
Inner-city destruction and survival: the case of Over-the-Rhine, Cincinnati

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Abstract. The purpose of this study is to determine how the original street and lot patterns of an inner-city area have affected the incidence of development, demolition and redevelopment. In particular, the correlation is examined between the pattern of streets, lots and building types on the one hand, and the survival of nineteenth-century buildings on the other. The focus of the study is the district called Over-the-Rhine, in Cincinnati, Ohio, USA.

Key Words: inner city, streets, lots, buildings, demolition

The deterioration of inner-city areas in America is a well-documented phenomenon: it has been blamed on suburban expansion, social instability, and misguided government programmes. However, even within individual inner cities, there is not only great diversity of original form but some parts are much more intact than others. This paper is concerned with the spatial distribution of building demolition and survival in one particular inner-city area – Over-the-Rhine in Cincinnati, Ohio, USA. It focuses on the way in which layout and building forms have interacted with land use and other factors to produce specific patterns of destruction and survival.

In his study of the plan of Savannah, Georgia, Stanford Anderson theorizes that a 'city plan is a resource in that it long outlasts the moment of its initiation, continuing to provide guidance for later decisions' (Anderson, 1993, p. 110). Anderson demonstrates that the plan of Savannah provides specific conditions of support and

constraint for changing conditions of development over time, development that could not have been anticipated when the plan was first laid out in 1734. As an example, he points to the inevitability of the location of a nineteenth century-style commercial district along Broughton Street, because this street was the only one that was continuous and provided usable parcels fronting on both sides of the street (Anderson, 1993, pp. 112-114).

Arnis Siksna (1997) echoes this theme in his study comparing street-block sizes in North America and Australia. He discovered that initial block size and layout of lots have predictable effects on subsequent patterns of development. Specifically, he found that cities initially founded with very large blocks tended to invite a greater number of modifications of the urban fabric, which usually led to the creation of more successful, smaller blocks.

If the plan is a resource, the pattern of land subdivision and streets should heavily

influence the subsequent development and redevelopment (Moudon, 1986, p. 134). As Siksna and Anderson suggest, there should be more successful and less successful configurations. A successful configuration would be one that supported the retention of buildings from the nineteenth-century or supported successful redevelopment.

Study area and sources

The Over-the-Rhine neighbourhood is a residential and commercial district of about 300 acres (120ha) directly north of Cincinnati's downtown. Since the mid-1960s the area has suffered a decline in population, and much of the nineteenth-century building stock has been destroyed. Over-the-Rhine is an instance of a common American inter-city condition: it is overwhelmingly black and poor, with deteriorating structures and many vacant lots. The neighbourhood is currently the home of between 10 000 and 12 000 people, in an area that at the beginning of the twentieth century held approximately five times as many people (Cain, 1995).

During the twentieth century, almost 70 per cent of Over-the-Rhine's nineteenth-century buildings were destroyed, although large areas remain relatively intact. The object of this research was to discover if there was a relationship between the buildings that survived and the original street forms, land subdivision and building types. If the layout of Over-the-Rhine, like the plan of Savannah, is a resource extending through time, what effects did it have on subsequent development?

Our basic research tools were the recorded maps found in the records of Hamilton County. Though the original 1789 Israel Ludlow survey of Cincinnati has not survived, there is a survey of 1802 of the original land subdivision (Klein, 1958). From this 1802 benchmark we were able to acquire a land survey map from 1819 (Gridley, 1819); deeds of land subdivision in the Hamilton County records from 1820 onward; and fire insurance maps from 1855, 1891, and 1956. The 1855 Martin Insurance

Companies and Real Estate Agent's map is limited to building footprints, building construction, block delineation and street layout. The 1891 and 1956 maps were produced by the Sanborn Map Company of Pelham, New York and record the building footprints, building construction, building height, land use, street layout and land subdivisions. Finally, the 1991 map was produced by the Cincinnati Area GIS from digitized aerial photographs and other sources. All the maps were digitized and layered, using the GIS map as a reference point.

Historical context

The area that now comprises Over-the-Rhine was once the location of the first outlots for the settlers of Cincinnati. Cincinnati was platted in 1789 by Colonel Israel Ludlow with a regular grid of 400ft by 400ft (122m by 122m) blocks. In keeping with the custom of the time, Ludlow laid the grid parallel and perpendicular to the Ohio River in order to give the broadest frontage to the river (Klein, 1958). New settlers were rewarded with a 400ft by 400ft outlot on the northern edge of the new town if they constructed a substantial home on their town plot.

By 1819 the population reached 10 283 and the area had 1890 buildings (Gridley, 1819). At this time, the outlots north of the original plat of Cincinnati began to be subdivided for purposes other than the production of crops or livestock, in response to the rapid growth of the frontier town (Figure 1).

Over-the-Rhine's development accelerated following the completion in 1837 of the Miami & Erie Canal, which connected Cincinnati to markets in the north and provided water passage from New York to New Orleans. The Miami & Erie Canal, which eventually cut through the entire State of Ohio and joined Cincinnati to Lake Erie, was located on the northern edge of the then-developed town, four blocks north of the original town plat.

Because of the availability of cheap land

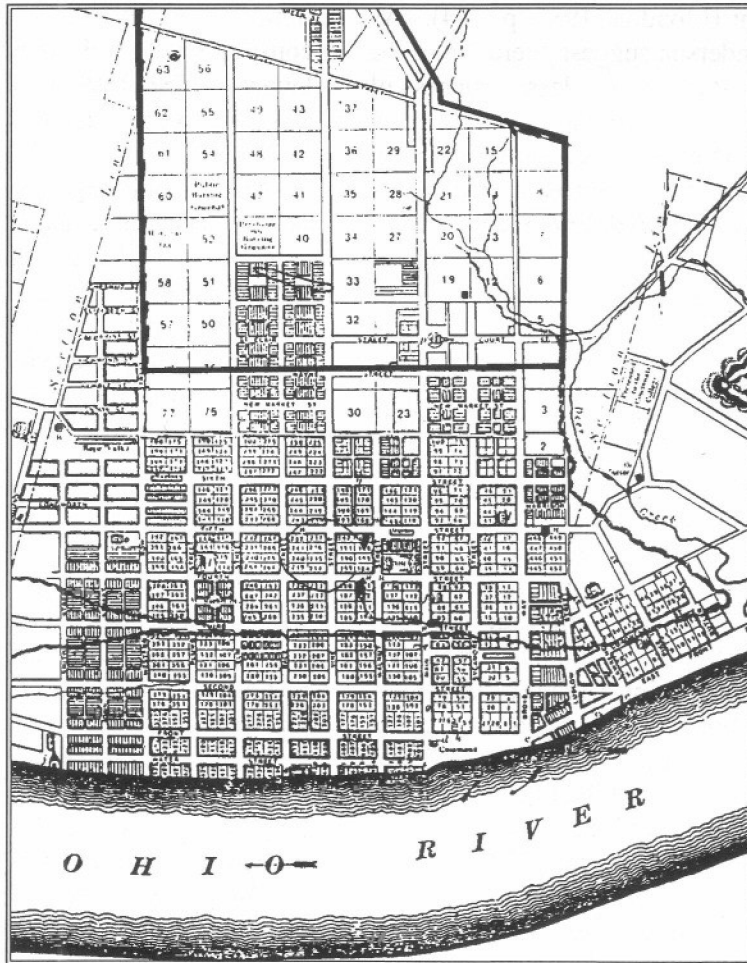


Figure 1. Cincinnati in 1819. The study area of Over-the-Rhine is outlined.
Source: Gridley, 1819.

and transport many manufacturing and warehousing businesses sited their operations alongside the canal. The former farm plots north of Cincinnati's original plat were subdivided for these business and residential sites, which were, at first, small two- and three-storey wooden buildings spaced closely together on land parcels measuring 25ft by 100ft (about 8m by 30m).

Between 1831 and 1841 Cincinnati's population nearly doubled, from 26 071 (3495 structures) to 50 270 (6781 structures) (Wittke, 1964). This population surge was dominated by immigrants from Germany, of whom there were more than 10 000 in the 10 years from 1830 to 1840. When these immigrants arrived in Cincinnati they

generally settled on land north of the Miami & Erie Canal, as developers erected rows of small, mostly wooden-framed houses to accommodate the German immigrants (Cain, 1995). With a large influx of Germans to the northern reaches of Cincinnati, citizens south of the canal sardonically referred to the canal as the Rhine and, when one passed over to the northern district, one was Over-the-Rhine. By 1855, the neighbourhood was almost fully developed.

Between 1855 and 1891, almost all the original wooden structures were torn down and replaced with substantial stone, brick and cast-iron buildings. But, as railroads became pervasive modes of transport, the Miami & Erie Canal fell into disuse and became a

stagnant pool by the 1900s. Eventually, in 1928, the canal area was converted to a landscaped boulevard, Central Parkway, under a plan for a city-wide parkway system proposed by George Kessler in 1919.

Despite the presence of the new boulevard, the population density began to fall in the 1910s and 1920s as families moved out to the suburbs. When Cincinnati adopted its first Comprehensive Plan, in 1925, it was anticipated that Cincinnati's business district would continue to expand to the north and west, and Over-the-Rhine was designated as an industrial and commercial district, ignoring the substantial number of buildings in use as homes. In the 1930s Over-the-Rhine was officially declared a slum, and planners called for much of it to be cleared. Indeed, a nearby district, the West End, was completely destroyed during this time, but the reformers ran out of funds and political winds changed before they reached Over-the-Rhine (Miller and Tucker, 1998).

But the destruction of the West End had an impact: displaced blacks and Appalachians who poured into Over-the-Rhine spurred the remaining middle-class white families to leave. For the past 60 years, the neighbourhood has slowly lost even this population, as absentee landlords refused to maintain old buildings and poverty became deeper. From 1960 to 1990, the decline of the neighbourhood accelerated, with substantial numbers of the nineteenth-century buildings being lost.

In the past 10 years, however, there has been some new construction and much rehabilitation of older buildings. But this process is slow and controversial. As the neighbourhood declined, many properties were purchased and held exclusively for low-income people through a variety of government and charitable programmes. New investment and rehabilitation is viewed suspiciously by poor neighbourhood residents, who fear that gentrification of the neighbourhood will displace them.

Form of Over-the-Rhine

Unlike New York or Chicago, where the street grids were laid upon the land in an extensive pattern, Cincinnati was laid-out with a very limited grid and some suggestion of its continuation. At first, the outlots were served by only three, north-south streets (Elm, Vine and Main) which emanated from the grid (Figure 2). Vine Street alone continued beyond the hills to northern towns, including Hamilton and Dayton. The regular grid pattern of the outlots suggests that Israel Ludlow intended the grid to continue north of Seventh Street. However, instead of continuing a systematic gridded street and block network, new configurations were left to the discretion of the land developers. The north-south streets that were laid out in the Ludlow plan were introduced, as expected, into the developing neighbourhood over a period of years. These streets were consistent in width, between 60 and 66ft (between 19.3 and 21.3 m).

The east-west streets were introduced into Over-the-Rhine as each tract of land was subdivided and developed. Sometimes the land owner would aggregate several outlots to make a larger subdivision. Within these subdivisions the original landowner or the subdivider (developer) made provision for streets and alleys for cross circulation and interior access.

The new subdivisions and streets were filed with the County office, creating a record used for this study. Although several subdivisions were platted before 1837, few had much substantial construction until that time. The county's land registration function did not include co-ordinating the street plans of different subdivisions. The east-west street of one subdivision often did not line up with the street of another. The east-west streets also range in width from 40 to 60ft (13 to 19.3 m).

There were, and are, essentially two methods of subdividing land in the County. The first is to establish a recorded sub-

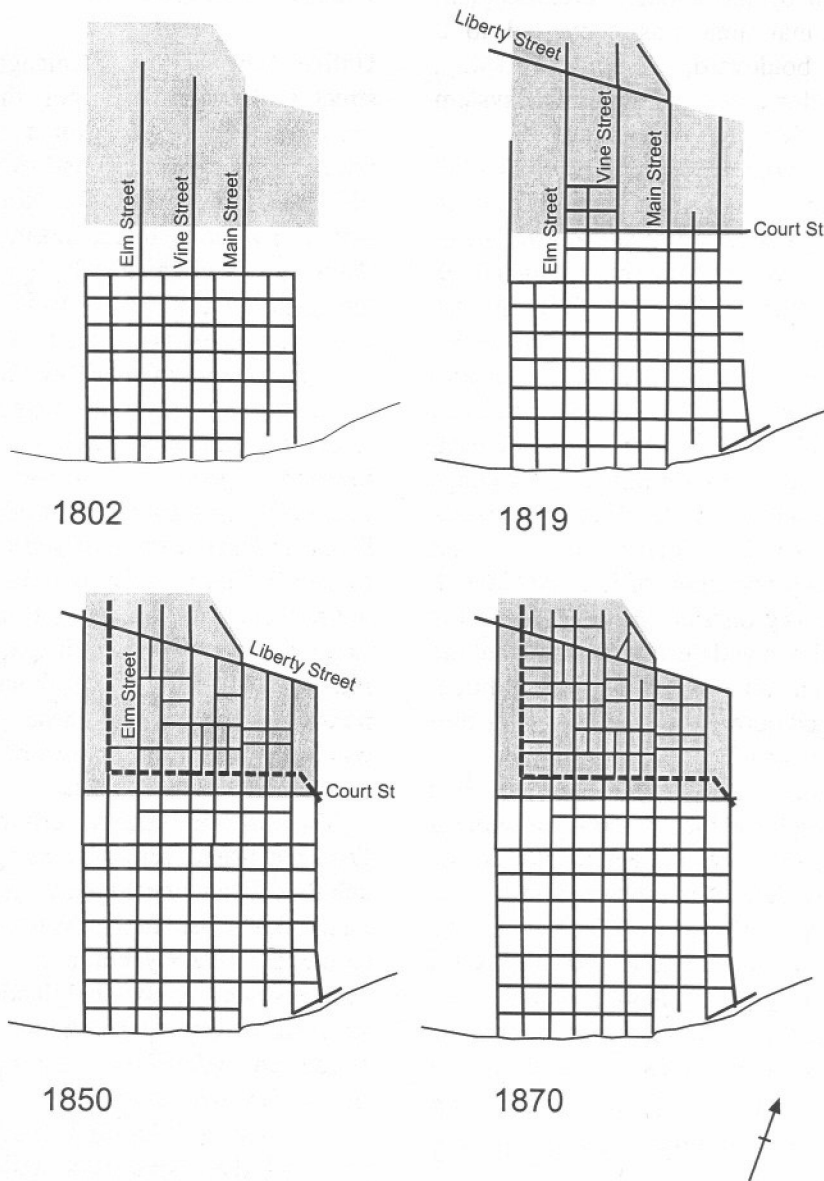


Figure 2. Evolution of Cincinnati's street system. The Over-the-Rhine study area is shaded. Cincinnati downtown is the regular grid south of the study area. The Miami & Erie Canal is the broken line. The Ohio River is on the southern boundary.

division (plat), which describes the boundary of the land to be subdivided and establishes streets and numbered lots, which are then sold by reference to their lot number. The second method is to subdivide a larger parcel one piece at a time, with each subdivided lot described by a survey of its metes and bounds. The lots established by this method are likely to be irregular in size and width.

Within the blocks configured by recorded subdivision, the lots that were established by record were proposed to be regular, but even a few years after being platted, there was no block that retained this regularity of lot size, suggesting that major and minor changes were associated with actual development. Figure 3 shows one block as it was recorded in 1840, and the same block as it was actually

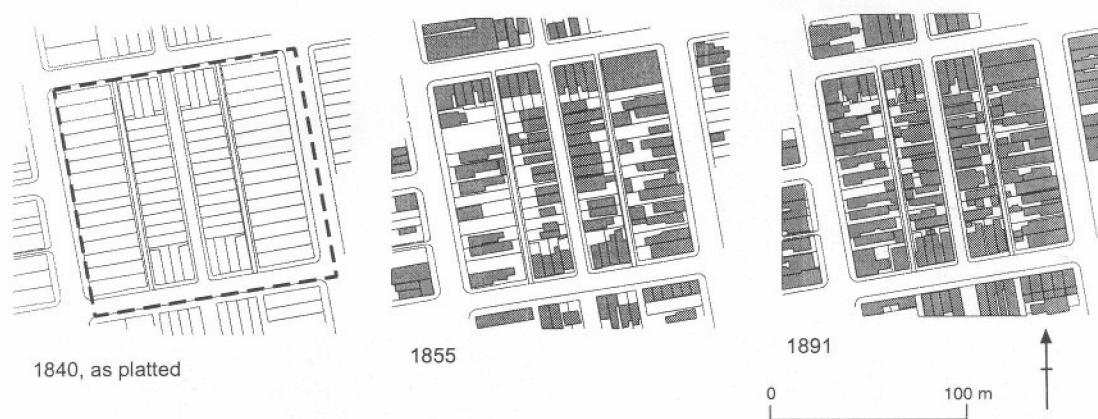


Figure 3. Jones block, showing the original outlet boundary in a broken line.

built in 1855 and 1891.

Though each recorded subdivision shares a typical parcel size of 25 by 100ft (about 8 by 30m), the orientation and arrangement of parcels differed with each subdivision. Figure 4 shows the subdivision of land and streets as of 1855.

The evenly subdivided land was a prepackaged entity which would enable the new owner to build on the land with clear parameters. Land subdivided by metes and bounds required the new landowner to secure a survey and record a deed with the Hamilton County Recorder. Land recorded by subdivision was developed first, even if it was farther from the centre of the city.

From these subdivisions sprang a dense urban form. The buildings typically occupied more than 70 per cent of their lots. Individual dwellings were each contained within a single lot, but industrial uses usually sprawled over several lots or were carved out of unimproved land.

Plan as resource

Figure 5 shows building footprints in 1855, 1891, 1956, and 1991. Although the neighbourhood was densely built up in 1855, by 1891 almost no building survived from that period. Instead, a massive rebuilding of the neighbourhood occurred, in which small, two- and three-storey, wooden structures were replaced by substantial, four- and five-

storey brick structures, usually built within the same lot areas or in lots even further subdivided. This created a much more dense fabric that was undoubtedly overcrowded, but considered economically and socially successful. By 1956, the neighbourhood was still physically intact except for land parcels along the former canal, but the social conditions had deteriorated. The dense conditions that were acceptable in the late-nineteenth century had become unbearable for middle-class families, leaving Over-the-Rhine inhabited by the urban poor who had little choice. By 1991, there was an astonishing loss of building stock, leaving the neighbourhood pock-marked with vacant lots. Of the 3695 buildings shown on the map in 1891, 2500 remained in 1956, but only 1155 (31 per cent) were still standing in 1991 (Figure 6).

Yet there are clearly areas where the survival of buildings is much higher. We examined the following factors that might help explain differences from place to place:

1. street width and continuity;
2. lot configuration within the block;
3. building size;
4. land use.

Many of these turn out to be interrelated conditions: for example, the widest through streets are ideal locations for commercial and industrial buildings, which also tended to be larger and more vulnerable to obsolescence and destruction.



Figure 4. Land subdivision in 1855. The canal is shown by a thick line.

Street width and continuity

In this analysis, the streets were categorized by width and continuity. There are four basic categories:

- 1) major through streets created at some time after the original grid and with a width of at least 100ft (32 m);
- 2) those north-south streets that are continuous from downtown through the study area and have a standard width of 60-66ft (19.3 to 21.3 m);
- 3) east-west streets, which range between two and four blocks long, are 20-30ft (6.5-9.7 m)

wide, and are not continuous; and
4) north-south streets that are less than 30ft (9.7 m) wide and are not continuous.

The survival rate is the percentage of buildings that survived from 1891 to 1991. We examined the survival of the buildings that fronted these streets, aggregating the numbers to get the survival rate for the street type (Table 1). The mean survival rate for all streets was 31 per cent.

Almost 90 per cent of the 1891 building stock fronting the major through streets, Central Parkway (site of the old canal) and Liberty Street, had been destroyed by 1991.



Figure 5. Figure ground maps, 1855-1991. The Miami & Erie Canal appears as a white band in 1855 and 1891: it became Central Parkway in 1928.

The earlier function of Parkway as a canal led to the growth of industrial, warehouse and brewery buildings along it. These became obsolete and were subsequently demolished. Central Parkway was also the site of some redevelopment in the 1950s and 1960s.

Liberty Street is a different story. In the mid-1960s the lack of east-west connection through Over-the-Rhine was addressed by widening Liberty Street and extending it to connect with other thoroughfares and high-

ways to the east and west. The original width of Liberty Street was a mere 40ft (12.2m), whereas the improved Liberty Street reached a width of 100ft (30.5m) and cut a swath through the dense urban fabric of central Over-the-Rhine. The widening of Liberty Street eliminated at least two rows of buildings on its southern border, but it also led to the destruction of buildings adjacent to those removed for the road widening, clearly showing the cluster effect identified by Moudon in Alamo Square, San Francisco

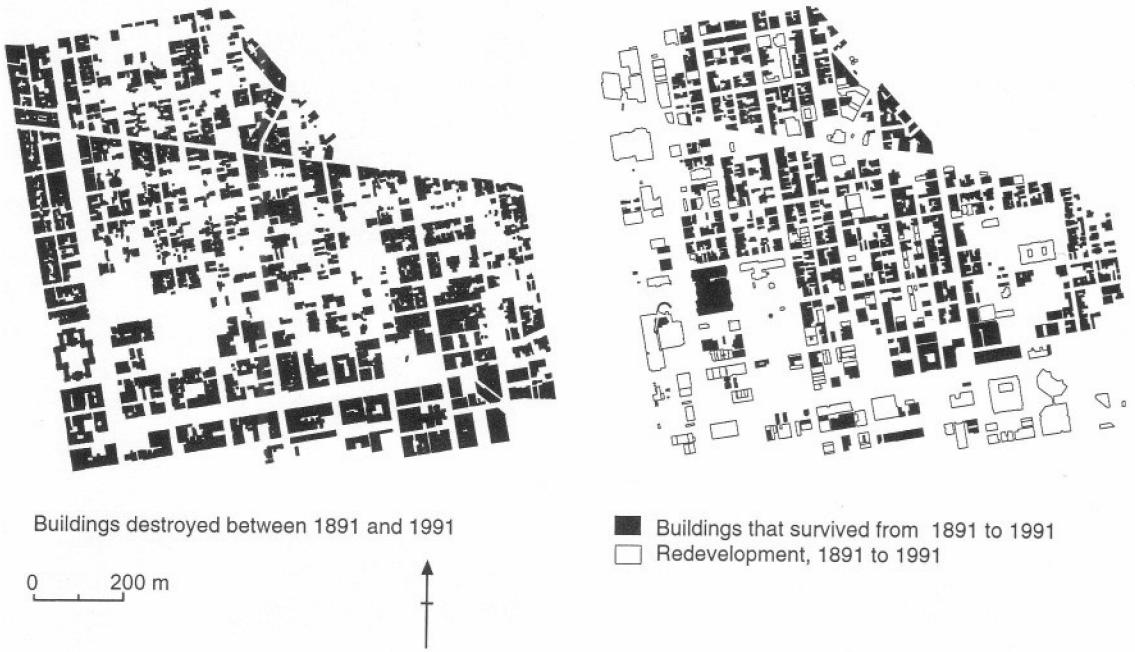


Figure 6. Destruction and survival of buildings, 1891 to 1991.

Table 1. Percentage of buildings existing in 1891 that survived in 1991, by street

Street type	Street width (feet)	Percentage surviving (mean)	Percentage surviving (range)
Major through street	> 100	10.1	6.2-12.9
North-south through street	60-66	52.0	16.3-71.4
East-west short street	24-30	40.9	2.9-85.7
North-south short street	18-32	31.7	9.7-46.2

(Moudon, 1986, p. 144). This created larger vacant parcels, some of which were redeveloped with buildings and services oriented to the new thoroughfare. The widening of Liberty Street and its associated development accounted for the loss of 294 historic buildings in the study area.

In contrast, north-south streets did not undergo this type of destruction: buildings on these streets were five times more likely to survive than those on major through streets. In 1891, most of these streets had consider-

able commercial activity, with storefronts lining the street and housing or workshops above. Because of the number of these streets and their limited width, traffic on each of them has always been less than and slower than that on Liberty Street and Central Parkway. Thus the north-south streets did not attract industrial development in the nineteenth century or new commercial development in the twentieth century – developments that contributed to the substantial destruction of older buildings on Liberty Street and

Table 2. Percentage of buildings existing in 1891 that survived in 1991, according to footprint size

Area (sq ft)	Number of buildings in 1891	Number of buildings in 1991	Percentage surviving
<700	909	119	13.1
701-1200	1124	336	29.9
1201-2300	1125	585	52.0
2301-4300	366	180	49.1
>4301	180	54	30.0

Central Parkway.

Smaller, non-continuous streets in the study area, especially east-west ones, varied considerably in their survival rates. These areas have been almost entirely residential for more than 100 years.

Lot configurations within blocks

Most subdivision blocks measure 180-198ft (58-63m) in width and 367 to 385ft (116-124m) in length), corresponding to roughly half the size of an outlet. The configuration of lots in these regular blocks follows two patterns. The first, which is commonly found in regular blocks that are oriented with their long sides along north-south streets, is a simple, somewhat regular subdivision with all lots facing east or west. The second, which is commonly found in blocks that are oriented with their long sides on east-west streets, has an H-shaped configuration, in which lots in the centre of the block face east-west streets and lots on the ends of the block face north-south streets. In addition to these two configurations of regular blocks, almost half of the blocks are irregular, with both larger and smaller dimensions than the regular blocks and a variety of lot size and orientation.

The most stable configuration is the regular, north-south block, in which 41.5 per cent of the buildings survive. The least

stable is the regular, east-west H-shaped block, in which only 22.6 per cent of the buildings survive. Irregular blocks show a wide range of survival rates. Most of them are on the periphery of the study area.

Building size

Table 2 summarizes the survival rate of buildings according to the size of their footprint. Since most of the buildings in 1891 were either four or five stories high, footprint is a good indication of building size.

Buildings that were most susceptible to demolition were the very smallest ones – less than 700 sq ft (73 m²) in size. Most of these were located at the rear of lots and used for storage, stables, rental houses and small additions to the main building. Many were replaced by parking areas and gardens, giving some relief to the overcrowding that existed in 1891.

If the very smallest buildings are excluded from the calculations, the mean survival rate rises from 31 per cent to 41 per cent. Larger buildings also fared poorly. The buildings that have the greatest survival rate correspond to a standard building type in Over-the-Rhine, which is a single or double row house with commercial use on the ground floor and three or four floors of residential use above (Figure 7).



Figure 7. The common building type in Main Street, executed in substantial materials.

Land use

Over-the-Rhine has always sustained a broad mix of land use. In the middle of the nineteenth century, breweries and warehouses lined the canal, while beer halls, as well as stores, lined the north-south streets (Main Street, Vine Street and Walnut Street). Above them were residential apartments. Except for these streets, most of the rest of the streets were primarily residential, with occasional shops located at the corners.

The larger buildings in 1891 were primarily non-residential. They included liveries, warehouses, a hospital, factories, opera houses, beer halls, and breweries. The largest surviving building by far is Music Hall, the home of Cincinnati's Symphony Orchestra. Most of the other large buildings that survive are churches. The non-residential buildings were larger, more specialized and less flexible than the standard type. They often occupied larger pieces of land that were more attractive to twentieth-century developers and, compared to the

small buildings, they were expensive to renovate. For these reasons, most did not survive.

A small school and the county courthouse were the main public buildings in the early days of the neighbourhood. These were to have large repercussions in the development of the neighbourhood, primarily through their expansion. By 1855, a small school was built in the central, eastern part of the neighbourhood (Figure 8). On the same site, Woodward High School (now the School for the Creative and Performing Arts) was built in 1907 and later site expansion in 1955 involved removal of an entire block of residential buildings. Nearby buildings also were destroyed and made into parking lots and playgrounds. By 1991, the original tiny school had become a high school and recreation centre complex that occupied a gaping hole in the fabric of the neighbourhood.

The Hamilton County Courthouse was rebuilt four times in the same location. The latest version, built in 1915, resulted in the destruction of commercial buildings that occupied the north and east sections of its site. Expansions in the 1970s included a jail and parking areas. New institutions like the Washington Park School and Peaslee Community Center and Park likewise were carved out of the urban fabric of the Over-the-Rhine neighbourhood. Even in the last 5 years, two large areas of Over-the-Rhine have been destroyed to make way for a parking lot to serve the city-owned Findlay Market, and the expansion of two recreational parks. Altogether, the destruction of buildings to serve institutional expansion accounted for the loss of 197 buildings between 1891 and 1991.

Conclusions

The early streets and subdivisions form a kind of destiny of a place – they limit the extent to which normal social and economic changes can really affect a place. The earliest street patterns, subdivisions and

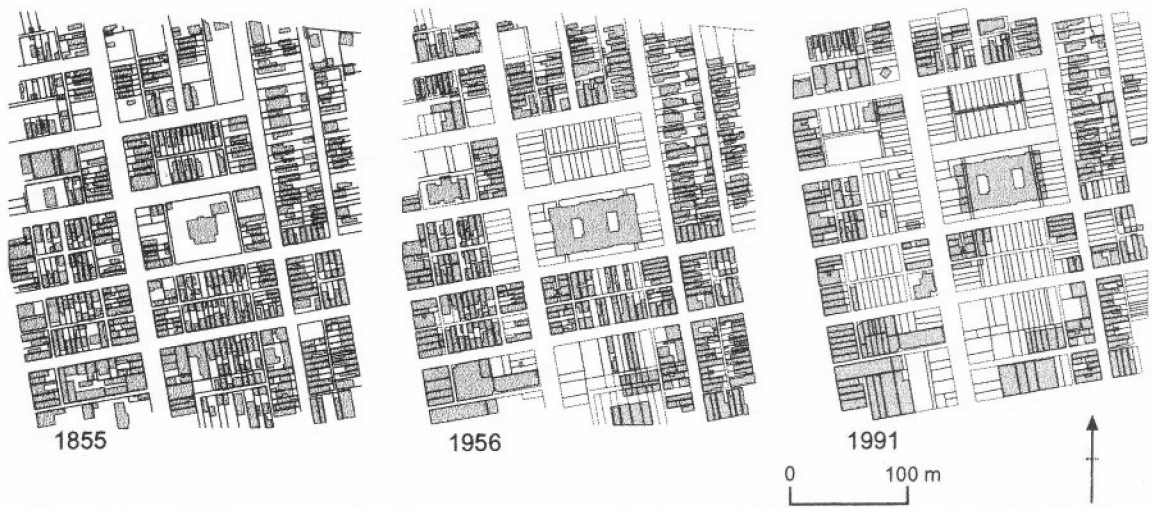


Figure 8. Destruction of buildings and expansion of land around school buildings, 1855-1991.

building types (and their evolution over time) reveal important insights into Over-the-Rhine's present patterns of decay.

Unlike Savannah and the American and Australian grid plans documented by Siksna, Over-the-Rhine is not a planned district, an area designed and platted at one time. On the whole, it is a spontaneously-developed urban fabric composed of smaller planned areas. In Savannah, Anderson's idea of 'plan as resource' encompasses not only the idea of the persistence and influence of an urban fabric of streets, blocks and lots, but also the long-term influence of regularities and repetitions of a designed, rather than spontaneous, settlement pattern.

The plan as a resource implies that the original plan guides the subsequent development by constraining it, as in Savannah, or by providing opportunities for specific kinds of redevelopment. Preservation is one result of constraining redevelopment, which can be seen in Savannah. Another result can be destruction, as buildings that are no longer economical can neither be redeveloped nor sustained. Over-the-Rhine's somewhat unusual and mostly spontaneous layout provided several specialized conditions and deficiencies, which affected the subsequent preservation and destruction of buildings.

First, the initial lack of an east-west

connector through this important part of the city had far-reaching consequences. Two connectors had to be carved out, Liberty Street and Central Parkway, and both were built extraordinarily wide by the standards of Over-the-Rhine's initial planning. These very major streets, larger than any in Cincinnati's downtown until quite recently, became the natural site of redevelopment activity: they were unsuitable for the smaller, residential scale buildings that dominate the rest of the study area. The larger non-residential buildings built there have been vulnerable to redevelopment because of their highly visible location.

Secondly, the planned, north-south streets extending from the street grid of the downtown hosted the most successful environment in Over-the-Rhine. They provided a number of different lines of movement through the neighbourhood so that no one of these streets had an inherent location advantage over any other, and traffic flow never became excessive. Because of their convenient connection to the downtown, substantial buildings were built along most of them by 1891. These buildings have not only survived, but many of them have recently been restored. This robust survival reflects the inherent functional adaptability of the building type (Moudon, 1986, p. 178) as well as its substantial construction in brick or

stone.

In contrast, buildings facing discontinuous, short streets did not fare as well. These buildings usually were residential only, without a storefront, and the streets they faced are much narrower. The most likely explanation for their destruction, however, is not their function, but their lack of continuity. These houses appeared in small groups of four or five, interrupted by the strong north-south axis. They tended to survive or be destroyed in groups, as well. This matches the observation of Moudon (1986, p. 144) and suggests that part of the strength of the north-south streets is the continuity of buildings facing those streets, regardless of the orientation of the block.

Finally, the plan also encouraged very dense development by 1891, perhaps a greater density than could be sustained. The lots, averaging more than 100ft (30.5 m) deep, allowed added development in the rear, sometimes with separate access to an alleyway. The vast majority of these buildings were destroyed in the last 50 years. The breathing space for parking that this provides may be a great boon to the neighbourhood as it redevelops.

Not surprisingly, Over-the-Rhine's planned elements (north-south streets, regular subdivisions, consistent building types) were, overall, more successful than the unplanned and opportunistic elements (after-the-fact thoroughfares, irregular blocks, and discontinuous streets). This supports Ander-

son's claim about the 'plan as resource'. However, many substantial losses of building stock, especially those involving the expansion of institutions, were unpredictable and not related to the form of the area.

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