# CODING THE THIRD CONDITION

Cities today are the cumulative product of codes and standards that have directed how people use, construct, and shape their environments. By extrapolating the legends of land use maps, this timeline seeks to expose how landmark codes and ordinances have shaped the North American landscape and its people through time. The legend in isolation reveals the often reductive, scientific rationality of the code in contrast to the fluidity of natural processes and human conditions.

As codes have become more complex, the essential elements of the land, critical in early surveying, have become obscured and secondary. Charting the historical development of codes and standards, we see two conditions emerge over time. The first condition is the regulation of land. The second is the regulation of use. This exhibition proposes a third condition, rooted in the inherent fluctuations of both. In this condition, land is neither wet nor dry, and consequently, programs and uses are enriched by a state of evolution and flux.

- City Plans
- Streets & Subdivision
- Height & Bulk
- Utopian Schemes
- Environmental Codes
- Laws & Acts
- Publications

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**Key References:**
Ben-Joseph, Eran. *The Code of the City: Standards and the Hidden Language of Place Making.* MIT Press, 2005.

Scott, Mel G. *American City Planning Since 1890: A History Commemorating the Fiftieth Anniversary of the American Institute of Planners.* University of California Press, 1969.

Gallion, Arthur B., and Simon Eisner. *The Urban Pattern: City Planning and Design.* D. Van Nostrand Rheinhold, 1956.

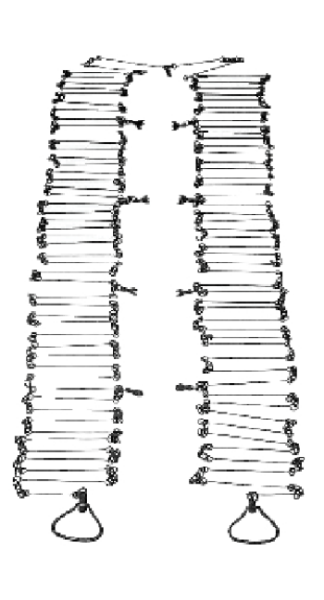
## ACTS OF SURVEYING

**1606**
English mathematician and inventor Edmund Gunter develops tool for the accurate surveying and measurement of lands.

**1667**
A year after the Great Fire of London, the city imposes its first Buiding Act with restrictions on building heights. Height restrictions will later become one of the first instigations for widespread zoning.

**1699**
The Plan of Williamsburg, Virginia is adopted. The plan marks one of the first formal plans to be instituted in the colonies.

1700

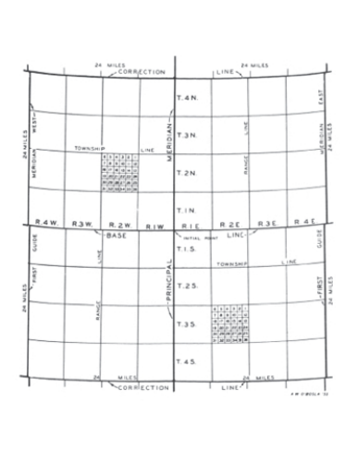


**Gunter's Chain, 1606**

Invented in 1606 by English mathematician and inventor Edmund Gunter, Gunter's Chain (below) vastly simplified the process of surveying land. The chain was made up of 100 links in groups of 10. 80 chains constituted 1 mile, and 10 square chains made up 1 acre. This simple surveying tool became the standard means of surveying land and demarcating lot lines in the United States.

**1721**
The US Act of Surveyors and Regulators confers power on a district surveyor to establish streets and building lines in Philadelphia. Pennsylvania remains one of the only states with enabling legislation for regulating building lot lines until the 1920s.

**1774**
London passes a second comprehensive Building Act, regulating waste and building details. The act is emulated beyond London soon after.

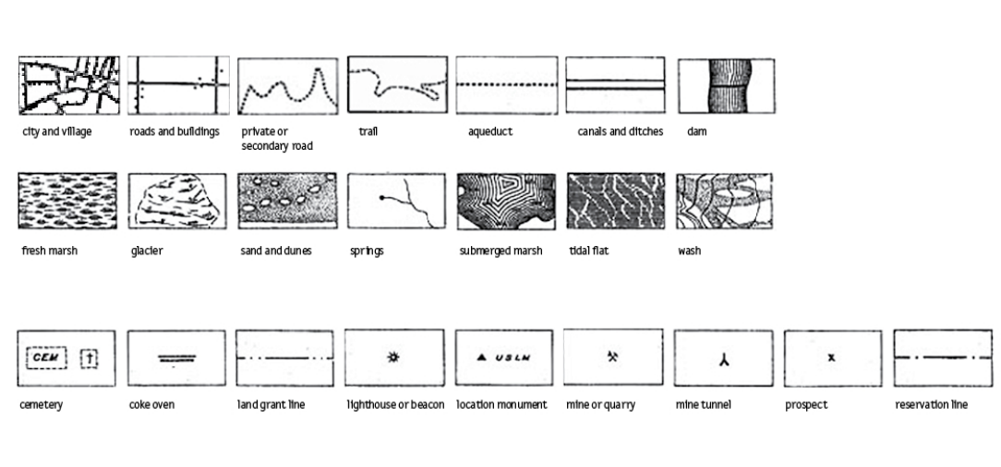


**United States Public Land Survey, 1785**

Adopted by the Continental Congress, in 1785, the United States Public Land Survey divided lands west of the original colonies into square townships subdivided into 1-square mile grids. While the rectalinearity of the grid ignored the natural topographies of the land, it proved an expedient device for surveying the vast western lands. The grid followed the westward course of the railroads, defining the American landscape.

**1785**
The U.S. Land Ordinance for the Western Territory sets the stage for a rectangular survey grid across the United States. Gunter's chain is utilized to conduct the survey.

**1794**
*A General Plan for Laying Out Towns and Townships on New Acquired Lands in the East Indies, America or Elsewhere* is authored by Granville Sharp. Sharp's text provides a blueprint for town planning in colonial enterprises.


city and village
roads and buildings
private or secondary road
trail
aqueduct
canals and ditches
dam
fresh marsh
glacier
sand and dunes
springs
submerged marsh
tidal flat
wash
cemetery
coke oven
land grant line
lighthouse or beacon
location monument
mine or quarry
mine tunnel
prospect
reservation line

1800

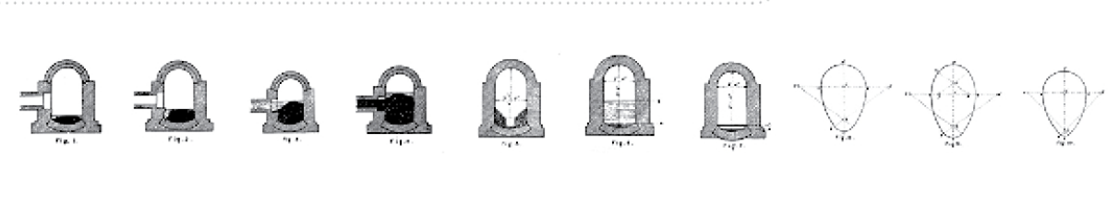
**1811**
Under the leadership of Mayor Dewitt Clinton and Surveyor John Randel Jr., the Commissioner's Plan surveys the island of Manhattan, establishing the island's famous gridiron.

**Sewerage Systems**

The expansion of cities spawned a crisis over the spread of disease and an outcry over the visible filth of city streets. Mid-nineteenth century sewerage systems, such as that pioneered in London (right), introduced a series of solutions for the conveyance of waste. Although water-based sewerage systems became the standard, alternative, more sophisticated, systems emerged later, but did not gain traction.

**1832**
England's "Ancient Lights Doctrine" is passed to ensure access to light for dwellings and working houses. The doctrine serves as a legal precursor to bulk (form) zoning.

**1835**
In response to cholera epidemics, England requires that sewers be at least 6 feet high to allow access for cleaning. These sewers convey refuse of all types.



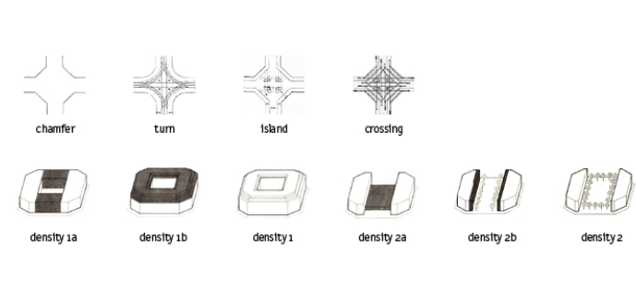
## CITY & GARDEN CODES

The rapid expansion of industrial cities in the United States and Europe during the mid-to-late nineteenth century precipitated widespread concern over overcrowding, disease, and antisocial maladies. Intellectuals of the era reacted to the pitfalls of urbanization by proposing a series of progressive utopian programs that reframed society's relationship to its environment. These utopias encouraged the dispersion of the population across the hinterland and redressed the conditions of the burgeoning slums.

**1855**
Baron Haussmann launches an ambitious campaign to modernize Paris. Buildings along the city's new boulevards are governed by precise height limits and facade treatments, an early example of form-based codes.

**1867**
New York's first Tenement Law is passed, governing access to light and density in tenement buildings being constructed across the rapidly expanding city.

**1867**
*A General Theory of Urbanization* is authored by Catalan Civil Engineer Ildefons Cerda in support of his plan for the expansion of Barcelona. Cerda's Plan for Barcelona arguably marks the first example of comprehensive planning.

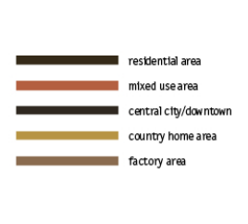

chamfer
turn
island
crossing
density 1a
density 1b
density 1
density 2a
density 2b
density 2

**A General Theory of Urbanization, Ildefons Cerda, 1867**

Considered by many to be the father of comprehensive planning, the Catalan civil engineer Ildefons Cerda published his *A General Theory of Urbanization* to support his plan for the extension of Barcelona (1859). The plan was revolutionary in many respects, including its attention to the arrangement of blocks and open spaces, traffic circulation, and municipal infrastructure systems.

**1885**
The City of Modesto bans steam laundries in residential areas. The regulation reflects a high degree of anti-Chinese sentiment in the 1880s, including the Chinese Exclusion Act of 1882.

**1891**
Germany, led by Reinhard Baumeister, was a pioneer in zoning. Many cities, including Frankfurt-am-Main and Berlin, passed zoning resolutions in the 1880s and 1890s. These proved highly influential to American reformers investigating zoning in the early 1900s.

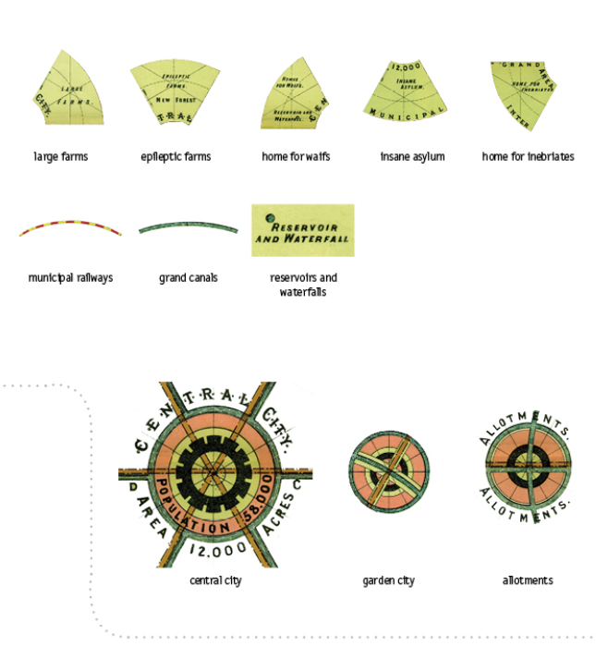

residential area
mixed use area
central city/downtown
country home area
factory area

**Frankfurt Zoning Ordinance, 1891**

Frankfurt's 1891 zoning ordinance was cited in New York City's 1916 zoning resolution. The ordinance regulated bulk (form) and land use, providing a template for American cities in the early nineteenth century. In contrast to early US zoning practices, Frankfurt and other cities embraced mixed-use districts.

**1893**
The World's Columbian Exposition is held in Chicago, IL. Designed by Daniel Burnham, Louis Sullivan, Frederick Law Olmsted among others, the fair marks the birth of the City Beautiful movement in America.

**1898**
*To-Morrow: A Path to Peaceful Reform* (later reprinted as *Garden Cities of Tomorrow*) by Ebenezer Howard is published. The Garden City movement in England and the United States focuses on new town planning, subdivision reform, and population decentralization.


large farms
epileptic farms
home for waifs
insane asylum
home for inebriates
municipal railways
grand canals
RESERVOIR AND WATERFALL
reservoirs and waterfalls
CENTRAL CITY
POPULATION 58000
AREA 12,000 ACRES
central city
garden city
ALLOTMENTS
allotments

**Garden City, Ebenezer Howard, 1898**

In his 1898 work, *To-Morrow, a Peaceful Path to Real Reform*, Ebenezer Howard articulated the potential for a new relationship between town and country. Inspired by the writings of Ralph Waldo Emerson and Henry David Thoreau, Howard's famed Garden City diagrams laid the groundwork for later thinkers in the garden city and new town movements in both Britain and the United States.

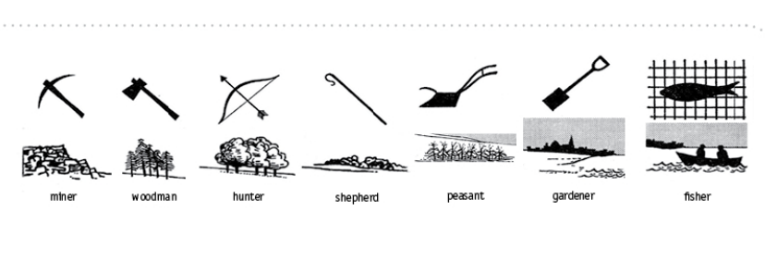
**1899**
The U.S. Congress sets building height restrictions for Washington D.C. The restrictions are aesthetic in nature and intended to preserve the dominance of the Capitol on the skyline.

> "State simplifications can be considered part of an ongoing "project of legibility," a project that is never fully realized... The radically simplified city plan, provided it is viewed from above, is practical and efficient... The logic behind the spatial segregation and zoning is at once aesthetic, scientific, and practical... it led to visual regularity – even regimentation... it reduced the number of unknowns, for which the planner had to find a solution... too many unknowns in urban planning rendered any solution problematic, or else requiring heroic assumptions... urban planning, is a short step from parsimonious assumptions to the practice of shaping the environment, so that it satisfies the simplifications required by the formula... Compared to uniformity, diversity is always more difficult to design, build, and control."
>
> – James C. Scott, 1998
> Seeing Like A State: How Certain Schemes to Improve the Human Condition Have Failed

1900

**1904**
Boston introduces building height restrictions, with maximums of 45 feet for wooden buildings, 125 feet in business districts, and 80 feet elsewhere in the city.

**1909**
Scottish biologist and town planner Patrick Geddes publishes his "valley section," relating man, labor, and landscape. Geddes is among the first to articulate early principles of regional planning.


miner
woodman
hunter
shepherd
peasant
gardener
fisher

**Valley Section, Patrick Geddes, 1909**

A Scottish biologist and pioneering town and regional planner, Patrick Geddes admonished the "dreary" gridiron city plans of his era. He sought instead to understand the observable relationship between landscape, labor, and man. His approach influenced and foreshadowed later developments in regional planning and landscape architecture, especially the work of Ian McHarg.

**1909**
The first National Conference on City Planning conference is held in Washington D.C. Reformer and conference organizer Benjamin Marsh of New York issues a pamphlet extolling the merits of German zoning. A divide soon emerges between reformist "housers" and physical planners.

## CODES OF LIGHT & AIR

The unabated growth of cities in the United States, and of New York City in particular, prompted lawmakers to pass the first zoning regulations in 1916. While these regulations sought to prevent the kinds of skyscraper canyons emerging in Lower Manhattan during the first decades of the twentieth century, zoning advocates quickly expanded zoning's reach into planning and reform. By the 1920s, zoning had become a means of regulating industry and nuisances, ensuring lower densities, and protecting single-family residential districts. In the process, zoning assumed a more pernicious purpose - the exclusion of certain races and lower social classes.

**1909**
Forest Hills Gardens is founded in Queens, New York. Designed by Olmsted, Olmsted & Eliot and financed by the Russell Sage Foundation, the development serves as an exemplar of garden city planning in the United States, one of several precedents to build upon Ebenezer Howard's vision.

**1913**
In an article entitled "Efficiency in City Planning," planning consultant George B. Ford of New York describes the elements of a comprehensive plan, shifting the focus of planning from "The City Beautiful" to "The City Practical."

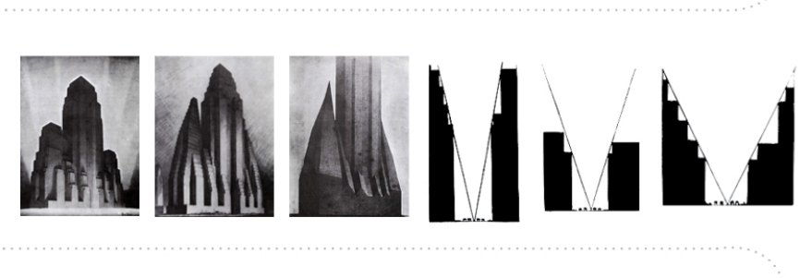
**1914**
Flavel Shurtleff, commissioned by Frederick Law Olmsted Jr. to conduct a survey on the legal instruments and authorities of city planning, publishes "Carrying Out a City Plan." His work notes the severe restrictions on cities to regulate private property.

**New York City Zoning Ordinance, 1916**

In 1916, New York City became the first city in the United States to adopt a zoning resolution. New York City's zoning code crafted a new relationship between light, buildings, and streets, giving rise to a "wedding-cake" form of skyscraper that became an emblematic part of the city's landscape until zoning reform in the early 1960s.

**1915**
The construction of the Equitable Building in New York City's Financial District prompts the city to pursue the adoption of a comprehensive new zoning resolution.

**1916**
Led by Edward Bassett, New York City adopts the first comprehensive zoning resolution, governing bulk, use, and density. New York's zoning resolution marks the beginning of a pattern of 'zoning before planning' in American cities.



> "Zoning was the heaven-sent nostrum for sick cities, the wonder drug of planners, the balm sought by lending institutions and householders alike. City after city worked itself into a state of acute apprehension until it could adopt zoning ordinance."
>
> – Mel G. Scott, 1969
> American City Planning Since 1890

1920

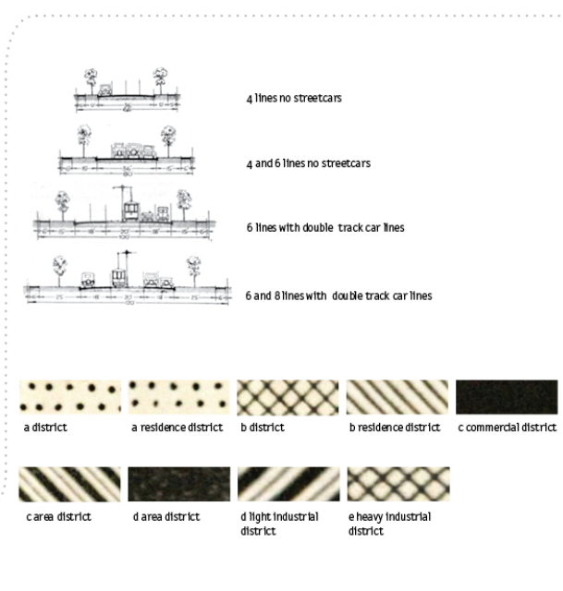
**The Metropolis of Tomorrow, Hugh Ferriss**

In 1922, the architect Harvey Wiley Corbett commissioned Hugh Ferriss to draw four perspectives that could articulate the formal consequences of the 1916 zoning laws. These perspectives, which have since become emblems of Gotham in the 1920s, were later featured in Ferriss' 1929 book, *The Metropolis of Tomorrow.*

**1922**
The US Department of Commerce publishes the Standard State Zoning Enabling Act. The act establishes a legal authority for states to pass zoning ordinances.

**1922**
The Supreme Court case Pennsylvania Coal Co. v. Mahon becomes the first decision to hold a land use restriction as a taking (of property). The case reflects the contested constitutionality of zoning in the early 1920s.

**1923**
*The Plan for Wichita* by prolific planner-civil engineer Harland Bartholomew, is adopted. While emblematic of most comprehensive plans of the era, it was one of few of its time that contained a section on housing, significant in a decade when housing interests remained on the fringe of urban planning.

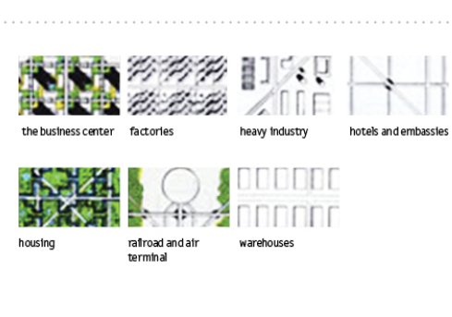

4 lines no streetcars
4 and 6 lines no streetcars
6 lines with double track car lines
6 and 8 lines with double track car lines
a district
a residence district
b district
b residence district
c commercial district
c area district
d area district
d light industrial district
e heavy industrial district

**Plan for Wichita, Harland Bartholomew, 1923**

A prolific urban planning consultant and civil engineer from the 1920s through the 1950s, Harland Bartholomew made comprehensive plans for countless American cities. Bartholomew's *Plan for Wichita* reflects the logic of land use and transportation planning that was emerging in the United States in the 1920s.

**1923**
Ohio passes a law, authored by lawyer-planner Alfred Bettman, allowing cities with adopted long-range plans the ability to regulate subdivisions within three miles of their boundaries. The law marks one of several early attempts to give force to long range and regional planning ambitions.

**1924**
Le Corbusier presents his proposal for *Le Ville Radieuse (The Radiant City)*, which will serve as a defining project in the history of modernist urban planning. The design rejects the old city in favor of an urbanism composed of interlocking open spaces and superblocks.

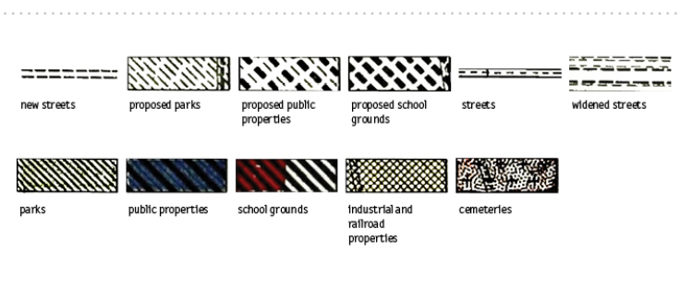

the business center
factories
heavy industry
hotels and embassies
housing
railroad and air terminal
warehouses

**Ville Radieuse, Le Corbusier, 1924**

Le Corbusier's *Le Ville Radieuse* (*The Radiant City*) served as an inspiration for many of the utopian ideals of the modernist era. The project mirrored the logic of single-use zoning and presaged the design, if not the urbanism, that would emerge as part of urban renewal clearance schemes beginning in the 1930s and peaking in the late 1950s and 1960s.

**1925**
*The Metropolitan Master Plan for Cincinnati* is adopted. Authored by George Ford, E.P. Goodrich, and Ladislas Segoe, with the legal aid of Alfred Bettman, the plan is the most advanced of its age. The authors attempt to make adherence to the plan compulsory, but the legal provision fails to take hold.

**1925**
*The City Plan for Asheville*, NC is adopted. The plan is part of major body of plans authored by John Nolen, an original member of the National Conference on City Planning and the American Institute of Planners. Nolen lamented that three times as many cities had adopted zoning resolutions as long-range plans in 1927.

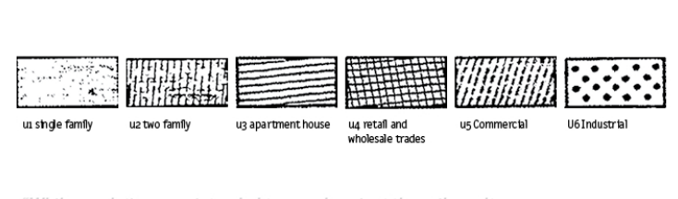

new streets
proposed parks
proposed public properties
proposed school grounds
streets
widened streets
parks
public properties
school grounds
industrial and railroad properties
cemeteries

**City Plan for Asheville, NC John Nolen, 1925**

Like Harland Bartholomew, John Nolen crafted countless plans for American cities in the first three decades of the twentieth century. Trained as a landscape architect, Nolen's practice hybridized emerging planning ideals with a rich legacy of park system planning. His works evidence new spatial ideas and priorities emerging in the 1920s, including playgrounds for children and proposed street widenings.

**1926**
Planners, including John Nolen, Robert Whitten, and Frederick Law Olmsted Jr. descend on the "boom-delirious" state of Florida to test new concepts in city planning. Nolen's 1926 general plan for Venice, Florida, reflects emerging planning ideals in neighborhood design and development.

**1926**
The Supreme Court decision of Village of Euclid v. Ambler Realty upholds the constitutionality of zoning, paving the way for jurisdictions around the United States to pass zoning resolutions.


u1 single family
u2 two family
u3 apartment house
u4 retail and wholesale trades
u5 Commercial
U6 Industrial

> "While regulations are intended to guard against the evil results of ignorance and greed on the part of landowners and builders, they also limit and control the operations of those who are neither ignorant nor greedy... such regulations are, and always should in a state of flux and adjustment..."
>
> – Fredrick Law Olmsted Jr., 1916
> Basic Principles of City Planning

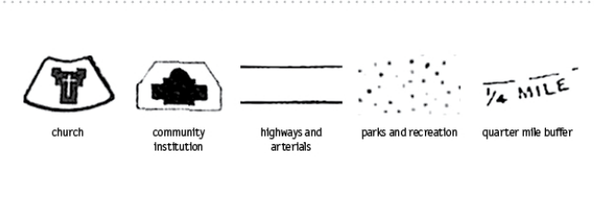
**Euclid v. Ambler Realty Village of Euclid Zoning Map, 1926**

A landmark court decision that supported the constitutionality of zoning based on the "police power" of the state, Euclid v. Ambler paved the way for zoning ordinances to become commonplace in local jurisdictions around the country. The case stemmed from Ambler Realty's contention that village zoning laws had taken away their right to use the land to its most profitable extent.

**1928**
The US Department of Commerce issues the Standard City Planning Enabling Act. The Act aims to ensure a balance between zoning and long-range master planning.

**1929**
*The Metropolis of Tomorrow* by delineator Hugh Ferriss illustrates the formal consequences of New York City's zoning ordinance.

**1929**
"The Neighborhood Unit" by Clarence Perry is published. Perry lays the groundwork for subdivision regulations later passed by the federal government and reflects a renewed emphasis on housing and neighborhoods in city planning.

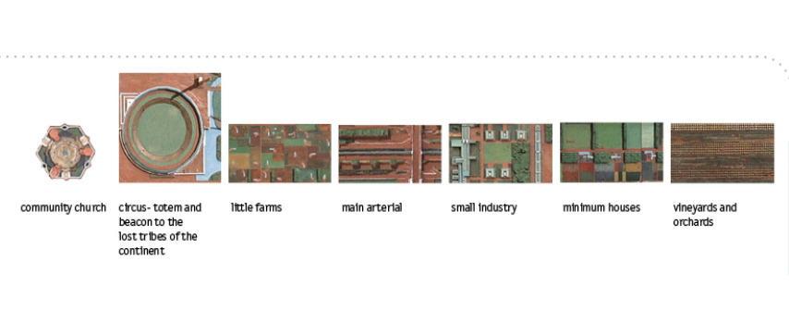

church
community institution
highways and arterials
parks and recreation
1/4 MILE
quarter mile buffer

**The Neighborhood Unit, Clarence Perry, 1929**

Published as a section of *The Regional Plan of New York and Its Environs*, Clarence Perry's "Neighborhood Unit" foregrounded the neighborhood as the essential unit of planning. Diagrams for the scheme articulated the relationship between community services, like schools and churches, open space, and circulation. The Neighborhood Unit approach became a cornerstone of the federal government's subdivision standards for new communities beginning in the 1930s.

**1930**
The US National Institute of Transportation Engineers (ITE) is formed. The institute will go on to become a standard-bearer for roadway design and subdivision controls.

**1932**
Presented in his book *The Disappearing City* in 1932, Frank Lloyd Wright's Broadacre City was exhibited in a stunning model exhibition at Rockefeller Center three years later. Broadacre City illustrated a horizontal, decentralized landscape of single-family homes, farms, towers, and flying machines.


community church
circus- totem and beacon to the lost tribes of the continent
little farms
main arterial
small industry
minimum houses
vineyards and orchards

**Broadacre City, Frank Lloyd Wright, 1932**

While less influential in urban policy or modernist dialogues, Wright's agrarian utopia reflected the ethos of the age, establishing across the vast American grid a Jeffersonian utopia of amazing proportions. Wright's vision embellished and celebrated the looming age of suburbanization, while drawing upon the garden city ideals earlier established by Ebenezer Howard.

**1934**
The U.S. Federal Housing Administration (FHA) under the National Housing Act is established. Its underwriting procedures quickly become the standard for residential mortgages.

**1935**
FHA's "Property Standards and Subdivision Development Standards" are introduced. The standards argue against gridiron plans in favor of cul-de-sacs, courts, and curvilinear streets.

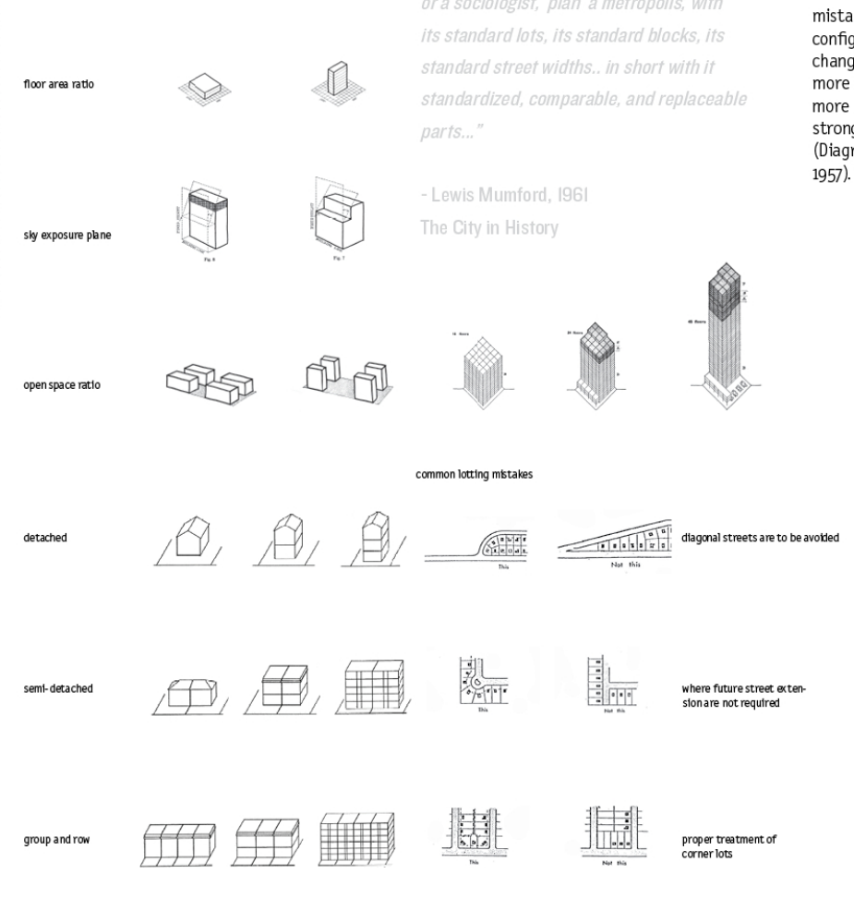
**The Urban Pattern: Zoning and Subdivision Rules**

In the 1930s and 1940s, a number of publications set new standards for streets and subdivisions that would reshape cities. Many of the early standards sought to correct past mistakes in lot layouts and street configurations. In the 1960s, cities changed their zoning to accomodate more public space at ground level, more parking provisions, and stronger loading requirements. (Diagrams from *The Urban Pattern*, 1957).

> "With a T-square and a triangle, finally the municipal engineer could, without the slightest training as either an architect or a sociologist, 'plan' a metropolis, with its standard lots, its standard blocks, its standard street widths... in short with it standardized, comparable, and replaceable parts..."
>
> – Lewis Mumford, 1961
> The City in History

**1936**
*Model Laws for Planning Cities, Counties and States, Including Subdivision Regulations and Protection of Official Map* by Edward Bassett is published.

**1936**
*Model Subdivision Regulations* is produced by Advisory Committee on City Planning and Zoning.


floor area ratio
sky exposure plane
open space ratio
common lotting mistakes
detached
diagonal streets are to be avoided
semi-detached
where future street extension are not required
group and row
proper treatment of corner lots

**1939**
*Land Subdivision* by the American Society of Civil Engineers is published. New subdivision laws aimed to correct haphazard gridiron platting with more "logical" layouts for new areas of the city.

**1939**
At the New York World's Fair of 1939, Norman Bel Geddes' Futurama exhibit in the General Motors Pavilion depicts the automotive city of tomorrow, engendering a vision of modernity whose impact was comparable to that of the Chicago Columbian Exposition of 1893.

## THE COMPREHENSIVE CODE

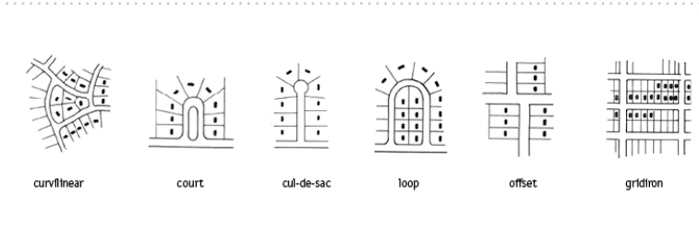
The 1956 Interstate Highway Act and landmark Federal Housing Acts in 1949 and 1954 set in motion urban renewal programs that reconfigured US cities from the the 1950s through the 1970s. Highway and urban renewal funds displaced thousands of people, uprooting many ingrained communities of color, while tearing districts of the city apart from one another permanently. Urban renewal opened the doors to test modern ideas of city making and city form, resulting in changed landscape of modern office buildings, housing towers, shopping atriums, one-way streets, and multi-level parking edifices.

1940

**1941**
The United States constructs a number of "bomber towns" for wartime housing near major production centers. The towns provide an opportunity to test housing and urban design principles that will become common in the 1950s and 1960s.

**1942**
The "Traffic Engineering Handbook" is published by the Institute of Traffic Engineers (ITE).

**1947**
*A Checklist for the Review of Local Subdivision Controls* is published by the US National Housing Agency.

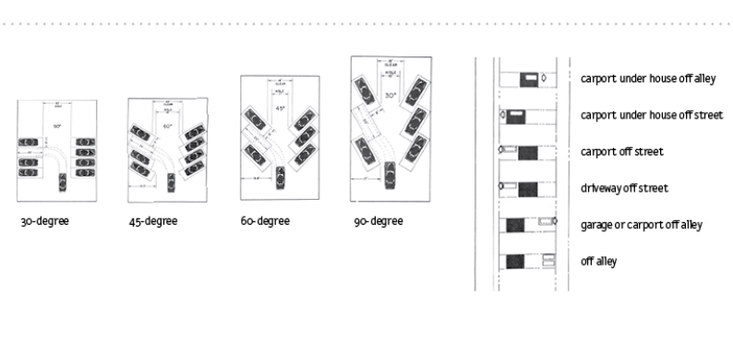

curvilinear
court
cul-de-sac
loop
offset
gridiron

**Roadway and Subdivision Standards**

Standards for subdivisions and roadways proliferated from the 1930s through the 1950s. Many of these standards became deeply embedded in federal guidelines and regulations. They changed patterns of circulation in and through cities.

**1949**
The passage of landmark Federal Housing legislation provides federal financial assistance for slum clearance. The post-war urban renewal period begins.

**1952**
Growing automobile ownership and rising demand for off-street parking gave rise to a new science for parking layouts and minimum requirements. Parking frustrated downtown business interests and residents and emerged as a critical concern in codes for suburban shopping precincts and subdivisions.

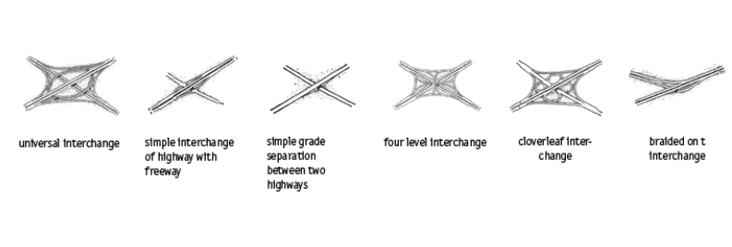

30-degree
45-degree
60-degree
90-degree
carport under house off alley
carport under house off street
carport off street
driveway off street
garage or carport off alley
off alley

**Parking Provisions**

Alongside the expansion of highways and growing automobile ownership, the science of parking evolved to combat the perceived deficiencies of downtowns, as well as the promise to prevent potential logjams at the burgeoning periphery.

**1954**
A corrective to the flaws of the 1949 Housing Act, a second federal Housing Act was passed in 1954. The Act had a broader scope than its predecessor, with funding for rehabilitation as well as demolition in designated urban renewal areas.

**1956**
The passage of the Interstate Highway Act opens up significant federal funding for the reconstruction of cities, including limited access urban freeways and transcontinental highways. The program caused massive displacement in urban cores.

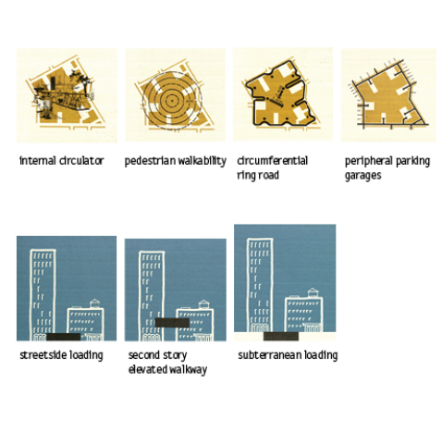

universal interchange
simple interchange of highway with freeway
simple grade separation between two highways
four level interchange
cloverleaf interchange
braided on t interchange

**The Interstate Highway Act, 1956**

The Interstate Highway Act of 1956 reshaped cities around the United States in profound ways. The highways displaced neighborhoods whole cloth, created easy access to, and (crucially) out of, downtowns, and enabled the dispersion of populations and businesses across metropolitan regions.

**1956**
The first enclosed shopping mall, the Southdale Center, opens in Edina, Minnesota.

**1956**
Victor Gruen's "A Greater Fort Worth Tomorrow" prescribes a tonic for tired cities and declining downtown revenues. The plan proposes to turn the city center into a pedestrian area. Cities around the country refer to the plan as a model for downtown revitalization.


internal circulator
pedestrian walkability
circumferential ring road
peripheral parking garages
streetside loading
second story elevated walkway
subterranean loading

**A Greater Fort Worth Tomorrow, Victor Gruen Associates, 1956**

Gruen's seminal plan for reviving the American downtown sought to counterbalance the deleterious impact of suburban malls on urban retail. The plan offered a model for revitalization that countless cities followed and was characterized by lively pedestrian malls, immense parking garages, and ring roads.

**1957**
F. Stuart Chapin authors "Urban Land Use Planning," which becomes a standard professional text for social scientific land use planning.

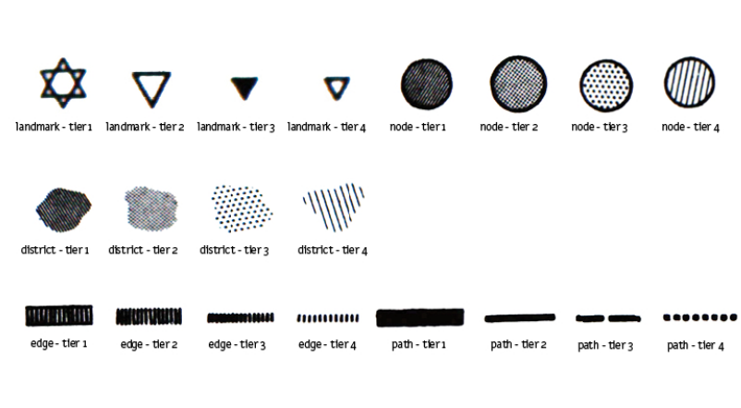
## CODE WITH NATURE

In 1969, the Cuyahoga River outside of Cleveland, Ohio caught fire. Pollution, once seen as a necessary consequence of industrial prosperity, gave way to a $100 million public bond initiative to fund the river's cleanup, signaling the start of environmental regulations and planning. As the urban renewal era came under increasing scrutiny from both citizens and academics, practitioners devised new modes of analysis and engagement to better comprehend both communities and environmental processes. The critiques of Jane Jacobs and Susan Sontag in the early 1960s and the race riots and environmental crises of the late 1960s catalyzed a transformative shift away from the precepts of modernism towards countermovements based in social and environmental justice.

**1959**
"A Multiple Land Use Classification System" by A. Guttenberg is published in the Journal of the American Institute of Planners. This signifies the first approach to the definition of land use classifications in multi-dimensional terms.

1960

**1960**
In his landmark publication, *The Image of the City*, Kevin Lynch engages users to create mental maps of the city. Lynch's methodology underscores a shift towards novel methods of engagement and environmental perception.

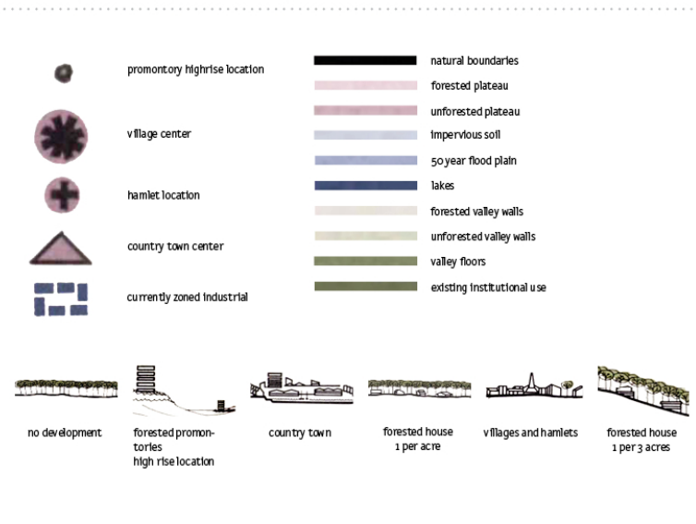

landmark - tier 1
landmark - tier 2
landmark - tier 3
landmark - tier 4
node - tier 1
node - tier 2
node - tier 3
node - tier 4
district - tier 1
district - tier 2
district - tier 3
district - tier 4
edge - tier 1
edge - tier 2
edge - tier 3
edge - tier 4
path - tier 1
path - tier 2
path - tier 3
path - tier 4

**The Image of the City, Kevin Lynch, 1960**

Lynch's hallmark study of how ordinary people perceive and interact with their environments pioneered new methods of reading the 'legibility' of cities. Lynch's work, along with a host of other critiques of prevailing planning practice, prompted planners to seek new methods of engagement as a genesis for city design.

**1962**
Fairfax County becomes the first jurisdiction to establish a residential planned community zone, a precursor to the Planned Unit Development (PUD).

**1964**
Led by David Wallace and Ian McHarg, The "Plan for the Valleys" tested new methods of environmental and regional planning. McHarg, who led the University of Pennsylvania's School of Landscape Architecture, emerged as a leader in the environmental planning field.

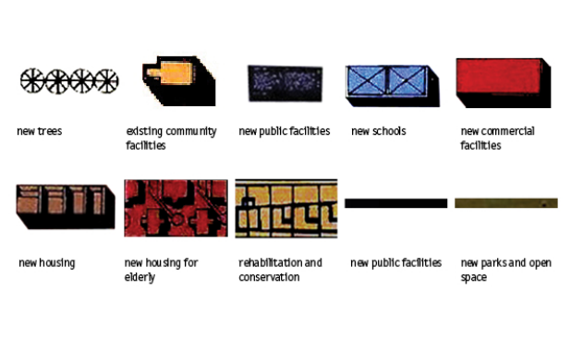

promontory highrise location
village center
hamlet location
country town center
currently zoned industrial
natural boundaries
forested plateau
unforested plateau
impervious soil
50 year flood plain
lakes
forested valley walls
unforested valley walls
valley floors
existing institutional use
no development
forested promontories high rise location
country town
forested house 1 per acre
villages and hamlets
forested house 1 per 3 acres

**Plan for the Valleys, Wallace-McHarg Associates, 1964**

David Wallace and Ian McHarg's "Plan for the Valleys" synthesized the environmental planning techniques and processes later detailed in Ian McHarg's 1969 work "Design with Nature." These methods became prevailing analytical techniques for analyzing local and regional ecosystems that were eventually embedded in GIS software.

**1965**
The Standard Land Use Coding Manual (SLUCM) is published to coordinate data collection and coding activities under the Urban Renewal Administration and the Bureau of Public Roads.

**1965**
The 1965/1975 General Plan for Boston and the Regional Core captured the vast urban renewal program planned for Boston's core in the mid-1960s. The plan epitomized the scale of impact urban renewal plans could have in older communities and business districts.

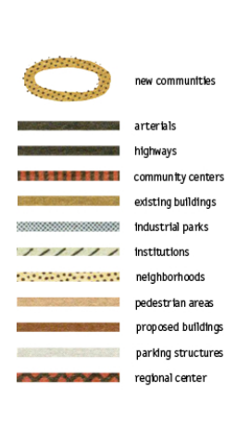

new trees
existing community facilities
new public facilities
new schools
new commercial facilities
new housing
new housing for elderly
rehabilitation and conservation
new public facilities
new parks and open space

**Boston Redevelopment Authority, General Plan for the City of Boston and the Regional Core, 1965/1975**

Under Boston Redevelopment Authority Director Edward Logue, Boston received significant urban renewal funds. Redevelopment efforts strove to rehabilitate the urban core and surrounding neighborhoods, engendering some of the most controversial and well documented clearance projects in history.

**1966**
The U.S. National Historic Preservation Act is passed, signaling the advent of historic preservation efforts nationwide.

**1966**
The Dubuque Development Plan is adopted. The plan reflects new ideas emerging within urban planning, including the advent of new towns like Columbia, MD and environmental analyses.


new communities
arterials
highways
community centers
existing buildings
industrial parks
institutions
neighborhoods
pedestrian areas
proposed buildings
parking structures
regional center

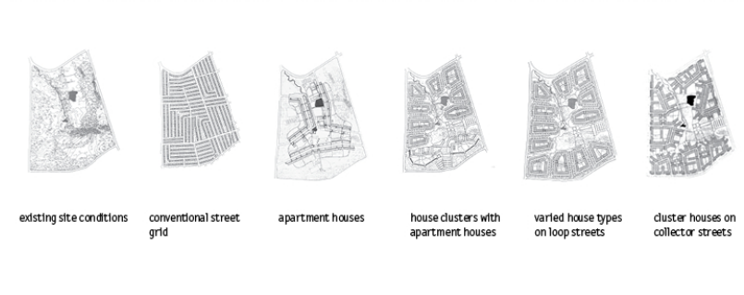
> "Planning is the means by which the discipline of science applied to human affairs will enable man to incarnate his purposes. It is the inevitable link between means and ends. Moreover, it is in itself an inspiring ideal. For once it is realized that there is no harmony of nature, no divine or other purpose hidden beneath the flux and chaos of present planlessness, it becomes immoral to let poverty, ignorance, pestilence, and war continue if they can be obliterated by a "plan."
>
> – Dwight Waldo, 1948
> The Administrative State

**Plan for Dubuque, IA Victor Gruen Associates, 1966**

Urban renewal era plans for smaller cities like Dubuque proposed ambitious development programs to save downtown retail and offices. Nonetheless, many small and mid-sized cities saw downtown fortunes continue to diminish during the 1960s and 1970s.

**1968**
The Housing and Urban Development Act of 1968 opens up federal funding for "new towns." The act shifts urban policy away from slum clearance and blight remediation programs.

**1968**
Mayor John Lindsay of New York City creates the New York City Urban Design Group, which establishes planned unit development standards to encourage better subdivision development practices.

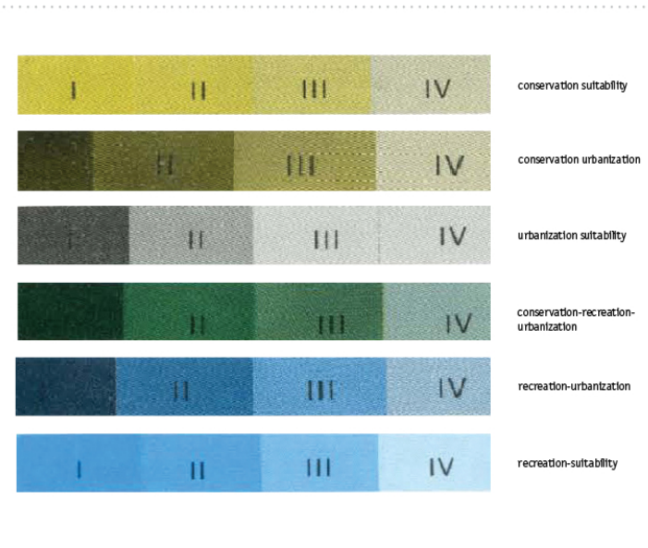

existing site conditions
conventional street grid
apartment houses
house clusters with apartment houses
varied house types on loop streets
cluster houses on collector streets

**Planned Unit Developments**

Beginning in the early 1960s, and becoming commonplace in the 1970s, Planned Unit Developments (PUDs) and Special Districts emerged as strategies to introduce flexibility and creativity into the conventional zoning framework.

**1969**
The passage of the National Environmental Policy Act (NEPA) of 1969, establishes a broad national framework for protecting the natural environment across the country.

**1969**
*Design with Nature* by Ian McHarg is published. The book synthesizes McHarg's environmental analysis techniques and marks a major shift towards large scale regional and landscape planning.


I
II
III
IV
conservation suitability
conservation urbanization
urbanization suitability
conservation-recreation-urbanization
recreation-urbanization
recreation-suitability

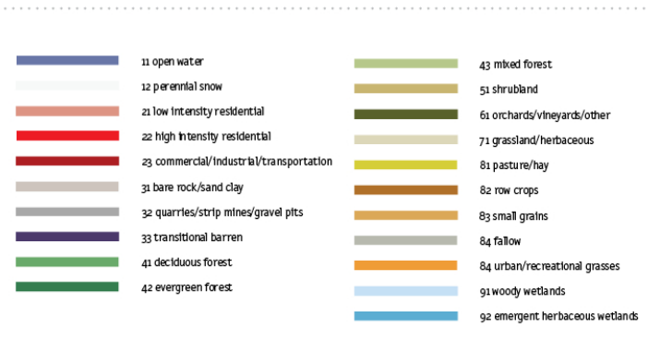
**Design with Nature, Ian McHarg, 1969**

McHarg's *Design with Nature* was a watershed in the field of environmental planning, landscape architecture, and design. It introduced step-by-step methods of analysis for regional planning, including attention to topography, water, climate, and soils as constraints on urbanization.

**1972**
The passage of the federal Clean Water Act of 1972 establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.

**1975**
"The Cleveland Policy Plan Report" created under Norman Krumholz shifts the emphasis from traditional land use planning to advocacy planning one year after Richard Nixon effectively cancels the federal urban renewal program.

**1976**
"A Land Use and Land Cover Classification System with Remote Sensor Data" by James R. Andersen is published. The National Land Cover Database (NLCD) emerges as a multi-dimensional, natural resource-based alternative to the standard land-use coding manual (SLUCM). (Legend above from 1992.)


11 open water
12 perennial snow
21 low intensity residential
22 high intensity residential
23 commercial/industrial/transportation
31 bare rock/sand/clay
32 quarries/strip mines/gravel pits
33 transitional barren
41 deciduous forest
42 evergreen forest
43 mixed forest
51 shrubland
61 orchards/vineyards/other
71 grassland/herbaceous
81 pasture/hay
82 row crops
83 small grains
84 fallow
84 urban/recreational grasses
91 woody wetlands
92 emergent herbaceous wetlands

**National Land Cover Database**

Emerging out of environmentalism and the advent of aerial and satellite photography in the 1970s, USGS chief geographer James Andersen proposed a new classification system to codify land cover and material. The classification system proposed by Andersen would eventually become a standard means of depicting large scale land characteristics, assuming the role of earlier USGS maps. The system employs multi-level coding with numbers as well as color categories.

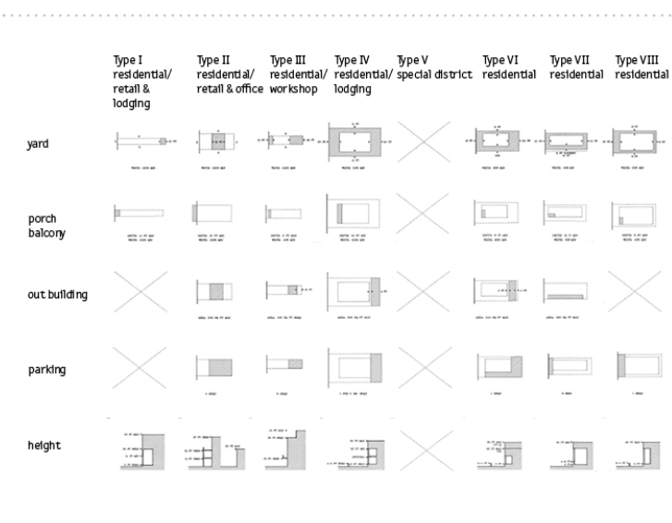
**1978**
A Supreme Court case resulting from a controversy over a tower proposed over Grand Central Station in New York designed by Marcel Breuer results in the foundation of Transfer of Development Rights (TDR) as a zoning tool.

## FORM-BASED CODES

Architectural codes that govern the shape, orientation, and detail of buildings have a long history, yet a new generation of form-based codes has over the past several decades embedded itself within zoning ordinances across the United States. The rise of form-based codes has been fueled by the movements of New Urbanism and Smart Growth, which have together aimed to control the haphazard sprawl of the horizontal metropolis in favor of polynodal, transit-oriented development. Form-based codes have proven to be a highly effective, if controversial, instrument for shaping the environment, but have also come under attack for espousing an aesthetic of parochial nostalgia.

1980

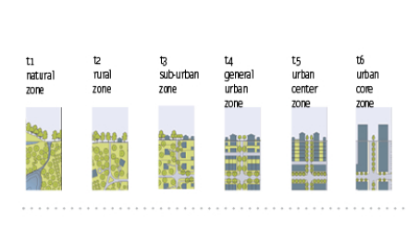
**1984**
Construction begins on Seaside, Florida, the first comprehensive New Urbanist community designed by Andres Duany and Elizabeth Plater-Zyberk.


Type I residential/retail & lodging
Type II residential/retail & office
Type III residential/workshop
Type IV residential/lodging
Type V special district
Type VI residential
Type VII residential
Type VIII residential
yard
porch balcony
out building
parking
height

**Urban Code for the Town of Seaside, Andres Duany and Elizabeth Plater-Zyberk, 1984**

Seaside, Florida was the first comprehensively planned New Urbanist community in the United States. Seaside's architects devised a complex urban code that could operate explicitly within the language of modern zoning - devising a system compatible with existing zoning practice and redevelopment. While the code has use-restrictions, it is predominantly form-based in its orientation.

**1987**
In Nollan v. California Coastal Commission, the Supreme Court rules that there must be an "essential nexus" (direct relationship) between state interests and the granting a permit condition on private property.

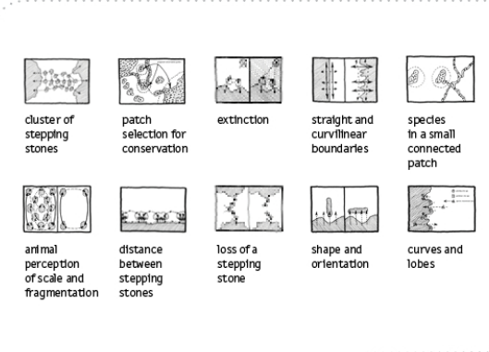

t1 natural zone
t2 rural zone
t3 sub-urban zone
t4 general urban zone
t5 urban center zone
t6 urban core zone

**The Transect, New Urbanism**

The Transect has emerged as a foundational element of New Urbanism's contextual coding strategy. The transect organizes streets, uses, and building types according to a density gradient within the larger regional hierarchy, deliberately referencing and adapting the valley section Patrick Geddes pioneered in the early 1900s.

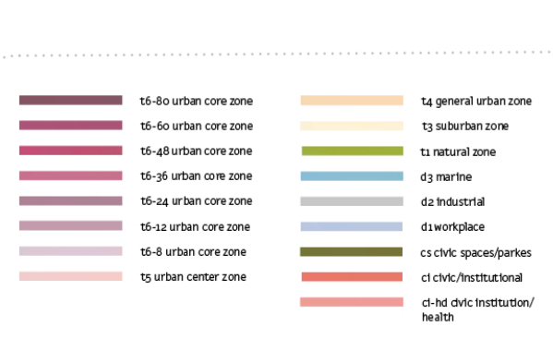
**1992**
In Lucas v. South Carolina Coastal Council, the Supreme Court limits the state's ability to restrict private property without compensation.

**1995**
A seminal publication integrating ecology and urban design, *Land Mosaics: The Ecology of Landscapes and Regions* by Richard Forman is published.


cluster of stepping stones
patch selection for conservation
extinction
straight and curvilinear boundaries
species in a small connected patch
animal perception of scale and fragmentation
distance between stepping stones
loss of a stepping stone
shape and orientation
curves and lobes

**Land Mosaics, Richard Forman, 1995**

A seminal text in landscape ecology, Forman's *Land Mosaics* has synthesized a new language for analyzing natural systems in the context of regional landscapes. The natural processes coded by Forman emerge as a foundation for critically understanding ecological principles in urban contexts.


t6-80 urban core zone
t6-60 urban core zone
t6-48 urban core zone
t6-36 urban core zone
t6-24 urban core zone
t6-12 urban core zone
t6-8 urban core zone
t5 urban center zone
t4 general urban zone
t3 suburban zone
t1 natural zone
d3 marine
d2 industrial
d1 workplace
cs civic spaces/parkes
ci civic/institutional
ci-hd civic institution/health

**Miami-21, 2010**

The most ambitious recent attempt by a city to introduce form-based zoning. Miami-21 adapts elements of the New Urbanist transect to create a more nuanced zoning hierarchy. The code is based on a formal reading of the landscape in context and represents both the crystallization of the New Urbanist coding ideal.

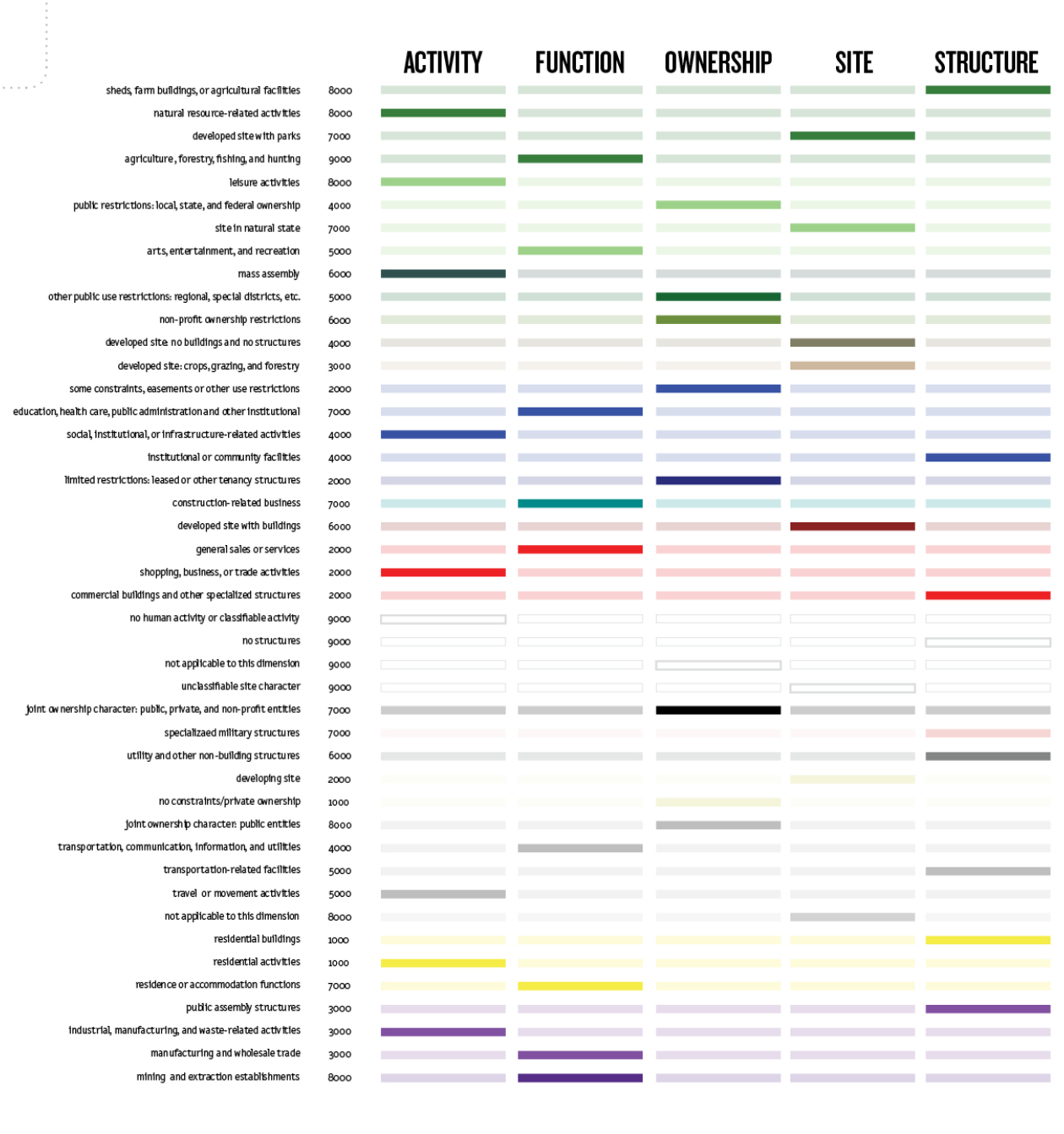
**1999**
*Traditional Neighborhood Development Street Design Guidelines* are developed by the Institute for Transportation Engineers (ITE). The guidelines express a preference for slow, historic street patterns and context-sensitive design.

## LAND BASED CLASSIFICATION STANDARDS

Beginning with the Standard Land Use Classification Manual (SLUCM) in 1965, planners and policymakers have pursued a consistent national classification scheme for land use, mapping, and codification. Recent efforts have yielded the Land Based Classification System (LBCS), which resulted from a partnership between the American Planning Association and the Federal Highway Administration. The LBCS is the only national-level attempt to standardize land-use coding for local, regional, and state land-use planning applications. The lack of a national land use policy, the static adherence to planometric projection, and the persistent substitution of zoning for planning has continued to frustrate those trying to productively shape cities and regions.

2000

**2000**
The American Planning Association and the Federal Highway Administration began updating the SLUCM in 1994 and published the Land Based Classification Standards (LBCS) in 2000.



| | | ACTIVITY | FUNCTION | OWNERSHIP | SITE | STRUCTURE |
|---|---|---|---|---|---|---|
| sheds, farm buildings, or agricultural facilities | 8000 | | | | | ▬ |
| natural resource-related activities | 8000 | ▬ | | | | |
| developed site with parks | 7000 | | | | ▬ | |
| agriculture, forestry, fishing, and hunting | 9000 | | ▬ | | | |
| leisure activities | 8000 | ▬ | | | | |
| public restrictions: local, state, and federal ownership | 4000 | | | ▬ | | |
| site in natural state | 7000 | | | | ▬ | |
| arts, entertainment, and recreation | 5000 | | ▬ | | | |
| mass assembly | 6000 | ▬ | | | | |
| other public use restrictions: regional, special districts, etc. | 5000 | | | ▬ | | |
| non-profit ownership restrictions | 6000 | | | ▬ | | |
| developed site: no buildings and no structures | 4000 | | | | ▬ | |
| developed site: crops, grazing, and forestry | 3000 | | | | ▬ | |
| some constraints, easements or other use restrictions | 2000 | | | ▬ | | |
| education, health care, public administration and other institutional | 7000 | | ▬ | | | |
| social, institutional, or infrastructure-related activities | 4000 | ▬ | | | | |
| institutional or community facilities | 4000 | | | | | ▬ |
| limited restrictions: leased or other tenancy structures | 2000 | | | ▬ | | |
| construction-related business | 7000 | | ▬ | | | |
| developed site with buildings | 6000 | | | | ▬ | |
| general sales or services | 2000 | | ▬ | | | |
| shopping, business, or trade activities | 2000 | ▬ | | | | |
| commercial buildings and other specialized structures | 2000 | | | | | ▬ |
| no human activity or classifiable activity | 9000 | ▭ | | | | |
| no structures | 9000 | | | | | ▭ |
| not applicable to this dimension | 9000 | | | ▭ | | |
| unclassifiable site character | 9000 | | | | ▭ | |
| joint ownership character: public, private, and non-profit entities | 7000 | | | ▬ | | |
| specialized military structures | 7000 | | | | | ▬ |
| utility and other non-building structures | 6000 | | | | | ▬ |
| developing site | 2000 | | | | ▬ | |
| no constraints/private ownership | 1000 | | | ▬ | | |
| joint ownership character: public entities | 8000 | | | ▬ | | |
| transportation, communication, information, and utilities | 4000 | | ▬ | | | |
| transportation-related facilities | 5000 | | | | | ▬ |
| travel or movement activities | 5000 | ▬ | | | | |
| not applicable to this dimension | 8000 | | | | ▬ | |
| residential buildings | 1000 | | | | | ▬ |
| residential activities | 1000 | ▬ | | | | |
| residence or accommodation functions | 1000 | | ▬ | | | |
| public assembly structures | 3000 | | | | | ▬ |
| industrial, manufacturing, and waste-related activities | 3000 | ▬ | | | | |
| manufacturing and wholesale trade | 3000 | | ▬ | | | |
| mining and extraction establishments | 8000 | | ▬ | | | |

**2003**
Columbia Pike in Arlington, VA adopts one of the first form-based zoning codes.

**2005**
The SmartCode User's Manual is published by Duany Plater-Zyberk & Company. The code is intended as a template for municipal adoption.

**2010**
Miami-21, a form-based code for the city of Miami, is put into effect. The code represents one of the most comprehensive efforts to date to integrate New Urbanist ideals in a zoning code.

## THE THIRD CONDITION

The Southeast Florida Regional Climate Change Compact was executed by Broward, Miami-Dade, Monroe, and Palm Beach Counties in January 2010 to coordinate mitigation and adaptation activities across county lines. The Compact represents a new form of regional climate governance designed to allow local governments to set the agenda for adaptation while providing an efficient means for state and federal agencies to engage with technical assistance and support. A team of MIT planning and architecture students engaged with the governments of Palm Beach and Broward Counties to test a set of projective "resiliency" codes and standards as part of an Urban Design Studio taught in Fall 2015 by Adèle Naudé Santos, Alan Berger, and Fadi Masoud. The research ultimately searches for techniques that incorporate dynamic elements of ecological indeterminacy with the instrumentality of planning tools on the "Third Condition," a condition that is neither wet nor dry, but is constantly in a state of flux.

2015