

# **101 Things I Learned<sup>®</sup> in Urban Design School**

Matthew Frederick and Vikas Mehta

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Matthew Frederick and Vikas Mehta



THREE RIVERS PRESS  
NEW YORK

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Published in the United States by Three Rivers Press, an imprint of the Crown Publishing Group, a division of Penguin Random House LLC, New York.

[crownpublishing.com](http://crownpublishing.com)

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Library of Congress Cataloging-in-Publication Data is available upon request.

ISBN 9780451496690

Ebook ISBN 9780451496706

Illustrations by Matthew Frederick and Vikas Mehta, except lessons [5](#) and [20](#).

Lesson 20 illustration © F.L.C./ADAGP, Paris/Artist Rights Society (ARS), New York 2017

Cover illustration by Matthew Frederick

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- 65 | Design for 3 mph.
- 66 | Separating pedestrians from vehicles is risky.
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- 81 | Initiate on impulse; design intuitively; justify with data.
- 82 | "Fools act on imagination without knowledge. Pedants act on knowledge without imagination."
- 83 | Don't just design; *respond*.
- 84 | Synthesis beats compromise.
- 85 | Make every decision accomplish at least two things.
- 86 | Sometimes you need to do one thing extraordinarily well. Most of the time, you need to do everything well enough.
- 87 | How and where will people *move*?
- 88 | Don't be afraid to do the obvious thing.
- 89 | "[No one] who bothers about originality will ever be original..."
- 90 | While making big plans, consider the details. When mucking around in the little stuff, stay alert to the big picture.
- 91 | The key to solving a wicked problem is to stop trying to solve it.

- 92 | Without a crisis, there's no breakthrough.
- 93 | A design scheme is an argument.
- 94 | Be brutally self-critical.
- 95 | Place > space
- 96 | Palimpsest
- 97 | Change is constant.
- 98 | Urban is *how* people live, not simply *where* they live.
- 99 | If it can't be urban now, make it easy for it to become urban later.
- 100 | They're not going to build what you draw.
- 101 | Your work will go on after you.

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## Author's Note

Students of urban design dwell in contradiction. In the design studios they take each semester, they are charged with designing important parts of cities and towns, even though they have little design experience and a limited understanding of urbanism. They receive minimal instruction on how to achieve their goals; instead, they must learn by *doing*. This approach may be necessary—as instructors, we cannot claim to have found a better way—but it asks the student to move in opposite directions at the same time: forward, toward the completion of a project, and backward, toward the understandings needed to complete it well.

How does a student negotiate this paradox? How does one design something before knowing anything about it? Where does one start—with understanding or action? Are there tangible strategies one can lean on while remaining on the lookout for larger learnings?

The answers are unlikely to be found in textbooks or a formal lesson plan. But they exist in the design studio nonetheless, typically in parenthetical conversations and offhanded observations instructors offer students to get them unstuck, shoo them off a wayward course, or simply inform or inspire them. Once the parentheticals are out of the way, the instructor returns to the lesson plan—ostensibly the “real” teachings. But we believe the parentheticals more often *are* the real teachings. And so we have distilled 101 of them in the following pages, a task we have found both daunting and liberating. Daunting, because it is impossible to fit

urbanism—humanity’s largest physical undertaking—into a small book. But liberating, because our real goal has been to accompany the student through the difficulties of the design studio.

We have focused mostly on the prosaic aspects of North American urbanism. We have not pursued some teachings, movements, and projects found in some urban design programs: the planning of supercities; the devising of large-scale, infrastructural interventions between cities and nature; the re-creating of traditional urbanism; or the clever engagements of “tactical” urbanism. There is much to learn from each of these, but we believe the essential questions for all urban places are and will remain the workaday experiences of ordinary people in ordinary life.

For this very reason, we think this book will be useful to many others beyond the design studio. Indeed, those on the front lines of real-world urban design—city and town administrators, professional designers and planners, and ordinary citizens—face the same dilemma as the student: an expectation or hope of realizing concrete solutions quickly, even as bigger questions beg to be explored. The all-too-common resolution is a resort to predigested design guidelines, “complete street” prescriptions, and other preformulated solutions, as if urban design amounts to standard answers applied universally. No doubt, universal principles apply to all urban places. But each place is unique in ways that make it rooted, authentic, and beloved. This is why urban design cannot be taught linearly. Some things are universal and some are specific, and while some should be learned ahead of others, there is no one place to begin. The entry point into a broad understanding of urban design is different for different people. We hope that one or more of the following proves to be yours.

Matthew Frederick and Vikas Mehta

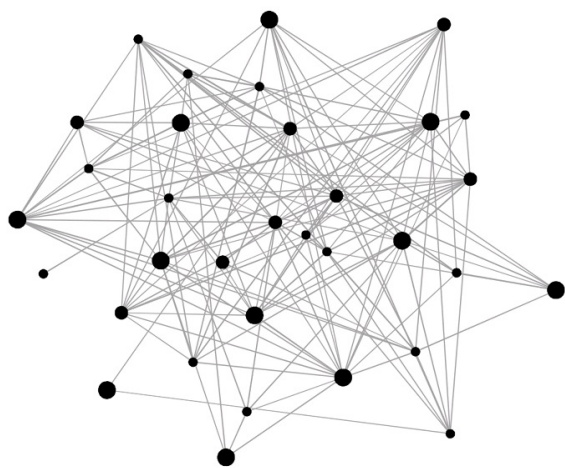
# Acknowledgments

Thanks to Tricia Boczkowski, Steve Delp, Sorche Fairbank, Matt Inman, Conrad Kickert, Andrea Lau, Binita Mahato, Shilpa Mehta, Scott Paden, Danilo Palazzo, Amanda Patten, Angeline Rodriguez, Molly Stern, and Rick Wolff.



## Relationships, not just parts

Each part in a symbiotic system is made stronger by its relationship to other parts. To connect symbiotically is to link parts to parts, make parts into systems, and join systems to other systems.



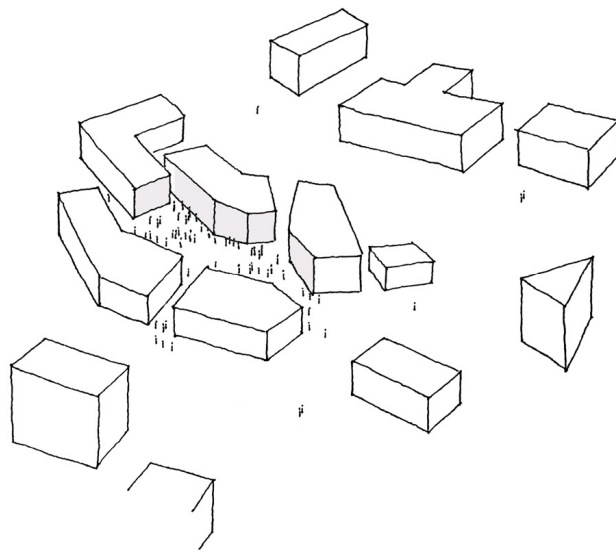
## You're 85% like everyone else 85% of the time.

The essential tools for studying urban design—you and your city, town, or village—are available twenty-four hours a day. By examining your own behavior in urban places, you can learn much about what works for others and why. Do you favor walking on some streets over others, or one side of a street versus the other? Do you take one route to your friend's house and a different way home? Do you get disoriented in one part of town? Are you comfortable among strangers in some places but not others? Most important, can you identify specific attributes of these places that influence your actions and experiences?



## We prefer enclosed spaces.

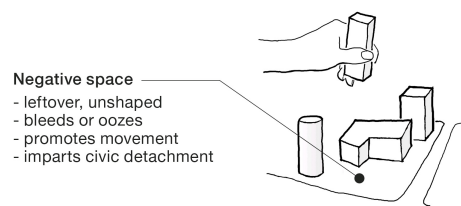
Contrary to popular belief, most people shun wide-open spaces. We may occasionally enjoy hiking open fields, visiting the beach, or viewing an expansive landscape from a car, but the outdoor spaces we choose to inhabit in a civic context have a high degree of definition and enclosure.



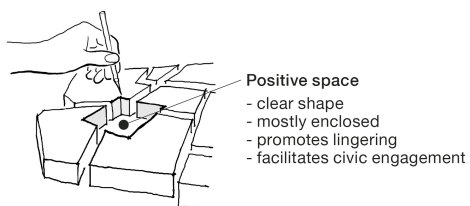
## Invert your thinking.

Our culture predisposes us to see and understand reality as an arrangement of objects. To our modern eyes, space is a void within which we create or place objects. We tend not to give space a shape but to treat it as a leftover, or residual, from the placement of objects.

The opposite understanding applies to the making of urban places. Just as one ordinarily gives shape to buildings, the urban designer gives shape to outdoor spaces. Buildings are often the leftover; they are typically sited, configured, formed, and even *deformed* so that public streets and plazas can have clear, meaningful shape.



Object prioritization

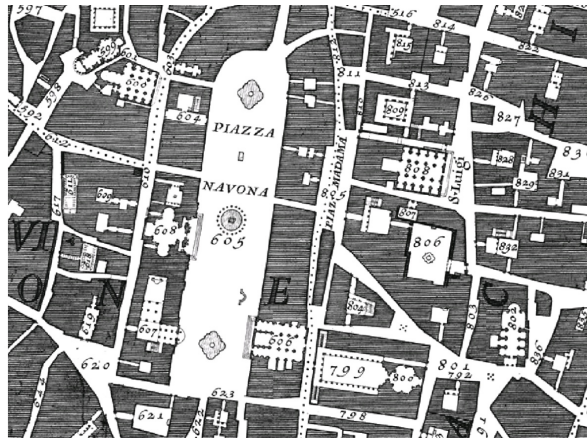


Space prioritization



## Space doesn't make space. *Forms* make space.

A public space, in order to have a clear shape, must be surrounded by a preponderance of built form, not more space. In walkable districts, ground coverage—the ratio of building footprint area to land area within a block—usually exceeds 50%. In ancient cities, this ratio may be over 90%.



Nolli map of Rome (partial), 1748

## Cities aren't always urban, and suburbs aren't always suburban.

**Urban:** Having high population density and mixed uses. An urban area can exist within or beyond the political boundary of a city and may be the size of a village, neighborhood, district, town, or city.

**Suburban:** Literally, sub-urban—i.e., less than urban, with low population density and segregated uses. *Suburban* is also a geographic descriptor for any settlement located on the outskirts of a large city, even though it may be partly or mostly urban.

**City:** A complex, enveloping settlement with a large number of people, typically containing areas that are urban and suburban, and sometimes even rural. A city may or may not be an official political entity.

**Urban sprawl:** A misnomer for suburban sprawl. Urbanism is inherently compact.



Geographic  
suburb of Boston



Many areas of  
suburban character



City form of  
government

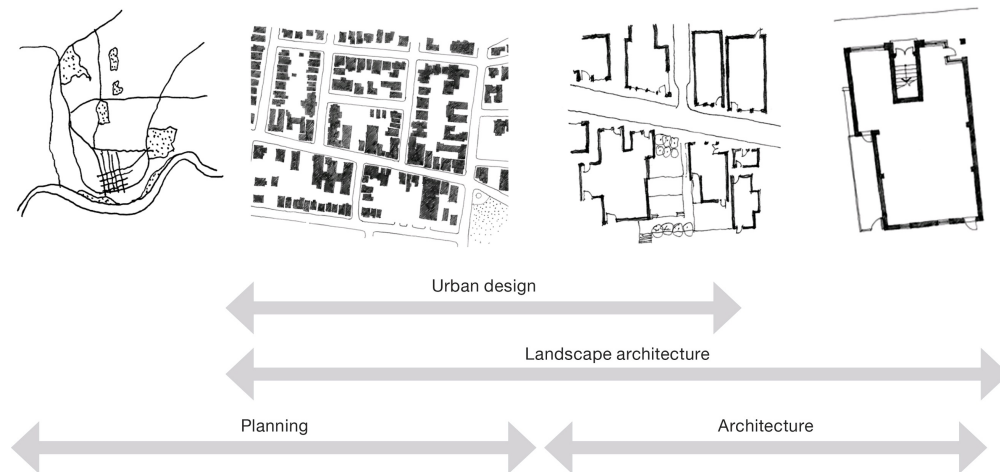


Thirteen urban/  
quasi-urban villages

#### Newton, Massachusetts

## Urban design isn't architecture writ large.

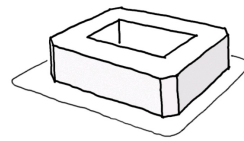
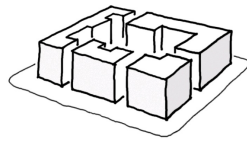
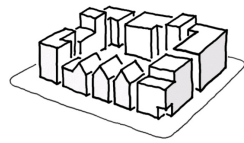
Urban design affects and is affected by building architecture, but it is not the design of multiple buildings. It is the design of the public realm, which among many other things includes the relationships among buildings. It is shaped by many disciplines, including architecture, public policy, behavioral science, sociology, environmental science, landscape architecture, urban planning, and engineering.



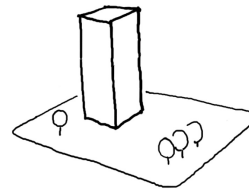
## Honor the streetwall.

Most urban buildings should be **streetwall buildings**, with continuous or nearly continuous frontage along or near the sidewalk. This lends the space of the street a consistent shape and places ground floor uses close to pedestrians. On the most comfortable, walkable streets, the streetwall comprises over 50%, and often close to 100%, of each block's sidewalk frontage.

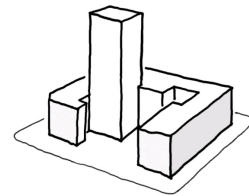
**Object buildings** are surrounded by open space. While we tend to see only one or perhaps two sides of a streetwall building, we are able to move around an object building and perceive it as a three-dimensional entity. It is usually designed to be distinct from its context—for example, by setting it back from the streetwall, elevating it above the ground plane, and/or rotating it from the prevailing geometries nearby.



Streetwall blocks



Object-in-space block



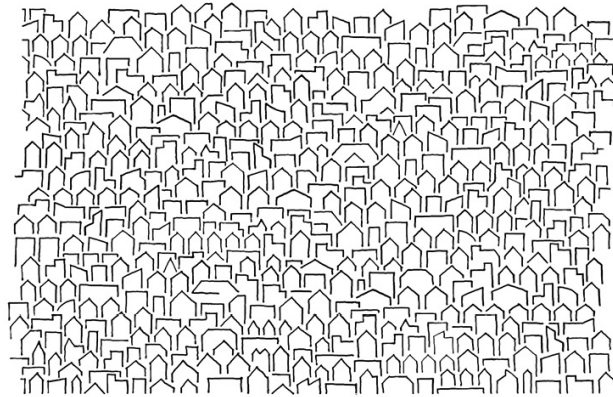
Hybrid block



## Knit some fabric.

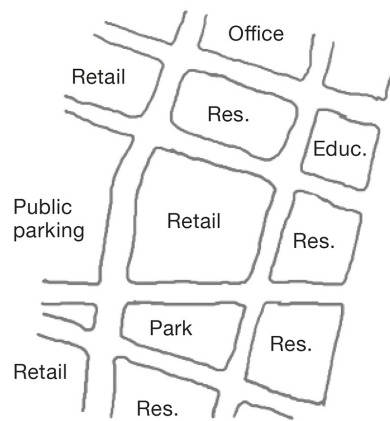
A textile fabric is made by weaving many individual threads into a whole. The resulting cloth, observed broadly, has a uniform makeup. But observed closely, it exhibits great variety—in the color, thickness, and spacing of threads; in slubs and other local deviations; and in embedded twill or jacquard patterns.

A useful and attractive garment has special features—seams, darts, buttons, lapels, and cuffs. But without the consistency and strength of the fabric, there can be no features; there can be no garment at all.

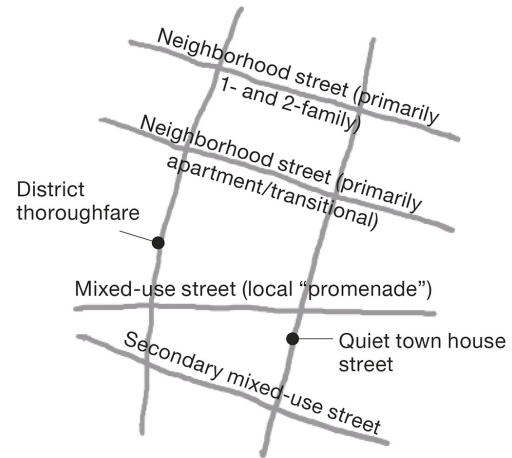


## Design streets, not blocks.

Twentieth-century urban designers and planners typically—and mistakenly—conceived urban places as agglomerations of blocks, often with each dedicated to a single use. But the primary interest of those inhabiting an urban place lies in the street. The business proprietor, homeowner, and pedestrian desire that the street on which they find themselves has integrity and continuity—up, down, and across from where they are. They do not benefit from having the other three sides of a block serve a purpose identical to the side on which they are located.



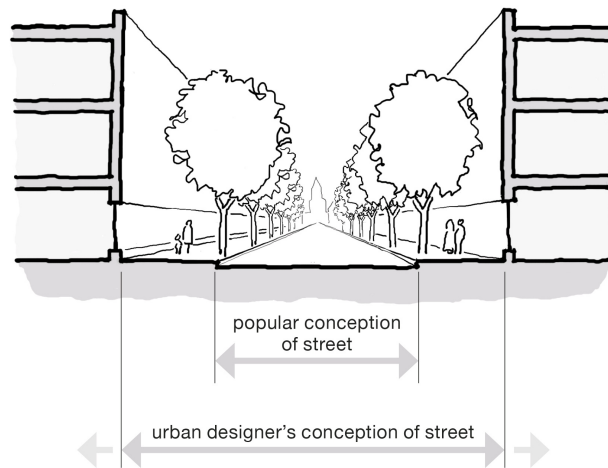
Block prioritization



Street prioritization

## A street isn't curb to curb.

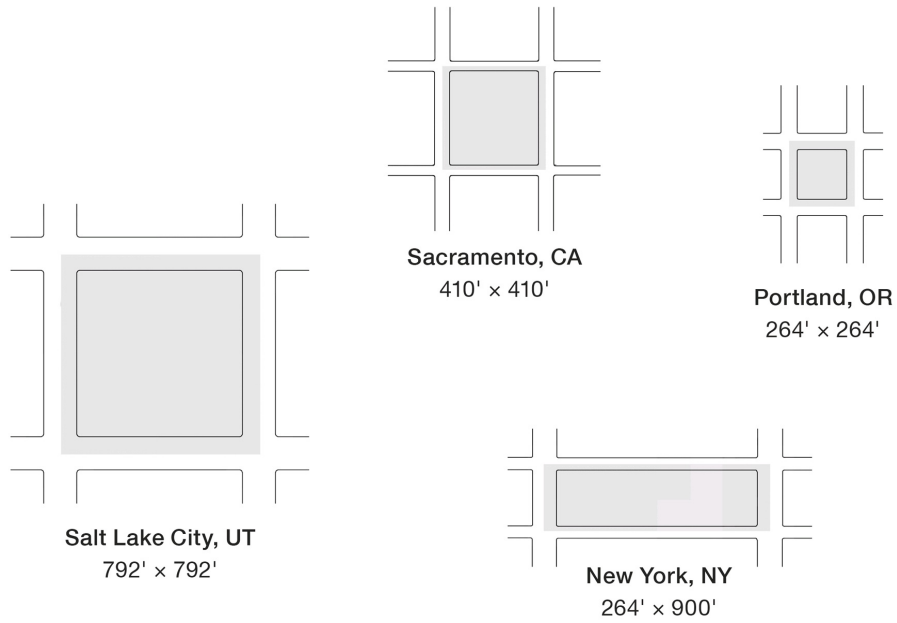
A street is not the two-dimensional surface on which motor vehicles travel, but the volumetric space extending from building face to building face. An urban designer's concern for the street may extend even farther, into the buildings.



## Small blocks are friendlier.

The shorter blocks are, the more easily people can explore, choose a preferred route of travel, or simply take a walk around the block. In the most walkable urban places, blocks measure less than 275' in at least one direction, a distance an average walker can cover in one minute. A block may be longer the other way, but if over about 600' it should be broken by a mid-block shortcut, such as a pedestrian way, vest-pocket park, or through-lobby.

Short blocks mean more intersections, providing high visibility to more businesses. Long blocks tend to be quieter, which can be detrimental to businesses at mid-block. However, they can benefit residences, especially in large cities. The extreme length of Manhattan's east–west streets buffers their interior-most portions from the extraordinary bustle of the commercial avenues, which run in the blocks' north–south, short direction.

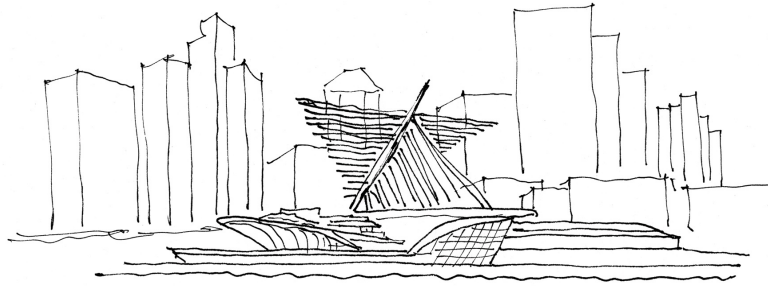


Typical block sizes, street centerline to street centerline,  
including mid-block alleys if present



If every building is a landmark, there's no landmark.

An object building must be deserving of the spotlight. Limit object status to buildings of true importance, such as major civic and institutional structures. When object buildings become the norm rather than the exception in a district, open space increases and habitability and walkability are reduced.

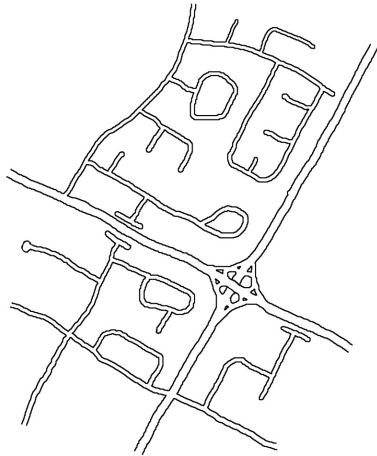


**Milwaukee Art Museum**  
Santiago Calatrava, architect

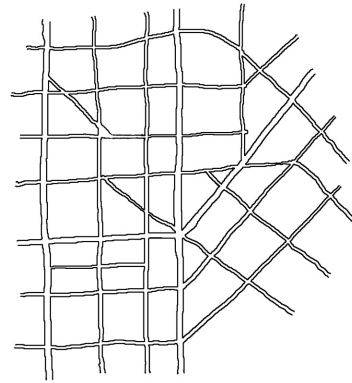
## Suburban streets collect. Urban streets interconnect.

Suburban street networks are usually hierarchical. Each roadway collects traffic from streets lower in the hierarchy and funnels it to a more primary street. For example, a suburban residential cul-de-sac is intended to be used only by its residents and their visitors. It may feed a looping neighborhood street, which connects to a local tertiary street, which feeds a yellow-striped secondary road, which feeds a multi-lane primary route, which feeds a major highway.

Urban streets are more egalitarian and interwoven. Nearly every street connects to many other streets, such that one can get from any point in the system to any other point via almost any street. Even residential-only streets accept through-traffic, easing the burden on the overall system and promoting social interconnection.



Suburban

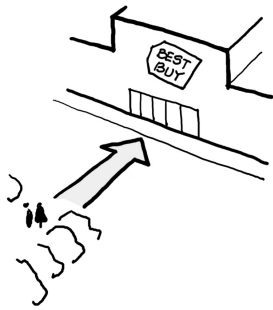


Urban

## Suburbanites walk perpendicular. Urbanites walk parallel.

Suburban land is organized by purpose, and suburban experience consequently tends to be selective, single-variable, and destination-centric. One travels to or among destinations, with each answering to one goal. The journey between is generally not designed to have experiential value. This is why, when suburbanites shop at a strip mall, they often walk only between car and front door. If using more than one store, they often return to their car, drive a short distance, and repeat the direct line of engagement to the next destination.

Urban experience is continuous, oblique, and incidental. It is all-at-once rather than one-at-a-time. Although one may move through an urban setting with a destination in mind, the journey to it will be rich, varied, and engaging.



“Urbanism works when it creates a journey as desirable as the destination.”

—PAUL GOLDBERGER



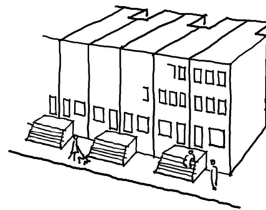


## Narrow side to the street.

On the most walkable streets, buildings and building sites are often less than 20' wide. This allows the pedestrian to engage many opportunities in a short distance; one can walk past five 20' wide buildings in the same time as he or she walks past one 100' building. Along the way, he or she may have five interesting experiences, support five different businesses, or meet five different neighbors.



Suburban norm



Urban norm

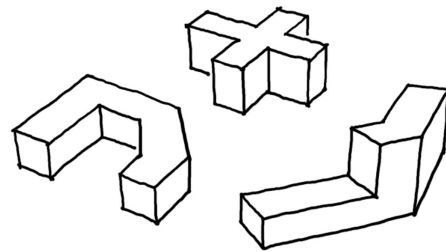
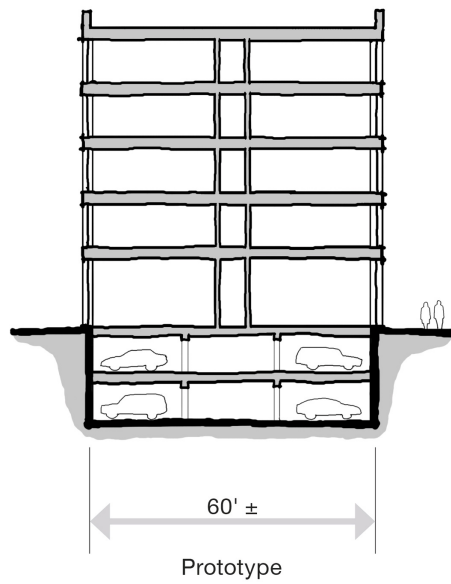


Large building adaptation

## Make most buildings from 60' wide strips.

If a 400' × 400' block were filled entirely with a building, some of its inhabitants would be 200' away from natural light and air—an unacceptable distance. Further, a maze of corridors would be required to provide access to the spaces located deep in the building's interior.

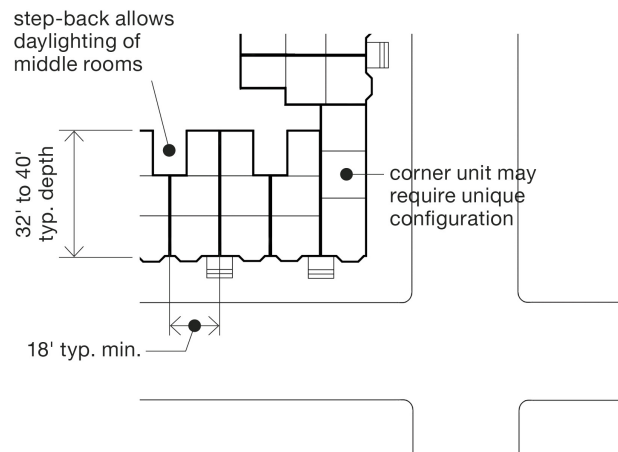
Most large urban buildings should be conceived as variations of a conventional corridor building, 55' to 65' in width. This dimension accommodates an interior corridor lined on two sides by program spaces, such as residential apartments, hotel rooms, classrooms, hospital rooms, or offices. It is also a useful dimension for parking if accommodated on other floors of the building.



Adaptations

## The town house: three rooms deep or less.

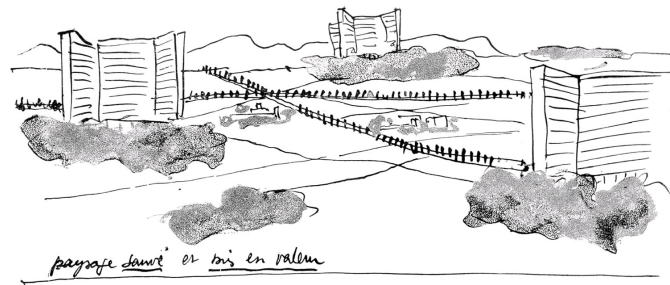
An urban row house is almost always three rooms deep from front to back. This ensures that the middle room is no more than one space away from natural light and air. Often, the rearmost room is made narrower than the front rooms so light and air can enter the middle space directly.



## Draw badly, and often.

It's better to communicate the essence of an idea in a bad drawing than to wait until there is time to render it perfectly. A sketch is a vehicle for conversation, not a final, correct answer. It says, "Here is what I am thinking," not "Here is what I figured out."

If you are unsure of the idea you wish to communicate, draw it anyway. Do a bad sketch now, see what it tells you, get other opinions, and do better drawings if and when you have more time. Meanwhile, keep making more bad drawings of other ideas. This will keep you from wasting valuable time creating refined depictions of ideas you may outgrow before you finish drawing them.



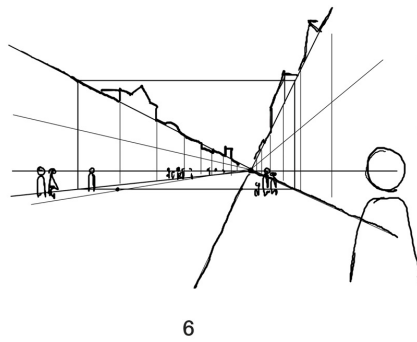
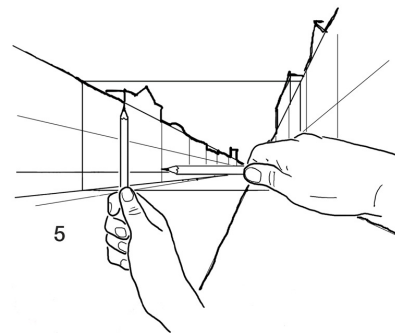
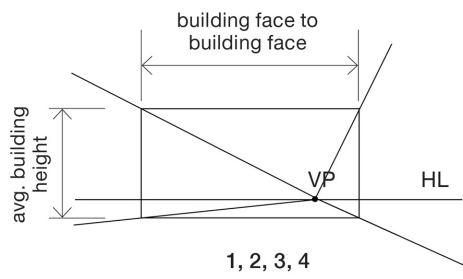
Sketch of Ville Radieuse by Charles-Édouard Jeanneret (Le Corbusier)



## How to draw a one-point perspective of a street

- 1 **Draw a rectangle in proportion to the street's cross section.**  
If it is 60' from building face to building face and the average building height is 30', draw a rectangle with a 60:30 (i.e., 2:1) horizontal proportion.
- 2 **Locate the horizon line (HL).** This is the height of your eye above the ground. If you are 5'6" tall, your eye height is about 5', or 1/6 up the 30' high rectangle.
- 3 **Establish a vanishing point (VP) on the HL.** As the view will be from the right-hand sidewalk, the VP is placed near the right edge of the rectangle. If the view were from the center of the street, it would be placed on the HL's left-right midpoint.
- 4 **Draw guidelines from the VP through the corners of the rectangle.** These will become the tops and bottoms of the typical buildings.
- 5 **Locate curbs, buildings, and other major elements.** If you are drawing a street as you view it in real life, hold your pencil at arm's length and determine the relative sizes of all elements in "pencil units."
- 6 **To include a person of your height,** draw a head any size

centered on the HL, then draw the body in proportion. An average person is about  $7\frac{1}{2}$  heads tall.



## Citizens, not the police department, make streets safe.

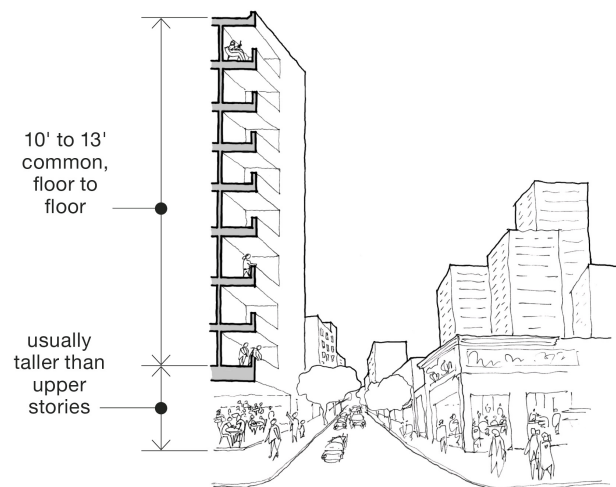
The greater the number of people using and observing a space, and the more diverse they are in their interests, the safer the space will tend to be.

Give every space you propose a **Use Test** to see if it has many reasons for different people to use it. Give it a **Timeline Test** to determine if people will use it throughout the day and week. Administer an **Age Test** to see if young and old will find reward in it, and a **Native-Visitor Test** to gauge use by both locals and outsiders. Administer a **Path-Destination Test** to see if people will incidentally move through when traveling to other parts of the district. Give it a **Sit-Stand-Lean Test** to determine if forms and edges allow the space to be engaged for short and long periods. Give it a **Sun-Shade Test** to determine if it will accommodate exposure preferences throughout the day and year. Administer a **Nosy Neighbor Test** to see if residents can easily overlook goings-on from their homes, especially from the first or second floor. A public space that passes this test is likely safest of all.



## At the 4th floor, we tend to lose identity with the street.

From the 2nd floor of a building, we usually can overhear voices, recognize faces, and have a brief conversation with people on the sidewalk below. At the 3rd floor, interaction with those on the street is much more difficult. At the 4th floor, we tend to shift toward a more general awareness of the neighborhood or district. As we ascend farther, the relevant context becomes the urban skyline, the natural landscape, the horizon, and the sky.



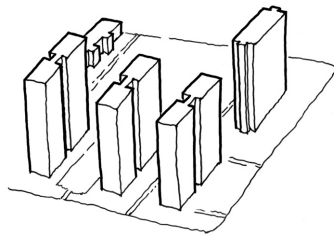
## Same densities, different outcomes.

In 1972, architect Oscar Newman compared crime in the Van Dyke and Brownsville housing projects in New York City. The projects were directly across the street from each other and had identical densities and similar demographics. But Brownsville had markedly less crime. Newman blamed the high-rise towers of Van Dyke.

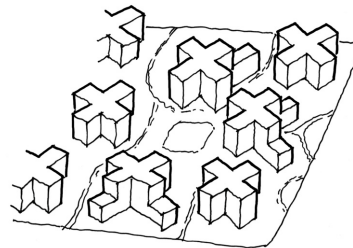
Newman argued that Brownsville's low-rise design fostered healthy territorialism: residents protected communal areas as extensions of their own residences. He advocated design features in other projects to help residents expand their "zone of felt responsibility." Windows and entries could be designed to allow residents to casually observe comings and goings. In large developments, units could be arranged in small groups to foster familiarity and mutual monitoring of communal spaces.

Defensible space theory continues to influence urban design, although some aspects of it are contested. Newman later acknowledged overlooking some demographic differences in the two developments, and came to attach more value to tenant policies and welfare dependence.





**Van Dyke**  
(13) 14-story; (9) 3-story



**Brownsville**  
6 stories with 3-story wings

16.6%  
288/acre  
94.4%  
\$4,997  
185

Site coverage  
Population density  
Minority  
Average income  
Crimes per thousand

23%  
287/acre  
97.4%  
\$5,056  
147

Adapted from Oscar Newman, *Defensible Space*

## A city is for the familiar and the strange.

In the **parochial** space of the city, familiar relationships prevail. One identifies with a neighborhood, in which local concerns are paramount and communal interests are shared with familiar people.

A city also must provide places for citizens to encounter and exist among strangers. **Cosmopolitan** space is more worldly and diverse. It is where one may hide or be unknown, and where we may come into contact with people very different from us.



***Gemeinschaft***  
(community/parochial)

social fabric built on familiarity and  
implicit trust, as might be found in  
traditional small towns



***Gesellschaft***  
(society/cosmopolitan)

social fabric built on rational  
agreement and explicit articulation  
of rights and responsibilities

## Ordinary life isn't boring.

The truest urban culture lies not in special events, but in street life—the buzz of activity that enlivens some streets and districts when nothing unusual is going on.

Street life cannot be created linearly; it doesn't result from an effort to create street life. It is a secondary phenomenon that grows from workaday happenings. Urban residents, as pedestrians, generate primary activity in taking their children to school, heading to transit, going to work, shopping, and visiting the library. This base of activity may motivate others to seek out the area for pure enjoyment. In this sense, street life isn't street life; it's ordinary life observed by people with time to kill.

When charged with creating an urban program, embrace the prosaic. Design places that accommodate and celebrate daily life. Event-based culture yields a one-time reward. The everyday yields every day rewards.



**The First Place**

home



**The Second Place**

work



**Third Places**

community hangouts distinct from home and work

After Ray Oldenburg, *The Great Good Place*

If you're designing a park next to a soup kitchen, it better be for the people using the soup kitchen.

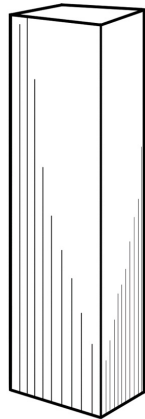
Public spaces are for all. Consider carefully those you might be subconsciously excluding from the spaces you design. Give attention to design cues that advertise untoward social intentions: a new building that sits a few feet farther back from the streetwall than the neighboring buildings may suggest that its owners and tenants consider themselves superior to the locals. A plaza that provides seating next to a fancy hotel but none at the bus stop may indicate disdain for those in the lower economic strata. A park programmed for activities preferred by a certain class, race, or age group will exclude others, even without an advertisement of such policies.



## What is the desired social order?

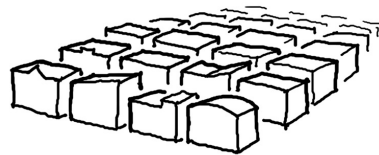
A social order is an interwoven system of social, economic, cultural, and governmental practices and behaviors. It exists both explicitly (e.g., in constitutional standards or official economic policies) and implicitly (e.g., the subconscious or default assumptions and practices of institutions and individuals). A social order tends to remain in place for decades or centuries. Change can occur through evolution or revolution. The built environment unavoidably embodies and furthers a social order—either the prevailing order or a potential new order.





One 40-story building  
600,000 sq. ft.

one out-of-town owner  
one out-of-town "starchitect"  
architectural singularity  
big, out-of-town contractor  
corporate tenants  
maintenance by one large company  
supports regional and global culture  
most profits leave locality  
supports the 1%



Forty 4-story buildings  
600,000 sq. ft.

many local owners  
many local architects  
architectural variety  
many local contractors  
mom-and-pop tenants  
maintenance by many small companies  
supports local culture  
most profits remain in locality  
supports the 99%

“Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody.”

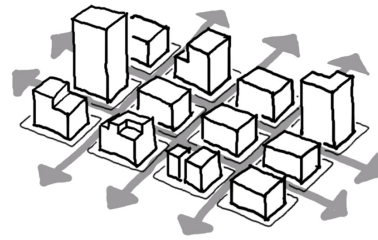
—JANE JACOBS, *The Death and Life of Great American Cities*



## Porosity = possibility

A space fronted by porous buildings, even if of so-so architecture, feels engaging and hopeful. Porosity is fostered when buildings have generous facade openings and a public-private transition zone in which the lives and happenings within the building spill toward and into the public realm. The activation of this zone draws our interest and indicates that building inhabitants are interested in the public realm, and perhaps in *us*—the passersby.

If a street fails to reveal what lies behind its walls, we probably will avoid it. We will interpret that private life and public life in that street are not negotiable, and that the people rooted there are disinterested in and possibly suspicious of us.



Urban porosity at different scales

## Random hypothesis: more glass isn't more open.

Windows serve to negotiate the public and private realms. Whether we are outside looking in or inside looking out, our view of unfamiliar people and activities can make us curious about, and ideally tolerant of, the unfamiliar and unknown.

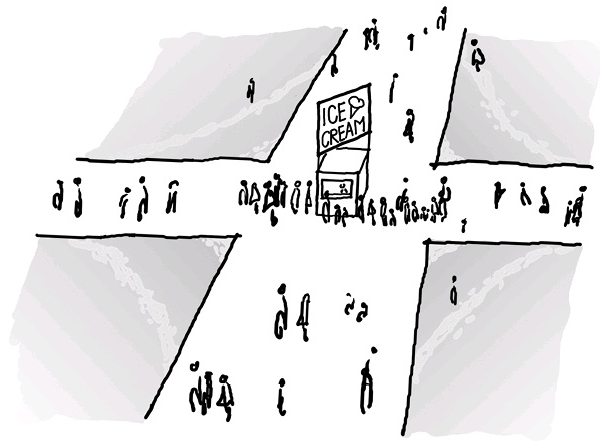
A building clad wholly in glass ostensibly maximizes this negotiation. But in actual experience, all-glass buildings tend to increase our sense of separation. Once glass has demonstrated its maximum ability to connect inside and outside, our frame of reference shifts: instead of tacitly comparing glass to a solid wall, we compare it to no glass at all. We become more aware that glass is not truly permeable. It disallows direct contact. It forbids our speaking to a person, touching displayed goods, or smelling food on the other side. The experiences and emotions suggested by a conventional wall—concealment, ambiguity, anticipation, revelation, and reward—are taken from us. Rather than feel more connected, we feel deprived.



## We're lazy...unless there's a reward.

People usually seek the simplest route to a destination, which often means the shortest path. We need a reward if we are to do extra work, such as taking the long way around or going up or down steps. An urban designer's job is often to make people do this extra work, to enrich personal experience and prompt social and economic interaction.





If we can't discern what's in store for us,  
we won't bother.

Before entering a building, we entertain a simple question, explicitly or tacitly: Does it present enough information about itself for us to feel comfortable or interested enough to go inside? Additional musings may follow: If wares are for sale, will they be too junky or too expensive? What goings-on might surprise? Who is already inside, and what will they expect of us? If we enter only to turn around and leave, will we embarrass them or ourselves?

If we cannot formulate satisfactory answers, we will err on the side of safety. We will move on.



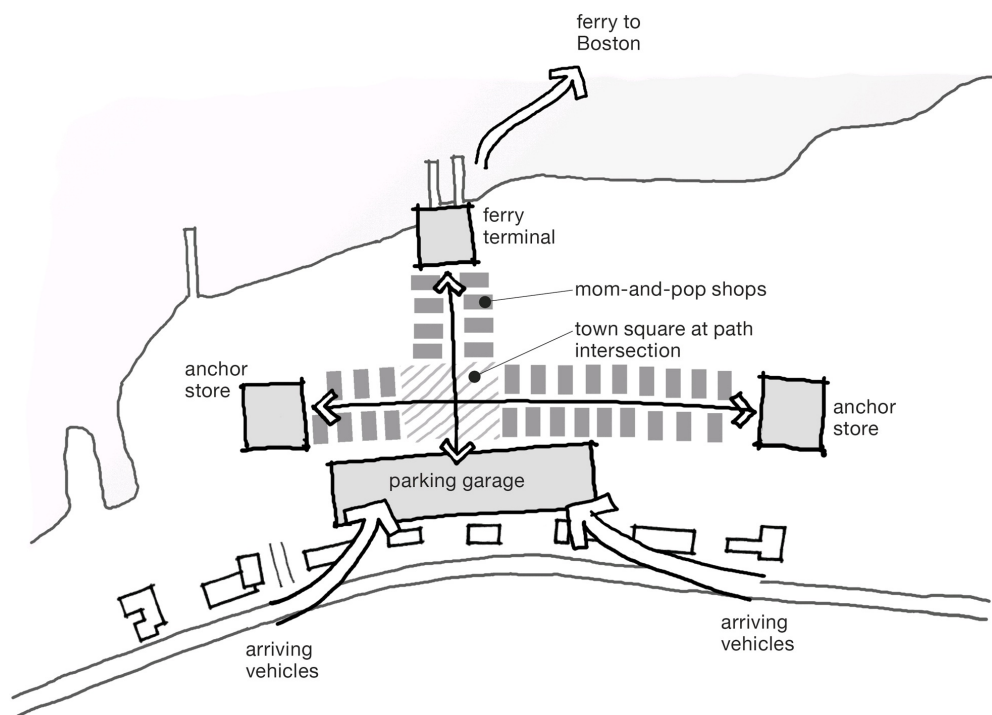
Midtown Scholar Bookstore, Harrisburg, Pennsylvania

## Activate, activate, activate.

A suburban shopping mall is made active by the placement of **anchors**—large department stores—at each end. An anchor inherently attracts a lot of shoppers, many of whom walk to another anchor. As they do so, they enliven the mall's common space and may patronize the smaller stores located along the way.

Anchors can be used to activate many urban spaces. For example, an office building and garage located on the same site will produce a single locus of activity. But if they are sited a block or two apart, pedestrian activity will occur between them at least twice each weekday. This will drive demand for dry cleaners, coffee shops, restaurants, drugstores, and banks, bringing benefit to buildings, businesses, and people beyond those invested in the primary project.

Almost any two large, related uses can be deployed as anchors: a housing project and supermarket, a hotel and shopping area, an event arena and transit stop. Anchors have limited gravitational pull, however. If they are placed too far apart, the space between them will not be sufficiently activated.



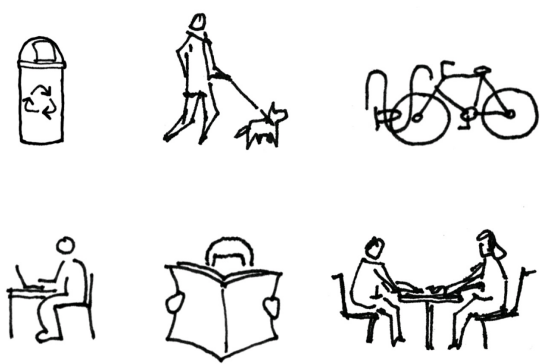
Anchor diagram, Hingham Shipyard Village proposal

## Identify activities as well as uses.

A **use** is the general purpose of a site, building, or district. It is addressed by zoning and building codes: industry, education, retail, residential, institutional, and others. **Activities** are the far more numerous and specific goings-on that attend to use. By identifying activities, you will better accommodate the fine grain of real life in your project and prompt activation that will help ensure its success.



Use: retail/restaurant



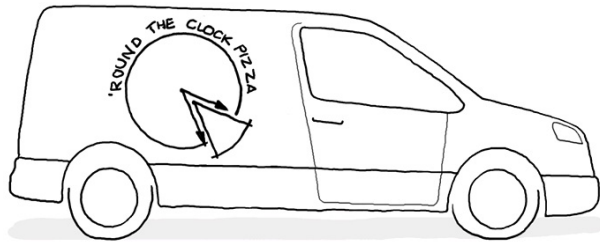
Activities

## Make parking lots very big or very small.

Numerous medium-sized lots—of eight, ten, twenty spaces—scattered throughout a district will produce a glut of open space, destroying walkability and motivating more motor vehicle use. But a single large lot or garage sited on the periphery of a pedestrian-intensive area can accommodate dozens or even hundreds of cars while leaving most or all of the urbanscape intact.

Similarly, small paved areas for one or two vehicles often can be tucked into naturally occurring niches in the urbanscape without disrupting it. An exception is the private residential driveway, as is sometimes provided in front of row houses. Each curb cut removes almost one whole parking space from the street, and the remaining curb space is often inadequate for even one car to parallel park. The result is often a net decrease in parking spaces.

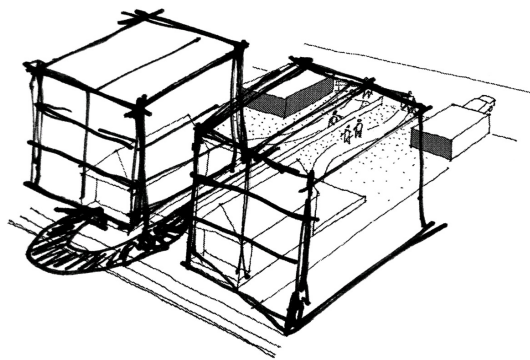




## The front moves to where the cars are.

Parking lots are often provided behind urban buildings, with the goal of keeping the street pedestrian friendly. But the opposite outcome can occur. When town houses are built on a struggling street, for example, they are often sited against the sidewalk while a shared parking lot is provided at the rear. However, if residents regularly enter their units from the back, it will become a de facto front. Their front door, facing the street, will become their back door. The street, rather than become friendlier, will go unactivated.

When parking is provided behind commercial buildings, ground floor businesses can feel pressure to provide access front and rear. This can strain small proprietors, who usually cannot monitor both ends of their space. Some will lock the street-facing door and maintain an active back door.



When providing rear parking, also provide streetwall breaks and other inducements to street use. Locate entrances to multi-story buildings in the front.

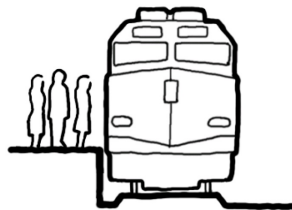
## Passenger boarding drives the transit system.

**Grade-accessed transit** (streetcars and usually light-rail transit, or LRT) allows passengers to board from a sidewalk or street. Pace is leisurely, with stops every block or two. A dedicated right-of-way (ROW) may be used, but tracks often occupy the same ROW as cars and buses, imparting to streets a unique and even romantic character. Grade-accessed transit tends to correlate with continuously dense, linear development, such as major mixed-use avenues.

**Platform-accessed transit** (commuter rail and sometimes LRT) requires passengers to board from a station platform at the level of the car floor. The ROW is isolated from autos and pedestrians, which allows faster travel with stops spaced farther apart. Submerged (subway) and elevated (e.g., Chicago's "L") ROWs tend to be associated with big cities. At-grade ROWs must be separated from motor vehicles and often correlate with intermittent/node patterns of development.



Grade-accessed



Platform-accessed

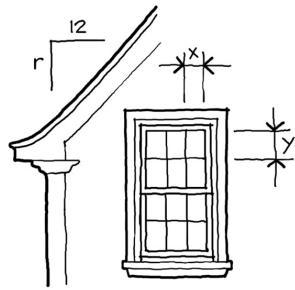
stop (sim. to bus stop)  
 1/8 to 1/2 mile  
 slower  
 1 or 2 cars  
 intraurban/local  
 linear/continuous  
 yes

**Stop or station**  
**Stop spacing**  
**Speed**  
**Length**  
**Usual service area**  
**Development mode**  
**Combinable with autos**

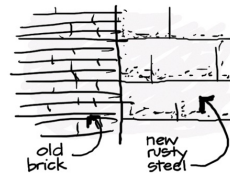
station  
 1/2 mile or more  
 faster  
 usually multi-car  
 intraurban/regional  
 big city or nodes  
 no

## Emulation beats imitation.

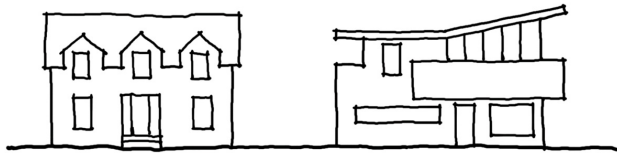
To *imitate* is to copy superficial physical qualities. To *emulate* is to take deep inspiration from. A designer can emulate another designer yet produce something that looks nothing like the first designer's work.



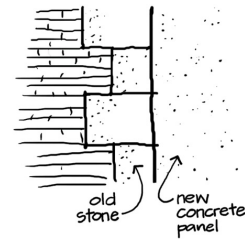
Proportion/scale



Color



Size



Texture

In historic contexts, focus on essential physical qualities, not styles.

“You don’t want to look like your heroes,  
you want to see like your heroes.”

—AUSTIN KLEON, *Steal Like an Artist: 10 Things Nobody Told You About  
Being Creative*





## The site isn't flat.

A site that appears flat often has several feet of elevation change. Dealing with grade variations can be annoying, but if embraced they can help you integrate interesting local features or even conceptually organize an entire site. A differential of 1.5' may present an opportunity for a retaining wall or seating. A 3' or 4' change can be used to adjoin disparate activities. A difference of 10' or more may suggest the creation of a double-height interior space that is entered at different stories, or provide a way to hide building services. At the very least, a site's natural slope must be used to manage stormwater runoff.



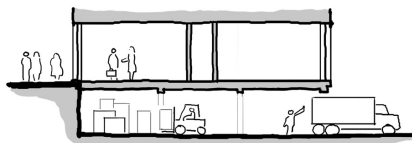
Amphitheater or stage



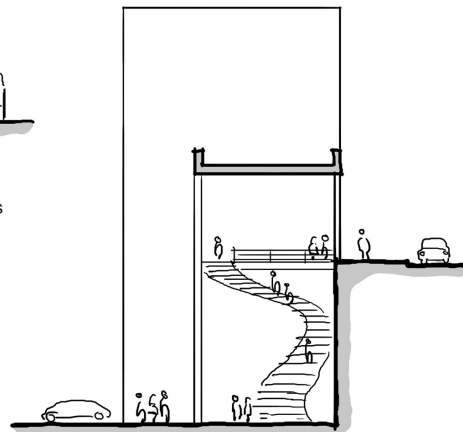
Seating



Zoning of activities



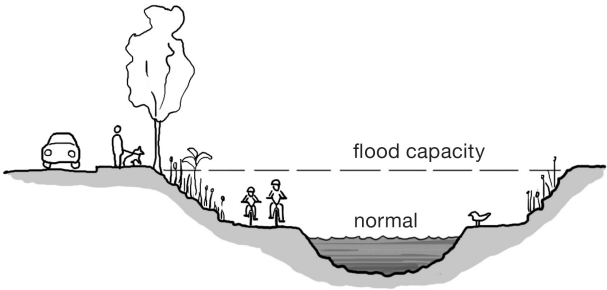
Concealing of building services



Multi-story atrium

## Make the flood zone useful.

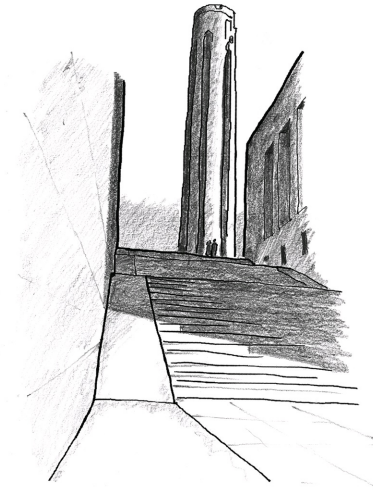
Although urbanism may seem to obscure nature, one is always designing in nature—even when designing hardscape. Natural processes provide an embedded context for the designer to respond to, in the same way that transportation systems, pedestrian pathways, the architectural environment, and other “hard” factors do. If you respond sympathetically, the man-made and the natural will not be two silos but one holistic system.



## Elevate to honor. Lower to humble.

Raising a space or building implies it is important, special, or symbolic of victory, and in some instances may project aloofness. Lowering it makes it more intimate, quiet, or humble, and in some contexts can suggest submission or defeat.

One or two feet can make a big difference, for better or worse. A plaza set several steps lower than the sidewalk can be surprisingly calming. But if nearby vehicular traffic is aggressive, inhabitants may feel vulnerable to eye-level fenders and headlights. An elevated park can provide a welcome reprieve from urban congestion. But many people won't use it if they can't see it from below, or if they suspect the effort required to climb stairs won't be adequately rewarded. For this reason, elevated spaces meant for regular use tend to work best in pedestrian-intensive parts of large cities, as the fraction of people willing to climb stairs will still produce an adequate number of park users.



National World War I Memorial, Kansas City, Missouri

## Every side can't be a front.

Fronts are handsome, proper, and usually well maintained. Backs can be ugly, dark, smelly, and even scary. Why not design a district in which buildings have only fronts? Why not hide loading docks, trash, and other services in an interior space and pass offensive materials through a single door?

In reality, this is almost always infeasible. Interior space, particularly in desirable districts, is too valuable to be given over to uses that do not contribute economically and aesthetically to the use of the building. Further, front-rear differentiation benefits users of the public realm by helping them distinguish between private and public, formal and informal, ceremonial and workaday. And despite the objectionable qualities backs may have, they are almost always interesting.

Building fronts should almost always face other fronts. If fronts face rears in a design scheme, there will be confusion between public and private experience. Such an outcome usually results from an oversight in the basic layout and dimensions of blocks, streets, and lots. Front-to-side relationships, as often occur near street intersections, are often unavoidable and are acceptable.

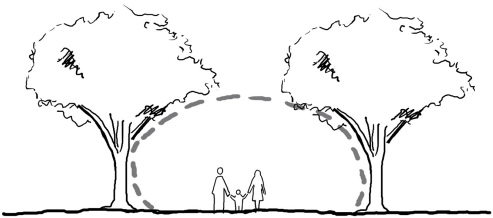




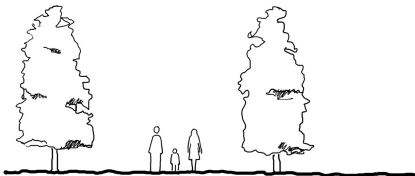
## Some trees are more urban than others.

Trees with a concave, arching shape, such as the American elm, gracefully define public space. Trees with a more globular shape, such as sugar maples and white ash, do not define space well, especially when young.

The physical placement of trees further affects whether we perceive and engage them as objects or space shapers. When scattered in front yards, trees can be beautiful but aloof objects that give little or no shape to public space. The same trees aligned at the curb can elegantly differentiate spaces for vehicles and pedestrians.



Space trees

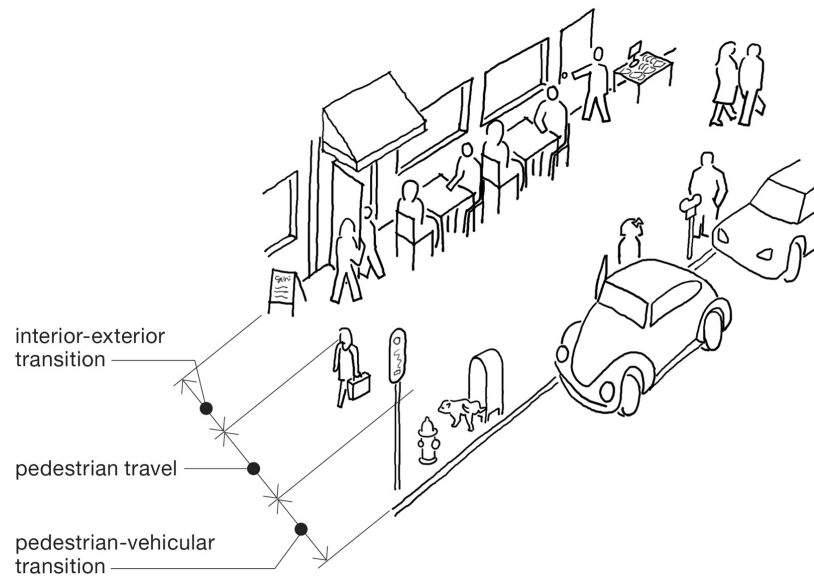


Object trees

## You need more space and less space than you think.

A room, stair, or other space or element that feels generously sized in a building interior usually will feel crowded or undersized outdoors. Indoors, our reference points are personal and local: our bodies, furniture, an ordinary room. Outdoors, our reference points are larger and more public: trees, streets, buildings, blocks, plazas, and the sky.

Once one adapts to the scale of exterior space, the opposite adjustment may have to be made: one often needs less space in the urban setting than expected. More activities usually will fit into a given urban space than a comparably sized suburban space, because urban denizens are accustomed to, and value, proximity and bustle.

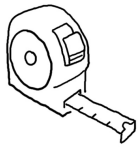


Sidewalk zones

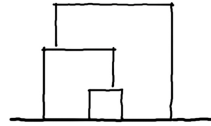
## Size matters

Our enjoyment of a space is affected by many qualitative factors, making it easy to overlook the importance of objective measurements.

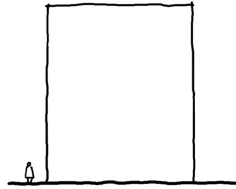
When designing a street, plaza, or other space, visit similar spaces in person. Try to guess or intuit their dimensions. Then measure them to see how they compare to your expectations. You likely will find that spaces with similar dimensions will feel very different in size, depending on how strongly their edges are defined, the intensity of their use, the ratio of hard to soft surfaces, the height of nearby buildings, the size and nature of other spaces nearby, and even the overall size and population of the city or town in which they are located.



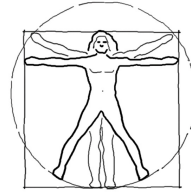
**Size**  
an objective  
measurement



**Scale**  
the size of an entity  
relative to other entities



**Human scale**  
the size of an entity relative  
to a person, particularly as  
fosters psychological comfort

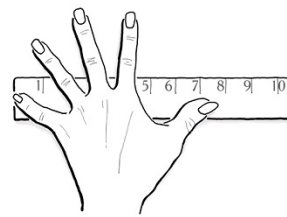
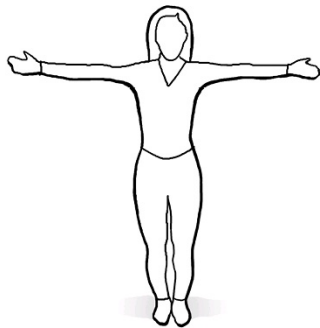
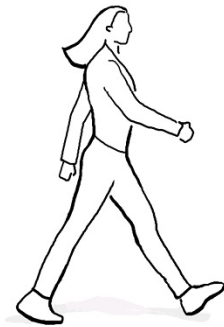


**Proportion**  
a comparison of dimensions  
within an entity or system,  
e.g., height-width ratio

## Measure yourself.

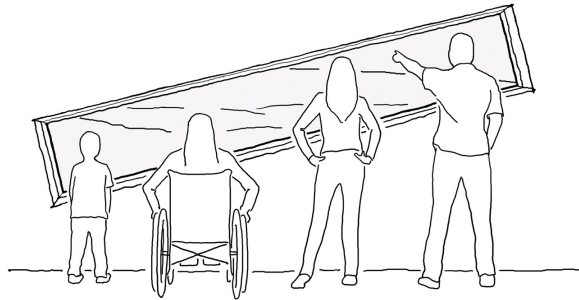
Measure and commit to memory your average walking stride, arm span, and hand span, so you can quickly size up conditions encountered in the field. Also memorize the size of common architectural elements such as bricks (8" wide; 3 courses, including mortar joints, are almost always 8" high), concrete blocks (16" × 8"), and commercial utility doors (often 3' wide × 7' high). Develop systematic methods for measuring large areas, such as measuring and counting sidewalk divisions to estimate block length.





## Simple, not simplistic.

A *simple* solution is direct, elegant, and no busier than it needs to be. It distills a problem to its essence while accommodating its particularities. A *simplistic* solution may appear similar to a simple solution but be misleadingly basic: whereas a simple solution is highly informed, a simplistic solution lacks nuanced insight into the deep nature of the problem. Simplistic solutions are easy to come up with; simple solutions can be very hard to achieve.



Inspired by Cincinnati Nature Center

## Complex, not complicated.

A *complex* system engages us at many levels of experience and intellect. Its layers and facets enrich, reinforce, and variegate the whole.

A *complicated* system juxtaposes things that are unrelated or that lack meaningful dialogue. Complicated design solutions tend to result from a process that is too linear—one in which the designer adds solution to solution to solution, without stepping back to consider a more holistic, generally informed approach.

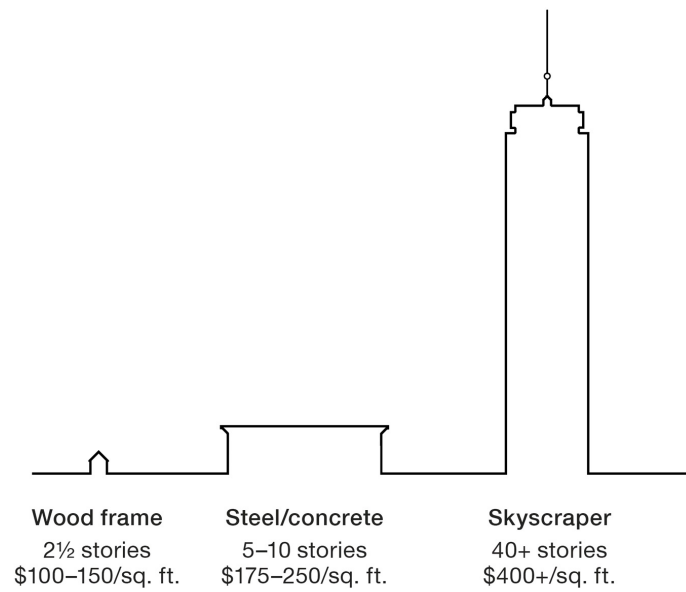


Starling murmuration

## Building taller is more efficient...up to a point.

Buildings of a given construction type usually become less expensive as they are made taller. A 3-story wood-frame building, for example, will cost less per square foot than a similar 2-story building, all else remaining constant. Steel and concrete buildings also grow less expensive, but only up to a point. Beyond about 30 stories, square foot costs increase. This is due to many factors, including construction site logistics; more intensive systems for foundation, superstructure, egress, elevator, fire suppression, and mechanicals; underground parking; and up-front costs to address environmental, social, traffic, economic, and legal concerns.

Higher construction costs mean higher rental rates for the finished spaces. These rates are also driven upward by the inherent inefficiency of high-rise floor plans, which give a higher percentage of their area to stairs, corridors, elevators, and mechanical services. Tall buildings are land efficient but floor plan inefficient.



Approximate average U.S. construction costs, 2017

## Avoid a void.

If a street leads toward a view that is empty or confusing, the experience of the street can be diminished.

**Straight street:** Terminate the view corridor with a major building, clock tower, water tower, or other tall element.

**Curved street:** A subtle curve can close off an undesirable view and create curiosity as to what lies just beyond. Provide intermediate rewards to maintain the interest of those venturing forward.

**Trees:** When planted regularly along the curb, trees will appear to touch in the distance, closing off the distant view.





## Give the neighborhood a character.

**Wood-frame neighborhood:** 2- to 3-story buildings, each with 1 to 3 dwelling units and a small yard. Demographics range across incomes, from families to single adults. Commerce is usually relegated to corner sites or a business area.

**Main Street neighborhood:** The classic small-town business district, 2 to 5 stories with highly varied uses and offices and residential apartments on upper floors.

**Apartment-block neighborhood:** Midrise ( $\pm$  3- to 8-story) buildings of masonry or steel. Ground floor commerce appears in many buildings. Demographics range across incomes, and from families to single adults.

**Urban edge neighborhood:** Fringe/transitional area with buildings of varying use, size, and character. Demographics may range widely, from poor and marginalized citizens to avant-garde professionals.

**Town house neighborhood:** Classic row houses, typically 3 or 4 stories, brick or stone. Demographics range across incomes, and from families to single adults. Commerce is usually relegated to corners or a nearby business area.

**Downtown neighborhood:** A center-city area, usually with many high-rise buildings. Building and business ownership may tend toward the corporate. Ground floor retail may be oriented to serving weekday workers and

weekend visitors.

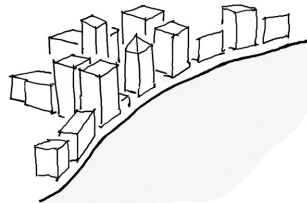


## Wayfinding

As we travel through a district, town, or city, we naturally seek to understand its organization and where we are in it. In the streets and spaces you propose, identify wayfinding elements that will keep users oriented with each step. Have you given the district a clear identity, such that people can intuit whether they are inside or outside it? Can people see familiar landmarks of different scales, and at distances and intervals that will reassure? Have you created memorable nodes, so pedestrians will be able to confidently retrace their steps?



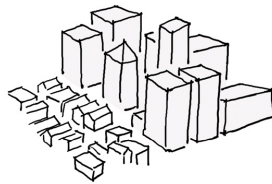
**Path**  
a clearly identifiable  
walkway or street



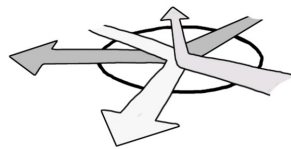
**Edge**  
a line of demarcation  
between zones or functions



**Landmark**  
an iconic, recognizable  
element; may be any size



**District**  
an area with a distinct  
physical character



**Node**  
a point of gathering  
and dispersal

The five elements of urban mental mapping,  
after Kevin Lynch's *The Image of the City*

## Order craves variety.

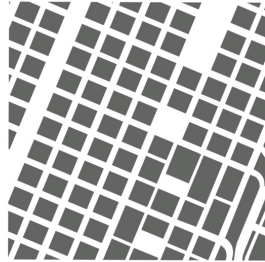
A 90° street grid gives useful shape to building parcels and facilitates navigation. If streets are named systematically, one knows, in traveling from 2nd Street to 3rd Street, where to find 4th or 15th Street.

However, the repetition of a grid can generate its own brand of lostness. One street or intersection may feel the same as many others. And if blocks have the same dimension or character in both directions, one's directional sense may be challenged.

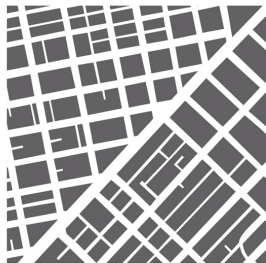
Judicious deviations in a grid can relieve tedium, improve wayfinding, and produce unique sites for special public spaces or exciting buildings. However, there can't be too many deviations, as the primary order will be lost and few or no sites will stand out as special.



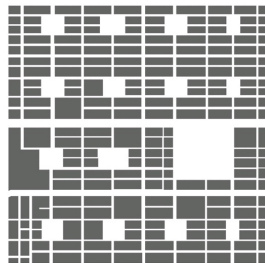
New York, NY



Portland, OR



San Francisco, CA



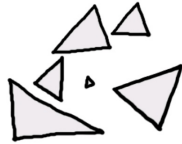
Savannah, GA

Plans not to scale

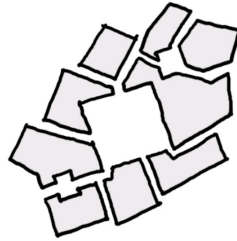


## What's the unifier?

A project needs a recognizable gesture or organizer that makes its parts into a whole. But don't seek merely to unify a project; unify it with the rest of the urbanscape.



Geometric family



Space hierarchy



Scale similarity



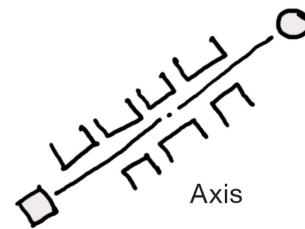
Material similarity



Object hierarchy



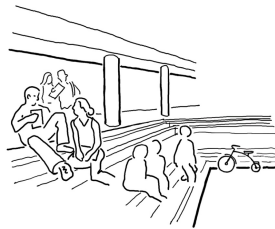
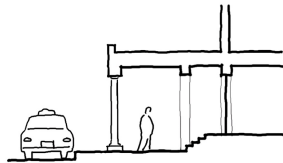
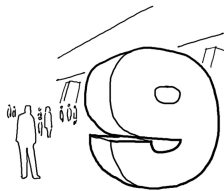
Path



Axis

## How will it meet the ground?

When we are on the sidewalk, we rarely are aware of the overall form of a building, especially if it is very large or tall, or if we are right next to it. Our direct awareness usually is limited to the first floor, with peripheral awareness extending upward a story or two. Thus, an unremarkable building on the skyline can be a terrific building to engage up close, and a great building on the skyline can be a poor building in direct experience.



## How will it meet the sky?

A building's overall form can express its use, advertise the values of its owners or tenants, or suggest civic aspirations. The design of buildings likely will be the job of an architect, but suggest the sensibility of any buildings you propose, especially those that are tall, freestanding, or otherwise prominent.



Aspirational



Special/civic



Nontraditional



Traditional



Efficient

## See and be seen; watch but don't be watched.

People-watching is almost everyone's favorite public activity. However, most people do not wish to gawk at others and want to control the extent to which they are watched or engaged. Preferences can be accommodated in many ways, including:

**Create spaces with multiple activities.** A buzz of activity guards against one person feeling closely observed, especially if engaged in a unique activity.

**Provide edges, nooks, crannies, columns, screens, level changes,** and other articulations that allow people to have a protected side or to pass in and out of view. This keeps them from feeling they are under constant surveillance.

**Make paths wide enough** for strangers to pass comfortably. Very wide paths can be zoned with plantings, benches, level changes, and paving variations.

**Make public benches long,** or space them so strangers can sit near each other without being confused about communication expectations. In crowded settings, place seats in multiple directions or make them movable so people can communicate social intent by body position.



---

**Public distance, 12 to 25 feet**

no expectation of interaction; communication, if any,  
most likely to be visual rather than spoken



---

**Social distance,  
4 to 12 feet**

no contact, but eye  
contact can initiate  
interaction;  
conversation possible



---

**Personal distance,  
1.5 to 4 feet**

comfortable  
conversation; can  
reach out and touch  
the other



---

**Intimate distance,  
<1.5 feet**

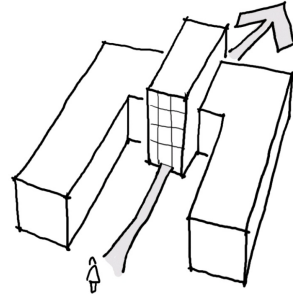
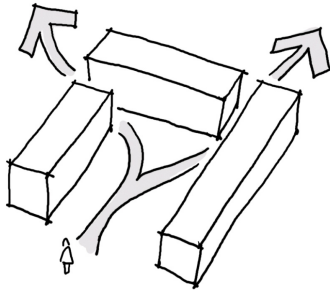
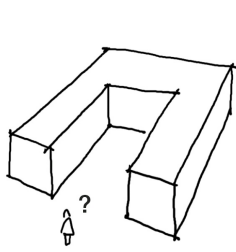
highly sensory;  
sitting very close,  
embracing, holding  
hands, or touching

Proxemics, based on the work of Edward T. Hall



## As we enter, we look for the exit.

A public space lacking an apparent exit at the end opposite from where one enters will dissuade many people from using it—even if they do not intend to pass all the way through the space. A dead end subconsciously invokes our defensive instincts: if we are pursued from behind, we will lack an escape route. A street, alley, public mall, or interior corridor lacking a through-connection will have fewer people, fewer things of interest, and less vitality than one with a through-passage. A physical dead end is an experiential dead end is a social dead end is a cultural dead end is an economic dead end.



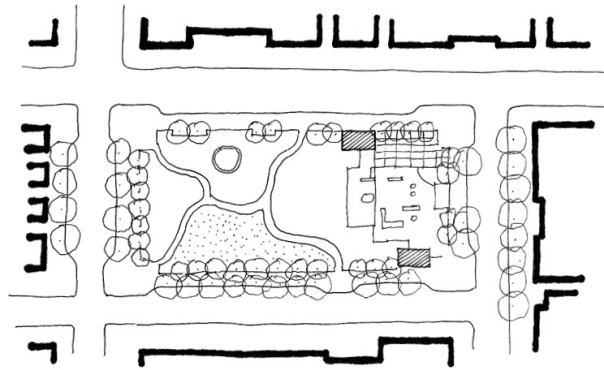
## If the edges fail, the space fails.

The central, more open parts of a public space tend to be occupied only after its edges are occupied. As creatures with an instinct for survival, we prefer to be at the edge, to protect our back from threats. Edges also provide places to stand, lean, and sit, as well as engage sensory stimuli—visual, aural, olfactory, and tactile.



## Keep the center available.

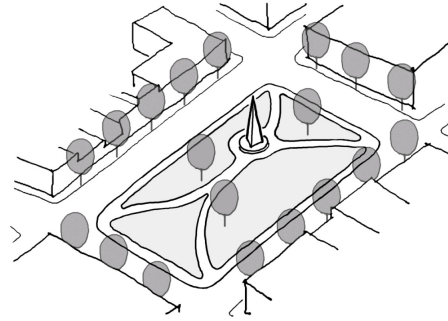
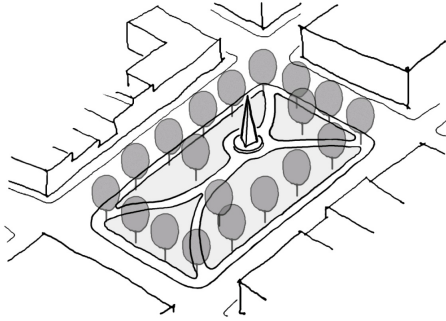
A statue, fountain, or other focal element at the center of a public space implies that one's purpose in using the space is to observe the monument rather than participate in public life. While this is sometimes appropriate, most often a focal point is best placed off-center. This allows people to inhabit the center and guards against the space feeling static. It divides the space into variously sized and shaped subspaces, which can be used by different people for different purposes at the same time. Additionally, an off-center siting can direct pedestrian movement, segregate circulation areas from gathering areas, and acknowledge a relationship to nearby architecture.



## Plant the park trees outside the park.

When trees are planted at the edge of a park, the park can become visually isolated. People on nearby streets and sidewalks will tend to perceive the park as an object they can see, not as a space they inhabit and experience. If plantings are especially dense, people may feel repelled.

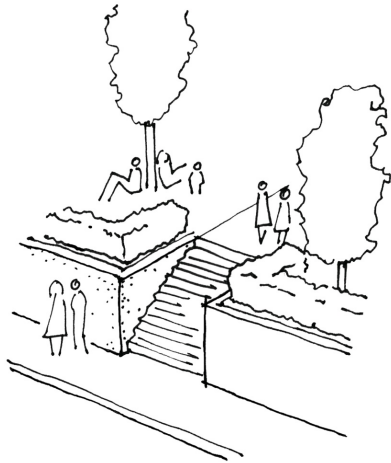
Planting the same trees on the side of the street opposite the park will enlarge the park's experiential zone. People using the streets and sidewalks for workaday activities also will be using the park—without taking extra time to do so.



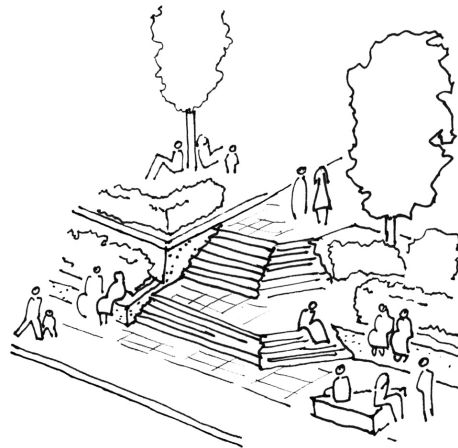


## Entice a few feet at a time.

People usually react negatively if asked to make an either-or decision. It's best, if you want people to use a space or walk down a path, to give them incremental opportunities to decide. Make it easy for someone to engage an edge. Then present successive enticements to the next increments. Not only will this make it more likely that the space will be used; the "in-betweeners" will act as advertisements for it, attracting even more people.



One is either in the park or not in the park.



One may choose degree of engagement with the park.

## Design for 3 mph.

An average walker covers about 4.5' each second. If the built environment is to maintain our interest, it must provide stimuli and rewards at close intervals. In older cities, a new view is revealed with almost every step—engaging windows, charming balconies, distant views of steeples and minarets. In your design scheme, are you offering the pedestrian similar rewards? Have you provided local, intermediate, and distant points of interest to entertain, as well as to assist in wayfinding?

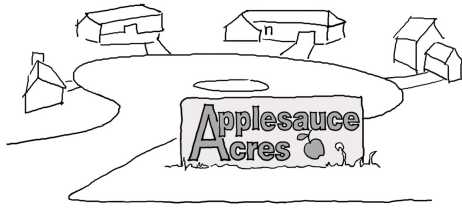


Provide active doors  $\leq 25'$  apart on mixed-use streets,  $\leq 50'$  on residential streets.

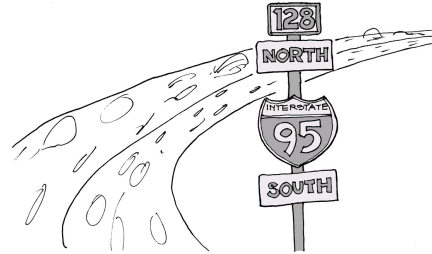
## Separating pedestrians from vehicles is risky.

A good street is two things: a place to be and a route of travel. These purposes are intertwined: one may discover an interesting street while passing through as a driver, and return later to hang out and enjoy its offerings. Part of the enjoyment will be watching the parade of other people and vehicles passing through.

Balance is critical. A street that prioritizes vehicular movement may be inhospitable for pedestrians. A street that eliminates vehicular travel to enhance pedestrian experience can become economically infeasible, boring, and even unsafe, if the vehicle absence is not compensated for by an extraordinary intensity of pedestrian movement. Such is rare in the U.S., where fewer than 80 streets are pedestrian-only. Some are in the process of being returned to vehicular use.



A place to dwell,  
but no through-connection

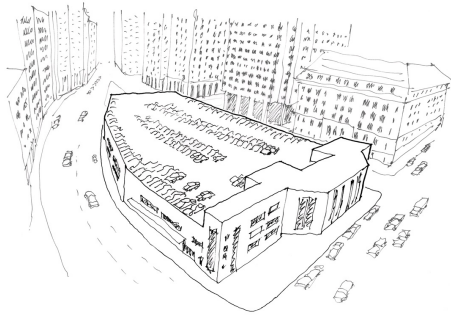


A route of travel,  
but not a place to linger

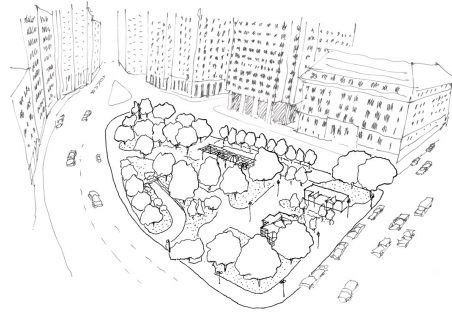
## Good design is more likely to happen if someone can make money from it.

A private developer may be asked by a city to reduce the size of a proposed building, or to add ground floor commerce where the building adjoins a planned public plaza. Such requests will bring costs upon the developer: they will reduce rentable area, may require a different financing structure due to the mixed uses, and may drive up construction, administrative, and maintenance costs on the ground floor.

At the same time, a public plaza can provide customers for the ground floor businesses. Prospective tenants may find the upper floors more attractive because of the nearby options for food and entertainment. The developer may be able to charge higher rents than would have been possible in the original proposal. And the city's costs for its part of the project might be recouped through higher tax revenues, due to the greater property value enjoyed by the private sector.



Before: with aboveground garage



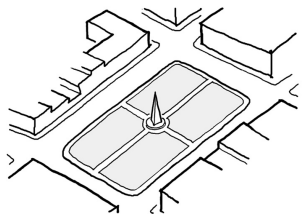
After: park with 6-story underground garage

Post Office Square, Boston  
Norman Leventhal, developer

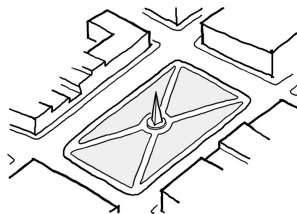


## A park is a wide spot on a path.

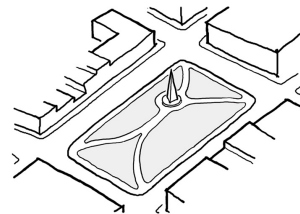
A park works best when its pathways continue the more general patterns of pedestrian movement in the surrounding district. This allows pedestrians to incidentally traverse the park while on their way elsewhere. Their offhanded use provides the park a baseline of activity that makes it safer and more interesting for others, including those who have sought out the park as a destination.



Orthogonal paths compel pedestrians to uncomfortably enter and leave the park at mid-block.



Diagonal paths connect park circulation to the street intersections, the natural access point for pedestrians.

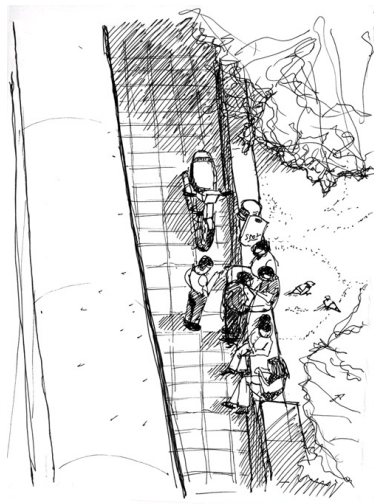


Paths that meander slightly provide interest and variety without significantly compromising walking time.

A park within an orthogonal street grid

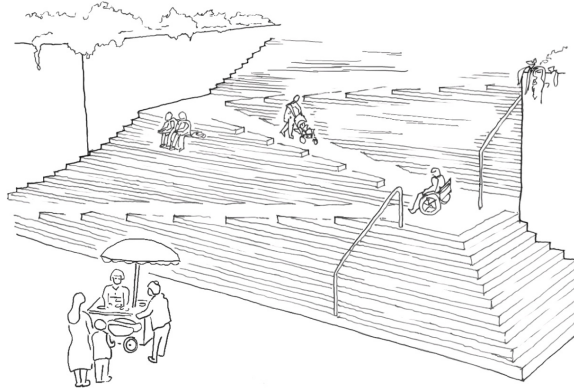
If it's 18" high, people will sit on it.

Most people will sit comfortably on surfaces from about 15" to 20" high. Wherever possible, place horizontal surfaces—the tops of planters, retaining walls, column bases, windowsills, and bollards—in this range.



## Integrate rather than append.

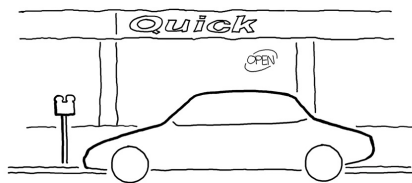
People with mobility concerns want to participate in the same experiences as most everyone else but may feel self-conscious if accommodations for them are disruptive to a space. Similarly, the able-bodied may sometimes use ramps or lifts but don't want to feel awkward in doing so. When designing a public space, integrate such accommodations into the design process at the outset, rather than design for the able-bodied and subsequently attach special accommodations. Designing for different populations is not a liability but an opportunity.



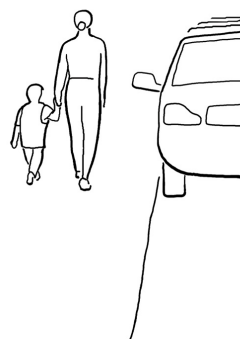
**Stair and ramp, Robson Square, Vancouver, BC**  
Arthur Erickson, architect

## Make streets high friction.

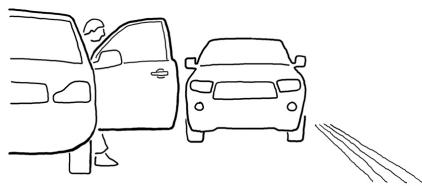
When drivers habitually drive too fast on a street, they are responding to the street's inherent spatial characteristics. Motorists drive more slowly on streets whose edges cause **friction**. Curbside parking is the best friction producer and should be included on nearly every street. Narrow lanes and two-way traffic also slow motorists, as do mature trees, especially when planted in the median—not only do motorists want to avoid a collision, they want to take a little more time to enjoy the street's atmosphere. The presence of many pedestrians has a similar effect: drivers want to guard against creating danger, as well as people-watch. Speed bumps, raised intersections, and other localized tactics can effectively slow motor vehicles, but these tend to be superficial fixes for elemental shortcomings in the street's design.



Convenience



Protects pedestrians



Slows through-traffic

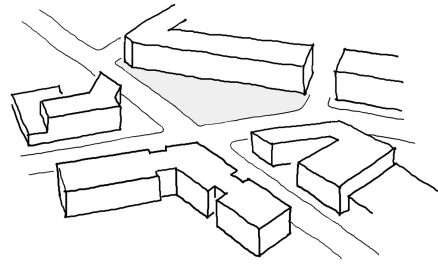
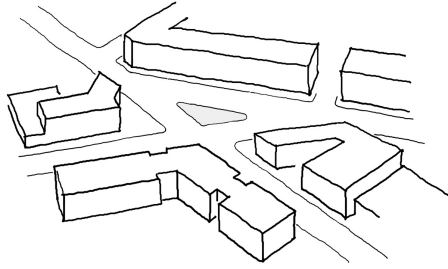
### Benefits of curbside parking



## Capture the drifter.

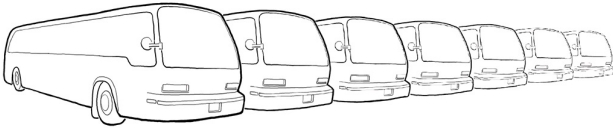
Where irregular street geometries meet, awkward traffic islands often result. Typically, they are too isolated and small to be used by pedestrians. They end up vacant, poorly (if at all) planted, and unmaintained.

These orphans often can be converted to more beneficial use by engaging one side to a nearby sidewalk. An instant plazalike space can be created, often with minimal impact on traffic and a vast improvement in pedestrian experience.



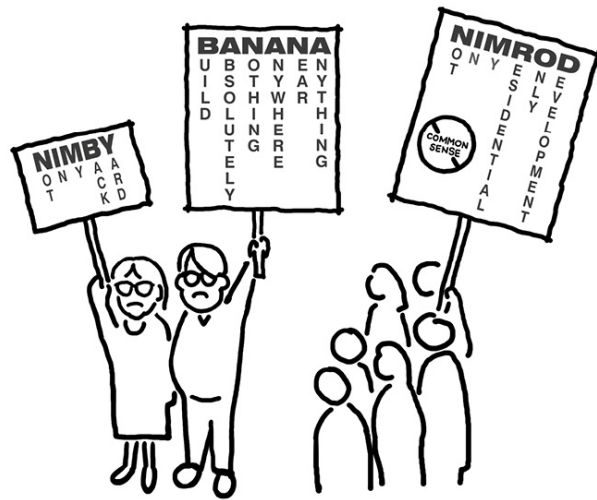
## A city needs a backyard.

Urban settlements need places for gravel and sand storage; repair and storage of trains, taxis, school buses, and public safety and public works vehicles; electricity generation; recycling and trash processing; oil and gas storage; warehouses; and industry. Such facilities often have regional responsibilities. They cannot be wished away in favor of genteel redevelopment plans.



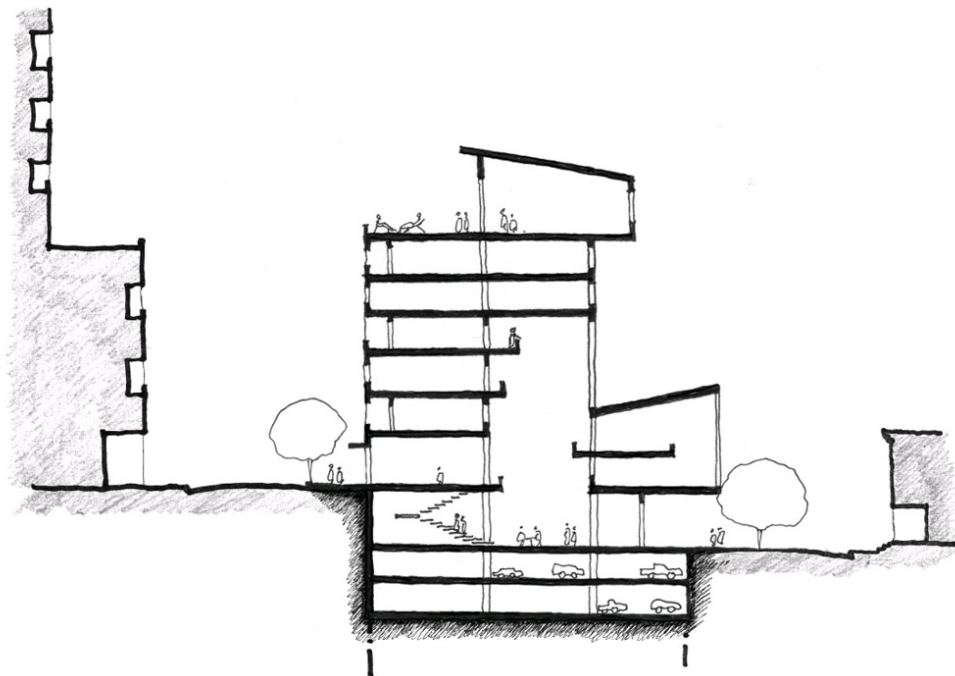
## Sort by magnitude over use.

The introduction of nonresidential uses into the residential environment is often hotly contested. However, objections are often rooted more in disparities in size than use, even if this is not recognized by the objectors. For example, a Walmart sited among residences is likely to offend universally. But a small retail store is wholly compatible with the residential neighborhood. In fact, most retail, business, institutional, assembly, and even repair and light industry uses can be combined satisfactorily—even charmingly—with housing if they are of comparable size and do not introduce hazards.



## Draw the other side of the street.

Your project area likely ends at the edge of a block or parcel. But its influence and the factors that influence it extend well beyond. Always present your project in context by showing the other side of the street and/or the relevant natural landscape on all drawings.

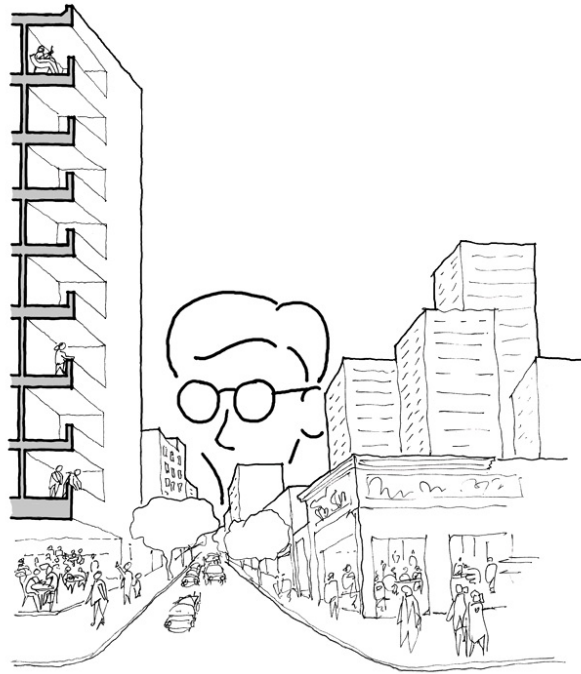




## Land your helicopter.

Designers usually, and perhaps unavoidably, spend much more time on plan and bird's-eye drawings than on sections, elevations, and eye-level perspectives. However, views from above will rarely if ever be experienced in ordinary life. Spatial relationships that appear powerful in such drawings can be jarring, irrelevant, or invisible to those inhabiting the built environment.

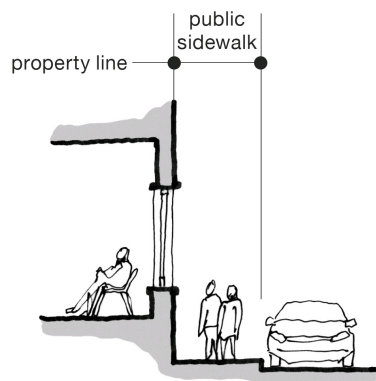
When designing, imagine yourself into your drawings and models. Mentally place yourself in the spaces you propose, and engage your design as a user. Make design decisions in section, elevation, perspective, and models; don't just use these modes to depict decisions made previously in aerial mode.



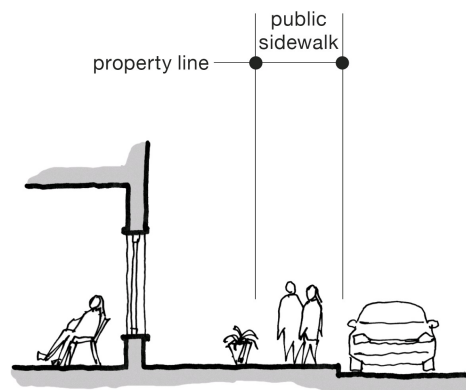
## 1' vertical = 3' horizontal

A transition between the public way and residences is needed to ensure residents' privacy and psychological comfort. Vertical transitions provide this more efficiently than horizontal transitions. People sitting in a room 3' back from, but at the same level as, the sidewalk will tend to feel exposed and vulnerable, as passersby will be higher than they are. But the same room 3' above and directly next to the sidewalk will almost always feel more comfortable.

The more public the street, the greater the transition needs to be. A residence on a parochial street in a small town may need little or no transition. A city residence on a highly trafficked, mixed-use street will usually need a significant transition zone—such that residences may be best located at the 2nd floor or above.



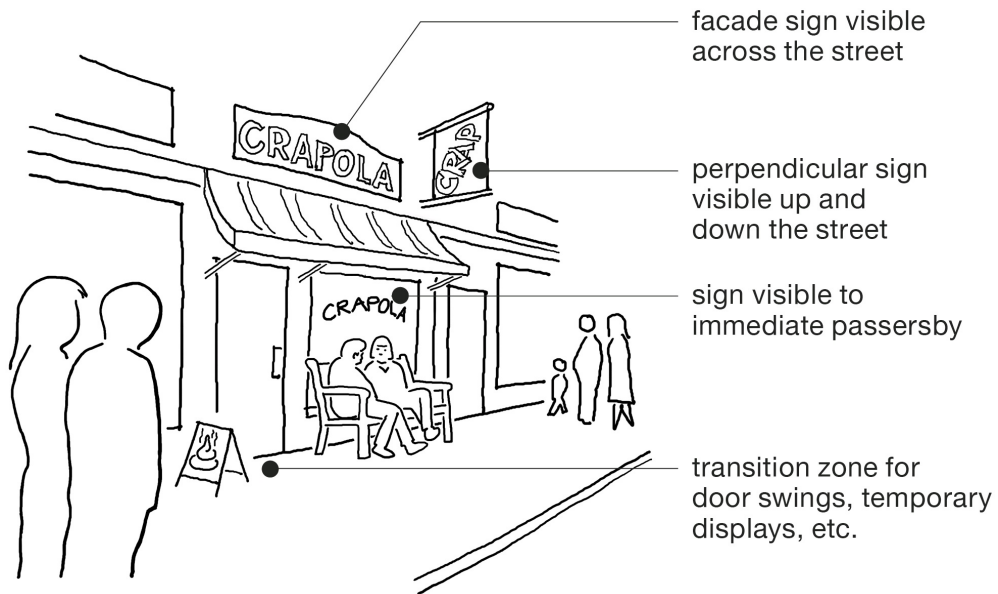
Vertical transition with  
no horizontal transition



Horizontal transition with  
no vertical transition

## Retail is fussy.

It wants its narrow side to face the sidewalk and a window to show off its wares to passersby. It insists on having a lot of people walk by the front door, and it doesn't want any impediments, such as a stair up or down, to prevent easy entrance. If it's on a 2nd floor or in a basement, the rent has to be cheap or there must be an extraordinary amount of pedestrian traffic to ensure an adequate number will venture up or down. It wants to be located on a through-route, so people will discover it accidentally. It loves street intersections, so people can see and get to it from four directions. It wants only one entrance, unless it's a large store that can afford security guards or attended registers at multiple locations. Most of all, retail wants to be near other retail. But it's jealous of other retail that stands closer to the sidewalk than it does.



## Use the tool that fits the thinking.

The design process is not linear. One moment you are contemplating a street layout, the next the style of a lamppost. These explorations call for different media. When figuring out the “bones” of a district, a fat marker and construction paper may be most expedient. If you need to test the dimensional feasibility of a rough idea, you might verify it in a computer drafting program and then return to your rough explorations. If you need to think more three-dimensionally, you might pile up objects found in the studio.

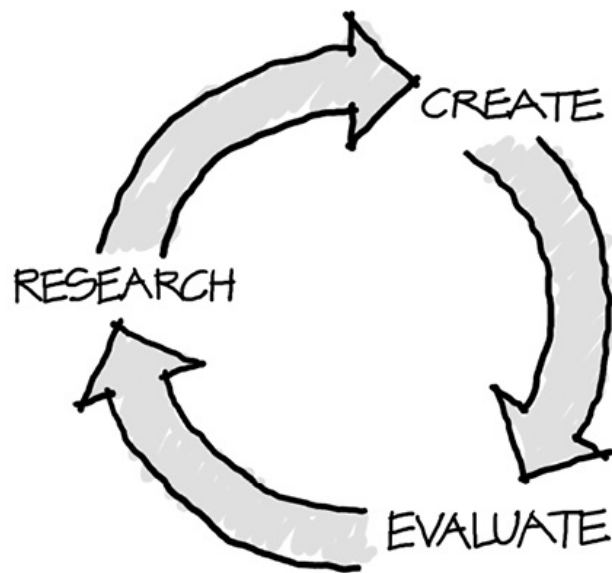
As your ideas cohere, a computer modeling program can help you quickly generate multiple variations. But be sure you are using the right software, as some programs will ask for input on dimensions and materials when you need only to make schematic decisions. If you find yourself fixating on such details, step away from the computer, as manual methods are most likely to facilitate intuitive insights.





## Too much information and too little information are both paralyzing.

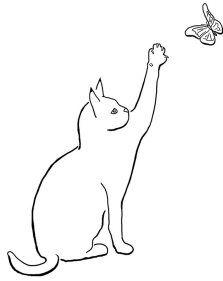
Too much information makes designing difficult, because you know that any idea you come up with will not answer adequately to all of it. Too little information makes designing difficult, because any idea will lack sufficient real-world rationale. One needs contextual information in order to design but doesn't know what information to look for until a design idea is under consideration. Accept the conundrum. Start somewhere.



## Initiate on impulse; design intuitively; justify with data.

The design process is often improvised. Significant ideas can grow from imagination, offhanded thoughts, gut feelings, and random observations: Site C may seem a more dignified location for a courthouse than Site A or B. One side of a street feels muscular, the other delicate. The ratio of one-bedroom units in a proposed residential development seems wrong for the market, but it is hard to explain why.

Subjective observations are important sources of inspiration and should be fully explored. But they shouldn't be used as the basis for a major design decision without being backed by reliable research data. As you acquire data, be careful of **confirmation bias**, the tendency to interpret new evidence in a way that supports one's initial preference.

**Instinct**

an innate, generally predictable behavior in response to a stimulus

**Impulse**

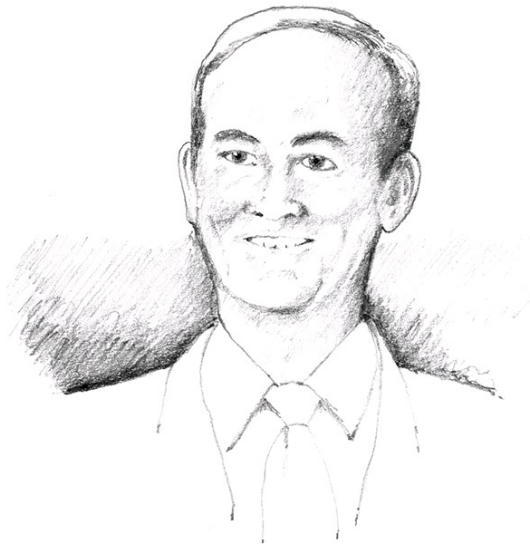
a sudden urge or desire to act without forethought

**Intuition**

an ability to quickly and holistically understand without rational processes

“Fools act on imagination without knowledge. Pedants act on knowledge without imagination.”

—WILLIAM ARTHUR WARD



## Don't just design; *respond*.

By documenting and analyzing the existing context, you can frame the conditions within which you design and discover opportunities that otherwise would remain hidden to you. Many or most points of analysis will be similar to those of other students. However, any point of analysis can be met with numerous responses. One designer might respond to an important axis by placing a monument; another might create an outdoor space to receive those walking toward it; a third might place an angled wall to catch the sun and visually deflect pedestrians onto a new path.

Common points of analysis include:

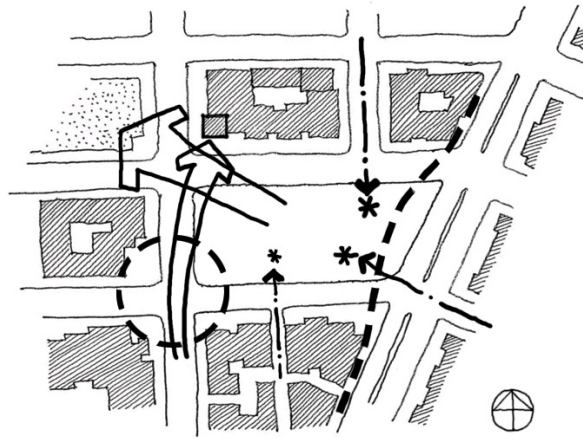
**Pedestrian activity:** pathways, desire lines, congregation (intensity, time)

**Sight lines:** views to and from the site, as well as nearby view corridors that should be preserved or enhanced

**Buildings and built elements:** ground floor and upper floor uses, front/rear relationships, scale, materials, style, building massing, etc.

**Natural elements:** sun path, shadows, wind, air quality, drainage, topography, subterranean conditions

**Streets:** quality, hierarchy, spatial characteristics, pedestrian prioritization

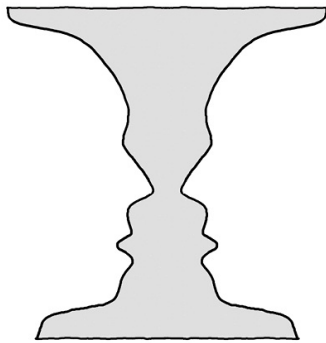




## Synthesis beats compromise.

In a **compromise**, issues or parties in conflict are understood to be in competition with and partly exclusive of each other. Differences are negotiated in a way that partly satisfies each issue or each party involved.

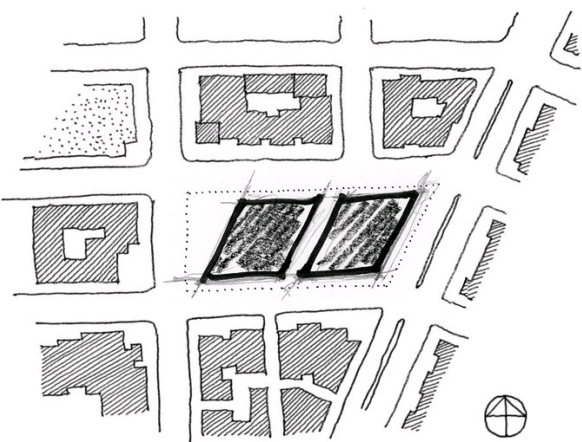
A search for a **synthesis** is a search for an overall superior outcome. One pursues a synthesis based on a belief that a conflict is the result of an order that is as yet unknown. If the order can be identified, the problem may be replaced by a more inclusive or elemental question that dissolves or reframes the conflict. The competing issues may no longer be at odds, but may be able to coexist or be combined in an unexpected, mutually beneficial way.



## Make every decision accomplish at least two things.

At left, a simple scheme has been proposed for an empty site. But while the two building forms shown are simple, they answer to numerous existing conditions. On the north, east, and south sides of the site, they meet the sidewalk in order to honor the existing streetwall. On the west, the angled facade allows a public hardscape plaza; is oriented toward an existing park diagonally opposite; allows a view of an existing clock tower for pedestrians approaching from the south; allows the south sun to illuminate the plaza and tower; and references the street geometry on the east end of the site. A pathway between the two forms enhances movement in the district by linking two existing public ways. Finally, the parallelograms are at once simple and dynamic, suggesting they can be developed into coherent, architecturally interesting buildings.

Despite the suggested success of the scheme, it answers to relatively few contextual considerations. Many other contextual factors will have different and perhaps even opposite things to say about how the site could or should be built on.



Sometimes you need to do one thing extraordinarily well. Most of the time, you need to do everything well enough.

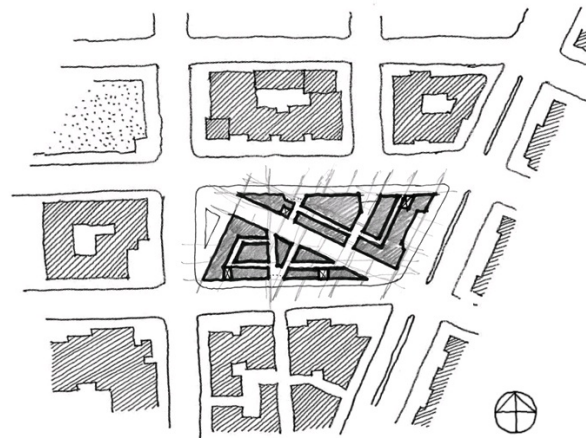
If you have ten problems to solve, don't fixate on solving one while the others languish, and don't wait until you have enough time to do all ten well. Take a very rough pass at all ten. Then work a little more on all of them. With each pass, look for ways to more suitably and economically execute the rest. This will save you time, help you think holistically about your project, and keep you from dwelling on your pet concerns to the exclusion of others.



## How and where will people *move*?

Every urban site must be understood as fundamentally a venue of movement—even if the goal of the project is to create a place of repose. Indeed, only a fraction of the people using or influenced by a site seek it out as a destination. Most people will pass through or by it on their way elsewhere.

A circulation scheme for a site must accommodate existing patterns of movement as well as provide new connections, to enhance the flow of people, ideas, and energy, and maximize opportunities for encounters. Even circulation within a building must be solved in relation to the larger urban system.





## Don't be afraid to do the obvious thing.

Doing what makes straightforward sense can seem to run counter to creativity: if a design solution is straightforward, couldn't anyone have come up with it?

The opposite is more often the case. A designer's work usually turns out to be more original when it comes from honest observation, painstaking analysis, unfiltered insight, and intelligent decision making, without concern for originality or self-expression. The result might seem like something anyone could have come up with; you might fear being laughed at should you naively pin it up in front of the class. You might imagine that everyone else in your studio *did* come up with it and wisely discarded such an obvious solution. But when something seems obvious to you, it is often because it is *natural*, not because others have seen the same thing.



“[No one] who bothers about originality will ever be original: whereas if you simply try to tell the truth (without caring twopence how often it has been told before) you will, nine times out of ten, become original without ever having noticed it. Give up yourself, and you will find your real self.”

—C. S. LEWIS



While making big plans, consider the details. When mucking around in the little stuff, stay alert to the big picture.

Turn your best ideas into principles you can apply in other places and at other scales.

**Small move:** Curve a street to go around a historic building.

**Bigger move:** Curve the parallel streets as an “echo” effect to reference the building’s significance to the district.

**Big move:** Create a network of boulevards to organize vehicular traffic in a district.

**Small move:** Place a civic monument at each boulevard intersection to enhance the city’s legibility.

**Medium move:** Within each area bounded by boulevards, create a street system and neighborhood with character distinct from the other areas.

**Small move:** Propose a Citi Bike rental facility in a new mixed-use development.

**Additional small move:** Provide repair, food, toilet, and other facilities for bikers.

**Medium move:** Propose dedicated bike lanes on nearby streets.

**Big move:** Create a linear green space with bike paths to connect the new

development to other major green spaces in the city.

I lined up the new facade with the building across the street to create a big plaza.

Interesting move. Have you thought about how to activate the plaza?

What about a clock tower? That would be cool!

Don't we need a subway head house? You could put it in the tower!

You should use special pavers in the street to link the two halves of the plaza.

Does this part of the city need a space like this?



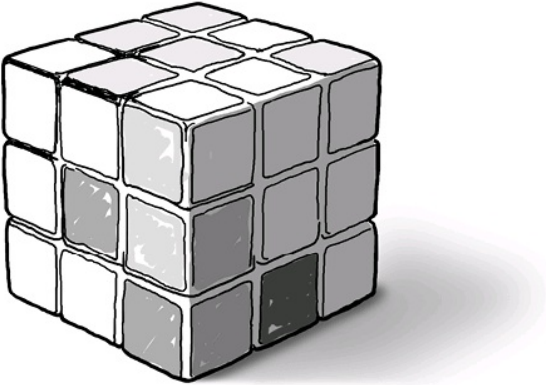
## The key to solving a wicked problem is to stop trying to solve it.

A **wicked problem** is a complex system of subproblems. It cannot be solved by solving the individual subproblems, because they are dynamic and interactive. A solution to one subproblem will change the others or will “unsolve” a subsolution.

Wicked problems must be addressed both incrementally and holistically. Investigate one subproblem at a time, and explore possible solutions—without deciding. Then study subproblems in pairs or groups. Eventually, you will intuit ways to solve two or more at once—although you still can’t move ahead. Next, consider the wicked problem as a whole: What values or assumptions created it and may be impeding attempts to solve it? What goals and values must inform an eventual solution?

The ultimate solution will not be a sum of subsolutions but a system, approach, or process that addresses the way in which the subproblems interact.

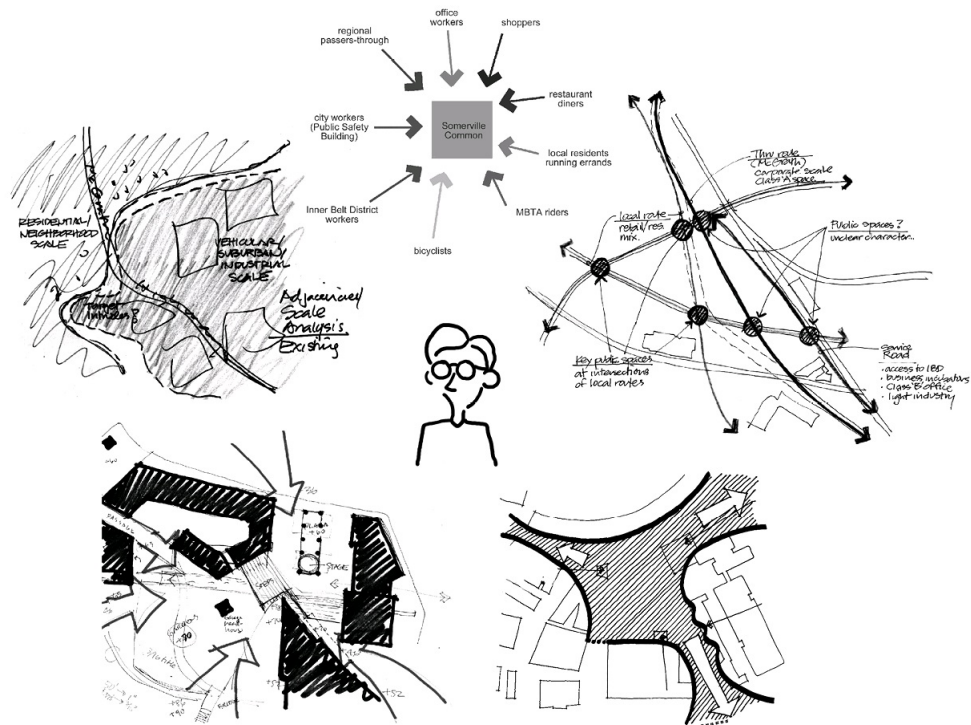




## Without a crisis, there's no breakthrough.

Everything falls apart at some point. Your best ideas stop working, or they sort of work but won't work *together*. You can't find a way forward. You look back on the times your previous projects fell apart and wonder why you didn't learn from them. You wonder why you can't manage the design process better, why you can't keep disaster at bay. You wonder why you aren't cut out for your field.

Eventually, you realize that everything falling apart is part of the process. The next time it happens, you realize it might be because you are doing things the right way. The time after that, you will expect the crisis and will grind through it.



## A design scheme is an argument.

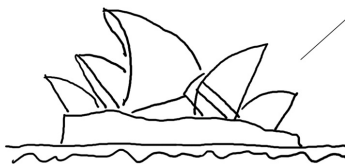
An argument requires evidence, but a strong argument is not airtight. If an argument is completely correct, it *isn't* an argument, but a presentation of fact. To argue effectively is thus not to prove you are right, but to show that your position is desirable given that perfect evidence is not available.



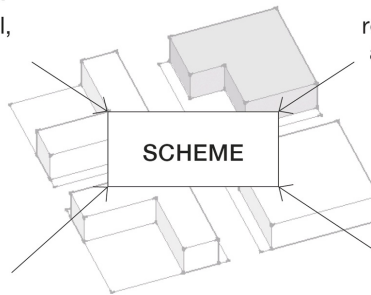
**Physical argument**  
practical, functional,  
logical, unified



**Humanistic argument**  
responsive to individual, social,  
and cultural needs and values



**Aesthetic argument**  
beautiful, harmonious,  
inspiring, enjoyable



**Natural argument**  
responsive to and  
accommodating of ecosystem

## Be brutally self-critical.

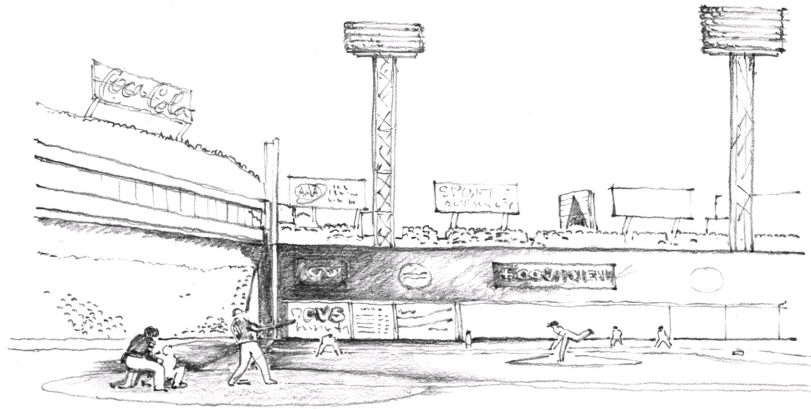
Would you walk across the public plaza you have proposed? Are you sure? Do you use and enjoy spaces like it now? You've drawn a promenade populated by delighted users. Will it be as active as your drawing suggests? Is its design based on known principles of human social behavior? Will people find your project visually appealing? Would you enjoy seeing it from your living room? Do you currently live across the street from something like it? If not, can you presume others would be willing to?



## Place > space

An urban designer's primary responsibility is the design of physical space. However, a designer's ultimate goal is that the space be beloved by its users as a *place*. A space is a physical environment; a place is a space to which people have a personal attachment. Over decades and centuries, this attachment alters and enriches a space. Users adapt it to new purposes, plant trees, make imperfect repairs, meet friends, watch life, and scratch their initials into benches. The changes accrete, making the place richer for others, and ultimately attesting to its users and its culture, rather than the designer who first gave it shape.





Fenway Park, Boston, Massachusetts

# Palimpsest

PAL imp sest

*noun*

- 1 A manuscript or other text written over an erased manuscript, such that the original text is partly legible.
- 2 Anything reused or altered that bears traces of its original form.

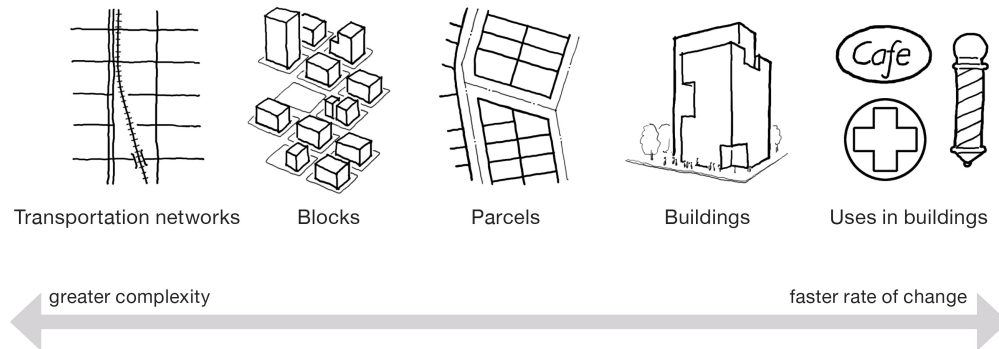
Students of urban design dwell in contradiction. In the design studios they take each semester, they are charged with designing important parts of cities and towns, even though they have little design experience and a limited understanding of urbanism. They are given minimal up-front instruction on how to achieve their goals; instead, they must learn by doing. This approach is perhaps necessary—as instructors, we cannot claim to have found a better way—but it asks the student to move in opposite directions at the same time: forward toward the completion of a project, and backward toward the broad understandings needed to complete it well.

How does a student negotiate this paradox? How does one design something before knowing anything about it? Where does one start—with understanding or action? Are there tangible strategies one can lean on while remaining on the lookout for larger learnings?

The answers are unlikely to be found in textbooks or a formal lesson plan, but they exist in the design studio nonetheless, typically in parenthetical conversations and off-handed observations instructors offer students to get them unstuck, shoo them off a wayward course, or simply inform or inspire them. Once the parentheticals are out of the way, the instructor returns to the lesson plan—ostensibly the

## Change is constant.

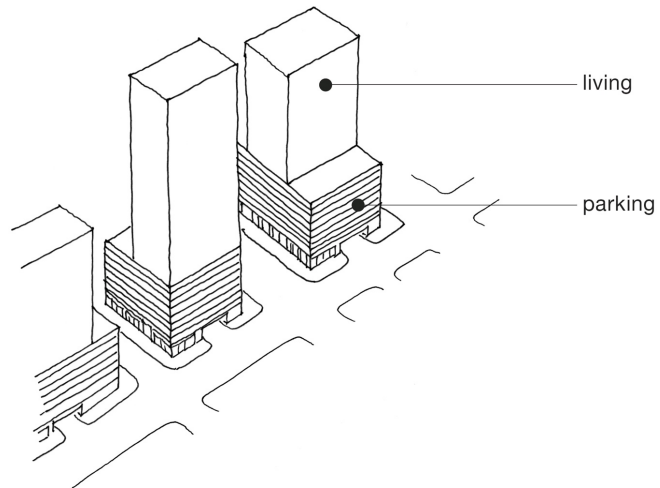
Urbanism is a problem that cannot be solved once and for all. It is an artifact of life. As life produces change, urbanism reinvents itself. It is the physical embodiment of human birth, growth, endeavor, success, failure, and death.



Urban is *how* people live, not simply *where* they live.

To live in an urban manner is to live locally, engage in direct experience, and integrate oneself into the social fabric. To live in a suburban manner is to embrace regionalism, selective experience, and social disengagement.

A resident of an urban neighborhood who drives to work, shops at strip malls, and maintains a regional social network is, dynamically, a suburbanite. The ultimate goal of urban design and planning is to foster dynamic urbanism, not merely to create physically urban places in which a suburban social order takes place.



A suburban social order within an urban facsimile

If it can't be urban now, make it easy for it to become urban later.

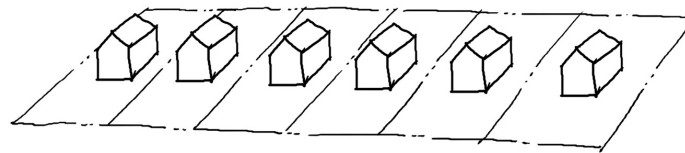
**Design suburban developments for future connection to neighboring developments.** Suburban housing and commercial developments typically have limited ways in and out and idiosyncratic vehicular circulation. By aligning buildings, interior streets, and even parking aisles with those in adjacent developments, future street networks and an integrated urban landscape are more possible.

**Design parking garages for reuse.** Make the first story tall enough for retail use. Make upper stories level wherever possible, and tall enough for future adaptation to residences, offices, and other uses.

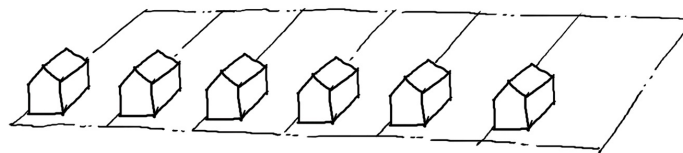
**If multi-unit apartment buildings** are residential-only, design them so sidewalk-facing rooms on the first floor can be converted to retail without compromising the functionality of the dwelling unit and building.

**If high density can't be realized now, make it easy to achieve later.** Objections to density derail many projects, so build them at acceptable density today but in a way that makes greater density possible when public sentiments change.

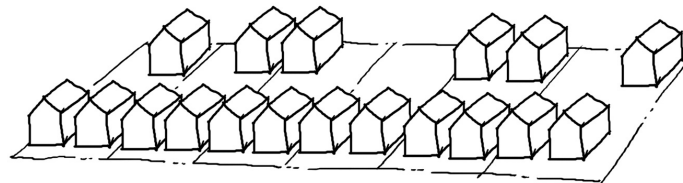




Houses centered on lots



Houses sited near lot lines

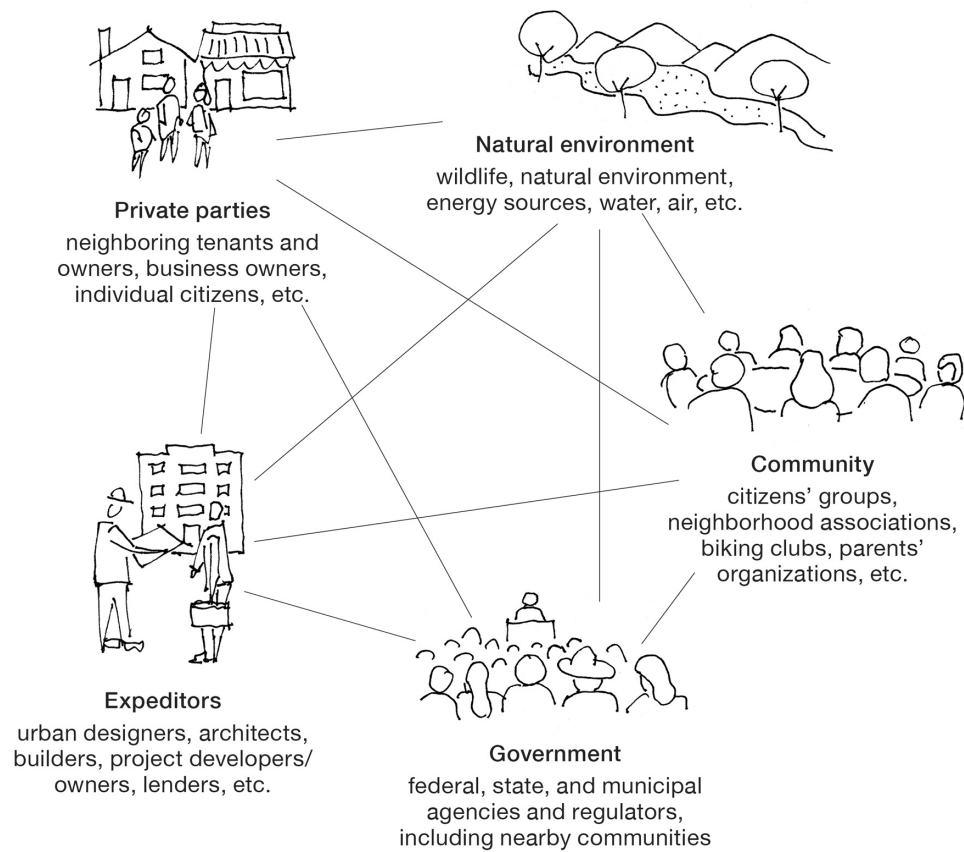


Future densification possible within each lot

## They're not going to build what you draw.

Competing interests, differing agendas, physical complications, regulatory obstacles, funding, and innumerable other concerns slow the progress of creating urban places. If the complications sometimes seem unnecessary, they also make urbanism rich: because the negotiations are complex, the solutions must be as well.

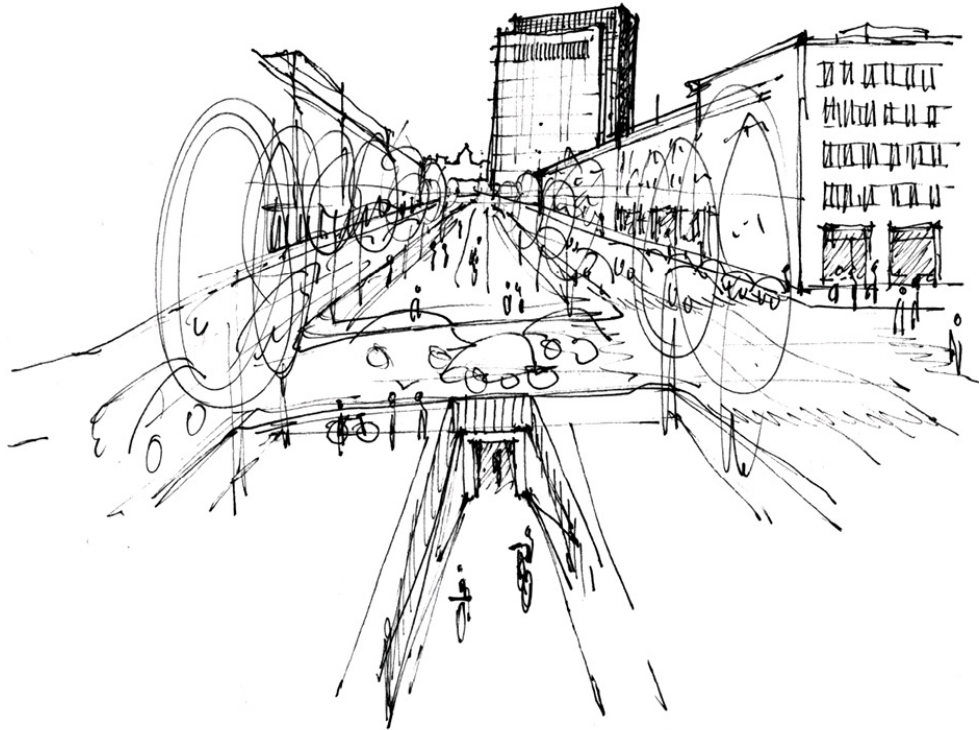
An urban designer may nominally lead the urban design process but is often a barely heard member of a recalcitrant flock. Our contributions may be more impressionistic than specific, more suggestive than prescriptive. An outcome is rarely if ever in the precise form a designer envisions. Most schemes and drawings a designer creates serve to facilitate discussion rather than represent a final answer.



### Common stakeholders

## Your work will go on after you.

An urban designer, in some ways, has to be an egotist. The confidence, conviction, or chutzpah needed to shape physical environments and the lives of people in them is great. But the urban designer also must be willing to let go, to relinquish desires to control or micromanage, to accept that the process is larger than any one person. If disconcerting, this is also why we are drawn to urban endeavor. Our opportunity is to participate in an endeavor that is unending, that will transcend us, that will shape life after we are gone.



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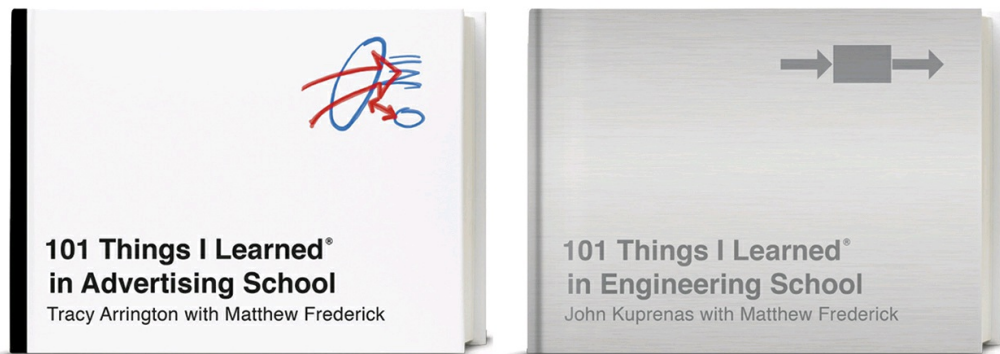
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**Matthew Frederick** is an architect, urban designer, instructor of design and writing, the author of the bestselling *101 Things I Learned in Architecture School*, and the creator of the acclaimed 101 Things I Learned series. He lives in New York's Hudson Valley.

**Vikas Mehta, Ph.D.**, is the Ohio Eminent Scholar of Urban/Environmental Design and Associate Professor of Urbanism at the University of Cincinnati. He is the author of *Public Space* (Routledge, 2015) and *The Street: A Quintessential Social Public Space* (Routledge, 2013), which received the 2014 Book Award from the Environmental Design Research Association.

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# **101 Things I Learned<sup>®</sup> in Advertising School**

Tracy Arrington with Matthew Frederick



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NEW YORK

## Insight on insight

An insight is not an observation or invention. It isn't a flash of inspiration or the pinpointing of a missing ingredient. It is the realizing of the essence of a situation.

The search for insight can be tedious and deflating. It requires researching, brainstorming, focusing, refocusing, sifting, resifting, doing, undoing, and often giving up in frustration. But in giving up, one becomes a stranger to his or her situation and may be open to a fresh perspective on it.

When it is eventually found, an insight will be both broad and specific: it will reveal a human truth or cultural-scale experience, yet will connect concretely to the product or product category. It will surprise, inspire, and provide clarity. It will feel like something you had not thought of before yet were aware of all along.

We need to  
sell more milk.



Ugh. Milk is  
boring.



It's good  
with a PB&J.



I don't  
like milk.



I do.

This assignment  
stinks.



The only time I think about  
milk is when I run out of it.



What?



got milk?

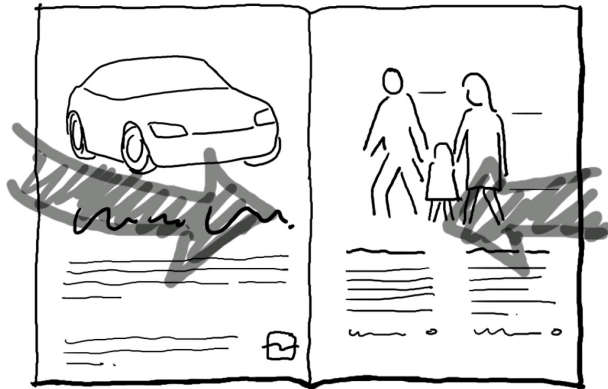
After the advertising campaign by Goodby, Silverstein & Partners  
for the California Milk Processor Board, 1993

## Direct the flow of energy.

Arrange figures and objects to call attention to an ad's message. People, animals, and objects usually should face or be inflected toward the body text or call to action. If in motion, they usually should be moving "into" the ad.

If the placement of the ad on a web page is known, its energy usually should be directed toward the center of the screen. In a print publication such as a magazine or catalog, energy is best directed toward the spine. People or vehicles moving away from the spine may appear disinterested, as if they are "leaving" the publication, although this can be less problematic on right-hand pages, where movement to the right matches the direction one's eye and attention are usually headed.

As our brain processes images 60,000 times faster than words, we seek out imagery to shortcut the additional work that words require. If a headline needs to be read before one can make sense of an image, place and size the headline so the eye goes to it first.



Energy oriented  
toward the spine



Figure oriented toward  
the call to action





# **101 Things I Learned<sup>®</sup> in Engineering School**

John Kuprenas with Matthew Frederick



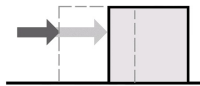
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## When a force acts on an object, three things can happen.

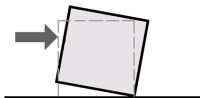
An object that receives a force will remain stationary, move, or change shape—or undergo a combination of these reactions. Mechanical engineering generally seeks to exploit movement, while structural engineering seeks to prevent or minimize it. Most engineering disciplines aim to minimize changes in the shape of a designed object.



Object remains stationary



translation (sliding)

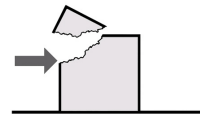


rotation

Object moves



shear



fracture



compression



deflection



racking



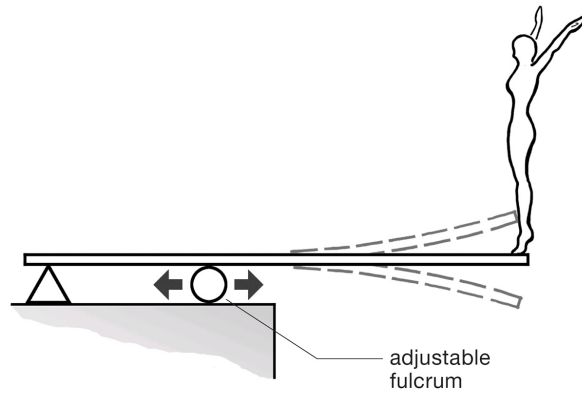
deformation

Object changes shape

## Soldiers shouldn't march across a bridge.

A structural member vibrates in response to normal loads and impacts, in the manner of a plucked guitar string. The **natural** or **resonant frequency** of an object is the time it takes to complete one cycle of movement (fully back and forth or up and down) upon disturbance.

When a force acts repeatedly on a structural member, and at a rate that matches its natural frequency, the member's response is enhanced with every cycle. The effects range from loud humming (such as when vibrations from a building's mechanical equipment coincide with a beam's natural frequency) to uncomfortable oscillation to occasional collapse. Many relatively small earthquakes have induced significant damage when their wave frequency has matched that of affected buildings. In 2000, thousands of pedestrians celebrating the opening of the London Millennium Footbridge inadvertently induced oscillation when their walking rhythms matched the structure's natural frequency. As they swayed in response to the unanticipated movement, they inadvertently increased it. The bridge was closed following the event and the structural system was repaired.



With each bounce, a diver stores energy in the board. By coordinating each landing with the board's natural frequency, the height of the takeoff is increased.