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# A new world from two old ones: the evolution of Montreal's tenements, 1850-1892

François Dufaux

Bartlett School of Graduate Studies, University College London,  
1-19 Torrington Place, London, WC1E 6BT, UK  
E-mail: morind@total.net

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**Abstract.** *Tenements became Montreal's dominant dwelling type in the second half of the nineteenth century. Morphological analysis of a sample of dwelling plans reveals the gradual transformation of housing conditions under the pressure of rapid urbanization and the introduction of new technologies, materials and ideas about domestic life. This evolution is a unique combination of older patterns, based on the French-Canadian tradition, and new elements introduced mainly by the British community. Montreal's tenements are an example of a cross-cultural exchange leading to an original urban cultural form in North America.*

*Key Words: Montreal, tenement, housing morphology, space syntax*

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Montreal's housing tradition of rows of two- and three-storey tenements,<sup>1</sup> juxtaposed dwellings and numerous doors on the street, presents a singular housing form for its density, building typology, tenure and morphology. Studies of the historical origin of this housing type have yielded hypotheses concerning foreign precedents.<sup>2</sup> The morphological analysis of building plans presented in this paper goes beyond the façades of buildings to reassess the significance of local tradition and foreign influences for the evolution of Montreal's tenements.

Thirty-three buildings in the eastern section of Notre-Dame Street, one of Montreal's principal thoroughfares,<sup>3</sup> are examined. This sample shows a wide range of variation in built form over four decades, and reveals types of tenements previously unsuspected. As a major artery, Notre-Dame

Street<sup>4</sup> illustrates the peculiar pressure on the transformation of built form associated with the meeting of French-Canadian tradition and British or American innovations. Interior layouts have been affected by the introduction of a hall and corridors, competing with the traditional layouts of adjacent *en-suite* rooms. Space syntax analysis shows, however, a general concern to keep dwellings shallow to the exterior, and to maintain flexibility in the function of rooms. This configurational strategy suggests the existence of mutual dependence among households and the adaptability of dwellings to accommodate a wide range of needs and aspirations.

## From French to British rule

Montreal was founded in 1642 during the wave of French colonial expansion in North

America. The town had a population of about 5000 in 1763, shortly after being ceded to the British Crown. Urban growth remained slow until the beginning of the nineteenth century. At this time, Montreal, along with its hinterland, had a small English-speaking colonial élite of merchants, military personnel, and civil servants living among a predominantly French-speaking and Roman Catholic population. The social reality was somewhat comparable to that in other British dominions in which a small minority of English-speaking Protestants ruled a large 'foreign' nation, as in Ireland.<sup>5</sup>

The increase of exports during the Napoleonic Wars and later, in the 1820s, the arrival of British immigrants supported a faster urban growth, resulting in the destruction of the fortification wall built by the French and the development of the suburbs (*les faubourgs*) along the main rural roads. After 1840 the existing colonial commercial centre experienced a new expansion with the opening of industries now serving the local Canadian market. At the same time, the English-speaking population enjoyed, for a few decades, a relative majority within Montreal. The British population was divided along religious and national lines into Irish, Scottish and English, compared with the more homogeneous French-Canadians.<sup>6</sup>

The social, and often political, context translated itself in the city's architecture. The external appearance of institutional and community buildings such as churches, schools and hospitals reflected formal allegiance to a national tradition, either English Georgian, French-Canadian vernacular, or Scottish Classicism. The residential buildings, which made up most of the urban fabric, have until recently remained unexplored as an architectural object, since they do not fit easily within rural French-Canadian precedents or British and American housing types.<sup>7</sup>

### The importance of the tenement

Between 1850 and 1870, the population of

Montreal tripled from about 50,000 to 150,000 inhabitants. During the same period, tenements comprised 60 per cent of the housing stock, increasing to 80 per cent by 1944 when Montreal's population was over one million (Nobbs, 1945). It has been assumed that the introduction of these multi-family buildings and the high rental rate were side effects of the Industrial Revolution after 1850. Such a large number of tenements meant that Montrealers were mostly tenants, and lived in a multi-dwelling building type. These two attributes of housing type and tenure were, individually or together, not exceptional in Britain or the United States,<sup>8</sup> but they were poorly valued by social reformers. In North America, single-family home ownership became a residential dogma which discredited other urban residential solutions. The importance of the tenement as a housing form meant that it served a large spectrum of housing needs, from working class to middle class, and that it was found in most neighbourhoods, irrespective of linguistic divisions.

### Morphological analysis

Technological innovations, like the flat roof or standardized wood boards, reflect the impact of a changing industrial economy. The aspirations of the ruling classes, merchants, and landowners are projected in architectural design: in the number of rooms, the layout, and the façade. The desire of rising middle-class entrepreneurs and professionals to emulate them is reflected in the borrowing of architectural components to dress up more modest buildings.

In Montreal, a pattern of compromise between the prevalent building tradition, technological innovation, and new concepts of domestic space takes a cross-cultural dimension. Construction of the 'New Town' of terraces of single-family houses presented a new urban model, set by a ruling English-speaking élite and inspired by British precedents (Hanna, 1974). It is during this period that the buildings on Notre-Dame Street were rebuilt for working and middle

classes, both French and English.

Analysis of the architectural order suggests the binary nature of the design options of many of the components of the architectural composition: on one side the French-Canadian building tradition; on the other the British innovations implemented in the new houses of the Montreal well-to-do. The underlying question is how much the architectural order is a metaphor of the transition from the French-Canadian urban tradition to the new Anglo-Saxon domestic models.

**The typology**

The increasing proportion of multi-family buildings after 1850 reflects the growing density of the urban population in a city confined to walking suburbs. The overall construction trend between 1866 and 1900 indicates the increasing share of buildings

with multiple units and the decreasing proportion of single-family houses. The Notre-Dame Street sample does not simply show a mechanistic passage from single-family house to plex (multiple unit), but rather the exploration of many alternative multi-family structures on the same type of plot (Figure 1).

Notre-Dame Street was a commercial street in which most of the ground floors consisted of shop-fronts. There were dwellings on the upper levels. The analysis by Lewis (1990) of the 1842 census and 1847 tax roll underlines the fact that 'single-family houses' in the town centre often included commercial premises. The sample allows two types of relationships to be distinguished: commercial space was either an integral part of the dwellings, or independent of them. In the first case, one or two rooms at ground level were specifically designed with a large display window, a door opening to the street, and an access to other



**Figure 1. Architectural order: building typology based on number of dwellings.**

rooms of the dwelling, either behind, under, or above the shop. In the second case, the commercial spaces have no direct connection to the dwelling(s) above.

The shop-front character of Notre-Dame Street clearly derived from its connections to Montreal's urban grid. It is the main road connecting the city centre to the rural areas east of the island and to the ferry across the river. It was the high street of its neighbourhood, the *faubourg Québec*. This function explains why only six buildings of the 33 in the sample were exclusively residential. The modern definition of mixed-use buildings, with no connection between commercial space and dwellings, is applicable to only seven buildings.

**Building characteristics**

Evolution from early square or wide footprints to long and narrow footprints

occurred gradually in the second half of the nineteenth century. In the Notre-Dame sample, wide (45 per cent) and square (15 per cent) were still dominant and only 40 per cent of buildings had deep footprints. Indeed, the constraints of the foundations were probably those of pre-1852 structures (Figure 2).

The Notre-Dame Street sample has a large proportion of dwellings of two storeys, even some of three or four storeys, in all typological classes. This may be a feature of a sample containing unusually large properties, but it suggests also the hypothesis of a gradual transition from a dwelling with small areas on many floors, to larger flats on one floor.

Following the 1852 conflagration, the City of Montreal prohibited wood as an exterior cladding material (for both walls and roofs). The expropriation notice of 1892 for Notre-Dame Street specified the exterior building



Figure 2. Architectural order: building footprints and ground-floor plans.

material as stone, brick or wood. On closer inspection of the plans, six types of construction material (cladding and wall structure) were found. Load-bearing masonry (stone or brick) existed in 50 per cent of the buildings, the rest having masonry cladding (stone, stone and brick, and brick over plank walls). Wood cladding remained a common material in outbuildings (sheds, privies and stables).

Photographs of Montreal in the 1850s show sloping roofs all over the city, but by 1900 flat roofs were the norm. For the middle class, a flat roof allowed the façade to be finished with a strong cornice in the Italianate style, imitating the latest British and American fashions. At the lower end of the market, the flat roof offered an economical solution to providing a larger habitable space for small dwellings, notably in the form of repetitive boxes of twinned two-storey dwellings, one above the other (four-plexes). The traditional sloping roofs were also gradually challenged by the reintroduction of the mansard roof, which offered more rental space in the attic. Imitation of the extension of the Louvre in Paris, even in a modest local adaptation, conveyed a political meaning in culture-conscious Montreal. The false mansard permitted both a stylistic message and cost saving. The Notre-Dame Street sample shows that by 1891 sloping roofs were still common, but the mansard pattern, real or false, occurred on 10 per cent of new or modified buildings after 1866.

Brick and stone-masonry walls and masonry cladding over wood boards are load-bearing structures. The plank wall became the standard construction system in Montreal until the 1960s. Boards, 7cm thick and 30cm high, were semi-industrial products and constituted at once structural strength, fire-resistance, and insulation. Auger (1998) identifies two main types of structural system for buildings in Montreal. The medieval tradition, imported by French settlers in the seventeenth century, used the front and rear outside walls to support the beams. In the nineteenth century, a new construction system

was introduced with beams supported by the side walls. The construction system has a direct impact on the building footprint. The early system, with beams on front and rear walls (supporting façades) favours wider shapes, while use of the side walls for beam support (supporting fire-walls) is better adapted for deeper footprints. Since the average wood beam spans 15 to 20 feet (4.5 to 6m), both systems relied on intermediate partitions and supports to bridge the distance between the main supporting walls, either front and rear, or on the sides. On Notre-Dame Street the older construction system was dominant in the 1850s reconstruction. In later buildings, the new side-wall systems predominated: the older structural system had fallen out of favour, declining from 85 per cent to 45 per cent.

Most buildings in Notre-Dame Street with supporting façades had a supporting partition running the width of the building. The introduction of a double partition with a central corridor was exceptional, as was the addition of an extra room in the rear courtyard with a new supporting façade. The second model of supporting fire-walls is found in a few early cases with beams only. Later, one partition, off-centre to the building's width, is more common. In one case, a carriage way, with three supporting walls, has been opened on the ground floor.

Understanding the structural systems offers clues to the layout of rooms. The introduction of a supporting wall dictates interior partition location. The sample contains two strategies for internal layouts: adjacent rooms or distributing hall. Generally, buildings using the older structural system of supporting façades have adjacent rooms. A distributing hall occurs in some cases where there are supporting façades, but it constitutes the only arrangement in buildings using the newer supporting side-walls (Figure 3).

The sample shows a wide range of combinations: in the same building we find adjacent rooms on one floor and a distributing hall in the upper floor leading to bedrooms. The reverse occurs as well, where

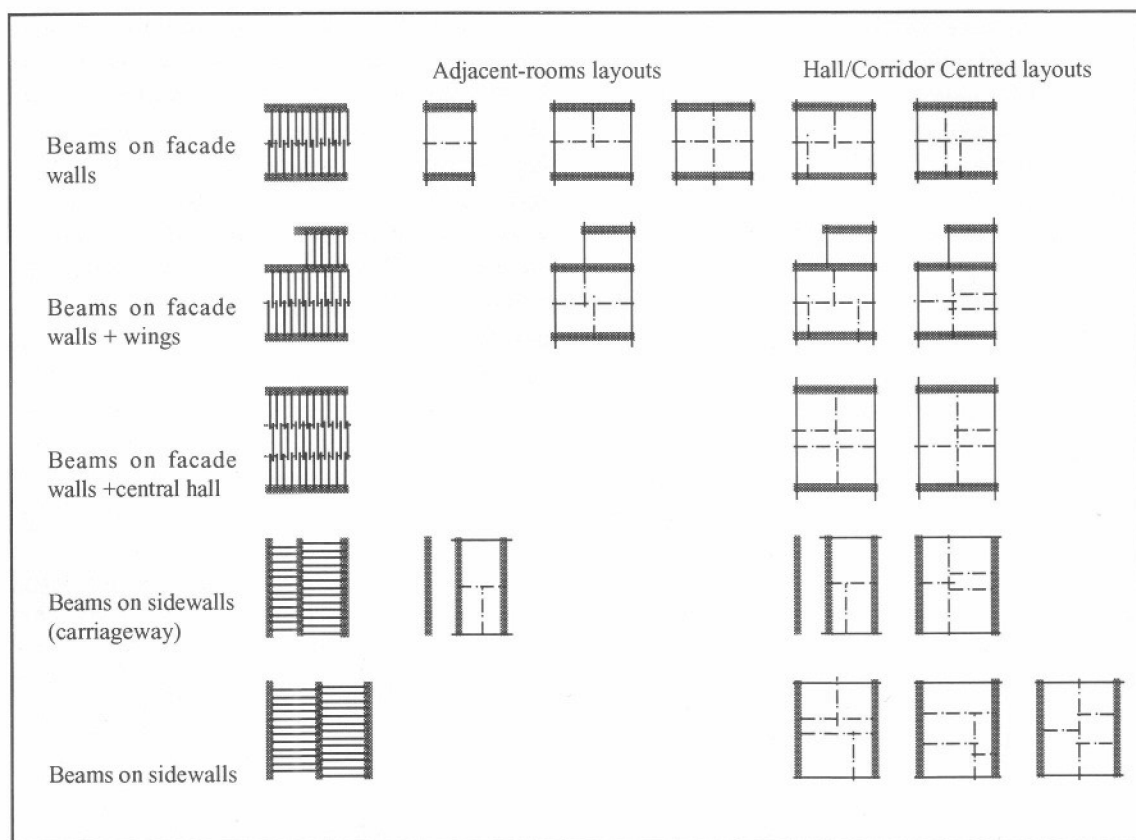


Figure 3. Structural system and interior layout.

the main floor is organized around a hall and the upper floors are divided as adjacent rooms.

Since the Notre-Dame Street façades share strong similarities in stylistic composition, the variety of layouts is unexpected. More recent buildings may have more varied elevations, as formal compositions, but the interior plans tend to be more repetitive. This paradox illustrates the complex relationship between architectural order, as perceived superficially in the elevations, and spatial order read through the building layouts.

### Configurational analysis

#### *Accessibility and depth*

Evans (1997) argues that the progressive introduction of distributing spaces is part of a shift in a definition of privacy and control over domestic space. Evans's distinction between adjacent-rooms layouts and distributing-hall layouts is evident in the

building sample. Stages in a progression towards a more restricted access to certain rooms can be recognized. Following methods developed at the Bartlett School under Hillier and Hanson, each plan is transcribed as a j-graph,<sup>9</sup> representing the depth of the dwelling. Depth is a first clue to the relative position of rooms to the exterior and the different functions in a dwelling's layout.

The j-graphs show different conditions according to the two types of layout. The wide range of floor plans with respect to the number of rooms and layout formality illustrates that Notre-Dame Street was occupied by households that varied in size and income. Most dwellings have at least two points of access to the exterior: one to the street, the other to the courtyard. The third entrance usually served the commercial space. Four dwellings had only one entrance, which faced the courtyard, and had four rooms or less.

The introduction of a hall changes the layout's formal aspect in terms of average room depth. However, it does not affect the sequence of other rooms, which remains similar to that in the adjacent-rooms layout. This is confirmed by the average depth of dwellings. In the adjacent-rooms layout, dwelling sizes range from three to twelve rooms, but the average depth is only 1.65, while the j-graphs vary from two to six rooms deep. There is a strong emphasis on keeping the dwelling shallow from the exterior, meaning easily accessible. This planning strategy is associated with spatial configurations in which casual encounters between building users and visitors are seen as valuable opportunities for social and economic exchanges. Hillier and Hanson (1984) suggest that these configurations support patterns of 'spatial solidarity' in which household members and visitors are brought together by the dwelling's spatial configuration.

Introduction of a hall increases the average depth to 2.32, but here again the whole sample shows a remarkable consistency in keeping the dwellings relatively shallow to the exterior. The formality of the hall as a distribution space is, according to Evans (1997), a tool for insuring privacy. Such a strategy is associated with configurations in which control is stressed rather than accessibility. Hillier and Hanson (1984) describe such a pattern as a manifestation of 'trans-spatial' solidarity, in which spatial control underlines class status by the distance and formal distinctions between the different members of the household and between those members and visitors.

In the sample, the halls perform their intended function but the impact is mitigated by rings of secondary accesses between rooms allowing bypassing of the hall and creating a layout similar to the adjacent-rooms one (Figure 4).

The option of bypassing the hall, or any

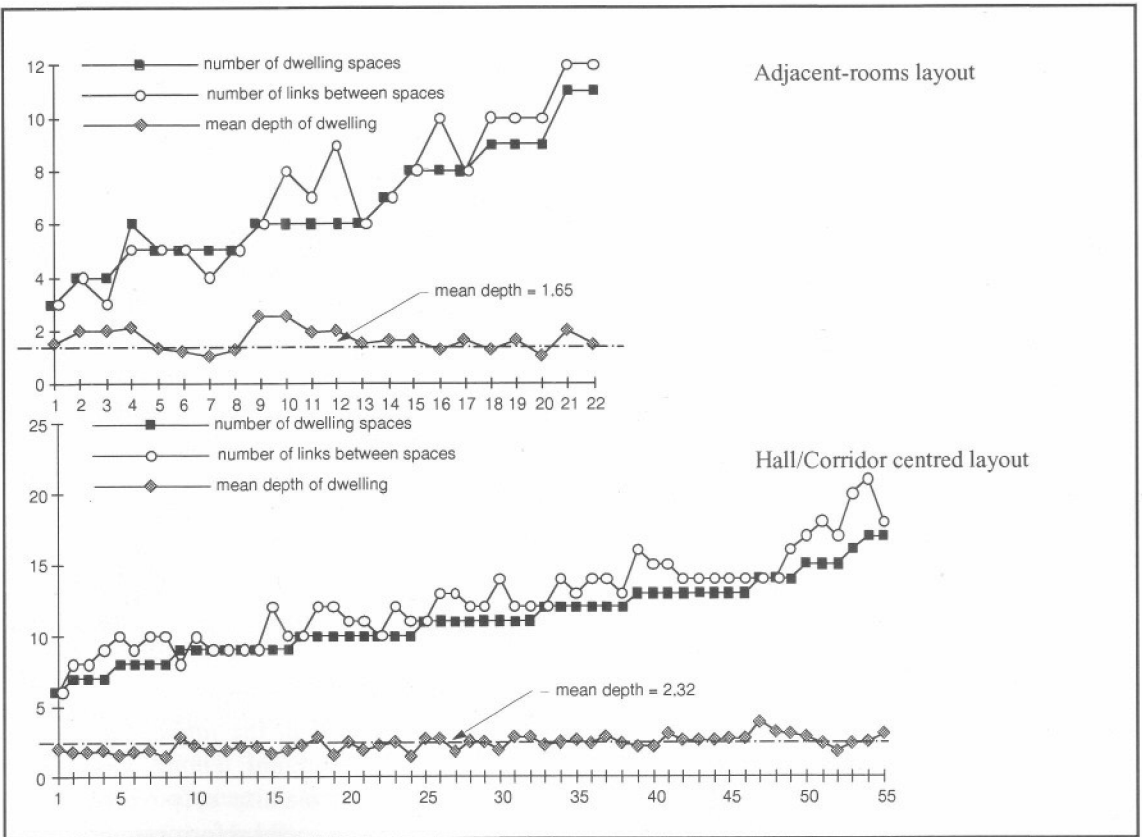


Figure 4. Mean depth of dwellings.

other room, derives from the existence of a ring distribution rather than a tree-like distribution. The j-graphs show that rings exist among a majority of spaces in daytime use (kitchen, living room, dining room, exterior and hall) in both types of layout. Dwellings on more than one floor show a tree-like distribution of an upper hall and the bedrooms, insuring relative segregation between the sleeping quarters.

### Genotypes

Sorted by decreasing integration value,<sup>10</sup> a genotype presents a set of spaces from the most integrated to the most segregated. The identification of a common genotype for dwellings defines a pattern of cultural relationship: 'a social logic of space' (Hillier and Hanson, 1984).

The mean integration values for adjacent-rooms layouts and hall-centred layouts share common characteristics. The kitchen is generally a highly integrated space, followed by the day-rooms (living room, vestibule, dining room, shop), the exterior, the night rooms (bedrooms and bathroom) and finally storage space (cellar, attic). The dominance of the kitchen recalls rural lifestyle patterns in Quebec (Martin, 1999).

In the sample of hall-centred layouts, the highest mean integration value is for the hall and upper hall. The resulting genotype has a fairly similar mean integration value to that of the adjacent-rooms layouts. A case-by-case analysis illustrates examples where the kitchen's integration value remains higher than that of the hall of the dwellings.

In both layout forms, the ranges of integration values among day rooms and night rooms show only slight differences. Hillier and Hanson (1984) argue that low differentiation in integration values favours exchange of room functions. The Notre-Dame Street sample shows configurations in which many rooms have multiple doors and so comparable integration values. The result is a high degree of flexibility in the control and use of the dwelling spaces (Figure 5).

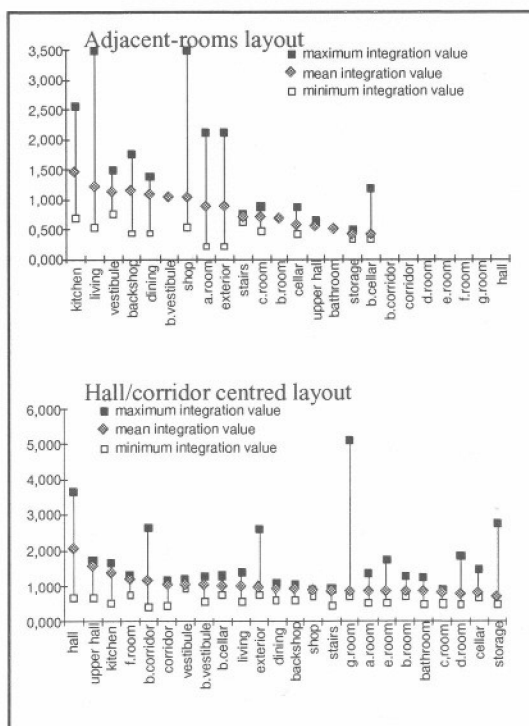


Figure 5. Genotypes: range and mean integration values by rooms.

### Discussion

The tenement housing revolution of the 1850s appears as the expansion of a local tradition under the new conditions of rapid urban development generated by industrialization. The double reality of tenure and building typology across a wide spectrum of social classes is part of a larger cultural model of urban life and economy. Lewis (1990) has suggested a more gradual evolution, stating that, already in 1846, buildings with two units or more accounted for one-quarter of the houses and one-half of the dwellings. He also confirmed the large proportion of tenants, with the highest proportions being in the wealthier districts of the town centre and, paradoxically, the highest proportion of home-ownership being among artisans and in the *faubourgs*. This fact suggests that rental tenure was not a measure of social malaise or poverty, as is often suggested by social reformers and even

current housing policy.<sup>11</sup>

These considerations of tenure and building typology support some of the observations regarding the pre-1850 housing tradition. Rental tenure was a common practice among all social classes, rooted in the urban economy since the French regime and more common in consolidated urban areas.<sup>12</sup> Multi-dwelling properties followed three main patterns: some consisted of one building with several units on different floors; some consisted of many units built in rows; some plots contained several different buildings.

Architectural style appears often, for the different components, as a binary choice between the French-Canadian tradition and British or American innovation. The sample shows, however, a more complex relationship between these cultural sources. The sample holds few perfect examples of the older patterns or newer trends but more hybrid solutions. Traditional buildings were integrating new features like a hall-centred layout of one floor. In newer buildings, closer to British or American models, the construction system and the layout reflected a compromise with the local tradition. The survival of earlier subdivisions, foundations and walls, integrated in new construction, illustrate the phenomenon of transformation over a few decades.

The syntactic analysis confirms the previous general observation on hybrid solutions. The two layout forms reflect very different strategies concerning spatial control: one is favourable to 'spatial solidarity', the other not. The impact of the hall-centred layout is, however, mitigated by the configuration of the day-rooms, with a ring of access and the pivotal position of the kitchen. The spatial configuration of the hall-centred layout is an evolution of the adjacent-rooms layout with the addition of an optional new formality in the relationship between the public and private spaces of the dwelling.

Flexibility appears to be a central concern in the plan of the dwelling layouts. The low average depth of small and large dwellings, whether following an adjacent-rooms layout

or a hall-centred one, favoured 'trans-spatial' solidarity between households. The low differentiation between the integration values of rooms allowed changes of uses according to the need of a wide diversity of households. This flexibility was a key asset in Montreal's rental market. The formality of the day-rooms fits the lifestyle of the rising middle classes. The same rooms may become bedrooms, boarding rooms, workshops or offices for atypical households of extended families, widows and homeworkers.

The Notre-Dame Street sample helps to illustrate the distinct character of Montreal's housing tradition in relation to recognized patterns elsewhere on the North American continent. The building tradition owes much to the odd balance between the two 'nations',<sup>13</sup> French-Canadian and British-Canadian. The components of the architectural order shed new light on a dialectic of cultural exchange between them. Building design stressing flexibility and spatial cohesion over time, as well as style, suggests that there was a common strategy shaping the evolution of Montreal's urban culture.

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### Notes

1. Municipal records relating to bylaws and building permits historically referred to the building type as 'tenement' in English, and *logement* in French. Apartment buildings were considered a different type, with their

- single entrance, common stairs and corridor. In the past decades the expression 'plex' has become the generic label describing a multi-dwelling building where each dwelling has direct access to the street and the courtyard. Two-dwellings make a duplex, three-dwellings a triplex and so on. Buildings generally have between two and six units.
2. Hanna (1986) mentioned Sebastopol Row, a housing complex built by a British railway company in 1853, as one source of foreign influence, and Montreal Scottish community, a key player in the real estate and building industry in the nineteenth century, as another.
  3. The northern side of the street, destroyed by fire in 1852, was largely rebuilt between 1853 and 1880. The buildings examined in this paper were demolished in the 1890s for the widening of the street. The plans can be found at the Archives Nationales du Québec à Montréal.
  4. Notre-Dame Street could be considered a *percorso matrice* as proposed by Caniggia and Maffei (1979).
  5. In 1774, confronted with the impatience of the 13 colonies, the British government passed the Quebec Act, conceding to its French Roman Catholic subjects the protection of their property rights, including the ones of French-Canadian seigneurs and the Roman Catholic Church, the French legal system, the use of the French language and religious freedom. These pragmatic measures appeared generous compared to the contemporary rule over Ireland. The survival of the 'older regime' institutions set an unusual balance between British colonial interests and values on one hand and the local tradition on the other.
  6. For a general understanding of Montreal history, see Marsan (1994) and Linteau (1992).
  7. For more information on Montreal housing, see Hanna (1974, 1986) and Gilliland and Olson (1998). For morphological analysis of urban space in Quebec City, see Gauthier (1997) and Vallière (1999).
  8. For Montreal, see Gilliland and Olson (1998); for Glasgow, Birmingham, Philadelphia and New York, see Dauntou (1990), and for Baltimore see Belfoure and Hayward (1999).
  9. The j-graph represents the connections between the rooms, starting, in this case, from the exterior. The depth of the j-graph represents the shortest number of spaces one must go through to get to every room.
  10. The integration value of each room measures the likelihood of crossing that room to reach other spaces in a dwelling. By associating a function with each space, the integration value estimates the relative importance of its use.
  11. This negative view of renting is presented in Choko (1979). For an alternative position that highlights some of the benefits of renting, see Gilliland (1998).
  12. See Desloges (1991) on Quebec City in the eighteenth century.
  13. In English the word 'nation' refers to the political reality of a people in one state, hence one Canadian nation above its different communities. In French, 'nation' defines a community united by language, traditions and a geographical area. In the current Quebec context the word has an ambiguous meaning. The wider definition of the English word is perceived by French-speaking people as denying their existence, while the French meaning sounds like a threat to the unity of the Canadian state.

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