THE IRREGULAR GRID IN PORTLAND, OREGON USA
an investigation of urban morphology and building typology

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Portland’s Irregular Grid Urban Morphology
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A block size of two hundred by two hundred square feet formed the original urban building pattern for the platting of Portland, Oregon, in 1845, a city on the American West Coast located at the confluence of the Willamette and Columbia Rivers. Combined with a street width of sixty feet this block size established an urban grid (including a rectangular version) that was used in subsequent platting and the expansion of the city in commercial, residential, and industrial areas. In the one hundred and sixty-three years since the initial layout, however, ideas about settlement planning, about urban design, and about architecture have changed greatly.

With the expansion of the city and subsequent annexation of surrounding communities during the early twentieth century, multiple residential neighborhoods located near trolley lines were built with irregular block patterns. Restricted by topographic parameters or predefined master planning concepts, these blocks departed from the standard square and rectangular morphology seen elsewhere in Portland. As many of the areas were reclaimed farm land surrounded by developments, the edge conditions of most blended into the existing traditional grid and street pattern. When combined with the phased construction of typical building typologies seen in other residential neighborhoods, this irregular pattern presents new spatial properties and urban fabric types in the city.

This booklet contains a detailed investigation of four neighborhoods: King’s Hill, Ladd’s Addition, Laurelhurst, and Mt. Tabor. All contain unique urban morphology strategies and irregular grid structures.

This research will ultimately be compiled with previous studies of the square and rectangular blocks into an overall urban atlas investigating the urban morphology and building typology in Portland.
Overall Location

In Relation to Portland
King’s Hill is located south of West Burnside at the start of the west hills.

Aerial Map
The district is bound by Burnside to the North, Washington Park on the West, Canyon Road on the South, and 20th Ave on the East.

Top: 1889 Sanborn map with king’s hill highlighted, Bottom: King’s Hill District boundary
Densely Mixed
King’s Hill is an interesting mix of old and new. Originally a neighborhood of houses, the close in location made it a desirable place to develop high and medium rise apartments. This mix makes the many different styles stand out.

Architectural style of Houses
The architectural style of this historic district is made up of many houses built mostly from 1890 to 1925. The majority of the houses are Colonial Revival style, but they range across all styles.
The Irregular block in King’s Hill

King’s Hill has many irregular blocks due to its unique location on the west hills. The topography of the site is steep in many places, especially as it approaches the hills. There is also a connection with some of the irregular shapes and the difference in additions as the land was being platted.

The example blocks given are irregular as a result from different forces. Example 1 is due to topography. Example 2 is due to a grid shift along 21st ave. Example 3 is part of a special organization for the Ardmore addition. Example 4 is adjusting to the shape of what is now Canyon Rd. Example 5 is given as the standard 200’ x 200’ square for portland.
The Special Character of King’s Hill
In 1991 the King’s hill district was listed in the national register of historic places. The district has rich history in architectural, landscape, and city planning fields. The people involved in the production and design, as well as the people that lived in the area, were often affluent and important figures in the development of Portland as a city.

The building type was predominantly large single and multi-family dwelling units from 1882 until 1942. The architectural styles are largely varied which adds to the distinct character of the neighborhood. These houses were owned by the affluent and many were designed by famous architects of the time, including Albert E. Doyle, Joseph Jaccobberger, Otto Kleeman, William C. Knighton, David C. Lewis, the firm of MacNaughton, Raymond and Lawrence, Richard Painter, Emil Schacht, the firm of Whidden and Lewis, and gardens by John Yeon.

Cable cars were brought up Burnside to 23rd Ave in 1890, which was a main contributing factor to the desirability of the area. In 1926 the Vista Avenue Viaduct was constructed and increased traffic flow around the area. On the lot between Burnside and Osage street the was a small waiting station for the cable cars. 1914 marks a stop in the primary development of the historical buildings in the area, and after 1942 it had virtually ceased. Starting in 1943 many of the historic buildings were demolished, partly due to rising property values. In some cases international style apartment high rises were built in their place, which adds a unique character to the area today, and contributes to the area being the densest residential area in all of Portland.
Left: The Loewenberg House (demolished), Right: View of street trees, Lower Right: Garden design by John Yeon.
Figure Ground
Here is a progression of the figure ground relationship of the neighborhood over time. After and around 1950 we start to see the replacement of houses with apartments and higher density structures.

left to right: 1901, 1909, 1950, 2008
Starting at one of the gateways specified by the district, you can follow a path attempting to focus on the clusters of the oldest structures in the area first. The winding, sometimes European feeling streets are very pleasant and interesting to walk on. This is one suggestion of a possible route, but there are many un labeled passageways, and interesting places not listed. It is a dense and lively historic district that is very walkable.
Left and Right: District mixes historic houses with high density development.
Vista Avenue Apartments

Vista Avenue Apartments is located between Vista and St. Clair, North of Park. It is a successful complex that fits nicely in between the houses and high rises in King’s hill. It adapts to topographical features and utilizes trees and landscaping unique to the area to create a special character.
City of Portland. “King’s Hill Historic District Guidelines.” 2001

Neighborhood Location
Ladd’s Addition is located on the east side of Portland. It is bordered by SE Hawthorne Blvd. to the north, SE Division St. to the south, SE 12th Ave. to the west and SE 20th Ave. to the east. SE Harrison St. runs east to west through the center of the development, and SE 16th Ave. runs north to south through the center.
The geometry was designed by Ladd and is attributed to him being influenced by L’Enfant’s plan for Washington D.C., as well as the Olmsteads. Ladd was also influenced by the beginning of the “City Beautiful” movement (Staehli).

The addition is contained in the regular 200x200 block system, approximately eight and one half blocks on the north and south and ten blocks on the east and west. (Although it fits in this framework, the blocks to the east are actually a configuration of the rectangular block).

Two main diagonal streets, a north-south street, and an east-west street define the major geometry. These streets converge in the center of the development at a circular park.

Four diamond shaped parks are located along cardinal axes on secondary diagonal streets.

Lots are aligned normal to the four main streets.

Between the primary and secondary diagonal streets there are alleys that provide parking, garage access, utilities and garbage collection.

The majority of the houses have similarly styled detached garages along these alleys, as well as private gardens.

This is one of the few communities in Portland with alleys. The alleys “reinforce the continuity of street elevations, largely uninterrupted by curb cuts” (Weeks).

Major streets are lined with mature street trees.
The land was previously owned by William S. Ladd.

Approximately 128 acres of farmland in Portland’s southeast was subdivided in 1891 for a housing development. Ladd died shortly after in 1893.

Ladd waited to plat the land and put it on the market until the surrounding area was sufficiently developed to “justify his laying it out in a manner that would be a credit alike to himself, and to the city with whose growth he has for so many years been closely identified” (Oregonian Souvenir).

Design and planning was done by Ladd and was thought of as an “urban garden village” (McCull).

At the time of planning, the community incorporated many “modern” features such as gas and electric lighting and a sewer system. Also, the northern boundary Hawthorne Ave., provided access to a major streetcar line.

The sewer system was made possible by Ladd holding a position as chairman of the Board of Water Commissioners.

Through the deed process, Ladd restricted the type of development allowed. At that time, he banned saloons and multi-family housing.

First home was completed in 1900.

Majority of development took place between 1905 and 1930.

In the late 1930’s, the development was in a transition from upper to middle income residents.

“By 1959, the neighborhood was zoned for duplex apartment density with commercial and manufacturing along the borders” (McCull).

Ladd’s Addition is part of the Hosford-Abernethy neighborhood, which became official in the 1970’s. It is the only part of the neighborhood that was not affected by redevelopment and deterioration.

Ladd’s Addition became a historic district in 1977 and became part of the National Register of Historic Places in 1988 (Ross).
Diagram of block development at boundaries of Ladd’s Addition.
The following walk is proposed as a way to experience the character of this neighborhood:

Start at Hawthorne on the north side of Ladd’s Addition. Continue southeast down SE Maple Ave. The oldest existing home in Ladd’s Addition, built in 1900, can be found on this street at 1559 SE Maple Ave (Portland Maps).

Continue past the north park and walk south along SE 16th Ave. towards the central park. Walk through the central park and turn left to continue walking along SE Harrison St. Walk around the east rose garden to continue on SE Harrison St. Note the difference in design of the three gardens.

Turn left at SE Hemlock Alley. Note the structure of the alley and the similarity of detached structures to their main house, this is typical for Ladd’s Addition but is one of few places in Portland with alleys.

At the end of the alley, take a right and continue on SE Locust Ave. until you exit Ladd’s Addition onto SE 20th Ave.
Building Typology

Majority of houses is a mix of “compatible early 20th century styles, including bungalow, craftsman, American foursquare, mission, Tudor, and colonial revival” (Weeks).

Detached structures were typically built to complement the main house. Currently, this similarity is listed as a design standard for the community.

Currently, the oldest residence in the development was built in 1900 and is on SE Maple Avenue (Portland Maps).

The majority of Ladd’s Addition is single-family residential, with higher density residential and commercial zoned at the boundaries.

There are several churches and one school within the boundaries of Ladd’s Addition. All of these, and most of the residences, are contributing historic properties.

Several styles of homes in Ladd’s Addition.
Neighborhood Parks

The diagonal parks in Ladd’s Addition were developed similarly to the neighborhood layout; there is a definitive geometry that relates to the major streets.

The west, east, and south parks have identical geometries centered on another diamond shape. The north park is unique and is organized around a circle.

These parks were part of Portland’s 1903 Olmstead Parks plan and were developed between 1909 and 1912 (Ross).

After the neighborhood became part of the National Register of Historic Places, community efforts restored the parks. The east, west and south parks retained their original design which is visible today. The north park was remodeled in the 1970’s to reduce maintenance costs (Ross).

The central park, shown below, is less designed and has more open space than the diagonal gardens.

This diagram illustrates the strict geometric design of the gardens.

Aerial view of central park in Ladd’s Addition.
The highlighted block in the image to the left was chosen to be studied more closely because it contains the defining characteristics of Ladd’s Addition.

The block is bordered by SE Maple Ave., SE 16th Ave., SE Ladd Ave., and SE Palm St.

The block faces one of the neighborhood diagonal parks, has an alley in the back with detached structures, and is bordered by a major and a minor street. It also is connected at one end to the central park.

The house highlighted in black below was chosen to study because it has a detached structure without an alley and it is bordered by a minor street to the front and an alley to the side.


The Oregonian Souvenir. Portland: The Lewis and Dryden Printing Company, 1892.


Ladd’s Addition
Portland’s Laurelhurst neighborhood intersects both the Northeast and Southeast quadrants of Portland. It is bounded on the north by I-84, the east by NE 44th, the south by SE Stark, and the west by NE 32nd.
The Laurelhurst Neighborhood, designed to be a gracious area of the city occupied by homes of cultivated people (Vaughan 455) began as rolling farmland on the edge of the city. Purchased in small sections in 1869, 1873, and 1876 by William S. Ladd, the collective property became Hazel Fern Farm, one of three owned by Ladd in the greater Portland Area. His death in 1893 coupled with the new development of neighborhoods and infrastructure around the site ultimately led to decision by the Ladd Estate Company to modify the property from farming to residential. The annexation of the area by the city of Portland between 1891 – 1900 and again between 1901 – 1910 showed the rapid growth of the region and need for land, regardless of use.

Initial platting of the neighborhood began in 1906 by the Laurelhurst Company, founded to oversee the development of the site. Named after the Laurelhurst neighborhood in Seattle, Washington, the goal by administrator Paul C. Murphy was to bring a like vision to Portland. As site improvements were made and public interest grew, developers placed an emphasis on a “Country in the City” atmosphere, provided by aesthetically designed neighborhood of curving paved streets, tree lined paring strips, and a dedicated neighborhood park (Vaughan 455). While the grid street pattern seen in surrounding neighborhoods resulted in the much more common middle class housing, Laurelhurst followed the theories of Charles M. Robinson as a shift away from wide streets and the regular pattern.
The irregular block structure of Laurelhurst is comprised of 2,880 individual lots. Alphabetical and numerical street names are extended through the neighborhood, and radiate around a central circle and park located at NE 39th and NE Glisan, the original route of the Montville Streetcar line. Using the streetcar, by the time the first home opened in 1910, a person could get downtown in 15 minutes (MacColl 69). Only six new radial streets: Mirimar Place, Floral Place, Hazelfern Place, Laurelhurst Place, Royal Court, and Laddington Court, were added to the existing urban street network of Portland. The radial blocks of the center are 200 feet, or two lots, wide, and have a length based on the intersection of cross streets.
The design of Laurelhurst is predominately based on a similar neighborhood in Seattle, Washington located on Lake Washington. While the area is approximately the same size as Portland’s neighborhood, the irregular block structure of the peninsula development was laid out at the turn of the 20th Century based on maximizing views to the water and addressing existing topographic restrictions. Coined Laurelhurst by developers in 1906 because of the heavily wooded area, later sub districts and streets were given matching titles like Laurelhurst Heights and The Palisades. Seattle’s Laurelhurst was officially annexed into the city in 1910 and today is one of the most expensive neighborhoods in the city.
Standard size lots originally sold between $2,500 and $15,000 in improvements and assess and depending on the location of the property. A house on the site would be an additional $3,000 minimum (MacColl 70). Today, the majority of the buildings are valued beginning at $500,000. Yet the desire to live in this Portland neighborhood has been apparent since the original development. In 1910 half the lots were sold and by 1935 less than 10% of the site was vacant land. Ultimately the new morphology of this neighborhood as a residential community coupled with the spatial qualities of walkable pathways, small streets, and abundant landscapes has resulted in Laurelhurst becoming an iconic irregular part of Portland, while still calling back to the original square platting that it stemmed from.
Building Typology

Coined a “High Class Residence Park”, the desire for a prestigious environment ultimately defined the affluent social class that would reside here. As it was exclusively a residential neighborhood, commercial buildings, stables, and any purveyors of alcohol were not allowed, nor were the presence of any apartments, hotels, or flats. Like many developments in the city at the time, racial discrimination was present. Any sales to Chinese, Japanese, or African Americans were strictly prohibited (MacColl 70). While single family units range from small units to mansions, over 1,000 cases of bungalow style are seen throughout the neighborhood. The neighborhood also holds Laurelhurst Elementary and a 32 acre park. Built in 1912, Laurelhurst Park defines the lower edge of the neighborhood and surrounding edge blocks that are more of a transition between rectangular and irregular form. Designed by Emanuel Mische, the park superintendent for Portland between 1908 – 1914, the acreage includes a three acre man made lake, lawns and forests, and playing grounds based on the Olmsted Brothers Park Plan (O’Donnell 141).
Given that the building typology of the Laurelhurst neighborhood is predominately comprised of craftsman style houses, the residential street typically mimics street sections seen elsewhere in the city. The urban morphology and irregular grid does not affect the sectional properties. Rather, changes in topography and planting of vegetation express a hierarchy of space unique to this neighborhood.
Situated in the southwest quadrant of the neighborhood, this ten minute walk offers an overall example of the character of the neighborhood. Beginning at the Laurelhurst gates, the walk continues south through the curved residential streets. A variety of house typologies are seen, with private landscaping obscuring many from view. The adjacency to the 3 acre Laurelhurst Park offers a spatial quality unique to the neighborhood and much of the greater city. Walking up the primary North-South axis suggests the predominate vehicular route through the area.

A - Laurelhurst Gate - The entry to the neighborhood

B - Typical Bungalow Style Residences

C - Laurelhurst Club - Community Center

D - Coe Circle Park
The original planning of Laurelhurst included paved streets with water, sewer, and gas mains installed underneath. Six foot wide sidewalks separated front yards from nine foot wide parking strips. Cosmetically, street lighting was installed and over 2,200 trees were planted at 30 foot intervals along the paring strips. This block expresses the development of a residential and public use with 16 single family houses and the Eighth Church of Christ Scientist, which was built after three individual lots were combined for a larger building.

The Eighth Church of Christ Scientist is located at the triangular intersection of three roads, one of which is a primary artery from the northern neighborhood boundary. Given its size and placement on the lot, and coupled with the change in the sectional property of the street, this would be an appropriate building to further study.

Google Earth 2008


Profile of Mt. Tabor Neighborhood in 2000 Census

- Population: 10,037
- Area: 1,022 acres
- Population Density: 9 persons per acre
- Male Population: 4,705 (47%)
- Female Population: 5,332 (53%)
- Households: 4,316 (96% occupied)
- Home Owners: 65% (2,808)
- Renters: 35% (1,508)
- Household Size: 2.33 avg
Mount Tabor Neighborhood
Urban form, 2008
Mt. Tabor Neighborhood

Topography & contemporary form

Transportation history & contemporary form

1850s Steam Rail

1950s Streetcar
1846. The “Big Burn”, a forest fire begins on the slopes of Mt. Scott, southeast of Mt. Tabor, burning most of the timber in the inner East side as far north as the Columbia River wetlands. The timber is replaced with coarse grasses and the area cleared for the transition to agricultural use - orchards & small farms.

1847. The Prettyman land claim - North to South from Base Line Road (SE Stark St.) to Section Line Road (SE Division St.), and from West to East from SE 39th Ave. to SE 60th Ave.

1848. The area is still "WOODED, GAME-FILLED WILDERNESS." A bear is reportedly taken at 12th and Division St.

1853. Mt. Tabor receives its name from Plympton Kelley, son of Methodist Reverend Clinton Kelley.

Mt. Tabor Methodist-Episcopal church built at SE 60th and Base Line Rd. (SE Stark St.).


1887. Morrison St. bridge opened.

1888-89. Willamette Bridge Railway Co. begins service to Mt Tabor

1889. Mt. Tabor Railway company opens steam powered line out Hawthorne Blvd. to 54th St. Originally called Mount Tabor Villa, the first plat of the area is filed.

1903. The Mount Tabor butte is identified as prime park land by John Charles Olmsted, son of Frederick Law Olmsted.

"There seems to be every reason why a portion, at least, of Mount Tabor should be taken as a public park. It is the only important landscape feature for miles around, and the population in its vicinity is destined to be fairly dense. It is already a good deal resorted to by people for their Sunday and holiday outings, and it will be better known to and more visited by the citizens as time goes on. . . . There can be little doubt that public sentiment will cordially support the city government in acquiring considerable land on this prominent and beautiful hill.” (Olmsted Brothers “Report of the Park Board,” 1903).
Mt. Tabor Neighborhood

- Mt. Tabor Presbyterian Church
  - Masonry building, 1921
  - 5500 SE Belmont St

- Infill development at SE 60th / Stark

- Buehner Residence
  - Bungalow - 6133 SE Main St.

- Mt. Tabor Reservoir 6 Gatehouse
Mt. Tabor Neighborhood
This block at the intersection of SE 55th Ave & SE Belmont St can be seen in every available map of the Mt. Tabor area since the early subdivisions of the mid 19th century. It retains more or less the same shape, which may have been determined initially by the most expeditious route for a steam rail line running from the east bank of the Willamette river to the end of Belmont St.

The topography of the Mt Tabor neighborhood, as the overlay in the analysis section suggests, has been perhaps the most influential force shaping the urban form.
IRREGULAR BLOCK

ONE BUILDING

5500 SE Belmont St
Built 1921, Masonry
Adaptive Reuse: office on street level with apartment or office above.

SE 55th Ave. & SE Belmont St.

Property Data :: PortlandMaps.com


Nelson, Grant. “The Early Years of Mt. Tabor.”

Staehli, Alfred. “Preservation Options for Portland Neighborhoods.”