# CHAPTER ONE

# INTRODUCTION



> Our streets and squares make up what we call the public realm, which is the physical manifestation of the common good. When you degrade the public realm, the common good suffers.
>
> —James Howard Kunstler

THE DESIGN OF CITIES begins with the design of streets. To make a good city, you need good streets, and that means streets where people want to be. Streets need to be safe and comfortable, they need to be interesting, and they need to be beautiful. They need to be places.

◀ **Figure 1.1:** Broad Street, New York, New York. Looking north on one of the main streets in New York City's financial district around 1905. *Library of Congress, Prints and Photographs Division, Detroit Publishing Company Photograph Collection, LC-D4-33881*

We often think of *buildings* when we think of urban design—as we should. Great streets require great buildings. Good streets can get by with merely good buildings; great or merely good, the art of architecture is clearly indispensable. But streets are the spaces between the buildings, and those spaces need the art of *placemaking*. Placemaking makes the street spaces into settings where people want to be. A place is not a place until there are people in it.

We'll look at great streets in this book and explore what made them great places. Most of them are beautiful, and so it is important to point out that the cliché about beauty being in the eye of the beholder is wrong: we all intuitively know beautiful places when we experience them. If we walk through an arcade in Venice and come out in the Piazza San Marco, no one has to tell us that this is a profound and uplifting experience. There can also be a great deal of beauty in everyday experience, as we see on many "ordinary" Main Streets


**Figure 1.2:** An "auto sewer" arterial that, except for the palm trees, could be Anywhere, USA. "The road is now like television, violent and tawdry. The landscape it runs through is littered with cartoon buildings and commercial messages. We whiz by them at fifty-five miles an hour and forget them, because one convenience store looks like the next. They do not celebrate anything beyond their mechanistic ability to sell merchandise. We don't want to remember them. We did not savor the approach and we were not rewarded upon reaching the destination, and it will be the same next time, and every time. There is little sense of having arrived anywhere, because everyplace looks like noplace in particular." — James Howard Kunstler, *The Geography of Nowhere*.

**Figure 1.3:** A placeless cul-de-sac: a residential auto sewer in Anywhere, USA. *Image courtesy of Megan McLaughlin*

in American small towns. When the buildings and trees lining the street give it a sense of enclosure, and the proportions and details form a harmonious whole, Main Street becomes a place where we want to linger, sharing a common experience with our neighbors and fellow citizens.

Tragically, we rarely build streets like that today. The overwhelming majority of the streets in America have been built since World War II, and most of them were built for cars rather than people—like the six-lane arterial road in the middle of nowhere lined with strip malls, shopping malls, big box centers, and the other detritus of modern suburban life (Figure 1.2). These cheaply built, poorly designed sites and buildings do not feel like authentic places to us: there is no there there.[1] The roads are what the writer James Howard Kunstler calls "auto sewers"—suburban "thoroughfares" sized by engineers to make the traffic flow like water in a pipe. Sometimes it seems more like sludge in a sewer pipe.

Not surprisingly, the streets that result look as though they were made for cars. No one walks on them if they can possibly avoid it (Figure 1.3). The problem with these streets is not just their location, far from anything except other shopping centers and big box stores. Their design and construction are bad for people, too. The scale is vast and frightening, speeding cars roar by, there are large swales where the sidewalk should be, and crossing the street is difficult, with long expanses between traffic lights. Even when you get to your destination, you still have to cross a large parking lot that has no sidewalks or shade trees. It's all ugly, and it's all depressing.

Fortunately, after decades of fleeing cities and old towns, Americans have embraced walkable towns and neighborhoods again. There's a common understanding that the automobile-based patterns of building made a physical environment inferior in many ways to the old pedestrian-based one, and that we need to remake our cities, towns, and streets for people. Accordingly, the Federal and local governments are appropriating billions of dollars in a well-intentioned—yet scattered and intermittent—effort to rebuild the nation's roads.

Less encouraging is that many of the professionals involved in remaking our streets bring with them the criteria and biases of their specialties, and that frequently prevents them from designing streets where people want to be. Bicycle specialists, pedestrian specialists, transit specialists, and even Complete Street specialists may understand the need to add a bike lane or a streetcar, but they often don't understand placemaking or the importance of the public realm. The professionals in charge usually continue the late-twentieth-century pattern of allocating most of the square footage there primarily to the motor vehicle and its movement—now with the movement of bicycles and buses added. They introduce innovations that make the street safer for those riding bikes or even traveling on foot, but at the same time they repeatedly diminish the space and beauty of the street for the walker. And when you diminish the public realm, you diminish the common good.

## THE TRADITIONAL STREET

The history of urban design and street design in Western civilization has its roots in ancient Rome and Athens. For the Greeks and the Romans, the city was the place where men and women came together to make a good and civilized life. The words "civil," "civilization," and "citizen" come from the Roman word for city, "civitas." From the ancient Greek word for city, "polis," we get "polite," "political," and "police," which reflect the classical idea that the city was a political body of citizens, as well as the place where they politely came together to create civilization. For centuries, the first job of the architect when designing a new building was to make or reinforce the public realm (Figure 1.5).

Ancient Romans talked about the public realm, which they called the *res publica,* as the place where the citizens came together in the *polis*. It was shaped by the buildings in the private realm (*res privata*). In *The Architecture of Community*, the architect and urban designer Léon Krier uses diagrams to show that each realm is incomplete without the other, while the two combine to

make the complete city (Figure 1.6).[2] In addition to open space (streets and squares and parks), the public realm also includes public buildings such as churches and town halls. Much of the art of traditional urban design and town planning consists of two things: shaping and programming the public realm into a place where pedestrians want to be, and strategically placing public buildings (such as a market or place of worship or theater) so that they are understood to be more important than the private buildings (Figure 1.4).

**Figure 1.4:** Old New York Police Headquarters, 240 Centre Street, New York, New York. Hoppin & Koen, 1905–1909. "The boldest conception of civic art makes it embrace not merely individual groups of buildings with their approaches and gardens but even entire cities. It is one thing to distribute fine groups of public buildings over the area of a city and to connect them effectively. It is a much more difficult thing to relate the entire city to such a scheme."—Werner Hegemann and Elbert Peets, *American Vitruvius: An Architects' Handbook of Civic Art.*

**Figure 1.5:** Paris, France. An aerial photograph of the Right Bank from the early twentieth century. The Church of the Madeleine is at the center, and the place de la Concorde below.

In the modern world, we also have the semipublic domain of stores, businesses, and places of entertainment, such as movie houses, restaurants, and nightclubs. Office buildings now frequently tower above the church steeples that used to be the tallest structures, and corporate headquarters like the Chicago Tribune Tower or the Woolworth Building in New York are distinguished from speculative office buildings by their monumentality and ornate architecture. All these buildings play a large part in making urban places where people want to be. Some of these spaces were meant to inspire a sense of grandeur; others were designed to be intimate. Most important, whether we are strolling through the ruins of the Roman Forum or exploring the streets of Back Bay, Boston, all of these environments were built to a human scale.

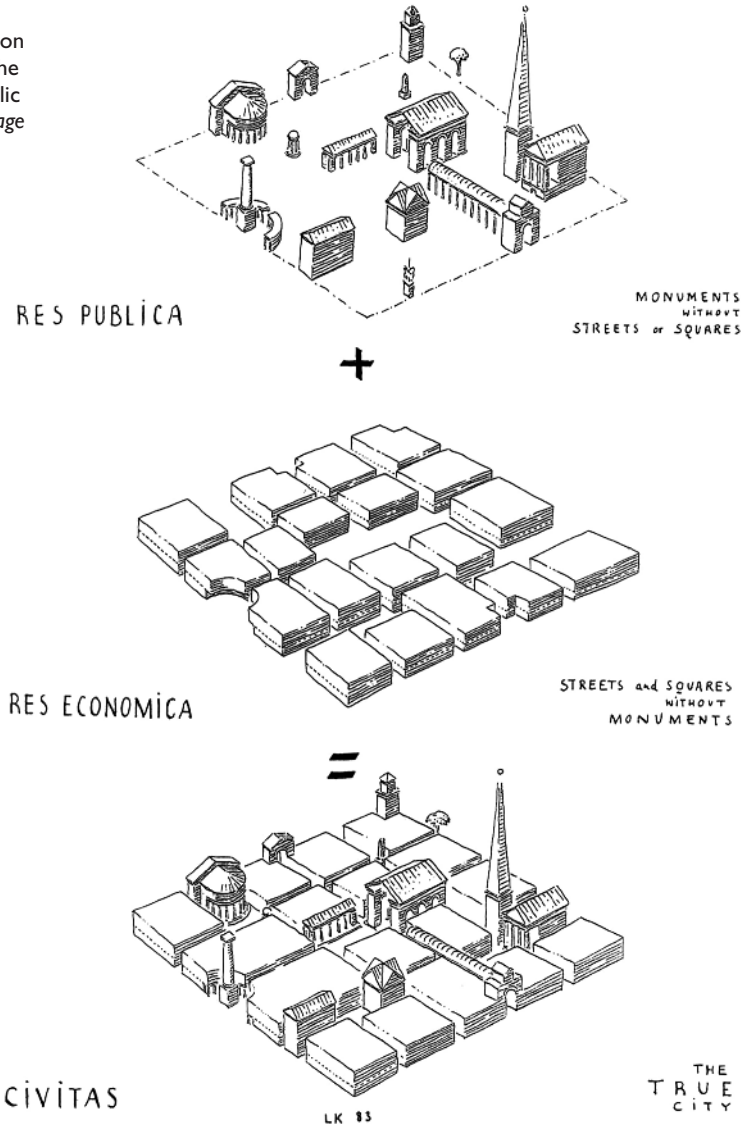



**Figure 1.6:** The True City. Léon Krier, 1983. To be complete, the city needs to have both a public realm and a private realm. *Image courtesy of Léon Krier*

## THE GRID

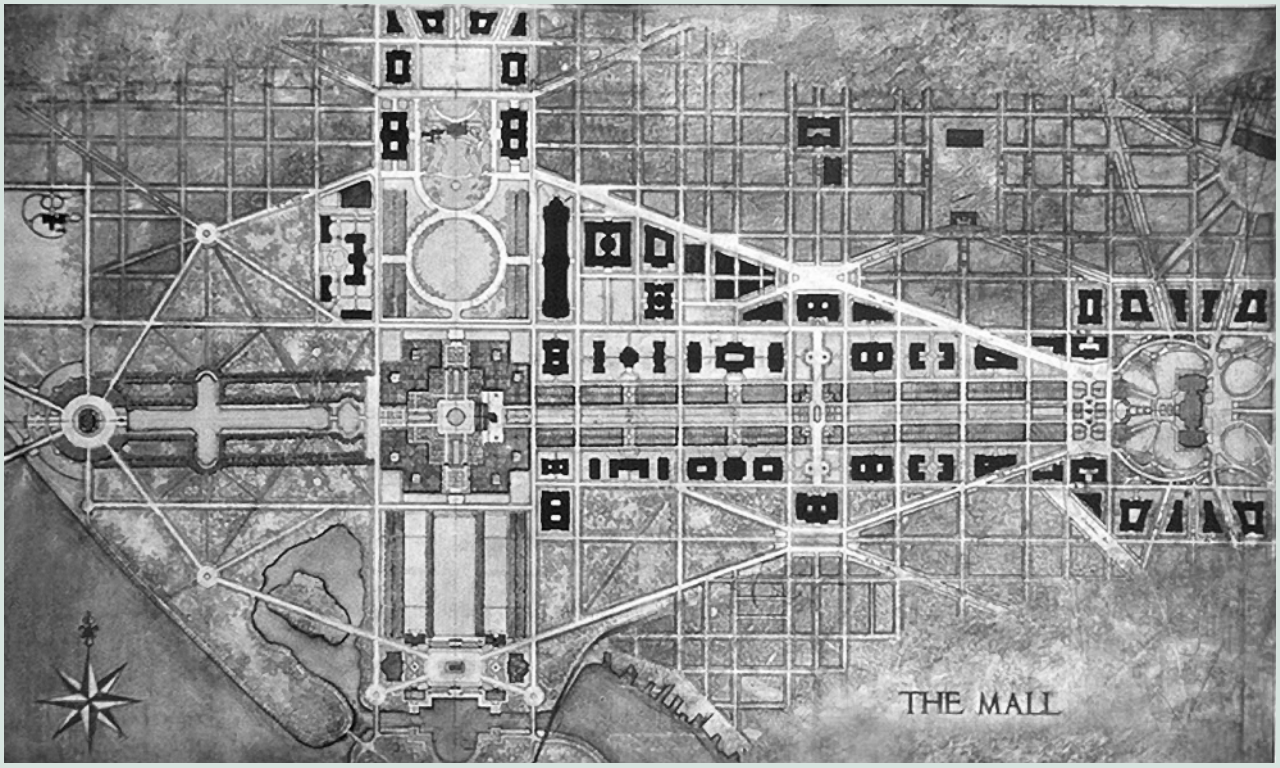



**Figure 1.7:** McMillan Plan, Washington, DC. Senate Park Commission (Daniel Burnham, F. L. Olmsted, Jr., Charles F. McKim, et al), 1901. At the peak of the City Beautiful movement, the Senate Park Commission hired leading architects and landscape architects to restore the clarity of Pierre Charles L'Enfant's 1791 plan for Washington. The Senate Park Commission was better known as the McMillan Commission, in honor of Senator James McMillan, whose Chief of Staff led the effort.

An American book about street design must mention the grid, however briefly. The rectilinear grid has been used in the planning of towns and cities since at least the fifteenth century BC, when the Chinese started a tradition of gridded plans that they still employ today. In the Western world, the use of rectilinear grids for town plans goes back to at least 2600 or 2500 BC, and the Romans institutionalized a standard gridded plan for the places colonized by the Roman Empire. Roman cities, fortified garrisons, and colonial outposts were designed around the famous *cardo* and *decumanus*. *Cardi* were north–south streets, and *decumani* east–west streets: the two central axes were the largest streets, known as the *cardo maximus* and the *decumanus maximus*. Where they crossed at the center of the town, there was normally a forum, or public square. The most important streets in many European, Middle Eastern, and North African cities and towns today are still where the Romans built their *cardo maximus* and *decumanus maximus*.

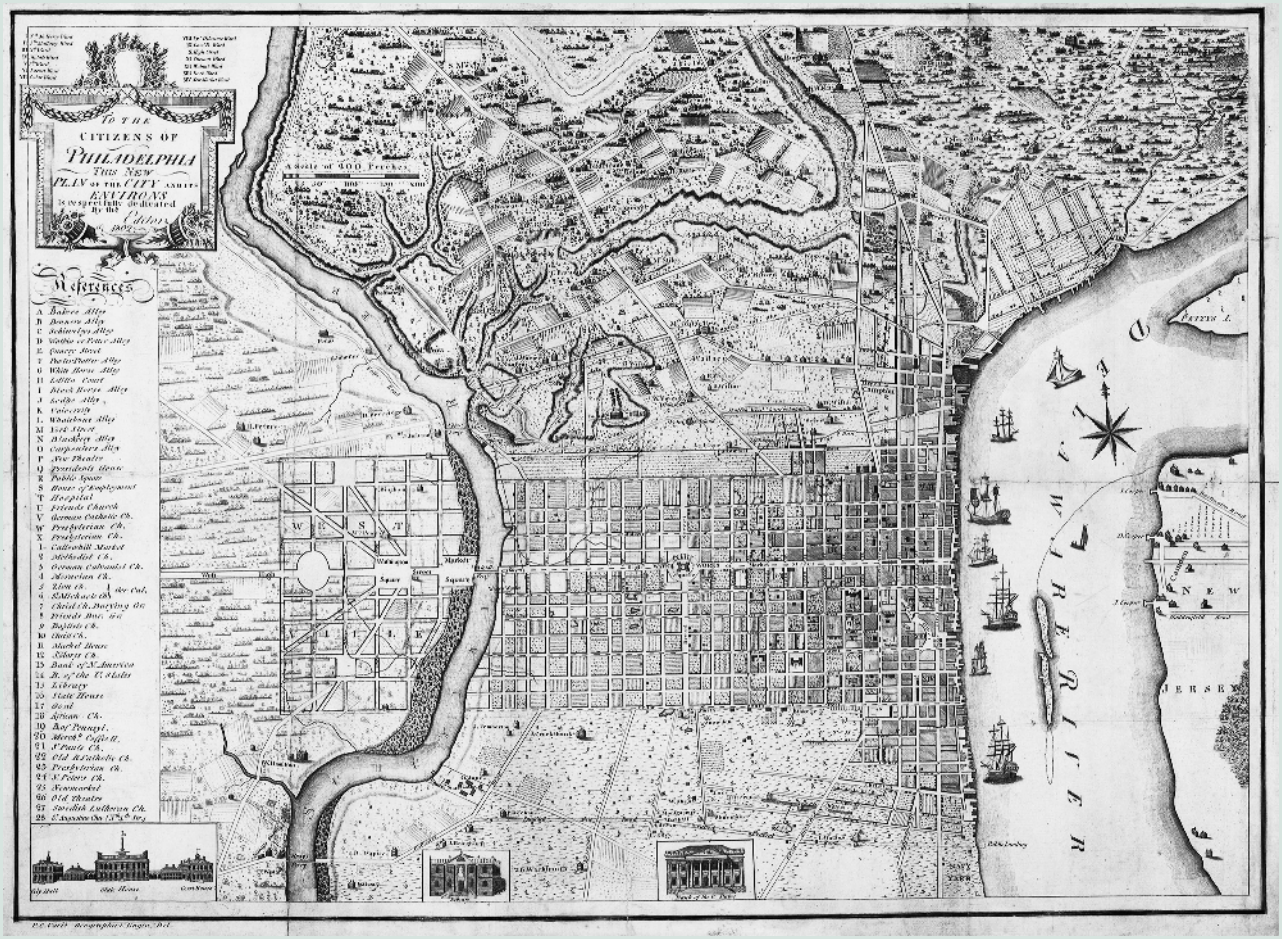
Many early towns and cities in America were laid out by commercial interests that saw the grid as an efficient,

simple way to divide open land into rectangular lots with clear boundaries that allowed the easy establishment of title. The seventeenth- and eighteenth-century settlements typically had level sites, often by a river or along the coast. There was not much topography on the flat sites to impede easy implementation of the plans, which frequently ended raggedly along the uneven shorelines. The grandest versions of these plans were in Philadelphia (1682) and Savannah (1733).

**Figure 1.8:** Philadelphia, Pennsylvania. William Penn, 1682. A plan of Philadelphia published in 1802. An early and influential American grid.

Philadelphia's influential plan (Figure 1.8) started a tradition for American gridded plans: the north–south streets were numbered, while the east–west streets were named after trees.

Savannah and Philadelphia started by the edge of rivers and took many decades to grow into their expansive plans. The plans for Philadelphia and Savannah (Figure 3.1) included regularly repeated squares; in Philadelphia, one square was rented to a lumberyard until the city grew up around it. Savannah had a rich and varied plan, which also made it easy for the city to grow over time (see "The Streets of Charleston and Savannah" in Chapter 3).



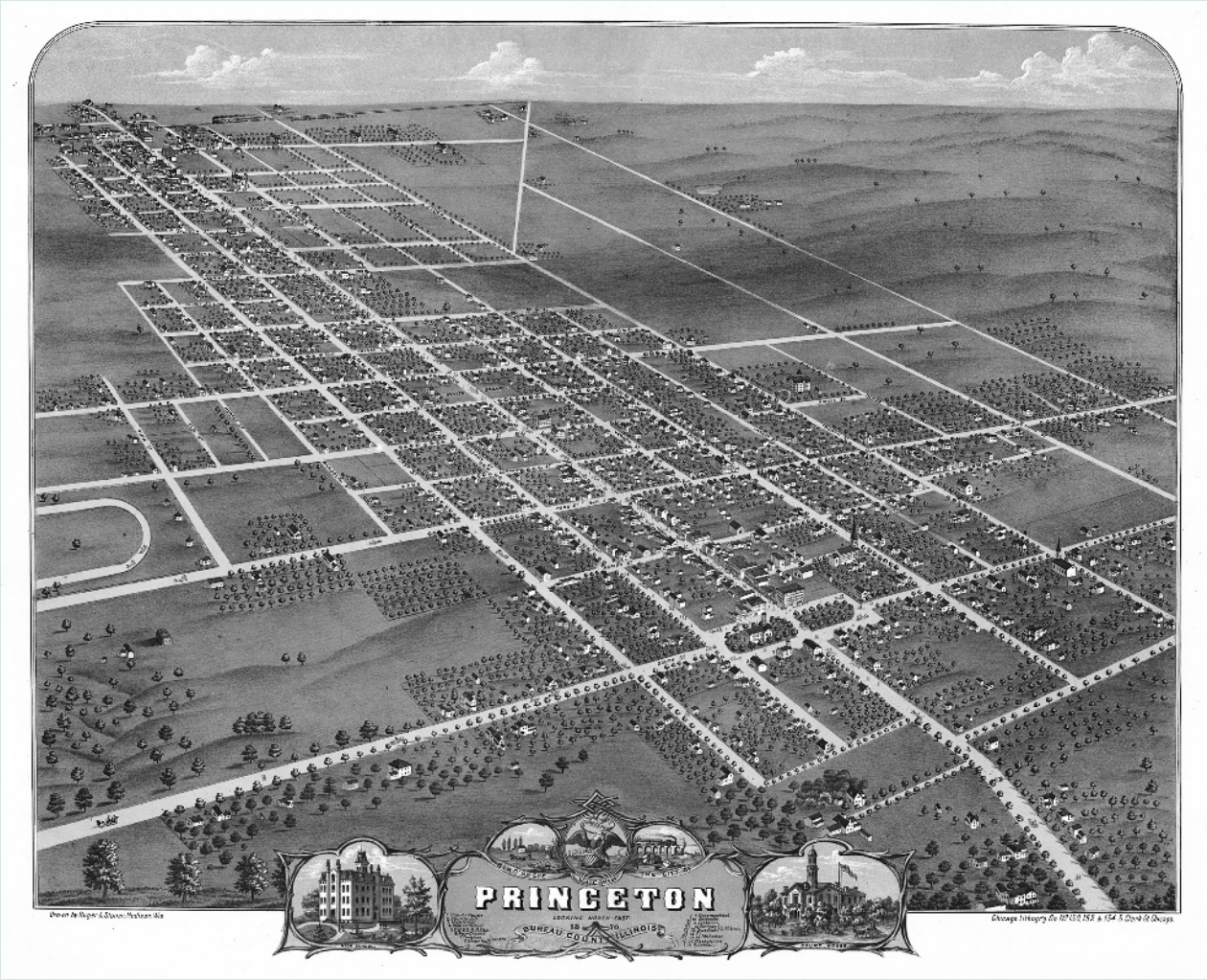



**Figure 1.9:** Princeton, Illinois. Bird's eye view of Princeton in 1870. A perspective map looking northeast, not drawn to scale. Bird's eye views like this were commonly made for American cities and towns in the nineteenth century. *Library of Congress, Geography and Map Division, Ruger Map Collection, g4104p pm001800*

The predictability of how the grid will shape development is another of its advantages. In 1811, New York's city fathers platted a grid across the island of Manhattan, which was still mainly covered by farmland, woods, and wetland. As in the American towns established by commercial interests, the grid made surveying and selling lots with clear title simple and straightforward. Land speculation started immediately, and the population of Manhattan alone multiplied almost fourteen times before the end of the century. Speculation and growth were helped by the fact that the Commissioners' Plan of 1811 continued block sizes already in use in lower Manhattan, so that building types developed there could be easily used in new parts of the city. "A city is to be composed principally of the habitations of men, and that strait sided, and right angled houses

are the most cheap to build, and the most convenient to live in," a Commissioners' Plan report said.[3]

Grids were not only used in planning cities and towns. In 1785, the U.S. Congress passed a land ordinance that expanded on a similar one drafted by Thomas Jefferson the year before. The 1785 Land Ordinance drew a rectilinear National Grid across the entire country, dividing it into six-mile-square "townships." These squares were further divided by thirty-six square sections of 640 acres each. Those sections could be sliced into half-sections, quarter-sections, etc., down to a dimension of sixty feet across (Figure 1.9). Congress established a plan for surveying and laying out the grid, and then sold much of the land for a minimum of $1 an acre.

Satellite views of the Midwest and the Great Plains today clearly show the National Grid laid across the land. New towns and cities like Chicago were planned within the framework of the grid, and modern suburban and exurban arterials frequently follow the National Grid. In the west and southwest, however, the grid sometimes ran into conflict with development patterns in lands formerly belonging to Spain. New towns there were planned according to the Law of the Indies, the royal regulations for Spanish colonies. These included directions for siting and laying out towns with central squares in a rectilinear grid of twelve streets.

Santa Fe, New Mexico, was planned under the Law of the Indies. It is one of the places in America where market demand for second houses for the rich has driven house prices ridiculously high, because of the beauty of the town. Like many classic American small towns, it has a simple grid. Wiscasset, Maine; Easton, Maryland; Marshall, Michigan; and Virginia City, Nevada, are a few of many exemplars across the country. Mayberry, North Carolina, and Bedford Falls, New York, are two fictional examples on television and in the movies. They all have good Main Streets where people enjoy walking surrounded by simple grids with comfortable single-family houses on tree-lined streets (Figure 1.10).

Not all small towns with grids are classic places where we want to be, of course. In *American Notes*, Charles Dickens said Philadelphia is "a handsome city, but distractingly regular. After walking about for an hour or two I felt that I would have given the world for a crooked street."[4] A grid built without thought and attention to detail can be a rigid, unpleasant gridiron, but there are simple ways to soften the grid.

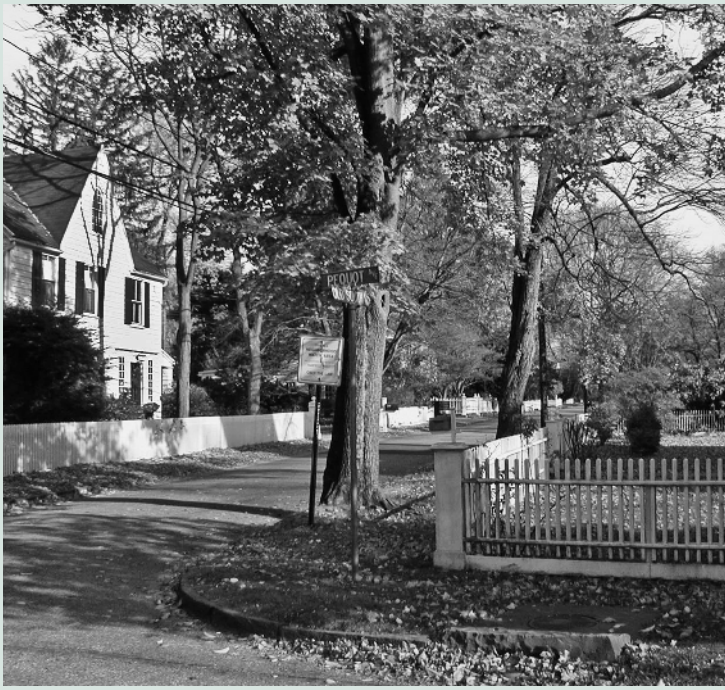



**Figure 1.10:** Old South Road, Southport, Connecticut. Looking east from the intersection of Old South Road and Pequot Avenue. This classic American street near the Southport train station and the village center has large front yards and a single sidewalk on one side of the road.

## Taming the Grid:

1. A beautiful tree canopy over a street is one of the easiest ways to soften a grid. When New Haven, Connecticut, was the Elm City, it had a more beautiful downtown.
2. A variety of street types and street widths combined with short blocks and squares enriches a grid. Savannah is the supreme example (see figure in Chapter 3).

**Figure 1.11:** Capitol Street, Charleston, West Virginia. The grid surrounding Capitol Street is almost orthogonal, but the streets bend slightly here and there, always in accordance with the city's gentle topography.

3. In a town or city with gentle slopes, slightly bending the streets to follow the topography softens the grid (Figure 1.11). A traditional design technique for city streets is to change the slope or the direction of the street only at an intersection with another street. As seen on Nassau Street in New York between Fulton Street and Wall Street, this produces a beautiful spatial effect.
4. When a town or city has dramatic hills, like San Francisco, running the grid up and down the hills with little deformation can be visually and experientially interesting. Even in Manhattan, where many hills were shaved down as the grid was built, the most pleasant parts of the long avenues are frequently where hills and plateaus combine to draw attention away from long, unterminated vistas. Madison Avenue in the 90s and Lexington Avenue in the 70s are examples.
5. Shifting the grid, so that some streets are only three or four blocks long, adds variety and richness to the grid. Sidney Place in Brooklyn, discussed in Chapter 2, is an example.
6. Laying diagonals across a grid, as in Pierre L'Enfant's plan for Washington, DC, adds interest if the plan skillfully includes important buildings or monuments on the prominent sites created by the diagonals (Figure 1.7). Diagonals in a grid can also be disorienting, however, and add awkwardly shaped lots that require custom building designs.
7. Streets that open to the surrounding area can draw the landscape into the town. Examples are streets in Santa Fe that point at the mountains and the cross-town streets in Manhattan that open to the Hudson and East rivers.

## THE FORMAL, THE PICTURESQUE, AND THE HYBRID

City plans and street designs have historically fallen into three main types: formal plans, picturesque plans, and hybrid designs that combine the two. Preferences for the formal and the picturesque have alternated throughout history. As we have seen, use of the simple grid goes back to at least the fifteenth century BC, but before the classical world of the ancient Greeks and Romans, many human settlements were planned and built in informal ways. In ancient Rome and Greece, Classical buildings were frequently used in both formal plans and informal plans, and we now know that during "the Dark Ages" between the fall of the Roman Empire and the beginning of the Italian Renaissance, planning was not exclusively what is now often called "medieval." Design tendencies became more formal as the Renaissance spread around the Western world, but in the nineteenth century there was a swing towards eclecticism, romanticism, and the picturesque. And yet the nineteenth century also had formal designers, planners, and architects who consciously combined the two, as we shall see.

In the mid-nineteenth century, eclectic designers like the great landscape architect Fredrick Law Olmsted used formal designs and picturesque designs, depending on the context. Olmsted's plans for the streets of Llewellyn Park, New Jersey, and Riverside, Illinois, were winding and romantic, and his plans for Ocean Parkway and Eastern Parkway in Brooklyn, New York, were more formal nineteenth-century American interpretations of the great French boulevards. His designs for Prospect Park in Brooklyn and Central Park in Manhattan contained both informal and formal designs, like the great Central Park Promenade. The formal elements of the Promenade, now known as the Mall or the Poet's Walk, include the long, straight, and level walk lined by a majestic allée of elm trees. The widest walkway in Central Park, it terminates with a grand stair that descends to the Bethesda Terrace and Fountain. The stair is on axis with the Mall, another measure of formal design, and the statue of an angel that crowns the fountain is too. From afar, the angel visually "terminates" the axis, which is another hallmark of formal planning (Figure 1.12).

## The Formal

The simple American grid was the work of the surveyor and the engineer. The grid has an obvious rectilinear formality, but it is frequently untouched by many of the principles of formal urban design. And as we've seen, these Classical principles—order, harmony, balance, legibility—shaped the form of great cities and buildings for thousands of years. In the late nineteenth century, the City Beautiful movement set out to reshape American towns and cities with the type of formal order found in the history of Classical architecture and urbanism in Europe. Most of the founders of this movement studied architecture and urbanism in Paris at the École des Beaux-Arts, where they saw firsthand the city's great avenues and boulevards from the eighteenth and nineteenth centuries. The students also studied and visited the landmarks of ancient Greece and Rome, the cities and buildings of the Italian Renaissance, and the Baroque of Western Europe.

They brought all of this back to America in the form of what they called Civic Art, which combined urban design, street design, building design, and the design and placement of monuments and sculpture in the city. They liked the American grid as a starting point, but they wanted to enrich it with a hierarchical range of streets and importantly sited civic buildings.

**Figure 1.12:** The Mall, Central Park, New York, New York. Frederick Law Olmsted and Calvert Vaux, 1858. Once known as the Promenade, and also called the Poet's Walk, the Mall has the largest stand of American elm trees in the world. Together with the Bethesda Fountain and Terrace that terminate the long axis, the Mall is the most formal spot in Central Park.

## CITY BEAUTIFUL

The first full-blown expression of the City Beautiful movement was the World's Columbian Exposition, built in Chicago in 1893 with temporary white plaster buildings that transformed America with a Beaux-Arts-influenced Classical revival. In urban design, the City Beautiful movement included ideas about social and economic justice that allied it with the Progressive movement in American politics. Master plans for American cities, like the 1909 Plan of Chicago, included housing reform and the planning of public parks, as well as formal interventions in simple grids, with new squares and tree-lined avenues visually terminated by important civic buildings.

Daniel Burnham—one of the founders of the City Beautiful movement, the organizer of the World's Columbian Exposition, and author of the 1909 Chicago plan commonly known as the Burnham Plan—famously said, "Make no little plans." Many of the best American cities owe much of their present character to work built during the City Beautiful movement. In New York City, for example, that work includes Grand Central Terminal; the Metropolitan Museum of Art; many of the great skyscrapers, like the Woolworth Building and the Municipal Building (Figure 1.13); the New York Public Library on 42nd Street and many of the branch libraries; the great public schools, parks, and playgrounds; and swaths of rowhouses and apartment buildings in all five boroughs.

Since this is a book about street design, however, it must be said that many of the street designs in the most ambitious City Beautiful plans were never executed, except in small parts here and there, even though American cities were undergoing enormous growth and had tremendous wealth. Of the great diagonals Burnham planned for Chicago, only one was constructed, while the City Beautiful streets designed for Manhattan by America's greatest architects exist only on paper. Notable exceptions are the streets around the Mall in Washington, DC, which were redesigned as part of the McMillan Plan, and the Benjamin Franklin Parkway in Philadelphia, designed by the French landscape architect Jacques Gréber. The goals of the parkway design were broad enough to encompass slum clearance and the creation of sites for new civic buildings, including the Philadelphia Museum of Art and a new city library.

The construction of individual City Beautiful buildings and civic centers around the country (San Francisco and Cleveland have prominent examples) was more

**Figure 1.13:** Manhattan Municipal Building, 1 Centre Street, New York, New York. McKim, Mead & White, 1907. Painting by Colin Campbell Cooper, 1922. Chambers Street, which is visually terminated by the Municipal Building, once continued through McKim, Mead & White's grand colonnade and arch.

common. In retrospect, the City Beautiful civic centers were often bad for street life, because they concentrated civic buildings around large plazas that drew pedestrians from the streets without filling the plazas. And almost a century after the Franklin Parkway was built in Philadelphia, the wide boulevard still has very little street life most of the time, because seldom-visited parks separate it from the low-density neighborhoods surrounding it, and the cultural institutions along the parkway don't draw much foot traffic. New Urbanists frequently advocate locating civic buildings in different places around the city in order to increase pedestrian traffic and maximize the use of civic buildings as civic monuments on important sites.

A story about three of the most influential founders of the City Beautiful movement demonstrates their fondness for the formal. In 1901, the U.S. Senate authorized the hiring of Burnham, Charles McKim, and Frederick Law Olmsted, Jr. (the son of Frederick Law Olmsted, who with his half-brother continued their father's landscape architecture practice under the name Olmsted Bros.) to study the deterioration of the Mall in Washington, DC, and to make recommendations about how to address it. With a Senate aide, the three set off on a six-week tour of Europe to study "French planning" and "Italian architecture." After touring Paris and Versailles they traveled to Venice, where McKim was unhappy because there was so little of the axial planning he enjoyed in Paris. Wandering the small, meandering passages of Venice, McKim became separated from the group. When Olmsted asked how they would find him, Burnham replied, "We will go to the Piazza San Marco and find him on the axis."[5] They did, and McKim was there.

## The Picturesque

The canals and *calli* of Venice that failed to satisfy McKim epitomize medieval and picturesque planning. The father of modern picturesque planning, Camillo Sitte, said about the Piazza San Marco, "So much beauty is united on this unique little patch of earth, that no painter has ever dreamt up anything surpassing it." After describing the elements and details that make the piazza, he continued, "However, it is the felicitous arrangement of them that contributes so decidedly to the whole arrangement. There is no doubt that if all these works of art were disposed separately according to the modern method, straight in line and geometrically centered, their effect would be immeasurably decreased."[6]

Sitte studied medieval towns and cities for his book, *City Planning According to Artistic Principles,* published in 1889. From his studies of medieval urbanism he developed underlying principles of design for what we call picturesque urbanism (Figure 1.14). This was not medieval design but, rather, design based on the spaces that Sitte found pleasing in medieval streets, towns, and cities. He presented his ideas in words, plans, and perspective drawings, emphasizing that the goal was not to reproduce old places but to make new places with experiences as good as those produced by the best medieval designs. He also emphasized that understanding how to produce engaging three-dimensional spaces was the key to creating picturesque urbanism. Irregular medieval squares and streets, he said, were more pleasing than the geometrical designs in later cities. He was particularly critical of contemporary engineering and formal designs like those favored by the City Beautiful movement.

Important to Sitte was the idea that the apprehension of one's surroundings was continuous through both space and time. In a discussion of medieval street design in the Etruscan hill town of Orvieto, Douglas Duany talks about the vernacular mind of the medieval period, which understood streets as a sequential experience (see the essay "Orvieto, Italy" in Chapter 2). For his own era, Sitte developed his designs as a series of picturesque compositions, drawn in perspective at different points along the way.

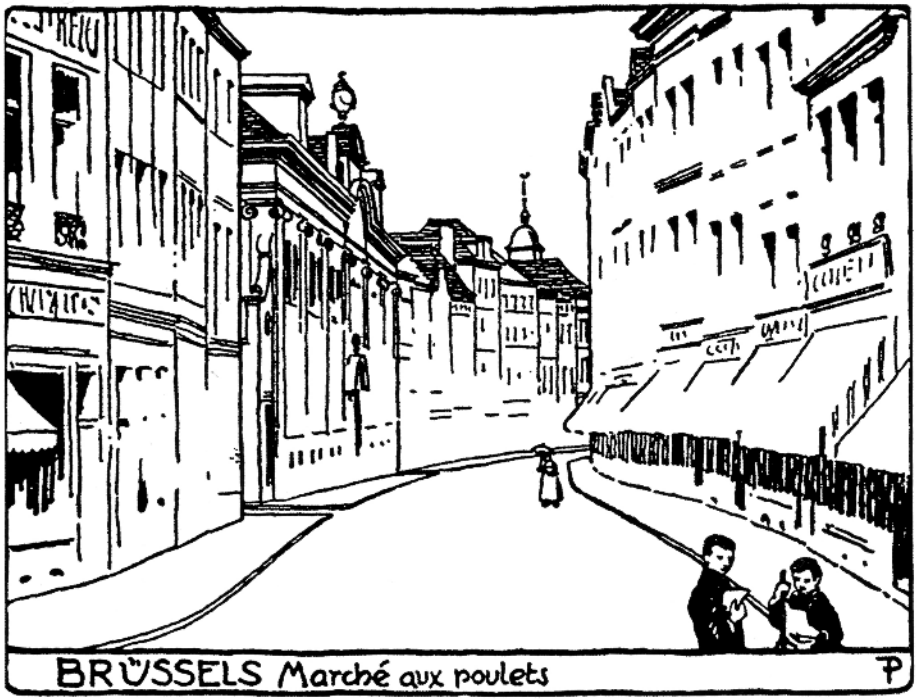



**Figure 1.14:** Marché aux poulets, Brussels. Drawing by Camillo Sitte, circa 1885. The composition of the gently curving street makes a space that deflects the view rather than formally terminating the vista with an object. The walk down the street presents a series of pictures and dynamic, unfolding events rather than a single static one.

Thus, they were "picturesque" in two ways: as painterly compositions and as compositions that were asymmetrical and dynamically balanced rather than static, centered, and regular. But it is important to remember that his individual drawings were meant to be seen almost like a flip-book. Picturesque designers today frequently "walk" their plans block by block, picturing the views at street level and adjusting angles and elements in the view to make them more pleasing and picturesque (Figure 1.14).

## The Hybrid

In 1909, the influential English architect and planner Sir Raymond Unwin wrote what became one of the most important urban design books of the twentieth century, *Town Planning in Practice.* After a discussion of plans from different cities and towns, he commented on the formal and the informal:

> We can hardly have examined the many different town plans referred to in the last chapter without realizing that in spite of their great variety they fall into two clearly marked classes, which we may call the formal and the informal, and that there are to-day [sic] two schools of town designers, the work of one being based on the conviction that the treatment should be formal and regular in character, while that of the other springs from an equally strong belief that informality is desirable. From the views given of both types of town we should almost certainly agree that a high order of beauty has been obtained by each method, for although our personal preference may lean strongly to one or the other type, there will be few who will not admit great beauty in many of the examples of its opposite.[7]

Unwin was one of the town planners involved with the Garden City movement, which combined the formal and the informal in hybrid plans—usually for new towns

**Figure 1.15:** Avenue de l'Opéra, Paris, France. Georges-Eugène Haussmann, 1864. The opera building is known as the Palais Garnier, in honor of the architect. It is an archetypal French version of the axial terminated vista, by an important graduate of the École des Beaux-Arts.


**Figure 1.16:** High Street, Oxford, England. William Wordsworth praised "the stream-like windings of that glorious street," one of the most beloved streets in England—and a wonderful example of a deflected vista. Contributing to the beauty of "The High" are the lean-in tree on the left and The Queen's College (Nicholas Hawksmoor, 1708–1710), which sits on a bend just beyond (for a plan of Oxford and the High Street, see Figure 2.105). The planner Thomas Sharp described the sycamore as "one of the most important in the world: without it, the scene would suffer greatly."

with formal centers and streets that became increasingly informal as they radiate outward. The Olmsted Bros. plan for Forest Hills Gardens is an American example of the hybrid type (see Figure 3.59). As used there, the hybrid plan illustrates what New Urbanists today call a Transect (discussed in Chapter 3 in "The Transect Observed"), and it's quite common for New Urban designers to make similar, Transect-based hybrid designs. New Urban firms might also choose to do either a formal *or* an informal plan—on the basis of the context or the client's preference.

To quote Duke Ellington, "There are two kinds of music. Good music, and the other kind." The same can be said about design.

Formal, picturesque, and hybrid designs can all be well or badly done, and *Street Design* does not advocate one over another. Some might prefer the music of Wolfgang Amadeus Mozart to Richard Wagner or vice versa, but they are both musical geniuses. To quote Duke Ellington, "There are two kinds of music. Good music, and the other kind." The same can be said about design.

Many people believe that beauty is in the eye of the beholder and that there can be no way to accurately define what individuals find beautiful. Recent studies,[8] however, show that if individuals walk a prescribed city route with a map in hand and mark the places they like and don't like there will be a high degree of correspondence in their preferences: the results show a consensus about what is beautiful, what is ugly, and how we respond to beauty and ugliness. If the group sample is large enough, there will also be distinct patterns—some people will prefer more formal spaces and some will like more picturesque places, for example, but the favorite and least favorite places will still be consistent. For the purposes of urban design, street design, and this book, what is of greatest importance is that *all* the groups show a preference for the places made according to the principles of placemaking illustrated here, whether formal or informal.

## EAST 70TH STREET: A BEAUTIFUL NEW YORK BLOCK

Legend has it that Woody Allen calls the block of East 70th Street between Park Avenue and Lexington Avenue on Manhattan's Upper East Side the most beautiful block in New York.[9] That's interesting, since the block is one of 150 or so very similar blocks between Park Avenue and Lexington Avenue. Looking at what makes it better than many of them illustrates some basic principles of urban design. We're going to examine East 70th Street (Figure 1.17) the way that one would do that in person: by standing on the sidewalk, gazing up and down the street, and observing what it feels like. By the time we finish, we'll also be considering the size of the block and how the block fits in the neighborhood and the city grid.

East 70th Street is a quiet street. Standing under the trees on the sidewalk is comfortable. The width of the sidewalk allows plenty of space for the number of people customarily walking there, and the width of the sidewalk and the height under the branches arcing over the sidewalk are similar, so that the ratio of the horizontal dimension to the vertical is approximately 1-to-1—a proportion that human beings find comfortable, as we shall see.

The parked cars and trees along the edge of the sidewalk shield us from cars and trucks driving by. That's also reassuring; these vehicles are often noisy and smelly, and they weigh four thousand to twenty thousand or more pounds, which can be both a physical and a psychological problem as they rush by at thirty to forty miles per hour. When we're on a sidewalk without any sort of barrier, we know that a car could easily injure or even kill us if it were to veer onto the walk.

When the traffic is quiet and we step out into the road—to cross it or to walk down the street—we find ourselves under a beautiful canopy of trees (Figure 1.18). The trees on East 70th Street, which are all in a line and regularly spaced, were used like architectural columns to provide visual order to the street—another quality

**Figure 1.17:** East 70th Street, New York, New York. Looking west towards Park Avenue, in the section of the block that has the biggest setback and the largest houses. 720 Park Avenue is visible above the Asia Society building at the end of the block (also see Figure 2.35).

**Figure 1.18:** East 70th Street Canopy, New York, New York. Farther east on East 70th Street, looking back towards Second Avenue in the spring, with the trees in bloom. *Image courtesy of Noel Y. Calingasan*

humans find comforting. We say the trees "*were* used like architectural columns" because in the last two or three decades they have been significantly changed. Originally, the trees were all American sycamores. Sycamores are traditional American street trees that reach high and form a canopy. Today there are six or seven tree species on the short block, including gingko and locust trees that make breaks in the canopies over the sidewalk and the street (Figure 1.23). The breaks and different tree types stand out like sore thumbs, diminishing the beauty of the street. If Woody Allen did, indeed, call this the most beautiful block in New York, he may have been talking about the old street, when it had a fuller canopy. He once famously said that everything in New York used to be better (a belief we don't share). In any case, the role of trees in street design is of critical importance.

East 70th Street is sixty feet across, like most of Manhattan's cross streets. That is to say, the distance from the property line on the north side of the street to the property line on the south side is 60 feet. The height of most of the buildings on the block averages 4½ to 5 generously sized stories, so that the height-to-width ratio of the street is also approximately 1-to-1 (Figure 1.19). Traditional principles of urbanism say that the most comfortable streets are 1-to-1 or 1-to-1½, width to height.[10] Many Italian piazzas are 1-to-3 (where the building height is one-third the width of the piazza). Once the proportions of an open space go beyond 1-to-5 or 1-to-6, though, it can lose its sense of spatial enclosure.

The surveyors who laid out the Manhattan grid thought of it as a utilitarian network for future development, so many of the block's elements are very simple. The question is: What was done that made the block feel better than other, similar blocks? We've looked at some of the ways the street trees help. Urban designers also use trees to help define the space between the buildings on a block as an "outdoor room." In terms of the spatial experience of the block, the canopy of the mature trees gives a "ceiling" to the room and limits how far we see in each direction, so that the space is visually contained. The slight slope of

## THE SEVEN ROLES OF THE URBAN STREET TREE

1. Define the space of the street.
   This particularly applies to streets that are too wide for the height of the buildings, streets with holes in the street wall, or suburban streets with buildings too far apart to contain the space of the street. Mature trees provide a canopy.
2. Define the pedestrian space.
   A mature canopy hides the tops of tall buildings, giving the sidewalk a consistent human scale.
3. Calm traffic and protect the pedestrian from cars.
   The tree is aided in this by on-street parking.
4. Filter the sunlight.
   Deciduous trees, unlike evergreen or palm, serve different functions in the summer and winter. Trees also lower city temperatures in the summer and change carbon dioxide into oxygen through photosynthesis.
5. Bring order to the street.
   Trees should be laid out with regular geometries, repetition, consistent sizes, and alignment. On long, straight streets, trees that form canopies over the street limit the visual length of the street.
6. Visually soften the streetscape.
   At some times of the day, the shadows are as beautiful as the trees.
7. Introduce the beauty of nature.
   Living plants contrast with the buildings, and in many parts of the world introduce seasonal change, color, and fragrance.

what is called Lenox Hill also helps, by bringing the canopy down into our view as we look towards Lexington Avenue.

Many of the elements of the block laid out by the surveyors are simple–but many of the principles of good street design can be simple. For example, the north and south "streetwalls" are parallel, and so are the sidewalks, the street trees, and the roadbed. A street can certainly be more complex in shape, but simple and straightforward work well, if the details are right.

The construction and the composition of the facades on the buildings that shape the street also affect the feeling of enclosure. The harmonious order of the whole and the solidity of the streetwall—the almost unbroken line of buildings—contribute to the making of an outdoor room where the pedestrian is comfortable. Part of the beauty of the block comes from the fact that it boasts an unusually high number of architecturally distinguished early-twentieth-century houses. Built in traditional styles with good natural materials—brick, stone, iron, wood, real

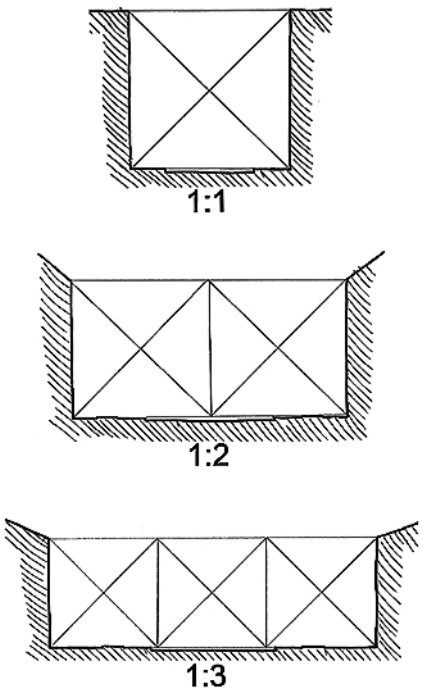



**Figure 1.19:** Street Sections with Harmonic Proportions.

**Figure 1.20:** Thomas W. Lamont House, 107 East 70th Street, New York, New York. Walker & Gillette, 1920. One of the large houses on the north side of the block affected by a covenant mandating a 10-foot setback.

stucco—they were designed by some of America's leading architects. The facades are well proportioned and, on the whole, simple and symmetrically composed. They have a layer of detail and ornament that also gives scale and visual interest. As a group, the buildings are varied, and yet they achieve an overall harmony through their similarities in size, massing, proportion, scale, and windows.

Most of the houses have similarly sized double-hung, vertical windows. Because the houses sit on a street, rather than in a piazza, we primarily see them obliquely, and the vertical openings set up a contrapuntal rhythm with the horizontal perspective. The windows are deeply set in the walls, increasing the play of light and shadow in a manner that adds a layer of visual interest. The houses themselves are taller than they are wide, which also sets up a pleasing counter rhythm. Good streets, and good cities, require a balance of order and richness. The vertical rhythms, the beautiful ornament, and the play of light and shadow all add richness to the parallel rows of the buildings, the sidewalks, the trees, and the street.

The early twentieth-century houses on the block were designed in accordance with the traditional principles of urbanism, which held that one of the first responsibilities of an architect or builder was to create or reinforce a good public realm (Figure 1.20). We've looked at the primary ways they did that. A building on East 70th Street that interrupts the pattern is a Modernist-style house at number 124 designed by William Lescaze in 1940, with large horizontal windows (Figure 1.21). Looking back at the traditionally designed facades on the block, we see that they appear to respect the forces of gravity. For example, openings in brick walls are spanned by lintels that visually hold up the bricks above them, regardless of whether or not they actually support them (the real structure might be a steel frame). And the exposed depth of the wall gives a mass that makes the wall seem to stand on its own, whether or not that is actually true. In contrast, the brick on the Lescaze facade is cut like wallpaper, and the thinness of the wall is emphasized. If there were any doubt that the brick is in effect glued on, Lescaze cantilevered the wall and pulled back the glass entry wall of the first floor, so that we see from below how thin the brick veneer really is. Finally, the lightly framed glass wall across the width of the first floor visually creates a void, so that as far as we can tell, nothing holds up the weight of the house above: the narrow corner column at one side is obviously not strong enough to bear the four-story wall that sits on it, even if it is just a light curtain wall.

Modern architectural theory argues this is more honest construction: the design reveals that the brick is a veneer rather than load-bearing, while the real structure is inside the house. But in terms of placemaking, the degree to which Lescaze focused on the expression of construction and the creation of a unique object weakened the

**Figure 1.21:** Edward A. Norman House, 124 East 70th Street, New York, New York. William Lescaze, 1941. The thin column, the wide, horizontal openings, and the shallow brick veneer of the Lescaze house all emphasize that the facade is a curtain wall rather than a structural, load-bearing wall. That is one of the reasons why the house has a different effect on the streetscape than the neighboring houses.

emphasis he gave to the larger context of the public realm and the making of a comfortable outdoor room.

The facade designed by Lescaze has a higher percentage of glass and a lower percentage of masonry wall than the other buildings on the block; by itself, the twenty-foot-wide building does not break the street wall, but a block of buildings like Lescaze's would feel less contained. Some other blocks between Lexington and Park avenues have all-glass street walls: consequently, they feel less enclosed and are less pleasant to be on. The mechanical repetition of the glass curtain over a large area is boring, and therefore detracts from the experience of the street in that way, as well. Only two blocks to the south, on 68th Street between Park and Lexington avenues, the architects of a large modern apartment building and the designers of a new synagogue across the street ignored some of the most basic principles about making the streetwall, so that a block that could be just as beautiful as the parallel block on 70th Street instead feels like an alley.

In comparison to the other buildings on the street, the Lescaze facade has plenty of order, but little richness. That's not a problem on East 70th Street, because the other buildings offer so much richness. In fact, the Lescaze house provides interesting variety. But on a street where there are only boring glass facades, or when the very simple building becomes bigger and more boring, the street suffers.

## The Lot and the Block

Rigid and autocratic, the Commissioners' Plan of 1811 was at the same time loose and entrepreneurial. Its grid cut across hills and property lines while leaving unanswered the question of how the blocks would be filled. Coming a little more than one hundred years before New York City introduced the first zoning in America, the plan relied on New York precedent and consensus among real estate developers, builders, buyers, and renters to answer the question of what to build. On the Upper East Side around East 70th Street, developers and builders decided that the area between Central Park and Third Avenue should be filled with single-family rowhouses and mansions for the rich. (A loud elevated subway on Third Avenue made that a natural boundary for the wealthy neighborhood.) New York City's builders already had standard rowhouse plans that could be built with or without architects. By consensus, these were initially built in brownstone, 3½ to 4½ stories tall, with stoops that required setting the house back from the property line so that there was room on the sidewalk to get by the stoops. The setback was six feet, even though there was no regulation that specified that dimension. At the top of the stoop was the main entrance and the main public floor, with the highest ceilings in the rowhouse. The service entrance was under the stoop, and the kitchen was

in the raised basement. By the late nineteenth century, this became known as the "American Plan."

In the early twentieth century, many New Yorkers remodeled their brownstones, using the new "English Plan." English Plan houses had ground floor entrances and no stoops, and frequently the new owners replaced the brownstone facades with limestone or brick elevations, and at the same time brought the front of the house a little closer to the street, since they no longer needed a setback for a stoop. Unusually, the houses on the north side of the block on lots perpendicular to 70th Street had restrictive covenants mandating 10 foot setbacks.[11] The sidewalk on that side of the street, therefore, is wider than the sidewalk on the southern side of the block. As a result, the limestone and brick mansions on the northern side get a little more light and air than most New York houses, giving the street a subtle luxuriousness.

The Commissioners' Plan specified that the avenues and the periodic wide cross streets like 72nd and 79th Street would be one hundred feet wide. Over time, larger buildings replaced the houses on the larger streets. Today, an urban designer preparing a form-based code begins by designing the street network and the streets, but he or she also chooses the building types to line each street. Variables in making that decision include the forms, sizes, and uses of the different building types involved. Smaller buildings, like rowhouses, still go on the narrower streets like East 70th Street. Larger buildings, like apartment houses, still go on the wider streets like Park Avenue and East 72nd Street.

All the blocks, including the ones between the wider streets and the narrow streets, are two hundred feet wide because that was the standard in New York by 1811. The two-hundred-foot block can be split down the middle to form back-to-back one-hundred-foot lots, each with its own street frontage, and a variety of building types had been developed to fit on those lots. A small house might have a lot sixteen feet wide by one hundred feet deep. A large house or an apartment building might have a lot twenty-four to forty-eight feet wide by one hundred feet deep. A very large apartment house might have a lot taking the entire two-hundred-foot length of the end of the block along the avenue. When a block fronted on both a wide cross street and a narrow cross street, larger buildings could go on the wider street, and smaller buildings on the narrower street. For example, apartment houses might sit on the lots along East 72nd Street, one of the wide streets, backing up to lots on East 71st Street with rowhouses on them. An important point for urban design and street design is that the larger buildings face each other across the wide street, appropriate to the shaping of that street, and smaller buildings face each other on the narrower street, appropriately sized for that street. In urban design, this is known as the principle of "like faces like."

Thus we have rowhouses of different widths but similar heights on the north and south sides of our block on East 70th Street and different building types on the east and west ends of the block. At Park Avenue, there is a large institutional building—the Asia Society headquarters and museum—on the north corner and a large postwar apartment building on the south side. On the east end of the block, at Lexington Avenue, is a house the architect Grosvenor Atterbury designed for himself: it has a storefront facing Lexington Avenue, which is the main retail street for the block.[12] Across the street, on the southwest corner of Lexington Avenue and East 70th Street, is a brownstone-faced rowhouse that preceded the fancier houses on the block (Figure 1.22). There were once a number of brownstones on the block, but most were torn down and replaced by more fashionable designs or were thoroughly rebuilt with new facades. Because it faces the busy retail street, the brownstone on the corner of Lexington was given a storefront and converted to apartments instead.

The new apartment buildings at the Park Avenue end of the block share materials with the smaller houses; if they shared double-hung windows as well—an architectural element that unites many other streets in the city—the block would have more unity. One can also argue that it's appropriate that the Asia Society, a civic building, be distinguished from the residential buildings by a more monumental scale or larger windows.

The final element that makes the block of East 70th Street between Park and Lexington Avenues more pleasant to walk on than many blocks in Manhattan is that it is


**Figure 1.22:** Lexington Avenue and East 70th Street, New York, New York. The brownstone on the northwest corner of the intersection was renovated by the architect Grosvenor Atterbury for his own use in 1909.

**Figure 1.23:** East 72nd Street, New York, New York. Looking west from Park Avenue. The current fashion for planting multiple types of trees and choosing species that will never grow very high or have a wide spread prevents majestic allées like the old ones in Figures 1.12 and 2.72.

shorter than most east–west blocks in the city. For reasons known only to themselves, the Commissioners varied the length of the east–west blocks in their plan. The blocks between Third Avenue and Sixth Avenue were 920 feet long, while Third Avenue to Second Avenue was a distance of 610, and the next block was 40 feet longer. For the purposes of street design, what's most relevant is that pedestrians like short blocks, and that the blocks between Park Avenue and Lexington Avenue are short, because of an historical anomaly.

For many decades, railroad trains ran in a trough at the center of Fourth Avenue, the original name for Park Avenue. The trains belched thick coal smoke that drove people away, but in the original plan, Fourth Avenue was the only north–south street between Fifth Avenue and Third Avenue, which are more than half a mile apart. To make walking in the neighborhoods around the railroad tracks more pleasant, two new avenues were cut in between Fifth Avenue and Fourth Avenue and between Fourth Avenue and Third Avenue, Madison Avenue being the former and Lexington Avenue the latter. What this means for pedestrians is that the east–west blocks between Fifth Avenue and Third Avenue are half the length of Manhattan's standard east–west blocks, which brings more sunlight and more freedom of movement to the experience of walking through the grid. As Jane Jacobs discusses in *Death and Life of Great American Cities,* long blocks can be visually and even psychologically disagreeable.[13]

Eventually, the trough in Fourth Avenue was covered and capped with planted medians, and the unusually wide street was renamed Park Avenue. On the Upper East Side, Lexington Avenue is primarily commercial, while Park Avenue is predominantly residential. This contrast further increases the pedestrian's feeling of options, which always makes walking more pleasant.

## A BRAVE NEW WORLD

For street design in America, everything changed after World War II, reflecting great changes taking place in American business, society, and culture at the time. The way we used streets, the way we built streets, and the way we built our communities were all transformed.

In the early twentieth century, America had walkable towns, cities, and neighborhoods connected by an excellent network of streetcars, trains, and boats; before the Depression brought so much hardship, most Americans could have a comfortable life without owning a car. After the war, living in the suburbs—which required owning a car—was frequently seen as the American Dream. Since then, we have exchanged the town for sprawl, by some estimates constructing three-quarters of the roads and buildings in America. Today, most Americans have to drive everywhere for everything: living, working, and shopping are all separated by roads built for the use of cars.

Several factors brought this about. Soldiers coming home from America wanted better lives than the ones they had left behind. Most Americans lived in cities before 1940, but by 1945 cities were frequently seen as dirty and crumbling, and old neighborhoods as socially constricting. There was a new sense of possibility and social mobility; after the war, the GI Bill encouraged veterans to go to college and aim for white-collar jobs instead of accepting the same blue-collar jobs their parents had. And when they graduated, low-cost loans that could only be used for buying single-family houses in the suburbs were easily available.

Cars for the new life in the suburbs were also more affordable after the war. Detroit switched from the manufacture of war planes and tanks to cars and produced hundreds of thousands of inexpensive automobiles. At the same time, the flight from the cities was just beginning, so suburban roads were empty, convenient to drive, and often beautiful. In addition, having won the war with technology and industry, we had faith in technology and industry. In 1956 the former Supreme Commander in Chief of the Allied Forces, President Dwight D. Eisenhower, signed the Federal Aid Highway Act, which funded the largest public works program in the history of the world: our interstate highway system. The highways were the centerpiece of a new road system explicitly focused on the free-flowing movement of traffic. The work begun in the 1920s by Organized Motordom, a lobby of automobile interests headed by the American Automobile Association, had won the day.

> Don't honk your horn. Raise your voice. We fought, and we won, our right of way. But now, two miles of road are wearing out for every one being built. Write your hometown officials and postcard your newspaper editors. Demand better highways and more parking space…. Give yourself the green light.
>
> —General Motors propaganda film *Give Yourself the Green Light*, by Handy Jam Productions, 1954

City roads were changed to make it easier for suburbanites to drive in and out from the suburbs, while transportation engineers successfully convinced cities that if they failed to build modern roads they would be unable to successfully compete in the twentieth century. In the suburbs, planners developed a new system of automobile-based zoning that separated uses, creating single-use housing developments, shopping centers, and office parks. It was all part of a new world in which President Eisenhower's secretary of defense said, "I thought what was good for our country was good for General Motors, and vice versa."[14] Famously misquoted as "What's good for General Motors is good for the country," and frequently attributed to President Eisenhower, the remark expressed the dominant ethos of the era.

Specialization was seen as one of the reasons why Detroit was able to produce all the planes, tanks, and munitions that beat the Nazis, and specialization became central to the creation of the new automobile-based way of life that promised economic and social mobility. Traffic engineers specializing in auto movement invented new road systems. Developers stopped building mixed-use towns, and built single-use "products." Loan officers at banks became specialists in lending for single-use products: a housing lender would not lend money for a shopping center, for example.

Architects and urban designers, too, participated in this reinvention of the way we live. Three decades earlier, the most influential architect and urban designer in the Western world, Le Corbusier, had written, "The street wears us out. It is altogether disgusting. Why, then, does it still exist?"[15] His solution was to invent a new type of urbanism without normal streets. In the famous "Plan Voisin," Corbusier proposed demolishing most of central Paris north of the Seine and building a new city with sixty-story towers in large parks. Surrounding the parks would be multilevel, multimodal streets (called "machines for circulation"[16]) with cars, buses, trains, and even planes. "The cities will be part of the country," Corbusier wrote in a paean to technology and futurism:

> I shall live 30 miles from my office in one direction, under a pine tree; my secretary will live 30 miles away from it too, in the other direction, under another pine tree. We shall both have our own car. We shall use up tires, wear out road surfaces and gears, consume oil and gasoline. All of which will necessitate a great deal of work… enough for all.[17]

It was only in the 1940s, however, that Le Corbusier's ideas became standard in American architecture and urbanism. Supersized blocks (superblocks) with towers in parks became so accepted in professional thinking that the federal funding incentives to construct them were impossible to pass up—as Robert Moses learned.

While Moses was working with New York University on a postwar plan for the redevelopment of Washington Square South in Greenwich Village, he saw renderings by Eggers & Higgins—the successor firm to the office of the Classical architect John Russell Pope—that showed two sides of Washington Square rebuilt with Georgian-style buildings. Moses was so impressed that when the university subsequently chose to build only one Georgian building (the NYU Law School), he wrote a letter of complaint to the university's chancellor. During this same period, Moses oversaw slum clearance plans funded by the Federal Housing Act of 1949, for a forty-acre site southeast of the square to be developed as Washington Square Village (Figure 1.24). He asked Eggers & Higgins to design a Georgian-style development, but Eggers soon came back to Moses, reporting that the federal program overwhelmingly favored superblocks with residential-only towers in parks. The authors of the Slum Clearance section of the Housing Act, known as Title I, explained that an "unwise mixture of residential and commercial uses of land" and the "frozen patterns of street layouts" like the Manhattan grid were among the causes of slum conditions.


**Figure 1.24:** Washington Square Village, New York, New York. An early site study for Robert Moses by the architects Eggers & Higgins. Committee on Slum Clearance Plans, *Washington Square South Slum Clearance Plan Under Title I of the Housing Act of 1949*.

## FUNCTIONAL CLASSIFICATION

Functional Classification is a system transportation planners and traffic engineers use today when designing roads. The system has only three road types (known as "facilities"): "Arterials," "Collectors," and "Local Roads." A fundamental reinvention of how we look at roads, the system was first developed in the United States by planners and engineers in the early part of the twentieth century; it was mandated by law in 1960s and 1970s and enshrined in the 1968 Federal-Aid Highway Act, which required the classification of all roads in the country in order to establish funding priorities. Functional Classification tells planners and engineers what types of roads to design and how they should connect (or not).

Functional Classification exemplifies the philosophy behind the automobile-dependent road system used first in America and later in other countries. It goes hand-in-hand with the automobile-based planning theory that separates uses to create a world in which it is necessary to drive to work, to stores, and to home. It favors the car over all other modes of transportation, including walking, and judges a road's effectiveness by its "Level of Service" (LOS), which measures the free flow of the automobile: How easy is it to drive from one place to another?

## PROBLEMS WITH FUNCTIONAL CLASSIFICATION

As shown in Figure 1.25, Functional Classification is based on a philosophy of "mobility" versus "land access." As the urbanist Laurence Aurbach has pointed out, "mobility" generally describes traffic flow and speed, while "land access" generally refers to the frequency of intersections and curb cuts for driveways and parking lots along a road. Local roads deliver traffic to collector roads, which deliver traffic to arterials, which deliver traffic to limited-access highways. The table shows that when land access increases, mobility decreases, and vice versa. This leads to three guiding principles of Functional Classification:

1. The longer the trip, the faster the travel speed should be.
2. The faster the road speed, the more isolated the road should be from its surroundings.
3. Isolated roads are considered bottlenecks, so they must grow wider as "Vehicle Miles Traveled" (VMT) grow.

Thus, highways have limited access, arterial roads have fewer intersections and curb cuts than collector roads, and local roads are considered optimal when they are cul-de-sacs (Figure 1.26). In theory, Level of Service evaluations demonstrate which roads and intersections are creating bottlenecks and lead to their redesign. In reality, growth and density frequently make the Functional Classification system fail on its own terms, because when everyone drives everywhere for everything it is impossible to build roads large enough to handle peak concentrations of cars. And while Functional Classification is designed to increase safety and lower traffic fatalities, studies by rogue transportation engineers show that wide roads frequently have more fatalities than narrower streets, and that increasing the number of intersections rather than minimizing intersections also lowers fatalities.[18] In other words, two of the fundamental principles of Functional Classification—increasing road width and limiting access—can increase deaths caused by traffic accidents.

Unfortunately, Functional Classification and Level of Service standards also conflict on many levels with the making of streets where people want to be (Figure 1.27). In their efforts to make the car's journey ever more efficient, engineers design large, barren, noisy places that pedestrians avoid whenever they can. The level of alienation from ordinary human experience that has crept into this field is reflected in its language: transportation engineers refer to trees as Fixed Hazardous Objects, or FHOs. Even worse, pedestrians are referred to as Moving Hazardous Objects (MHOs) that lower the Level of Service, and are actually banned from many roads. The criteria for Functional Classification obviously do not include making a public realm where people want to be.

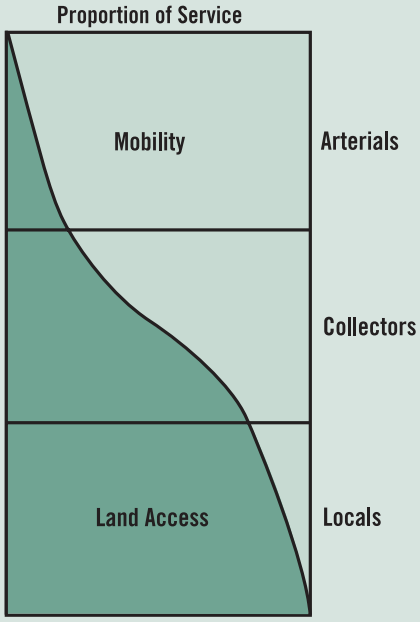
In a hopeful development, the Congress for New Urbanism worked with the Institute for Transportation Engineers in 2006 to create the CNU ITE manual *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*. In contrast with the Functional Classification system, the CNU ITE manual emphasizes connectivity and placemaking. Intersections are encouraged; narrow traffic lanes and on-street parking are called for. Walkable, mixed-use streets are favored over LOS.

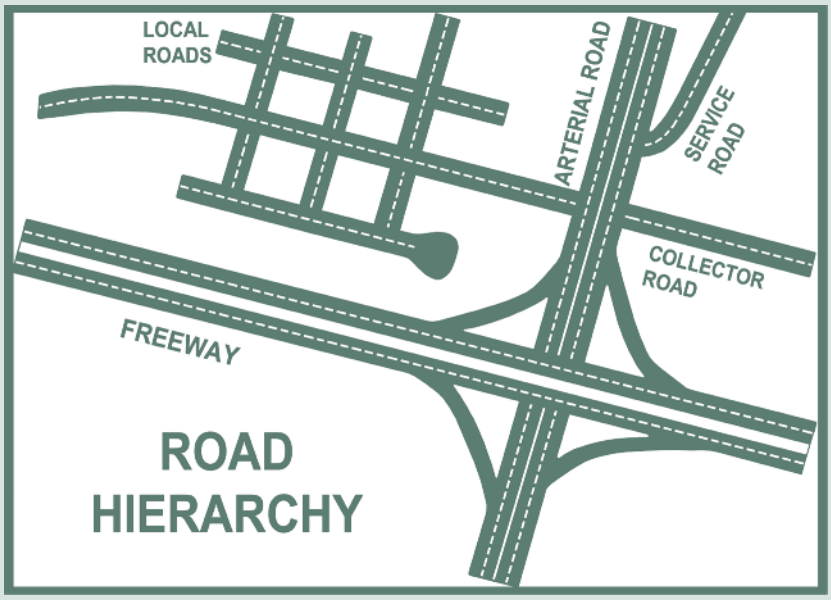
**Functional Classification & New Urban Street Names**

| Transportation Engineering | Urban Design |
|---|---|
| Highway | Parkway |
| Arterial | Boulevard |
| Collector | Avenue* and Connector |
| Local | Street and Road |
| Cul-de-sac | Close |
| Driveway | Alley & Lane |

*This is an approximate correspondence because an avenue is visually terminated.

"The Functional Classification System needs to be entirely reevaluated," says CNU President John Norquist. "In certain rural contexts, it sometimes makes sense, but applying it to urban contexts doesn't. For example, Greenwich Village is rated F (lowest), based on congestion. It's congested with people who want to be there! They're buying stuff, and creating jobs, and creating art. It's an F that all good urbanism gets."




▲**Figure 1.25:** Proportion of Service Diagram for the Functional Classification System. *Image courtesy of Dover, Kohl & Partners, redrawn from the 1969 Federal Aid Highways report*

◀**Figure 1.26:** Road Hierarchy Diagram. *Image courtesy of Dover, Kohl & Partners, redrawn from a Wisconsin DOT manual*

►**Figure 1.27:** I-95 and I-395 Interchange, Overtown, Miami, Florida. Hundreds of houses, businesses, and institutions were displaced to build I-95 and the interchange, in a disastrous urban renewal scheme motivated by racism and auto mania. The city was left more divided than ever. Aerial view, Pictometry. *Image courtesy of Pictometry International Corp. Copyright 2013*

Having built a way of life dependent on the car, we must respond to peoples' needs and desires to use their cars. It's always important to be practical when building in the public realm, particularly in times when public budgets are small. On the other hand, over a third of Americans are too young, too old, or too poor to drive, and most live in places where this inability to get around is a real hardship. At the same time, in the name of practicality, people have created auto sewers all over the world that greatly diminish the use of the public realm for everyone but drivers. Formerly great places where cultural life once flourished have passed a tipping point and become auto sewers.

Functional Classification contributes to climate change and works against the design of walkable, sustainable places. Our lives no longer work without gasoline, and dependence on foreign oil continues to be a serious political and economic challenge. So far, biofuels have caused more problems than they've solved, and the hydrofracking process for extracting natural gas from shale appears to be even worse. Electric cars may be good for the future of the planet, but Americans will be trading oil sources they don't control for battery material sources they don't control (China controls the rare earths needed for batteries). As the world's population grows, it is only going to become more important that our energy sources are renewable.

In the course of writing this book, we've visited Western European towns and cities that have much lower carbon footprints than ours–and that still support a wonderful quality of life. In Amsterdam, enormous numbers of people rely on their feet, bicycles, streetcars, and railroads for roughly 95 percent of their daily travel. The average Dutch citizen has a carbon footprint that is approximately one-half the size of the footprint of the average American, even though some Dutch rely on cars much more than Amsterdammers, who have an exceptionally good quality of life.

Ninety years ago, before World War II and the Great Depression, Americans lived in a time of prosperity when they, too, relied on railroads, streetcars, and bicycles. The countryside had not been spoiled, and people didn't sit in traffic jams on Interstate highways and strip roads. In many ways, they had a better quality of life than most of us have today.

## CONTEMPORARY CHALLENGES TO PLACEMAKING

Starting in the 1970s, several well-intentioned streetscape fads have led towns and cities to pile on features like benches and bulbouts (curb extensions) to sidewalks in an effort to improve the street space. Traveling around the country, one can almost always spot the tax-increment-financed, overdone Main Streets tarted up in hopes of revival. While none of these initiatives are necessarily bad (although many *are* bad), in retrospect they are costly and typically do little to improve the vitality of the street. Instead of adding fancy improvements at great expense, governments could achieve a larger and more lasting impact on the public realm by recruiting a mix of uses and shaping the street space with buildings (and street trees, when appropriate). Are the basic rules of successful retail, such as encouraging common hours of operation among storekeepers, being followed? An overblown streetscape will draw attention *away* from storefronts, which is problematic if retail revitalization is the goal. And since a clean sidewalk matters more to retail customers than a fancy one, is there a workable plan for regular cleaning and maintenance? Last but not least, conspicuously overdone streetscapes work against the authenticity characteristic of genuine livable streets.

Today, municipalities add bike lanes with similar fervor. Getting cycling to go mainstream is an important goal, and in some cases striped bike lanes are the best solution. But most municipalities are defaulting to highway striping and dividing up the road space without asking the right questions first: If the design speed of the street were simply lowered, would a separate bike lane even be necessary? Does the bike lane say to motorists that cyclists are to stay in their own space, when they customarily have rights to the whole road space on an urban street? Are those tawdry-looking reflective plastic sticks buffering the bike lane proposed only because some other fundamental aspect of a flawed street design was left unaddressed? Was killing off stores, shops, and restaurants by removing on-

## SEVERAL SCENES OR ONE?

There is more than one way to design a street. Some streets are monumental—long and straight, and often visually terminated by a monument or a monumental building. The French masterfully plotted streets like this, coding the architecture precisely, so that the background buildings that make up the urban fabric have a majestic presence enhanced rather than diminished by repetition. In extreme cases like the rue Royale in Paris, all of the facades between the place de la Concorde and the place de la Madeleine were designed by the Royal Architect Ange-Jacques Gabriel and built before the lots were sold (Figure 1.28). In addition, trees and light fixtures repeat regularly in long, straight rows. Cut a cross-section through one location and the drawing will look much like a cross-section cut in any other spot—as if the street were extruded from a mold or rolled out like a steel beam. Some will tell you that using one architect for multiple blocks or having so much repetition kills good urbanism, but few people come back from Paris saying, "Paris, how boring and ugly!" Of course, the architect and the architecture must be good in this scenario.

Less monumental streets can be built up from a series of individual segments laid end-to-end, with their own fine-tuned spatial recipe. The segments might be only a block long or a few blocks long. With each segment, the character can vary, as the total width and building-height-to-street-width proportion changes, the details adjust, and the mixtures of older and newer buildings unfold as we travel along the road. When these spatial segments are defined at their ends by intersections, terminated vistas, curves, cranks, or offsets, each segment reinforces the sense that it is a legible, self-contained piece of the town. The sections establish an impression of "local-ness" and intimacy, and every address along the street is unique.

**Figure 1.28:** Rue Royale, Paris, France. A hand-tinted view from the place de la Concorde, looking towards the Church of the Madeleine.

street parking to jam in a bike lane really worth it—just to demonstrate that the city was finally doing something about cycling?

Urban designers must be generalists, able to bring together expertise and ideas from many fields, including engineering, retail, finance, law, architecture, and city planning. The city-planning field, notably, has come to be dominated by regulators who do not design; many contemporary municipal-planning departments should probably be renamed "permitting departments." To make our streets places where people want to be, we must focus on what planners call "physical planning," designing or coding the physical form of the city, town, or neighborhood. Distilled down, this is the most crucial professional leadership work involving the built and natural environment to-

day: configuring beautiful, durable, and sustainable places for people. If the urban designer successfully does all those things, his or her design will necessarily include information from many different specialized areas of expertise.

For more than half a century, we steadily increased our extravagant dependence on the car. In the present era our task is to modify, and in some cases reverse, this financially and environmentally costly experiment. Our job now is to pay closer attention to the lessons of history, to see what works and what doesn't. Unlike the global sprawl project and the transformation of ordinary city streets into auto sewers, the New Urbanism must take its cues from five thousand years of human experience in building successful, robust human settlements.

> There should be no reason, finally, why the decisions taken by elected authority cannot be larger ones, disciplining anarchy in order to make the city what it has always been, the ultimate work of human art: making possible the effective action not only of the group but the individual citizen, so liberating what Sophocles called "the feelings that make the town."
>
> —Vincent Scully, "The Death of the Street"

## WORK OF MANY HANDS

An urban design cannot be an artist's personal vision, unless that vision is sufficiently broad and meaningful to attract the general public now and in the future. The public realm is forever for all citizens. Every architect or developer who designs a building that shapes the public realm should recognize his or her responsibility to contribute positively to the common good. Urban design and the design of urban architecture are public arts. They share little with the work of a painter or sculptor whose work is designed to be displayed in a collector's private home or in a gallery—where one may choose to look at it or not.

The city is an assembly of public works of art that are never finished, produced by many hands collaborating over time. That said, there are many opportunities for personal vision in the art of placemaking. One distinction between the urban designer and the painter or sculptor working alone is that the urban designer never starts with a truly blank canvas or plain piece of marble; there are always existing conditions that constrain and unlock the artistic response, as each successive round of work builds upon the layers that precede it. In one of the best-known examples, Michelangelo took hold of the incoherent public space of the Campidoglio in Rome and used geometry and a common architectural vocabulary to establish a legible order. The masterpiece is an intervention of finite size that is connected to the surrounding spaces and the fabric of the whole of the city (Figure 1.29).

**Figure 1.29:** Piazza del Campidoglio, Rome, Italy. Michelangelo, 1536–1546. Plan from Paul Letarouilly, *Edifices de Rome Moderne* (1840).

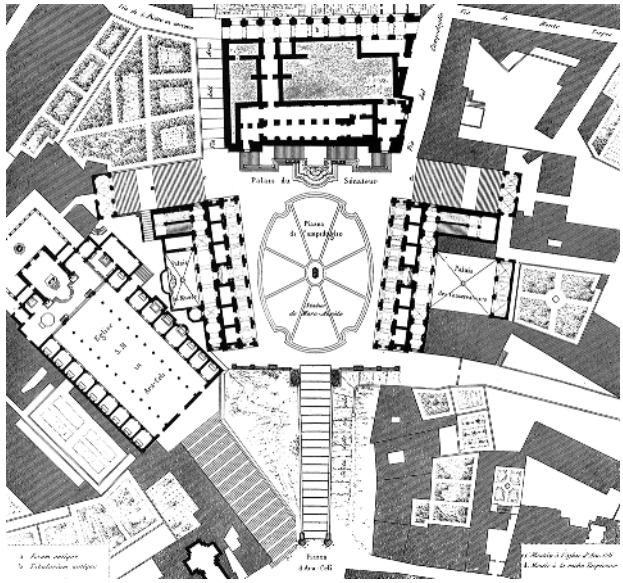



**Figure 1.30:** Carrer Avinyó, Barcelona, Spain. Streets can be thought of as segmented spatial experiences, perfected independently and stitched together.

This way of seeing good city form—as a complex family of spaces emerging over time from a series of discrete interventions and refinements—stands apart from the view that dominated city planning and architecture in the second half of the twentieth century. The habit of drawing up simplified, ideal cities was many centuries old by then. But with the new futuristic enthusiasm, technological power, and building booms, the postwar Modernists took grandiose utopianism to new levels (low and high). Some assumed that excellence in city form would best be achieved by making the city plan the work of a single master. If the tangled and contradictory city of the past could only be unified under one hand, some thought, maximizing the influence of the soloist's grand personal vision, perhaps it could be succeeded by a one-artist utopia. Predictably the approach instantly racked up many failures, glaringly in Chandīgarh and Brasilia.

Colin Rowe and Fred Koetter helped guide urbanism back to a happier path with their critical writing in *Collage City*; they dismissed the idea of the city as an authoritarian, single-authored, supersized, "perfect" utopian vision and suggested instead that the many scenes of a city can be built up from the juxtaposition of bite-size utopias.[19]

This is a useful way for the urban designer to see the street spaces of a contemporary metropolis—as a series of interconnected spatial experiences that are stitched together and perfected independently and gradually (Figures 1.30 through 1.32). These scenes are simultaneously the beneficiaries of personal artistic vision and collaborative art, as the urban designers lay down lines that guide a collaboration whose participants may never meet: engineers and architects and landscape architects who do their work in small and large projects spread out over centuries.

Rowe and Koetter dismissed the idea of the city as authoritarian, single-authored, supersized, "perfect" utopian vision and suggested instead that the many scenes of a city can be built up from the juxtaposition of bite-size utopias.


**Figure 1.31:** High Street, Dumfries, Scotland. A beautifully informal series of public spaces. *Library of Congress, Prints and Photographs Division, Detroit Publishing Company Photograph Collection, LC-DIG-ppmsc-07574*

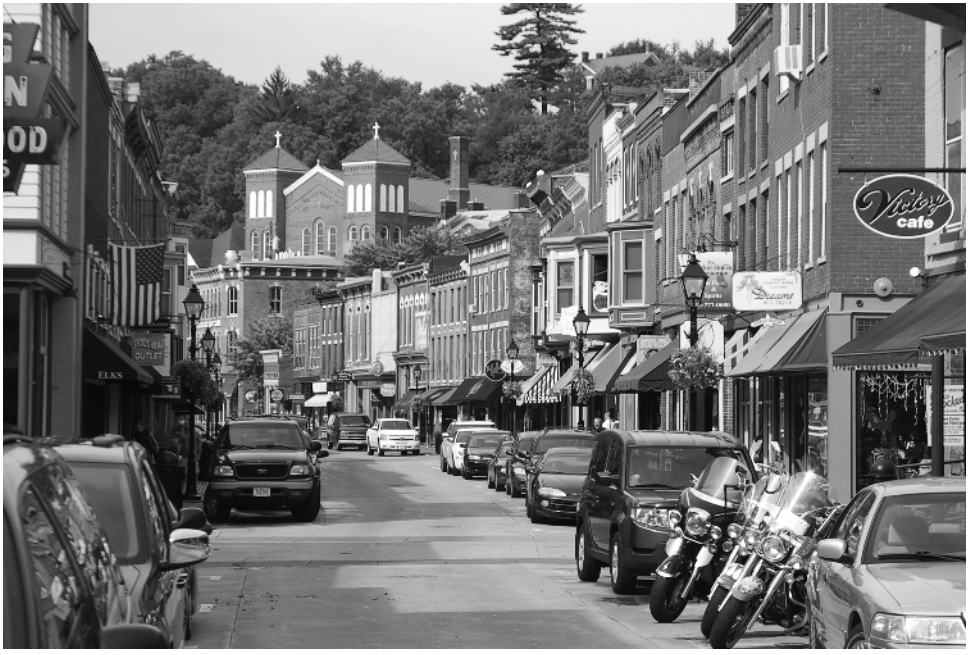



**Figure 1.32:** Main Street, Galena, Illinois. The city is an assembly of public works of art that are never finished, produced by many hands collaborating over time. Galena is discussed in a case study in Chapter 2.

## CONTEXT MATTERS

Street designers must work in context. A winding road out in the country should not look the same as an urban street inside the loop in Chicago, and a small-town residential street should have a different character than a Parisian boulevard. Today, most New Urban designers and developers use the Urban to Rural Transect developed by Andrés Duany and Douglas Duany. The Transect has six "transect zones": at one of end of the scale is T1, wilderness like Yosemite National Park or the Amazon rain forest, and at the other is T6, the metropolitan core. T2 is rural land, like farmland. Zones T3 through T5 describe different densities and forms of building, adjusted to local conditions, so that T4 would be different in a small country town than in Manhattan. Some choose to modify the Transect by adding T-zones or subzones, especially to differentiate the area where high-rise development should be allowed (Figure 1.34).

People not familiar with the Transect sometimes have a hard time visualizing how this works. It can help to think of the Transect in relationship to how we dress for different places. A banker making a presentation in a corporate boardroom on Wall Street (T-6) in Manhattan wears a dark suit and black leather shoes with laces. The farmer harvesting the wheat on his farm (T-2) might wear blue jeans, a flannel shirt, and brown work boots. The third grader walking to his elementary school from his family's house (T-3) has khaki pants and Jordan Aero Flight sneakers, while the writer in her home office in Park Slope, Brooklyn, puts on her heels to go out to lunch in Manhattan.

Dress is like style, so it's important to emphasize that the Transect is about much more than style. The size of a building, the massing of a building, the relationship of a building to the street, and indeed the way the street is made are all part of the Transect. An office building on Wall Street in Manhattan (T-6) is taller than a farmhouse in T-2, and it has a different relationship to the street. The office building sits at the edge of a large sidewalk, with no setback, while the road in front of the farmhouse probably has no sidewalk, and the house may be far from the road. The rural road in the country (T-2) has no curbs, but a main street in T-4 might have granite curbs and certainly has sidewalks. The traffic lanes in T-4 and T-6 should be narrow, so that cars will drive slowly in the space they share with pedestrians.

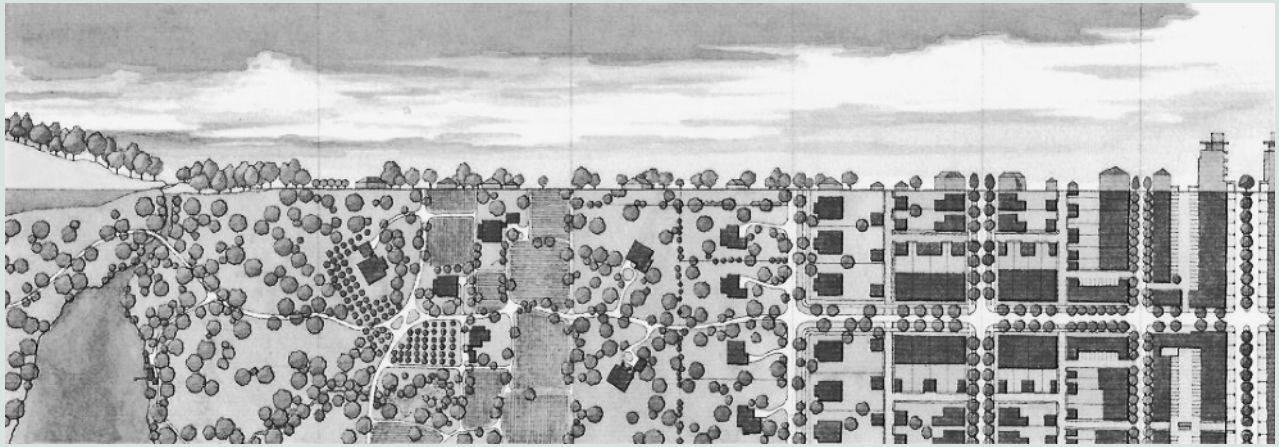


**Figure 1.33:** Urban to Rural Transect. Plan and section illustrating the six T-zones in the Urban to Rural Transect (also known as "the Transect"). Duany Plater-Zyberk & Company, 1996–2013. *Image courtesy of Duany Plater-Zyberk & Company*

The buildings lining the streets and sidewalks on Wall Street are stone buildings, while the village stores might be in buildings with wood clapboard. A fence in T1 might be a split-rail fence or a stone wall, but you wouldn't use the split-rail on Wall Street, where an iron railing is more appropriate. This is unlike the prevailing trends in contemporary architecture, where a mirror-glass tower is used on Wall Street, in a semirural office park, and in every T-zone in between.

The Transect figures prominently in the best new form-based codes. New Urbanists use these codes to regulate "the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks" rather than to simply separate activities and land uses.[20] This is a great improvement over the use-based and automobile-centric zoning that contributed to the physical degradation of our towns and cities. To give one example, parking requirements in those auto-centric zoning regulations called for suburban amounts of parking—numbers that were often met by tearing down buildings on Main Streets, leaving unwelcome gaps in the scene. Form-based codes, on the other hand, typically emphasize the importance of continuous streetwalls in commercial areas and call for filling in the gaps on important streets—or at least arranging buildings so that the parking is behind them (Figure 1.34).

**Figure 1.34:** Urban to Rural Transect. Some choose to modify the Transect by adding T-zones or subzones. This rendering illustrates two T-5 zones. Dover, Kohl & Partners, 2006. © *2006 Dover, Kohl & Partners*

## WALKABILITY

> Restore human legs as a means of travel. Pedestrians rely on food for fuel and need no special parking facilities.
>
> —Lewis Mumford

Until recently, settlements have always been walkable. Note that we use "walkability" as an indicator of a community's livability and completeness, not simply its friendliness toward pedestrians. The walkable streets tend to be the environments where households and businesses and institutions prosper. They tend to be the ones where cyclists are most comfortable, and the ones that make public transit most practical. They tend to be the ones where investments in infrastructure and property are rewarded with revenue. They tend to be the safest, most beautiful, and sustainable. Perhaps most important—because these streets allow for human interaction face to face instead of through windshields—they tend to encourage the social bonds between neighbors and strangers that help solve problems and let democracy flourish.

Walkability is the baseline in street design for a sound city. From there we add the other ingredients in the amounts necessary for each street segment's individual recipe: cycling, motoring, deliveries, garbage pickup,

**Figure 1.35:** Red Road, Coral Gables, Florida. White plastic sticks are everywhere in modern streets. We are so used to them that we subconsciously discount how alien and alienating they feel to the pedestrian.

**Figure 1.36:** Grant Avenue, San Francisco, California. Walkable streets are like comfortable outdoor rooms, places where we want to get out of our cars and enjoy the public space.

emergency response, utilities, parking, and other considerations can be incorporated in a balanced way once walking is established as the foundation of the design.[21] To return to the time-tested model of successful mixed-use cities and towns, the pedestrian's needs must come first: vehicles should be accommodated but not at the expense of the citizen on foot.[22]

## PRINCIPLES OF WALKABILITY

As we saw in our visit to East 70th Street, the basic principles of making streets where people want to walk are simple. To put it another way, these places are shaped, comfortable, safe, connected, interesting, and memorable.

### Shaped

Walkable streets have spatial enclosure. This results from the arrangement of architecture and trees in a way that forms a recognizable outdoor room, in which the "walls" of the room are the facades of the buildings and/or the column-like trunks of street trees, and the "floor" is the surface of the sidewalks and roadway. The proportional relationship between building height and street width and the continuity of the streetwalls are the prime determinants of the sense of place and street character. When the space between the buildings is too wide to give a sense of enclosure, or when there are gaps in the wall, street trees can be used to shape the space.

### Comfortable

In hot places, pedestrians want shade. In cold places, pedestrians like access to sunlight. In the subtropics, people seek protection from sudden storms. Street trees are a most common form of climate adaptation, but awnings, marquees, arches, colonnades, galleries, and other architectural

devices also work well. On shopping streets, adaptation to climate can be especially important. Awnings over storefronts make walking more comfortable and protect the interior from glare. Architectural features that control the effects of the climate can be a crucial ingredient in local distinctiveness. For example, in the Middle East or Central America, the close placement of buildings on the narrowest village streets keeps more of the street space in shade during the hot part of the day. In Bologna and Turin, arcades over the sidewalk became signature features of the two cities.

## Safe

As pedestrians, we choose to return to places where we feel reasonably free from danger. Without necessarily stopping to think about it, we quickly size up the risks in our environment and steer toward the safer routes as we move about a city. Streets that seem to be watched over by windows, doors, storefronts, or balconies feel safer than streets lined with blank walls; this impression of "natural surveillance" has been shown to reduce street crime. Having other people around going about their business is additionally reassuring because we feel more secure. Safety also means having the confidence that if we were to fall ill or have an accident, a call for help will be heard.[23] Finally, pedestrians want to feel safe from the dangers posed by cars. The best defense against mayhem in pedestrian–auto collisions is to keep motoring speeds low, by design. Studies show that as speeds increase just slightly, injuries and fatalities rise dramatically. Any excessive width in the area devoted to motoring—whether in the number of lanes or their dimension—pushes speeds higher and discourages walking.

## Connected

Walkers choose the paths that take them where they want to go. Walkable streets are almost always part of an integrated network—ideally, one with small blocks, so that there are many possible routes. The best street networks offer the pedestrian not only choices about which path to take but also a variety of experiences. When street vistas are arranged to create a sequence of legible segments, marked by landmarks that help with wayfinding and orientation, walkers have a sense of how the street space is knitted into the fabric of the surrounding neighborhood. Not surprisingly, studies undertaken to analyze "space syntax" consistently show that city streets with the most connections to the rest of the network tend to be streets where stores get the most traffic and business.[24]

## Interesting, Memorable

Pedestrians are easily bored. We are attracted to places that are beautiful and distinctive. The need can be satisfied with overt design, such as a formal axis framing a ceremonial building on a main street, or with something as subtle as a canopy of leafy autumn color on a quiet and ordinary street. We are drawn to the places that have richness, texture, and character; we tend to return to the places where the three-dimensional geometry of urban design and architecture is employed, in conspicuous or subtle ways, to create street scenes that unfold in some theater-like progression. We naturally want the backdrop of daily life to be agreeable, not drab. Beauty is not something extra to be added in after all of the other decisions about a street have already been made; it's the one ingredient without which no street is ever "complete" (Figure 1.37).

**Figure 1.37:** Rue de Seine, Paris, France. We are drawn to places that have richness, texture, and character, where street scenes unfold in a theater-like progression.

## PLACEMAKING'S POTENTIAL FOR RETURN ON INVESTMENT

Redesigning streets to make places for people may seem like a frivolous, irresponsible way to spend public money, especially during tight financial times. Some will inevitably argue that the zero-investment scenario for automobile-oriented streets is the best way forward—or that, if precious infrastructure funds must be spent, then redesigning streets to be wider and faster is the more practical choice.

Despite being seen as mere "enhancements," however, public investment in retrofitting automobile-oriented streets to make them more pedestrian friendly has been proven to have economic benefits for the communities around them. When streets are transformed into desirable addresses, they attract and concentrate demand for the construction and rehabilitation of the buildings along them, resulting not just in higher property values but also in new housing, increased sales, increased employment, or all three. The municipality benefits directly from the resulting increase in property taxes, hospitality taxes, and sales taxes. The revived street also offers the government at all levels potential cost-savings, which flow from the concentration of activity, especially compared to the cost of delivering municipal services to far-flung sprawl. Other benefits include increased transit use and job creation.

It is critical that we recognize the economic value of real placemaking. Otherwise, retrofitting auto-centric streets will be mistaken for a superficial frill rather than a sound investment in the health of the community. Cities and towns considering the cost of building streets have to weigh the benefits of faster-moving traffic with the economic and social costs of spending money on infrastructure that only serves the car. Beyond the dollars spent on construction, road building affects future land-use patterns and the all-important character of the surrounding community. An important test is whether property values go up or down after public monies have been spent. Regional demands for highways have to be balanced against the needs of the immediate neighborhood. Much harm has been done in cities and towns to speed things up for commuters headed elsewhere, which can make the streets worse for pedestrians, shoppers, and residents. When traffic concerns are leavened with placemaking, infrastructure improvements can improve property values considerably.[25]

Sometimes poor development choices are guided by the wrong financial considerations—penny-wise, pound-foolish decisions that favor short-term gains over long-term development goals. At other times, however, the smarter economic and aesthetic choice is also the least expensive over both the short term and the long term, but leaders still may choose poorly; in these instances, the fault lies with hidebound practices and a lack of imagination. Johnnie Dodds Boulevard in South Carolina and Columbia Pike, in Virginia, provide two contrasting—and illuminating—examples of the choices policymakers face.

### Two Case Studies

In Mount Pleasant, South Carolina, the segment of Highway 17 known locally as Johnnie Dodds Boulevard is an arterial commercial strip that aged in a graceless way. As sprawl increased traffic, property values declined and blight spread. In 2005, the late economist Don Zuchelli compared the economic costs and benefits of two possible retrofit strategies for Johnnie Dodds Boulevard. The first scenario, embraced by government traffic specialists, favored the conventional approach of increasing automobile capacity (Figure 1.38). The second scenario, put forward by a nonprofit planning council, argued for a traditional multiway boulevard, making places where pedestrians want to be (Figures 1.39, 1.40, and 1.41).

Zuchelli's comparison found that the placemaking alternative would cost approximately $62 million, but in the first twenty-five years, the property value would increase by $207.3 million and annual retail sales would increase by $156 million. Bottom line: the municipality's return on investment would be approximately 145 percent in the first twenty-five years. The government-endorsed alternative, on the other hand, would cost approximately $104.3 million to construct, while Zuchelli predicted that over the

**Figure 1.38:** Johnnie Dodds Boulevard, Mount Pleasant, South Carolina. A simulation of the Highway Overpass scenario, 2005. © *2005 Dover, Kohl & Partners / UrbanAdvantage*

**Figure 1.39:** Johnnie Dodds Boulevard, Mount Pleasant, South Carolina. Existing Conditions, circa 2005. © *2005 Dover, Kohl & Partners / UrbanAdvantage*


**Figure 1.40:** Johnnie Dodds Boulevard, Mount Pleasant, South Carolina. A simulation of the Multiway Boulevard scenario preferred by local residents, Dover, Kohl & Partners, 2005. © *2005 Dover, Kohl & Partners / UrbanAdvantage*

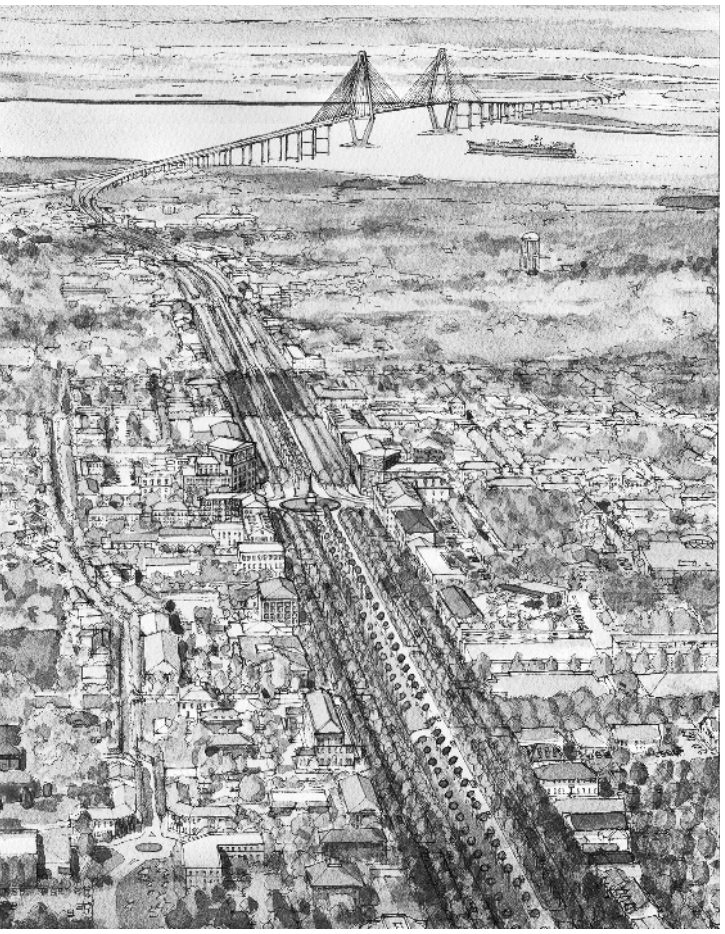


**Figure 1.41:** Johnnie Dodds Boulevard, Mount Pleasant, South Carolina. Aerial Rendering of the Multiway Boulevard scenario designed by Dover, Kohl & Partners in 2005. *© 2005 Dover, Kohl & Partners*

same period the property value would eventually increase by just $33.8 million and annual retail sales would slowly increase by $14.8 million. Bottom line: the government's return on investment for their preferred strategy would be negative, at approximately *minus* 113 percent. Unfortunately, the government chose that strategy; unthinkably, it will cost the taxpayers more than the competing design in both the long term *and* the short term.

The Mount Pleasant saga contrasts with the very successful return-on-investment story still unfolding on Columbia Pike in Arlington County, Virginia, where strategic moves by the local government are already paying off handsomely for taxpayers. After a long period of public and private disinvestment, in the late 1990s the community made revitalizing the Pike a priority by committing to placemaking—the opposite of the Johnnie Dodds highway approach. Rather than starting with a road-widening (or by rushing to redecorate by installing pavers and benches), Arlington County began by rewriting the land-development regulations. That unlocked a wave of new private investment in street-oriented buildings along the Pike. The results of the effort are highly visible, which inspires confidence in the community.

According to Arlington County Board member Christopher Zimmerman, the first six developments sparked by the changes to regulations on Columbia Pike are worth a combined $400 million and annual tax revenues of more than $5 million per year. The next wave of infill development, already in the permitting stages, is expected to raise that revenue figure to $10 million—every year. Now the revitalization effort has moved on to a more ambitious phase, including plans for a new streetcar line matched with a push to simultaneously build both affordable housing and luxury housing, so that a mixed-income community will emerge now that prosperity has returned to Columbia Pike. For their investment, residents of Arlington County are getting more jobs, more housing options, a corridor in which it will be easier to move around, and a better quality of life. Columbia Pike will generate great wealth for its investors *and* sustained revenue for public needs.[26]

From an economic-development perspective, the best street design is one that blends land-uses that produce tax revenues with street connectivity without placing undue stress on commuter traffic. Connectivity and placemaking foster alternative forms of transportation and create environments that add value and uniqueness to the street. Car trips and local public service costs drop if residential land use is integrated with good commercial and public services. Property values tend to be higher in areas supported by roads that include pedestrian and bicycle traffic and where buildings are pulled up to the sidewalk rather than set back behind parking lots.

## ATTRACTING THE CREATIVE CLASS

The creative class, defined by sociologist Richard Florida, is that restless group of talented artists, writers, scientists, professors, and entrepreneurs characterized by imagination and innovation. When members of the creative class come together in sufficient numbers, they generate economic growth and boost local and global wealth. According to Professor Florida, the creative class is attracted to settings with a lively public realm that feature talent, technology, and tolerance. Drawn to historic cities by the grit and authenticity found there, they seek out places with a good supply of potential mates, and are generally repelled by sprawl. The power of placemaking defines these locations; the creative class chooses where they want to live before they decide what work to take (or create). When employers follow them to "creative centers," the economic result is impressive. Supporting the places that attract the creative class is crucial to advancing financial success, and that is one reason why agreeable street scenes are actually an economic development tool.

## COMPLETE STREETS AND THE ENVIRONMENT

Building better streets can be an effective way to address climate change. An agreeable street design encourages people to replace driving trips with walking, cycling, or transit use, reducing greenhouse gas emissions and the consumption of fossil fuels. According to Reid Ewing and the researchers behind *Growing Cooler: The Evidence on Urban Development and Climate Change*, the potential impact of this "mode shift" is vast.[27] Their analysis of vehicle miles traveled shows that a well-connected street network with good public transport can decrease auto use and have a positive effect on the environment. They observe that increased density results in lower levels of VMT and that compact urban development promotes freedom from dependence on the car.[28] And they discuss the work of Peter Newman and Jeff Kenworthy, who conclude that higher-density neighborhoods lower VMT numbers and reduce fuel consumption far better than any other method of cutting fuel consumption.[29] Those who drive less also get more exercise.

Good streets help the environment on another, more subtle level. Walkable streets with bike lanes and mass transit reinforce a variety of broad environmental goals such as controlling sprawl, reducing regional energy consumption, protecting watersheds, and stemming the loss of farmland and wilderness. They do this by encouraging growth in the right places.

On the other hand, no one wants to walk on the arterials and collectors built under the Functional Classification system. Combined with the vast interstate highway system, these roads advanced the sprawl process they were part of by inducing the building of more and more roads. As generations of Americans used the roads to move farther and farther out to get away from it all, the increased driving had the perverse effect of making the traffic still worse—and, yes, inflating demand for still more and wider roads.

A good street where people want to be is naturally more marketable, so it sets up its adjacent places for perpetual use and reuse. This is the ultimate recycling process: reoccupying previously settled land more densely and giving historic buildings new life also accommodates population growth and economic change. Without this, population growth and economic evolution lead inexorably to the development of raw land in far-flung locations, skipping over the previously built-on land. To discourage sprawl, we have to make the real cities and towns attractive to the large number of homebuyers and businesses who have a choice about where to locate. They'll choose the locations that balance beauty, comfort, and convenience with privacy and safety. Better design is the tool that allows compact neighborhoods to fulfill their ecological promise. This is why Michael Busha of the Treasure Coast Regional Planning Council says, "New Urbanism is the operating system of smart growth."[30]


**Figure 1.42:** Koningsplein, Amsterdam, the Netherlands. Walkable, bike-friendly streets with mass transit can be great, "green" places. Amsterdammers use very little energy for cars, because they prefer to walk, bike, or ride the tram.

## ENVIRONMENTAL BENEFITS OF COMPLETE STREETS / Emily Glavey

Carbon neutral. Renewable. Eco-efficient. Green. These words and phrases fill the pages of books, websites, and the blogosphere. Each one references a great initiative. But, while solar panels and recyclable coffee cups are innovative and necessary, they are only a small solution to a complicated environmental problem. A solution with a larger impact? Design and develop better streets, to produce better neighborhoods and cities.

Sustainable development starts with the street. If a person can walk or bike to a destination, decreasing fossil fuel use and reducing daily Vehicle Miles Traveled, then her or his commute becomes more efficient. Driving fewer miles reduces greenhouse gas emissions. Since people don't like to walk on streets that are dominated by car traffic and they don't like to cycle on a road that was designed for only the automobile, accommodating these alternative forms of transport is a logical priority. It turns out that this logic is actually part of a rising trend—automobile ownership per household peaked in 2001 in America and has been steadily decreasing ever since. Fewer people are driving, and the resulting reduction in VMT is huge.

Designing walkable communities that allow people to be less dependent on fossil fuels is both smart and sustainable. "There can be no sustainable development while fossil and nuclear power prevail as the drivers of urban growth, the very definers of city culture," Peter Droege says. "The by-product of fossil fuel burning is skyrocketing atmospheric $CO_2$ concentrations. These are now at 390 parts per million, a full third above the proven stable level of 280 ppm."[31] Streets that connect work to home, and home to school (or entertainment), prompt urban growth that leaves a lighter imprint.

More than any singular energy-efficient policy or initiative, great streets and great street networks have large and lasting environmental effects. What if Amsterdam had not developed to be a city with narrow streets that encourage cycling, but instead had a system of streets that were wide and overrun with only car traffic? It could never have become the cycling mecca that it is today. The urban form of a community can be a catalyst for a thriving metropolitan ecosystem. Climate-responsive design can reduce the "urban heat island effect," create a verdant habitat for native plant species and animals, and accommodate local weather patterns by providing shade trees, arcades, and awnings. Great streets have defined the environmentally responsible cities of the past and will define the best cities of the future.

## GREEN STREETS

A new Green Streets movement uses a combination of modern and time-tested building materials and methods to make streets green. The movement focuses on creating localized storm water systems and habitats, and using renewable building materials and energy production. Notable experiments are underway in the Midwest in Chicago, through the green alleys program, and in the northwest in Portland, Oregon, through a comprehensive program that includes rain gardens in planting strips, and an increased use of permeable pavement types (Figure 1.43).

**Figure 1.43:** SW 12th Avenue. A "green street" in Portland, Oregon. *Image courtesy of Kevin Robert Perry, City of Portland*

**Figure 1.44:** Strandvagen, Stockholm, Sweden. Placemaking achieves utilitarian ends, like accommodating bikes, with beautiful means that transcend mere utility.

**Figure 1.45:** A new Complete Street in Fort Lauderdale, Florida. The green bicycle lanes are the only hint this street wasn't built in the 1950s, when the car was king. This unpleasant, pedestrian-repellent space needs to be a Completer Street.

The green streets built so far, like the bike lane "demonstration projects" in New York City, suggest a need for a design vocabulary that integrates new technology and desires into the traditional language of street design (see Color Plate 21 and Figure 1.43). In the early rain-garden-cum-street projects the experimental vocabulary is heavy with conspicuous reminders of the technical means for collecting rainwater. Like architecture schools today, landscape schools teach that form should express function, not just follow it. The Green Street designers wanted to communicate that something revolutionary is going on, but the expression of the idea becomes more important than the design of the street: the green streets have much to say about stormwater and its collection, but not much about placemaking.

Making the street design into a conspicuous advertisement for stormwater management may have been worthwhile on the first few technologically innovative projects. The same might be said about the contemporary streets repainted for bikes (Figure 1.45). Now, however, is the time to figure out—or remember—how to make these ideas more beautiful and more elegant, with less overdesign (Figure 1.44). For an analogy, think of the arrival of electrified street lighting—first in Wabash, Indiana, and not long afterward in New York City, where the conspicuously overlit segment of Broadway was nicknamed "The Great White Way" by 1880. Designers eventually took on the task of designing electric lamps that fit the streetscape, and gradually the lamppost became an integrated element of street design.

Once the novelty of a useful new technology wears off, its technical and utilitarian conspicuousness can recede. A natural role for civic art is to absorb various elements of the design into context-specific placemaking. The technology's new components should evolve and be integrated into the rest of the street design, so that they add to, rather than subtract from, community character—ideally, to the point where life without them would be hard to imagine. For example, in 1906, a scant generation after electrified street lighting appeared, the much-admired lampposts on the Passeig de Gràcia in Barcelona were introduced by Pere Falqués, the municipal architect (Figure 1.46).[32] Today, they are a famous signature of the street. Miami architect and professor Ramon Triàs, planning director of the City of Coral Gables and a longtime Barcelona scholar, points out that "while almost every other detail of the boulevard has changed since then, the beloved lampposts and benches remain. Barcelona's fixtures were commissioned designs, created by professional artists and architects, not by lamp experts. They were designed to be permanent parts of the civic world."[33]

The job ahead for advocates of healthy streets, green streets, and complete streets is to achieve a level of artistry in the designs that will engender loyalty and love among their everyday occupants.

**Figure 1.46:** Passeig de Gràcia, Barcelona, Spain. Electrified street lights were once a new and novel technology that challenged designers to find appropriate forms. In time, the designers learned how to combine function, construction, and beauty in new forms like this one. *Image courtesy of Paolo Rosa*

## NOTES

1 Gertrude Stein said about Oakland, California, that there is no there there, in *Everybody's Autobiography* (New York: Random House, 1937), 289. Gordon Cullen, the noted advocate of picturesque Modernist planning, thought the concept of "Here and There" (or here versus there) was an important one. Cullen, *The Concise Townscape* (New York: Architectural Press, 1961), 182.

2. Léon Krier, *The Architecture of Community*, ed. Dhiru A. Thadani and Peter J. Hetzel (Washington: Island Press, 2009), 28.

3. Michel Pauls, "111 the american grid," *Recivilization***,** http://recivilization.net/UrbanDesignPrimer/111theamericangrid.php. Quoted by Paul Knight, "The American Grid," The Great American Grid, http://www.thegreatamericangrid.com/2012/07/25/the-american-grid-2/, July 25, 2012.

4. Charles Dickens, *American Notes for General Circulation* (New York: Harper & Brothers, 1842), 39.

5. John W. Reps, *Monumental Washington: The Planning and Development of the Capital Center* (Princeton: Princeton University Press, 1967), 97.

6. George R. Collins and Christiane Craseman Collins, *Camillo Sitte: The Birth of Modern City Planning* (New York: Rizzoli, 1986), 195–196.

7. Sir Raymond Unwin, *Town Planning In Practice: An Introduction to the Art of Designing Cities and Suburbs* (New York: Princeton Architectural Press, 1994), 115.

8. Yodan Rofè, "The Meaning and Usefulness of the 'Feeling Map' as a Tool in Urban Design and Architecture," in *The Oxford Conference: A Re-evaluation of Education in Architecture***,** ed. Susan Roaf and Andrew Bairstow (Southampton, United Kingdom: WIT Press, 2008), 243–46.

9. Allen once owned one of the houses on the north side of the block: see Christopher Gray, "Streetscapes, East 70th Street, Along Millionaires' Row, at the Crest of Lenox Hill," *New York Times***,** September 17, 2006, http://travel.nytimes.com/2006/09/17/realestate/17scap.html. The article also says, "In 1939, *Fortune* magazine called it 'probably New York City's most beautiful residential block,' and Paul Goldberger, in his 1979 book, *New York: The City Observed* (Random House), described it as having 'a perfect balance between individuality and an overall order.'" http://travel.nytimes.com/2006/09/17/realestate/17scap.html. Also see Gray, "Streetscapes, 107 East 70th Street, The Best House on the Best Block," *New York Times,* July 9, 2009. http://www.nytimes.com/2009/07/12/realestate/12scapes.html. Architect and urban designer Léon Krier reportedly prefers the block in Greenwich Village where Barrow Street and Commerce Street come together to form a picturesque intersection. Krier would not like the way that the NYC DOT recently filled the space with bold striping, destroying some of the quiet charm of the irregular space.

10. Charles G. Ramsey and Harold Reeve Sleeper, *Graphic Standards***,** 10th ed., ed. John Ray Hoke Jr. (Somerset, New Jersey: John Wiley & Sons, Inc., 2000), 93.

11. Gray, "Along Millionaires Row," *op. cit***.**

12. Gray, "Streetscapes, 131 East 70th Street, Architect's Own Brownstone Doesn't Fit the Mold," *New York Times*, April 23, 2006, http://www.nytimes.com/2006/04/23/realestate/23scap.html.

13. Jane Jacobs, *The Death and Life of Great American Cities* (New York, Random House, 1962), 150–51. Jacobs wrote, "To generate exuberant diversity in a city's streets and districts four conditions are indispensable:

    1. The district, and indeed as many of its internal parts as possible, must serve more than one primary function; preferably more than two. . . .
    2. Most blocks must be short; that is, streets and opportunities to turn corners must be frequent.
    3. The district must mingle buildings that vary in age and condition, including a good proportion of old ones so that they vary in the economic yield they must produce. This mingling must be fairly close-grained.
    4. There must be a sufficiently dense concentration of people, for whatever purposes they may be there. . . ."

14. The Secretary of Defense, Charles Erwin Wilson, was the former CEO of General Motors.

15. Le Corbusier, *Oeuvre Complète*, 1910-1929 (Erlenbach: Editions d'Architecture Erlenbach-Zurich, 1946), 129 ff. According to Stanislaus von Moos, *Le Corbusier: Elements of a Synthesis* (Rotterdam: 010 Publishers, 2009), 188.

16. Le Corbusier, *Urbanisme* (Paris: Crès, 1925), 113. Translated by Frederick Etchells as *The City of Tomorrow* (London: J. Rodker, 1929). According to von Moos, *op. cit.***,** 188.

17. Le Corbusier, *La Ville radieuse: Eléments d'une doctrine d'urbanisme pour l'équipement de la civilisation machiniste* (Boulogne-sur-Seine: Editions de L'architecture d'aujourd'hui, 1935). Translated by Pamela Wright, Eleanor Levieux, and Derek Coltman as *The Radiant City: Elements of a Doctrine of Urbanism to Be Used as a Basis of our Machine-Age Civilization* (New York: Orion Press, 1967), 74.

18. Road width study: Peter Swift P.E., Dan Painter AICP, and Matthew Goldstein, "Residential Street Typology and Injury Accident Frequency," http://massengale.typepad.com/venustas/files/SwiftSafetyStudy.pdf. Intersection study: Norman Garrick, "Traffic Safety, Travel Mode Choice and Emergency Services," http://www.slideshare.net/CongressfortheNewUrbanism/norman-garrick-cnu-2009.

19. See Colin Rowe and Fred Koetter in *Collage City* (Cambridge, MA: MIT Press, 1984).
20. According to the Form-Based Codes Institute, "Form-based codes foster predictable built results and a high-quality public realm by using physical form (rather than separation of uses) as the organizing principle for the code. They are regulations, not mere guidelines, adopted into city or county law. Form-based codes offer a powerful alternative to conventional zoning." http://www.formbasedcodes.org/what-are-form-based-codes.
21. The AASHTO Green Book states that the transportation officials should first determine the function(s) of the street, then assign the design appropriate for the function(s). If walking is identified as a function of the facility from the beginning, the design will be different; walking ought to be one of the typical functions, but rarely is.
22. Also see Victor Dover's street design essay "Twenty-three" in Emily Talen, Ed., *Charter of the New Urbanism* (New York: McGraw-Hill Professional, 2nd Ed., 2013), 211. "It's time to reunite architecture and the creation of public spaces into complementary and seamless tasks. The details of the right-of-way and the design of adjacent buildings should work together to comfort, satisfy, and stimulate pedestrians. People will walk through areas where they are provided with precise orientation, visual stimulation, protection against the elements, and a variety of activities. Moreover, they must feel safe—both from fear of crime and from fear of being hit by a vehicle."
23. See also CPTED (Crime Prevention through Environmental Design) document, or *Defensible Space* by Oscar Newman (New York: Macmillan, 1973).
24. Some of the best studies on the subject are done by the company Space Syntax. Many are available at http://www.spacesyntax.com/downloads/.
25. See also "Tactical Urbanism in New York City" and the "Madison Square Property Values Study" in Chapter 3.
26. Christopher Zimmerman (Arlington County Board member), interview by Victor Dover, November 14, 2012.
27. Reid Ewing, Keith Bartholomew, Steve Winkelman, Jerry Walters, and Don Chen, *Growing Cooler: The Evidence on Urban Development and Climate Change* (Washington DC: Urban Land Institute, 2008).
28. Ibid., 54–55. "Compact development has the potential to reduce VMT [vehicle miles traveled] by anywhere from 20 to 40 percent relative to sprawl." Reducing VMT reduces the carbon footprint.
29. See also Peter Newman and Jeff Kenworthy in "The Transport Energy Trade-Off: Fuel-Efficient Traffic versus Fuel-Efficient Cities," 1988, http://www.sciencedirect.com/science/article/pii/0191260788900349.
30. Jean Scott, "An Overview of New Urbanism in South Florida," http://www.cnuflorida.org/nu_florida/south_florida.htm.
31. Peter Droege, *Sustainable Urbanism and Beyond: Rethinking Cities for the Future*, ed. Tigran Haas (New York: Rizzoli, 2012), 31.
32. Luis Permanyer, *Un Passeig per la Barcelona Modernista* (Barcelona: Ediciones Poligrafa SA, 1988).
33. In conversation.