4-27: Dubois (2005)

4-28 - 4-30: Author illustrations

4- 31: Notman Studio, 1896. Notman Photographic Archives, McCord Museum: View 2944

4-32: Author photo

4-38: Notman Studio, 1901. Notman Photographic Archives, McCord Museum: View 8718

4-39: BANQ/Massicotte: 8-160-g

4-40: Notman Studio, 1855. Notman Photographic Archives, McCord Museum: 81154000

4-41 - 4-43: Author illustrations

- 4-46: Library and Archives Canada: nmc12838; nmc20564
- 4-48: Library and Archives Canada: pa024655
- 4-49: BANQ/Massicotte: 4-106-b
- 4-50: BANQ/Massicotte: 8-196-b
- 4-54: BANQ/Massicotte: 3-35-a
- 4-58: Szilasi, Gabor, 1969. BANQ: 06M-E6S7SS1-P670823
- 4-60: Rielle, Joseph, 1877. Library and Archives Canada: r-312-1877

## 5. Discussion | Chapter five

- 5-1: Haberer, Eugene., 1874. McCord Museum: m97987366
- 5-3: Archives de la Ville de Montreal; Author photo
- 5-4: BANQ: M930-S-0-172
- 5-7: Notman Studio, 1855. Notman Photographic Archives, McCord Museum: Notman 13154
- 5-9: *Plans officiels de la paroisse de Montréal*. Sicotte, Louis-Wilfrid, 1878. BANQ: G/1144/M65G46/S53/1878 CAR
- 5-14: Author illustration
- 5-15: Author photo
- 5-16: *Garden View 2*. True North Properties, early 2000s. Accessible at [http://www.truenorthproperties.com/current\\_quebec.html#map](http://www.truenorthproperties.com/current_quebec.html#map) (retrieved 2007-04-16)