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The restructuring of Detroit: city block form change in a shrinking city, 1900–2000

Brent D. Ryan*

Department of Urban Planning, Harvard University Graduate School of Design, 48 Quincy Street, Gund 312, Cambridge, MA 02138, USA

This paper examines the dramatic changes to city block morphology that occurred during the 20th century in Detroit, MI, USA. The study area is comprised of four square miles (10.4 km^2) of downtown Detroit. The paper measures the amount and causes of city block frontage change between the years 1896 and 2002, and finds that 37% of Detroit's 1896 city block frontage was removed by 2002. Only 50% of the removed frontage was replaced with new frontage. The city block changes indicate a consistent replacement of small blocks and their intervening streets with larger superblocks with few or no cross streets. Almost 50% of city block frontage removal was attributable to slum clearance or 'urban renewal' and highway (motorway) construction. Smaller amounts of block reconfiguration were due to large-scale building (megaproject) construction, street widening, and block consolidation for industrial, institutional, and parking-related uses. The recent city block restructuring resulting from new megaprojects indicates that the further replacement of Detroit's 19th-century street and block structure by superblocks is likely.
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Introduction

Many cities have experienced the significant redevelopment and redesign of their central areas. Oftentimes this redevelopment was the result of war or natural disaster, such as the rebuilding of German cities after World War II, the rebuilding of downtown Beirut after the 1975–1990 civil war, or the redesign of Lisbon after its 1755 earthquake. Other downtowns were reconstructed in peacetime through large state-sponsored initiatives, such as the 19th-century Parisian boulevards (Evensen, 1988); the restructuring of Bulgarian cities after independence (Stanilov and Donchev, 2004); the megalomaniacal rebuilding of downtown Bucharest under the dictator Nicolai Ceaucescu (Cavalcanti, 1997); or the extensive clearance and rebuilding of the old city of Beijing in the early 21st century (Campanella, 2008).

*Correspondence: Tel: +1-617-496-2944, E-mail: bdr@gsd.harvard.edu

During the 20th century, the downtowns of American cities experienced physical restructuring as extensive as that of any war-damaged city in Europe. Federal policies designed to promote highway (motorway) construction (the Interstate Highway Act of 1956) and to redevelop 'blighted' areas in cities (the Housing Act of 1949) resulted in the large-scale clearance and rebuilding of many central and peripheral areas in American downtowns. While the intentions of these Federal policies were to benefit cities, their net impact was deemed by many critics as destructive and damaging almost from the start. Critics pilloried the clearance of older neighbourhoods for destroying dense, mixed-use, economically productive urban fabric (Jacobs, 1961, 1969); for displacing racial minorities (Thomas, 1997); and for cynically protecting the interest of moneyed downtown interests at the expense of lower-income city residents (Fogelson, 2000).

One of the principal consequences of the physical restructuring of American downtowns in the mid-20th century was the reshaping of city blocks.

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In many cases older block and street networks were deemed to be obsolete and were reshaped in order to promote more 'modern' development. Well-known examples of this downtown restructuring include the Government Center project in Boston, the Society Hill redevelopment in Philadelphia and Pittsburgh, and Pennsylvania's near-complete reconstruction of the 'Golden Triangle' at the apex of the city's three rivers.

This study developed out of an interest in further understanding the degree and type of change that occurred in a heavily reconfigured American downtown across a broad time span. While the role of highway construction and slum clearance in reshaping American downtowns is well-known, there is surprisingly little information on the precise amount of block restructuring that occurred during this era. Nor is there much information on the other forces that may have contributed to downtown restructuring. Precise urban design analysis is limited. Social science scholars have primarily focused on the policy aspects of downtown rebuilding (such as Anderson, 1964; Rae, 2003) rather than on their actual physical impact. And architectural scholars have examined the buildings resulting from these changes (among them Scully, 1969; Whiting, 2001; Waldheim, 2004), but have left under-examined the precise nature and degree of the urban design changes that occurred.

Within the field of urban morphology, there is a substantial body of work examining the additive and subtractive consequences of morphological changes in downtowns, particularly in those of older European cities whose form has evolved over hundreds or thousands of years. But as Siksna (1998, p. 253) noted, there has been comparatively little examination of 'towns or parts of cities that have experienced rapid, substantial changes since their inception'. One of the few such studies of a US city is Moudon's (1986) detailed look at block, lot, and building shifts in a San Francisco, California, neighbourhood. But Moudon's study neighbourhood experienced little dramatic change at a city block level, in part because of its location in a relatively dense, heavily travelled neighbourhood where streets remained necessary for circulation, and where widespread decline or clearance did not occur. Siksna (1997, 1998) also examined changes to the downtown grids of American cities such as Portland, Oregon, and Seattle, Washington after these places' original platting in the 19th century. While dramatic morphological change did occur in these places, Siksna examined a relatively small geographical area and did not quantitatively examine the nature or scale of change.

Following Siksna's (1997, 1998) pioneering examination of swiftly developed American and Australian cities, this study took up the call of Levy (1999, pp. 79–85) to examine the 'problem of the modern urban fabric' in an American city whose downtown had experienced substantial redevelopment during the 20th century. Levy (1999, p. 80) noted that many modern cities have been transformed from 'dense, compact, and continuous' fabrics to 'diffuse, loose, and discontinuous' networks. While Levy focused on this shift at the periurban or suburban scale, this type of restructuring also occurred during the 1990s in many American downtowns and inner-city neighbourhoods facing decline and abandonment (Ryan, 2006).

The city of Detroit, Michigan was a natural subject for the study. Like many other cities in the American Midwest and West, Detroit grew rapidly, expanding from a population of essentially nil in 1850 to over 1 800 000 by 1950. This extreme growth occurred mainly as a by-product of the city's rapid industrial development, much of it motivated by the automobile industry. Following this period of intense growth, the city declined dramatically after the mid-20th century, losing over half its 1950 population by 2000. By the early 21st century, Detroit was a paradigmatic 'thinning metropolis' (Pendall, 2000) or 'shrinking city' (Oswalt, 2006), complete with a much-reduced building stock, empty streets, and a still-dropping population.

In parallel with its steep decline, Detroit engaged in a series of rebuilding efforts, many of which were focused on downtown (Thomas, 1997). While these efforts did little to stem the city's decline, they did result in a downtown fabric that was much altered from its early 20th-century condition. This study sought to measure the reconfiguration of the urban fabric resulting from these efforts.

Research questions and study method

The study was guided by the following research questions. What was the precise amount of block

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reconfiguration that had occurred in Detroit's downtown during the 20th century? In other words, what was the form and quantity of block frontage that had been removed between 1900 and 2000, and in what form and quantity had the removed blocks been reshaped? Equally as important, which forces motivated block reshaping? Ultimately, the study sought to determine how Detroit's downtown city block fabric in the year 2000 compared to its city block fabric in 1900.

To answer these questions, the study examined a four-square mile area (two by two linear miles or 10.4 km^2) of downtown Detroit. The study area was defined as all of the blocks included within one mile (measured along the four cardinal directions) of the southern end of Grand Circus Park, a semicircular park in the downtown core bisected by Woodward Avenue, Detroit's principal north–south street. The study area included all of what is commonly thought of today (2007) as downtown Detroit, as well as some peripheral residential and industrial neighbourhoods at the fringes of downtown.

The study measured changes in block frontage, rather than block area or block form for the following reasons. Many studies of block form change have been published (Siksna, 1997), using a qualitative method of assessment. The study method used instead a quantitative means of assessing block change, which necessitated certain conditions. First, changes in block area were not measured because of the difficulty of measuring area change when only one or two faces of a block were altered. Block area change also inaccurately reflected the real change resulting from block consolidation. For example, a larger block resulting from the combination of two smaller blocks and an intervening street would experience a significant change in block frontage (a large amount of frontage would be removed), but only a small change in block area (an increase due to the contribution of the demapped street). In the case of block consolidation, a very common situation in 20th-century Detroit, changes in block frontage were a truer reflection of morphological change than changes in block area. Although changes to the downtown's building stock during the study period were also significant, the scale of the study did not permit the examination of changes to buildings or other built elements of the urban landscape.

Block frontage changes were measured in the following manner. The study used downtown maps from as close as possible to the dates of 1900 and 2000. An 1896 atlas map of Detroit (Rand McNally, 1896) was selected because it had a high level of resolution and included the entire study area. A 2002 image was obtained from aerial photographs available on the Internet (Google, 2006). These images were dated by construction visible in the photographs. The aerial photographs were one meter in resolution, which meant that street and block outlines were clearly visible.

Once maps had been obtained and assembled for the complete study area, they were digitally scaled to full scale (one unit in drawing = one unit in reality) and then aligned with each other using AutoCAD software. The overlap was very precise, indicating that the 1896 map was quite accurate. A digital two-dimensional model was then constructed over the scaled and aligned maps. Because block boundaries in the 1896 map were based on parcels rather than sidewalk edges, parcel edges were also used as the basis for block geometries in the model.

As the model was constructed, block frontages were grouped into layers according to whether the frontages had: (1) survived from 1896 to 2002; (2) been destroyed between 1896 and 2002; (3) been created since 1896 (see Figures 1, 2, and 5). Block frontages were considered to have been demolished, removed, or reconfigured if it was visually evident from the 1896 and 2002 base maps that change had occurred. Because the overlap between the two maps was very close, visual evidence of a shift was taken to be sufficient and not all blocks were reconfirmed in the field. Therefore, very small shifts (under one foot, approximately 0.3 m) that might not have been visible in the base maps were not included in the model.

Once all blocks existing in 1896 and 2002 had been drawn and placed into their respective layers, block frontages in the 'destroyed between 1896 and 2002' category were subcategorized by the cause of block destruction (Table 1). Causes were determined from visible evidence in the 2002 aerial photographs and were confirmed through field study. Changes were divided into five categories: (1) freeways (limited-access autoroutes); (2) urban renewal (large-scale residential neighbourhood redevelopment); (3) rationaliza-

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Figure 1. In 1896, the form of downtown Detroit was a loose rectilinear street grid with remnants of an older Baroque-inspired plan at its centre.

tion (non-highway-related street widening and realignments); (4) 'megaprojects' (large, single-purpose buildings such as stadiums); and (5) miscellaneous (causes not apparent from maps). The causes of miscellaneous changes were subsequently identified by field inspection. Observing changes in the field identified the causes of miscellaneous changes (Table 2).

Once block frontage changes had been categorized, each layer containing a different type of block change was queried with the LIST command to obtain the length of each piece of block frontage. Query outputs were compiled in Microsoft Word before being transferred to Microsoft Excel, where the total length of block frontages in each layer was calculated. The resulting block frontage totals are displayed in Tables 1 and 2.

Findings

In 1896, Detroit's city blocks were generally structured in a loose rectilinear fashion oriented to the Detroit River along the southern edge of the downtown (Figure 1). The major exception was the downtown core. This small area had been shaped by the very early 'Woodward Plan' of 1807, with a Baroque-inspired design of radiating streets and small squares. The only substantial impact of the Woodward Plan beyond downtown was three large diagonal avenues extending

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Figure 2. By 2002, downtown Detroit has been substantially restructured. Many streets were removed, making much larger blocks. New streets were wider and many connected to or bordered limited-access freeways (autoroutes). New block edges are shown in colour.

Table 1 Block frontage change and causes of block frontage destruction

	Linear feet	Linear miles	Linear metres	% of 1896 total (% of loss)
Total street frontage 1896	882 220.28	167.09	268 900.74	100
Frontage surviving 1896–2002	562 400.81	106.14	171 419.77	63.75
Frontage lost 1896–2002	319 819.47	60.57	97 480.97	36.25 (100)
Lost through				
Urban renewal	87 701.27	16.61	26 731.35	9.94 (27.05)
Highways	74 100.14	14.03	22 585.72	8.4 (23.17)
Indeterminate (see Table 2)	64 657.77	12.25	19 707.69	7.32 (20.22)
Megaprojects	54 255.97	10.28	16 537.22	6.15 (16.96)
Rationalization	39 104.31	7.41	11 918.99	4.43 (12.22)
New frontage 2002	149 242.43	28.27	45 489.09	16.92
Total frontage 2002	711 643.24	134.78	216 908.86	80.67
Net frontage lost 1896–2002	170 577.04	32.31	51 991.88	19.33

outward from downtown in a northwest and northeast direction. These avenues crossed the rectilinear grid at oblique angles, generating triangular blocks. The terrain of Detroit is quite flat and the city grid was therefore uninterrupted by any other topographical feature except the river.

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Table 2 Additional causes of block frontage destruction

	Linear feet	Linear miles	Linear metres	(% of total loss) % of indeterminate
Indeterminate (see Table 2)	64 657.77	12.25	19 707.69	(20.22) 100
Industrial uses	31 359.99	5.94	9558.52	48.50
Parking lots, garages	12 255.86	2.32	3735.59	18.95
Institutional uses (government, schools, churches, hospitals)	12 137.71	2.30	3699.57	18.77
Office uses	7925.31	1.50	2415.63	12.26
Open space	978.91	0.19	298.37	1.51

By 2002, downtown Detroit's loose rectilinear street grid had been substantially altered (Figure 2). Most visibly the downtown core had been encircled by highways on three sides, largely isolating it from the neighbourhoods beyond. On the east side of downtown, neighbourhood redevelopment had almost completely erased the original street grid and severed all but a few connections to the neighbourhoods beyond. Other large-scale changes that were also evident occurred. Many of downtown's smaller streets had been removed by the creation of large city blocks housing megaprojects such as the city's indoor arena and convention (conference) centre. And to ease automobile circulation to and through the downtown buildings had been demolished on one or both sides of many streets for a widened roadway.

Figure 3. Much of todays desolate Detroit streetscape is the result of building clearances and block consolidation photograph by the author.

In other words, much of downtown Detroit's cityscape was significantly reconfigured. This change was even more evident in three dimensions. Where city blocks had been consolidated, building demolition generally ensued, and even where city blocks had remained intact, the buildings on them were often demolished. Most demolished buildings were not replaced, resulting in a desolate landscape of parking lots and vacant, unused land with isolated remaining buildings (Figure 3).

The query results of the digital model reflect the substantial urban design changes that occurred in downtown Detroit. Table 1 shows the principal block length totals in 1896 and 2002 together with the amounts of block frontage change due to different forces.

In 1896, downtown Detroit had a fine-grained, dense street and city block network. With little topographical variation, this street grid was nearly continuous across the study area. Over one-third of this street network was removed during the 20th century (Figure 4). Of Detroit's 1896 block frontage of 167 miles, only 106 miles (63%) remained in 2002. The other 61 miles, or a just under 37% of the downtown's original frontage, was restructured between 1896 and 2002.

Five types of forces contributed to the demolition and restructuring of block frontages (Figure 5). These were, from large to small:

- slum clearance or urban renewal;
- the construction of highways;
- miscellaneous (not determinable from maps) causes;
- large single-use buildings or megaprojects; and
- street widening or rationalization.

The largest amount of block change – 17 miles, or 27% of the total frontage removed and 10% of the 1896 frontage total – was the result of large-scale

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Figure 4. 37% of downtown Detroit's block frontage was demolished during the 20th century. The centre and the area north of downtown were mostly spared, but much change occurred elsewhere. Demolished block fronts are shown in colour.

slum clearance, or urban renewal. Particularly at the eastern edge of Detroit's downtown, urban renewal resulted in the demolition of entire districts of 1896 street blocks. In most cases older blocks were consolidated to create much larger superblocks. Large streets were widened and retained, and smaller streets were removed or converted into cul-de-sac to access superblock interiors (Figure 6). In many cases, the surviving older street grid was rationalized, with streets removed or reshaped to permit easier traffic flow around the redevelopment area.

The next largest force causing block restructuring was highway (motorway) construction. Highways resulted in the destruction of almost 14 miles of block frontages in downtown. This was over 8% of the downtown's 1896 frontage and almost one-quarter of the frontage lost during the 20th century. Much of this destruction occurred because Detroit's highways were generally constructed below street grade. This necessitated the excavation of deep cuts in the earth and the removal of all but the largest traversing streets. Since reconstruction of the street grid required bridge construction for each through street, minor streets were generally left unconnected. Severed blocks were often united into single superblocks bordering the highway cut (Figure 7).

Together, highway construction and urban renewal were responsible for the destruction of over

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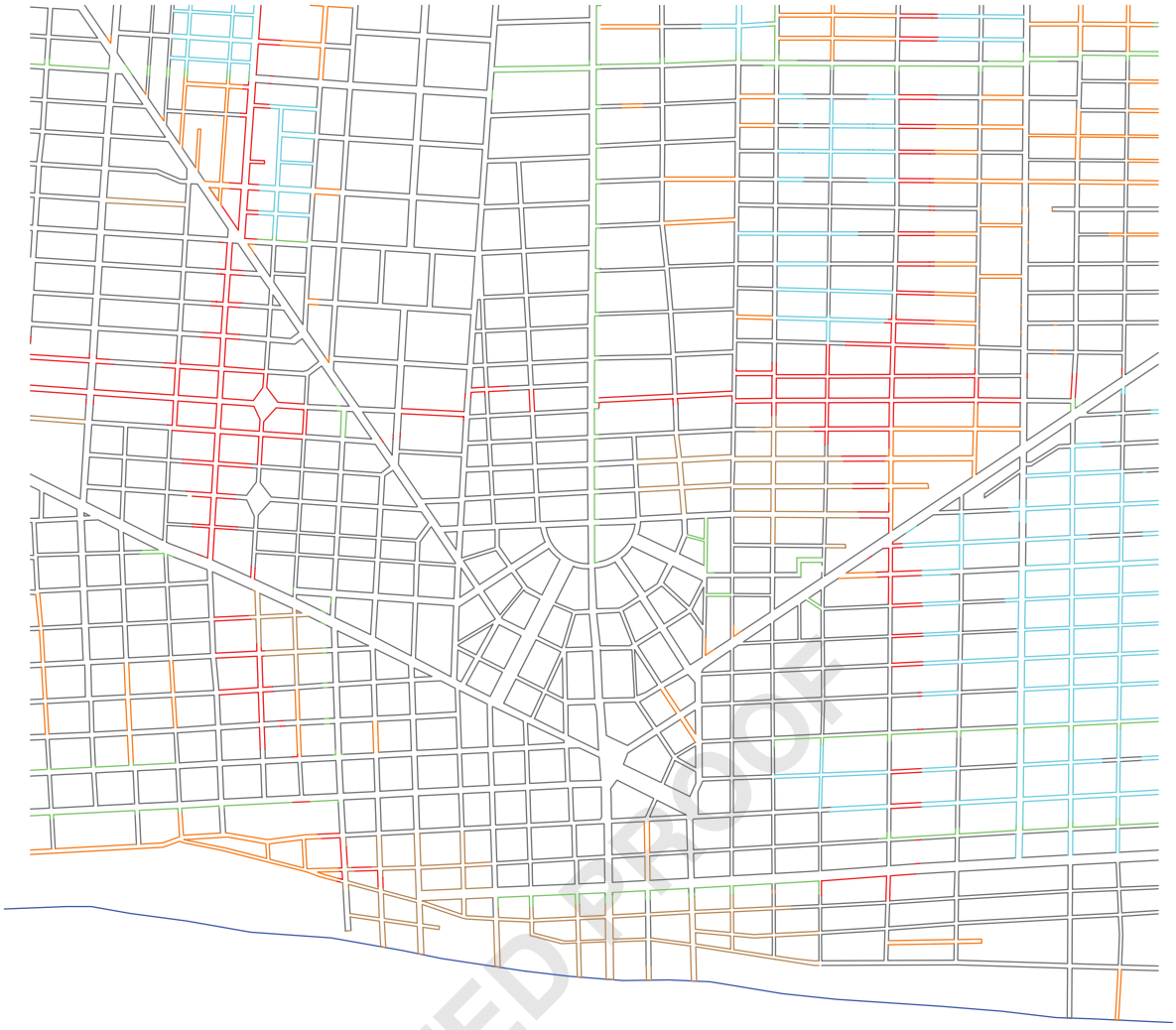

Figure 5. Many different forces contributed to the destruction of block frontages in downtown Detroit. Different causes are shown in different colours: urban renewal (blue); highways (red); megaprojects (brown); street widening (green); and miscellaneous (orange).

30 miles of 1896 block frontage. This was over 18% of the downtown's 1896 frontage, and almost 50% of the total lost 1896 frontage. But highways and slum clearance were not the only forces responsible for the reconfiguration of downtown Detroit's urban fabric. Several other forces acted to combine smaller blocks, widen streets, and reshape the street network, reducing the total number and length of block frontages in downtown as much as highways and urban renewal together.

Megaprojects, or large single-building developments, were responsible for the destruction of over 10 miles of block frontage, or over 16% of the total loss. All megaprojects replaced a number of smaller blocks with one or two superblocks. Detroit's megaprojects included a large riverfront civic centre, a convention centre/arena, and separate stadiums for football and baseball (Figure 8).

In a densely built city, street widening and reconfiguration was limited by large numbers of buildings and the subsequent high cost of clearance. As a result of density downtown and midtown, Manhattan experienced almost no street widening during the 20th century except where subways and tunnel entrances required it. Likewise, in San Francisco and Chicago, early plans for new downtown boulevards (Burnham and Bennett, 1904, 1909) remained mostly unbuilt Q5

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Figure 6. Many older blocks were cleared and consolidated for urban renewal programmes such as this public housing directly north of downtown Detroit.

Figure 8. Gargantuan single buildings, or megaprojects, similarly consolidated many smaller city blocks.

Figure 7. Highway interchanges (here, the intersection of the Chrysler and Fisher freeways) constructed directly adjacent to downtown Detroit consumed immense amounts of space previously occupied by small-scale fabric and city blocks.

Figure 9. As automobile circulation in downtown Detroit increased, many downtown streets were widened or reconfigured to allow for easier traffic flow. Shown is Mack Avenue, an important east–west street.

because of the great expense of creating such roadways. But 20th-century Detroit experienced many street widening, straightening, and reconfiguration. Some rationalization occurred in association with highways and urban renewal. An additional 7 miles of 1896 block frontage were removed simply to widen major streets for the city's growing automobile traffic. Major streets such as Woodward Avenue were widened because they were too narrow for the city's growing automobile traffic, while smaller streets such as Mack Avenue were expanded to correct for Detroit's irregular street intersections and to permit easier east–west automobile flow through the city's grid (Figure 9).

A substantial amount of destroyed block frontage (over 13 miles or 22% of the total) was due to forces that could not be discerned from the source maps ('indeterminate' in Table 1). Field study identified the causes of this change, enumerated in Table 2.

Almost half of the block frontage destruction in this 'indeterminate' category was caused by industrial uses. This is consistent with trends in industrial facilities in the post-war period, which required large, single-story buildings with abundant parking and loading facilities. Accommodating these facilities near Detroit's downtown required large-scale block clearance and consoli-

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Figure 10. A variety of other forces, including parking structures, closed streets, combined blocks, and demolished older buildings during downtown Detroit's 20th century.

dation analogous to that which occurred for urban renewal purposes. Additional significant causes of destruction were parking garages and lots, all of which were seemingly independent of other land uses, and public institutions such as schools and churches (Figure 10). Much of the latter block consolidation occurred in order to provide these uses with larger, campus-type sites containing additional parking, recreational, or open space facilities, and permitting them to emulate the space standards of suburban institutions. Together, these three types of land uses caused over 86% of the 'indeterminate' change – and approximately 17% of the total block frontage loss.

By 2002, the 167 miles (269 km) of 1896-era block frontage in downtown Detroit had been reduced to 106 miles (171 km) of frontage, a loss of 36%. The 60 miles (97 km) of lost frontage were replaced by only 28 miles (45 km). This diminution in overall block frontage and in Detroit's downtown street network reflected the larger block size of the new blocks created through reconfiguration and redevelopment, the larger buildings that occupied these spaces, and the fewer streets required to access these larger blocks.

Discussion

The 20th century was a century of change for downtown Detroit. Downtown's loose rectilinear grid pattern was substantially restructured, reducing the total block frontage and altering the block and street morphology of much of the study area. The resulting block morphology in 2000 was a mix of surviving smaller rectilinear blocks, larger superblocks resulting from the aggregation of smaller blocks, and long linear blocks resulting from the aggregation of blocks around the margins of sunken highways. While a net amount of block frontage was lost, the net area of Detroit blocks may actually have grown through block aggregation even as much block area was lost through highway construction and street widening.

While the causes of block amalgamation and reduction of block frontage in Detroit were diverse, their consequences were very consistent. All of the changes observed combined city blocks, thereby reducing overall block frontages. No block subdivision, which would have added new streets and block frontages, was observed. This is inconsistent with Siksna's (1997) observations in four American and Australian cities, where streets and therefore block frontages were both added and subtracted, although these changes occurred over a longer period of time than did this study. The net change, as Lynch (1981, p. 405) observed elsewhere in the United States, was a steadily increasing, or coarsening, 'grain' of street and block resolution.

Some of the causes of change in downtown Detroit were well known. The destructive impact of urban renewal and highways on downtown was large, as one might expect. Both of these programmes were highly centralized and well funded, and both were harshly criticized beginning in the 1960s. The block consolidation carried out for industrial redevelopment on the east and west sides of Detroit's downtown might also be considered an industrial version of urban renewal, though further research would be needed to ascertain this. These were the destructive causes that one expected to find.

Other causes of block destruction were less expected. These were not linked to single policies, but were incremental and apparently decentralized. Street widening, megaproject construction, and the expanding of institutional campuses, all seemed to have occurred on an individual basis, in the apparent absence of any larger-scale Federal or city policy requiring these measures.

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This indicates that the true cause of these changes likely lay in deeper economic, physical, or even social forces rather than singular policies. What might these forces have been?

Certainly, some of the incremental change observed, particularly megaproject construction, was motivated by the sense, and the reality, that Detroit's economic standing needed improvement. The second half of the 20th century saw an economic decline as steep as the rise seen in the first half of the century. Between 1960 and 2000 the city's population dropped by half, a period that also saw the abandonment or closure of most of the city's industrial facilities, including the majority of its automobile plants (Ryan and Campo, 2007). The alterations to the urban fabric for industrial uses also reflect an attempt to recapture, or retain, at least some industrial activity. Other economically motivated changes to the city fabric, not captured in this study, included the clearance of entire neighbourhoods for new automobile plants.

At the same time as economic forces were dictating changes to Detroit's urban fabric, Modernist urban planning ideology, with its origins in Europe, was encouraging similar forms of change. Most of the reconfiguration undertaken for residential uses reflected Modernist principles: large lots, abundant open space, and scattered, high-rise residential buildings. The European influence on downtown Detroit was literal: leading modernists Ludwig Hilbersheimer, Mies van der Rohe, and Eliel and Eero Saarinen, all designed projects for downtown Detroit at mid-century.

Ironically, as downtown Detroit continued to decline, megaprojects motivated by a different urban design philosophy of re-knitting, rather than clearing the urban fabric contributed to additional demolition. Both of Detroit's downtown stadiums, for example, were placed downtown in order to reinvigorate the area, and both were designed with the aim of fitting these very large buildings into their existing fabrics. But the urbanistic effects of these buildings were little different than that of the Modernist megaprojects that had preceded them. Megaprojects both old and new, whatever their date of construction, acted in the same way to consolidate blocks, destroy existing buildings, and coarsen the grain of the downtown.

But the largest contributor to the reconfiguration of downtown Detroit was doubtless the automobile. The inexorable growth of automobile usage and motor transport motivated the limited-access highways, changes in industrial space needs, and much of the Modernist design philosophies noted earlier, but the changes went further than that. Downtown streets were widened to accommodate cars, and buildings were demolished to park them or to construct garages. Even the institutional campuses created in downtown Detroit for schools, churches, and hospitals were in part motivated by the need to accommodate large numbers of cars on-site.

In the end, the urban design changes observed in Detroit's downtown reflected the invincible impact of ideology, technology, and economics on urban form. This triad of powerful forces acted in concert to produce a downtown cityscape dominated by automobiles, large city blocks, low-density buildings, and empty space. While we may decry the cumulative effects of these changes today, all of them made a certain degree of sense within the logics that dominated American urban development practice and policy, particularly at mid-century. Yet the vast changes observed were also ultimately futile. The reconfiguration of Detroit failed to reinvigorate what was in retrospect a declining city.

While the study did not closely examine the dates during the 20th century when block reconfigurations occurred, much of the change occurred during a relatively brief period at mid-century from 1950 to 1970. Before this period, reconfiguration was almost non-existent and afterward it was also much more limited. This suggests that the large-scale reconfigurations that did occur were an aberration. Certainly the evidence from other American cities (Moudon, 1986; Siksna, 1997; Scheer and Ferdelman, 2001) indicates that large-scale neighbourhood reconfiguration is relatively rare, particularly in large and dense cities. Historical evidence from other downtowns indicates that limited reconfiguration results from the inertial forces of high development densities, which preclude substantial morphological change (Bowden, 1967).

Almost all of the reconfiguration observed required substantial amounts of public intervention. Both highway construction and urban renewal were as much as 90% funded by the Federal

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government. Like the reconfiguration of 19th-century Paris and 21st-century Beijing, Detroit's 20th-century reshaping was a grandiose government gesture that required great amounts of capital. That such extensive urban reconfiguration occurred in a city that was neither the capital of its nation nor even of its state comes as something of a puzzle. Other American downtowns were also extensively rebuilt during the 20th century, but the great extent of Detroit's changes indicate additional forces motivating large-scale urban reconfiguration. The role of the city's powerful automotive corporations is worth investigating in this capacity.

Reconfiguration has continued in Detroit to the present day (2008). The implanting of large new building complexes (megaprojects) into the downtown slowed in the 1970s and 1980s, but accelerated again in the late 1990s with the construction of two single-use sports stadiums directly north of the CBD. At the same time, three 'temporary' casinos were constructed at the periphery of downtown, one of which has since been rebuilt in 'permanent' form. Each of these projects closed several streets and aggregated the remains into one or two large blocks. As of the time of writing (2007), additional street closures have been undertaken by the Federal government for 'security' purposes and by the public utility DTE Energy for a 'peace park'. An additional paper will explore the motivations for and consequences of recent megaproject construction in downtown Detroit.

Although many American downtowns experienced significant physical reconfiguration during the 20th century, many other cities in developed nations survived the 20th century with far less disruption to their historic block patterns. The city of Toronto, Canada, for example, with a similar topography, climate, and age as Detroit, retained a far greater portion of its historic block form and of its building fabric as well. Many large European cities such as London and Rome also retained the majority of their historic blocks despite substantial war damage and the same modernization and redevelopment pressures facing cities such as Detroit.

The evidence presented by downtown Detroit's 20th-century reconfiguration suggests interesting directions for future urban design researchers. What are the circumstances that lead different urban regimes to act conservatively or drastically in their decisions to reshape downtowns? And why do some cities in developed nations maintain their block networks while others take the drastic, and expensive, step of comprehensively rebuilding theirs? The Detroit experience is a cautionary tale for cities considering such changes. Detroit's economic decline in the face of dramatic rebuilding stands as a warning that physical reconfiguration alone does not define, or create, economic vitality. The fact that all of the urban design changes that occurred in 20th century Detroit led inexorably to a coarser grain of urban fabric and a higher degree of automobile orientation also hints that the older fabric may have possessed more economic vitality, and potential, than mid-century planners gave it credit for. A closer examination of cases and causes of conservative and liberal urban reconfiguration would be an important step towards understanding the relationship between historic urban fabrics and economic competitiveness.

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