



Architects

Form-Based Zoning for Architects

Course Number: AIAPDH269
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Final Exam for Form-Based Zoning For Architects

1. Zoning in the USA has its roots in which country?

- a) Great Britain
- b) France
- c) Germany
- d) Scandinavia

2. What was the main goal of New York's zoning rules of 1916?

- a) Taller buildings
- b) More parks
- c) Reducing traffic congestion
- d) Sunnier streets

3. The "Invisible Web" refers to:

- a) A network of corruption within city and state governments
- b) The network of developers' lobbyists who try to influence elected officials
- c) The way zoning works to shape the city
- d) The "old boy" network that still dominates the design and construction industries

4. The result of New York's 1916 zoning rules was:

- a) More open space and plazas
- b) Staggered and setback upper stories on tall buildings
- c) More apartments
- d) More green space

5. The primary intention of Standard Enabling Acts was to:

- a) Promote economic and business development
- b) Require all municipalities to create zoning maps and laws
- c) Limit the power of States to deviate from Federal law
- d) Promote regional planning in America

6. The solid legal basis of zoning buildings and land according to use was validated by:

- a) The Standard Enabling Act for zoning
- b) New York's 1916 Zoning Act
- c) The exclusion of Chinese laundries in California
- d) Euclid vs. Ambler

7. Amending zoning practice in America's suburbs is important because:

- a) It will increase personal property rights
- b) It can create more environmentally sound and socially just environments
- c) It will make suburban expansion easier
- d) It will stop all new development

8. Zoning in the "Jim Crow" era was intended to:

- a) Extend the African-American property rights gained during Reconstruction
- b) To focus resources equally between the races
- c) To keep black people "in their place" by segregating African-Americans away from white-owned homes and businesses
- d) To enact William Tecumseh Sherman's promise to give newly freed black Americans "40 acres of land and a mule"

9. "Redlining" was the process whereby:

- a) Commercial property was identified on zoning maps
- b) African-American neighborhoods were highlighted for improvement in the New Deal Era
- c) African-American neighborhoods were excluded from investment and access to mortgages
- d) Areas to be rebuilt under President Johnson's Fair Housing Act were identified

10. What was the significance of the Charter of Athens? Was it:

- a) A masterplan to rebuild the Greek capital according to modernist principles
- b) A template for timeless city design
- c) A radical rebuttal of modernist urbanism
- d) A manifesto for building the modern, functional city

11. Architects, artists, and planners emigrated from Europe to the USA during the 1930s. Was this because:

- a) America asked for their help to get out of the Great Depression
- b) They were offered jobs in the 1939 World's Fair in New York and its view of City of the Future
- c) They wanted to escape persecution by fascist and communist governments of that period.
- d) They felt their ideas would be appreciated there

12. Hardworking and patriotic women were displaced from their industry jobs when World War II ended. What did they do?

- a) Became union organizers, determined to get their jobs back
- b) Were pressured into new roles as homemakers by national advertising campaigns
- c) Marched on Washington
- d) Joined the armed forces

13. Developers capitalized on the massive suburban expansion in the decades after WWII ended. They were assisted by:

- a) The Eisenhower government's freeway building program
- b) Large tracts of undeveloped land around cities
- c) A system of zoning that made it easy to construct buildings with different uses on separate parcels of land
- d) All of the above

14. Architects were not involved in major suburban housing projects during this period because:

- a) Designing suburbs was beneath their dignity
- b) Their services were too expensive
- c) Landscape architects took all the work
- d) Federal government guidelines on housebuilding penalized builders who employed architects to create progressive designs

15. Against this trend, some architects in the 1970s did create some interesting work on suburban housing design. These were:

- a) Venturi and Scott-Brown
- b) Duany and Plater-Zyberk
- c) Parker and Unwin
- d) All of the above

16. Which decade saw the first stirrings of a change in public attitudes towards the suburban environment?

- a) 1950s
- b) 1960s
- c) 1970s
- d) 1980s

17. The way many municipalities have funded suburban expansion has been described here as:

- a) A socialistic conspiracy
- b) A Ponzi scheme
- c) A triumph of American capitalism
- d) A method of fooling the people most of the time

18. Which influential urban development in the early 1980s had an immediate impact on the process of form-based coding?

- a) Seaside, FL.
- b) Reston Town Center
- c) The River District, Portland, OR
- d) Baltimore Inner Harbor

19. Building frontages are:

- a) The building façades facing a public space
- b) The contextual relationship between adjacent buildings
- c) The area of land in front of the building
- d) The building façades and their thresholds

20. The primary generators of form-based codes are:

- a) Architectural styles
- b) Development economics
- c) Urban design principles
- d) Utopian ambitions

21. Who best defined the design of a city to the design of a great house? Was it:

- a) Andrea Palladio
- b) Le Corbusier
- c) Andres Duany
- d) Leon Battista Alberti

22. Masterplans act as:

- a) Visual catalysts for development
- b) A fixed prescription for development
- c) A waste of time
- d) A guaranteed source of architects' fees

23. The key armature of this urban masterplan-to-code process is:

- a) Clear plan drawings
- b) Density tabulations
- c) The definition of areas of different urban character
- d) A schedule of building uses

24. The Transect is explained as a useful tool for:

- a) Understanding the history of the area
- b) Organizing the complexity of masterplan detail
- c) Fixing preconceived urban conditions
- d) Educating planners

25. The Transect utilizes concepts of:

- a) Neoclassical urban design
- b) Morphological urban design
- c) Landscape Urbanism
- d) The City Beautiful

26. In form-based codes District Designations are:

- a) Standards for building placement, massing, and frontage conditions
- b) Standards for defining a zoning district by its general design and character
- c) The network of public spaces
- d) A detailed set of prescriptive rules

27. In form-based codes District Provisions are:

- a) The typology of public spaces
- b) The description of and basic standards for a zoning district
- c) Standards for building placement, massing, and frontage conditions
- d) A detailed set of building uses

28. What is the best way for a municipality to capture the value associated with an ambitious masterplan? Is it:

- a) Allow developers to have free rein according to market conditions
- b) Create a form-based code that aligns with new development opportunities
- c) Be very strict about permitted uses
- d) Keep the plan-making consultants under contract

29. What is the disadvantage of a Planned Development District? Is it:

- a) It is unfairly balanced towards developers' interests
- b) It is far too complicated
- c) Innovative design and zoning provisions remain rooted to that one site
- d) The municipality can impose conditions unfair on the developers

30. What is the most important datum for Frontage Conditions and District Provisions? Is it"

- a) Back edge of curb
- b) Street centerline
- c) Right-of-way line
- d) The front façade of the building

FORM-BASED ZONING FOR ARCHITECTS: MAKING PLACES FOR PEOPLE

Unit 1:

Zoning: The Invisible Web of City Design

LEARNING OBJECTIVE 1

The student will understand the basic elements and principles of form-based zoning codes and place them in their historical context concerning the development of conventional, use-based zoning in the USA. In this context, students will recognize how zoning embodies cultural values and how early American zoning history was tainted by legally enforced racial discrimination, and how this did not focus on or intend to protect the health, safety and welfare of everyone.

LEARNING OBJECTIVE 2

The student will build on this background and understand how, as the twentieth century progressed, zoning came to embody Americans' deeply held social values as well as providing the technical details for development control. The student will understand how these social values can still retain an unpleasant residue of racial bias within the rules of conventional zoning

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- 1.1 Preamble: The Invisible Web
- 1.2 What is Form-based Zoning?
- 1.3 The Evolution of Zoning in America
- 1.4 The Legal Landscape of Racism

1.1 Preamble: The Invisible Web

a) Zoning's Origins and Power:

Underlying this course about form-based codes is the well authenticated premise that within the dry and legalistic content of municipal zoning in the USA there exist deeply engrained assumptions about the way we, as Americans, should live our lives.¹ Zoning is an instrument of social policy no less than an instrument of control of a city's physical form. Therefore, while the latter units of the course deal in depth with the construction and operation of a form-based code from a technical perspective, the first half

examines elements of the origins and development of zoning practice in the America, which is very different from systems of development control in any other western democracy. This material therefore examines the way zoning establishes both the physical form and what has been called the “moral geography” of our cities. To quote zoning expert Sonia Hirt: “The ubiquity of zoning makes it so commonplace as to be invisible, but in this invisibility lies power—the power to shape daily practices and the power to shape ideas and ideals.”²

Herein lies one of the “hidden” powers of form-based codes—the ability to reshape our cities in ways that actively support ideals of community diversity, sustainability, economic opportunity, and social equity. These are four huge challenges facing American cities, and particularly their suburbs, in coming decades. Understanding and using form-based codes is one way we as professionals can increase our effectiveness in shaping our cities more effectively to meet these future challenges head on.

Gaining expertise in zoning is not something architects in general have rushed to embrace. Indeed, the presumption that zoning is boring but some sort of necessary evil is widely held within the profession. However, the material in this course shows how zoning can be transformed from something that’s often a burden on a project into a source of good design and productive urbanism.

Zoning in the USA has its roots in the nineteenth century, as we shall review in Section 1.3 below. However, the main principles and priorities of what we shall refer to in this course as “conventional zoning” were set in the 1940s and 1950s, in the post-war world of suburban expansion and vastly increased car ownership.

At its simplest level, this kind of zoning is based primarily on separating different parcels of land within a town or city into different sections, or zones, each with different rules that control the uses on that parcel. Zoning thus regulates what gets built where, but by doing so it has a deeper effect. By setting the basic spatial parameters of where we live, work, play, and socialize, it also establishes *how* we carry out these activities.³ It’s easy to forget that the spatial definition locked into zoning translates directly into spatial constraints on our social behavior. Zoning rules and regulations establish parameters regarding our appropriate social behavior in each zone – we shop here, live there, work downtown, and go to school way over yonder, for example – and thus zoning becomes the “invisible web” of city design,⁴ molding the way we live.

But there is very little *design* in all the technical and legal detail that fills the densely packed pages of a typical use-based zoning ordinance, and amongst the earliest innovators of contemporary form-based

zoning in the 1980s and 1990s were architects-turned-urban designers who were appalled by the generic and wasteful sameness of the American cityscape. The revolution these architects started put three-dimensional urban design and placemaking at the heart of a new zoning practice, and this practice has matured over the last twenty-five years to enshrine the central idea of making human-scaled places for people. This means that the design and regulation of public space has become the primary armature for other architectural, technical and procedural decisions.

This course explains how and why this major shift in zoning theory and practice happened, and how architects and other design professionals can use their design training to navigate this form-based system to their (and their clients') advantage. Additionally, as we shall see, many of the core concepts of form-based zoning align with practices of sustainable urbanism, a necessary part of any solution to the looming challenges of climate and demographic change.

b) The Importance of Suburbia:

Sections of the course deal explicitly with suburban situations for the simple reason that “retrofitting suburbia” to be more sustainable and resilient is one of the largest challenges we face as designers. For the last sixty years, the architectural profession has largely ignored the suburbs as sites for progressive design, and it is past time for this to change.⁵ America’s suburbs are the primary testing ground for ways to create more environmentally sound and socially just environments in which we may all live, work, and play.⁶

This author, as a professional who has learned lessons from several decades of urban design and zoning practice, knows from experience that dealing with projects in downtowns or other clearly urban settings can be more straightforward than working in the suburbs. This is largely because downtowns and districts like them tend to engage some basic attributes of urban design and placemaking-- such as spatial enclosure, mixing uses, and transportation options other than cars. And it is in downtowns where zoning codes have previously tried to grapple with some aspects of building design and urban form, sometimes with good results and at other times with less positive outcomes. For example, New York’s “set-back” and stepped building massing rules in the 1916 zoning ordinance was directly based around relationships between building form and urban space.⁷ Within the 1916 rules, architects were able to design such contrasting buildings as the “wedding cake” office building at 120 Wall Street (1930) and the podium and slim tower composition of Lever House (1952).

In an example of architectural design “leading” zoning rules, planners across the USA became enamored of Mies van der Rohe’s Seagram Building in New York (1958) with its elegant tower-on-a-plaza form, but what worked well as a single contrasting form in the Midtown Manhattan streetscape wreaked havoc with neighborhoods when the 1961 zoning resolution required it to be repeated ad infinitum.⁸

By contrast, post-World War II suburbs have rarely been improved by the hands and minds of talented architects. (Victor Gruen, as the inventor of the enclosed shopping mall and the so-called “Architect of an American Dream, can be cited as an exception to this state of affairs).⁹ More typically, seventy-five percent of construction in the decades leading up to the millennium – what we sometimes disparagingly refer to as “urban sprawl,” has been “shunned by most architectural designers.”¹⁰

This needs to change, and this course on form-based codes aims to provide architects with useful tools to tackle these urgent issues. To paraphrase respected author and urbanist Emily Talen, zoning codes provide the framework for the various professionals involved in the making of cities to act with unity of purpose. Without integrated codes, it has been possible for buildings to be designed and built that ignore the spatial logic of the public streets, and to damage the spaces that comprise our shared public realm.¹¹

c) The Scope and Opportunities of Form-based Codes:

Of all the many issues that need to be considered when creating or responding to the provisions of a form-based code, the most important topic is the character, safety, and attractiveness of the public realm. As we shall see in some detail, this concern for the utility and beauty of the spaces between and around buildings is probably the feature that most distinguishes form-based codes from conventional used based zoning.

There are two levels involved in understanding and using form-based zoning tools for architects and planners:

The first level comprises mastery of technical information and processes as they relate to individual projects in order that each project may reach its highest potential within the applicable zoning constraints.

The second level involves a deeper understanding of the cultural and societal forces, with their positive ideals and negative prejudices, upon which zoning is founded and within which it operates to shape our patterns of human settlement in the USA.

While the first level involves competence, understanding this second level can generate a more profound degree of “informed practice,” one that considers the deeper social, cultural, political and environmental sources and consequences of zoning today and in the future.

For example, conventional zoning sets single-family zoning apart as an exclusive use, with the economic segregation that inevitably follows. This segregation has been shown to be a major impediment to a city’s ability to maximize the economic potential of its citizens and to resolve urgent issues of social justice and access to decent and affordable housing. Form-based codes by contrast legislate by means of urban character, such as “Neighborhood Edge,” “Neighborhood General,” “Village Center.” Each of these zones specifically allow for a variety of building types, uses, and types of housing to mix together at different development intensities, thus providing more diverse and accessible opportunities for living and working for a wider segment of the population.¹² (See Fig. 1. Four-plex, single-family housing, and townhomes)



Fig. 1. Mixed Housing Types: .Here a large single-family home sits next to a fourplex apartment building, which is next to development of townhomes. .This adjacency of different types of housing was commonplace in America prior to the introduction of rigid single-family zoning. Illustration: David Walters

This methodology is based on the concept of the “Transect,” developed for contemporary planning and design use in 2000 by the urban design and planning firm DPZ, and defined as a lexicon of different urban conditions from wilderness or preserved rural land, through different degrees of urbanity leading to the urban center.¹³ Transect-based methodologies constitute a fundamental rethinking of the ways and means by which we plan and deliver our urban and suburban environments, basically the “invisible web” rejigged for the 21st century.

2. FBCs provide broad flexibility in allowable land uses and by-right entitlements to developers willing to construct projects in conformance with a community's articulated vision.

The **basic proposition** sets out a bargain:

Follow more explicit rules of good urban design and building layout -- and in return get quicker approvals with by-right entitlements and more market flexibility in mixing and matching product types.

Form-based Codes can *lighten* the regulatory load *if* they are properly written and administered. They can lead to quicker approvals, lower costs and thus greater affordability for housing and commercial products that comply with the integral urban design standards.

The sample code pages illustrated in this course also illustrate four objectives that permeate the professional world of form-based zoning practice:

1. To be very clear and use plain English
2. To use diagrams and photographs rather than words wherever possible
3. To embed urban design concepts more deeply into zoning regulations
4. To focus on our shared public realm (making spaces for people) as the primary product of the regulations.

Item number 4's emphasis on the public realm, the spaces we all share in our towns and cities, makes clear the objective for safe, attractive, and accessible public space for all citizens. This includes people on foot, on bikes and scooters, in vehicles, and on transit, and it applies to our future conditions as much as it does to our world today. This objective can be achieved by using principles of urban design and placemaking to enhance the "public good," that is, the benefits for the public that can be derived from private sector development. This involves managing the siting, massing and frontage layout of buildings in ways that create public spaces that facilitate multi-modal movement, are transit supportive, and promote pedestrian interaction and safety. As a parallel objective, this kind of urbanism becomes more sustainable and energy efficient by using compact and transit-supportive arrangements of multi-functional buildings. All these design strategies can substantially reduce the carbon footprint of our towns and cities.

Additionally, including different types of buildings and uses within neighborhoods and districts as a "by-right" component of the code aims to increase people's access to a wider range, and more affordable palette of housing types and workplaces. This also enhances a community's progress to an urbanism that

is more socially just and economically sustainable, and that begins to address ill effects of past and present racial and economic segregation.

b) Principles and Variations in Form-based Codes:

Although the scale, scope, and purpose of FBCs vary across projects and jurisdictions, effective form-based codes contain two unifying principles:

- First, FBCs impose relatively strict controls on the external form and scale of buildings and spaces in order to define the character of a neighborhood or district in the way that has been identified by a community plan.
- Second, FBCs provide developers with broad flexibility in allowable land uses and by-right entitlements *if* they are willing to construct projects in conformity with a community's articulated vision embodied in code.

But diving more deeply into their philosophy and organization, we can add a third:

- Third, FBCs generally eschew numerical density criteria in preference to a set of interwoven design criteria that are used to create the desired community character without reliance on abstract numbers.

All these features represent sharp departures from traditional zoning ordinances that have for decades discouraged mixed-use development and subjected developers and their architects to time-consuming and costly rezonings and project entitlement processes. In most architects' experience, such rezoning battles almost always come down to a fight over density numbers, as if they themselves are a guide to good design. If developers quote high figures for dwellings per acre, neighborhood groups automatically swing a cleaver at that number to hack it down to one they think is better.

It is self-evident that there are low-density areas in American towns and cities that are miserable places, and this is due to a whole variety of socio-economic conditions that have little to do with density statistics *per se*. Conversely, some of America's most prestigious and attractive urban areas are predicated on medium and high-densities. Form-based codes cut right through the false logic of density ratios as indicators of urban quality and they replace those numerical abstractions with real criteria about urban placemaking and character.

Form-based codes are often created relative to a particular project or a scripted zoning update, but whatever their origin they usually follow similar structures regarding content and administration while details and precise topic coverage will vary depending on the project. To begin with a simple application,

this section briefly explains the typical structure and content of a code written initially in conjunction with a private development project masterplan for a new “Garden Suburb” extension to a small town. (Fig. 3)

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Figure 3. Table of Contents for small, project-specific Form-based Code. Illustration courtesy of Stantec Urban Places Group

This code was later adopted by the municipality as a “floating” or “overlay” code, the provisions of which other landowners and developers could attach to or overlay onto their land and projects. This code thus strikes a balance between specificity regarding rigorous urban design criteria and a level of flexibility for use in other geographies.

The Case Studies in Unit 4 illustrate one similar use and one very different application of form-based codes. Case Study #1 illustrates a code specifically tailored to a Small Area Plan in a mid-sized city. It shares many technical details with the “floating” code, but is tailored to one specific geography and is organized under different headings more appropriate to a more comprehensive civic code.

Case Study #2 is very different. It is born out of an administrative process to insert detailed provisions to stimulate and control new development along a light rail line. As such, it utilizes the urban design concepts typical of a form-based code to create new zoning districts around the train stations, but without developing any site specific masterplans. Whatever their point of origin, form-based codes generally comprise a set of mandatory requirements and several optional sections. For brevity and clarity in this course we will deal only with elements of those mandatory sections marked with an asterisk (*), indicating sections with a high graphic content.

c) Mandatory Elements of a Form-based Code:¹⁴

- i) **Regulating Plan:*** (See Figs. 4 and 5)



Figure 4

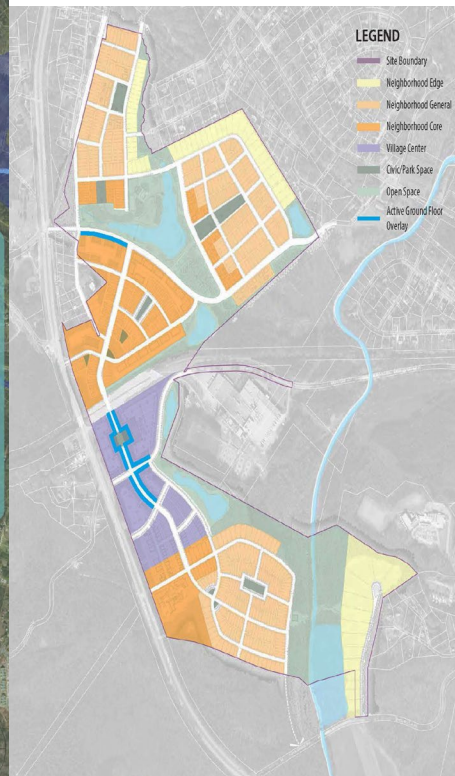


Figure 5

Figure 4. The Masterplan for a new “Garden Suburb” in a small town (Illustration Courtesy of Stantec Urban Places Group)

Figure 5. The Regulating Plan This is the Regulating Plan for the development shown in Fig. 4. It shows four hierarchical form-based zoning districts based on the Transect methodology: Neighborhood Edge-equivalent to T-3; Neighborhood General-equivalent to T-4; Neighborhood Core-equivalent to T-5; Village Center-equivalent to T-6; (Illustration courtesy of the Stantec Urban Places Group)

This is a reconceptualized version of a conventional, use-based zoning map, based not on land uses but on criteria established by a masterplan (or other criteria) using the placemaking categories of the urban design Transect (See Fig. 2 and detailed explanation in Unit 3). The Regulating Plan designates the districts where different standards apply, based on clear criteria regarding the physical character of the areas being coded.

- ii) **District Standards*** This comprises a diagrammatic listing of all the zoning districts included in the plan. (See Fig. 6 as a typical example). Other options of diagramming these standards are discussed in more detail in Units 3 and 4 of this

course.

iii) **Building Form Standards:***

These are the regulations controlling the configuration, features, and functions of buildings that define and shape the public realm. These are sometimes called **District Provisions*** (see Case Study #1) and can include **Frontage Conditions*** (See Fig. 7). These regulations may be extended to include **Building Design Standards,*** especially in relation to the visual permeability of building façades as they create streetscapes and the pedestrian environment (See Fig 8).

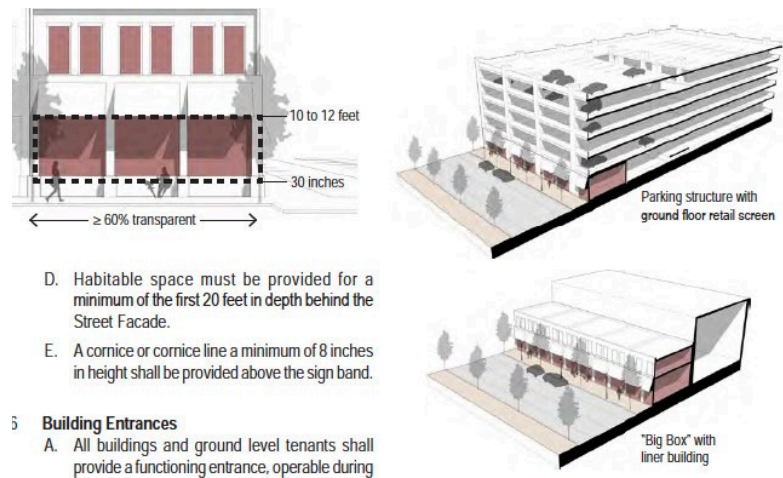


Figure 8. Façade Conditions. These diagrams deal specifically with the zoning controls at street level. Illustration courtesy of the Stantec Urban Places Group

Note: In areas where the highest intensity of pedestrian activity is desired or expected, the frontage conditions may be limited to “gallery” and/or “arcade” so as to create a sheltered and protected pedestrian environment and to maximize the economic development aspect of those properties. These frontage conditions should be used sparingly and focused only around nodes or along corridors of intense pedestrian activity. Such frontages are delineated on the Regulating Plan and cross-referenced on the Frontage Types page of the code. They are usually referred to as “Restricted Frontage Overlay”, or “Active Ground Floor Overlay.” (See Figs. 5 and 7, and Figs. 20 and 23 in Case Study #1 in Unit 4 of this course).

iv) **Site Standards / Public Space / Street Standards:***

These are specifications for the different types of streets and other public open spaces that comprise the public realm and for the detail elements within streets

and public space (e.g., sidewalks, travel lanes, street trees, street furniture, etc.).
 Parking and Landscape provisions are included here. (See Fig. 9 Public Space Types).

8.5 RECREATION SPACE TYPES

All land dedicated to satisfy the Recreation Space Dedication requirement of this section shall conform to one or more of the following typologies:



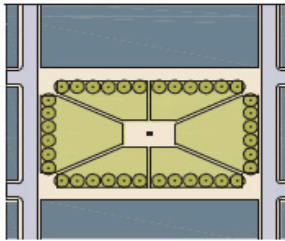
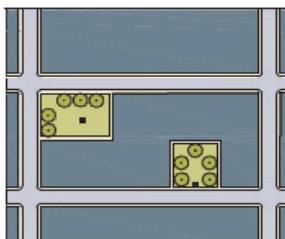
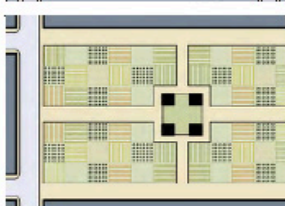
<p>a. Greenway: A lineal preserve available for unstructured recreation. Greenways typically follow the trajectories of natural corridors, but in urban environments they may be aligned with adjacent building Frontages. Greenways are most successful when providing access to a variety of urban environments and major trip origin/destination points.</p> <p>Requirements: Greenways shall consist of a paved path, a minimum of 10 feet in width, within a public easement or right-of-way a minimum of 20 feet in width (see diagram, opposite). The paved surface of accessways shall be constructed of a smooth, compactable material that is accessible for wheelchairs and strollers. Paving materials shall be approved by the Public Works Department and the Parks and Recreation Department. Greenways shall be credited toward the Recreation Space Dedication Requirement at a rate equal to the length of the path times 20 feet in width.</p>	 <div style="background-color: black; color: white; padding: 5px; text-align: center;"> UN UCMX DT </div>
<p>b. Park or Green: An Open Space, available for unstructured recreation. A Park or Green may be spatially defined by landscaping and/or building Frontages. It may include both informal areas (e.g., meadows, waterbodies, and woodland) and formal areas for specific uses and programs (e.g., picnic shelters, swimming pools, performance areas, and athletic fields).</p> <p>Requirements: The minimum size for a Park or Green shall be 1/2 acre. At least 25% of the park land shall be dedicated to active recreation purposes such as playgrounds, tennis courts, ball fields, volleyball courts, etc. The remainder of the park may be designed for passive recreation purposes such as walking, jogging, cycling, relaxation, etc.</p>	 <div style="background-color: black; color: white; padding: 5px; text-align: center;"> UN UCMX DT </div>
<p>c. Square or Plaza: A formal Open Space available for unstructured recreation, Civic gatherings, and Commercial activities. A Square or Plaza is spatially defined by building Frontages. Its landscape shall consist of paths, lawns and trees, and pavement formally disposed. Squares or Plazas should be located at the intersection of important Thoroughfares. Design of Squares or Plazas should incorporate a focal point defined by a major building Frontage, sculpture, fountain, gathering space, and/or other similar feature.</p> <p>Requirements: The minimum size shall be 1/2 acre and the maximum size shall be 2 acres. The shorter dimension of the Square or Plaza shall be less than 1/3 the height of surrounding buildings. Where a Square or Plaza is adjacent to a street, it shall be planted along such street with trees of a consistent species at a minimum of 10 feet and a maximum of 10 feet on center. Squares or Plazas shall be level, stepped or gently sloping (less than 3% grade).</p>	 <div style="background-color: black; color: white; padding: 5px; text-align: center;"> UCMX DT </div>
<p>d. Playground: An Open Space designed and equipped for the recreation of children. A playground should be fenced and may include an open shelter. Playgrounds shall be interspersed within Residential areas and may be placed within a Block. Playgrounds may be included along Greenways and within Parks or Greens. There shall be no minimum or maximum size.</p> <p>Requirements: Playground equipment shall be approved by the Parks and Recreation Department and shall meet the standards established by the Consumer Products Safety Commission and ASTM for playgrounds. Playing surfaces shall be covered with sand, wood chips, rubberized surfaces (such as tiles or rubber chips) or other approved materials, except that basketball or tennis courts may be included in a playground and may be paved with asphalt, concrete or similar material.</p>	 <div style="background-color: black; color: white; padding: 5px; text-align: center;"> UN UCMX DT </div>
<p>e. Community Garden: A grouping of garden plots available for small-scale cultivation, generally to residents of apartments and other dwelling types without private gardens.</p> <p>Requirements: Community Gardens shall include a garden shed or sheds for the storage of gardening equipment.</p>	 <div style="background-color: black; color: white; padding: 5px; text-align: center;"> UN UCMX DT </div>

Figure 9. This example from a different code, shows which space types apply to which districts. UN means Urban Neighborhood; UCMX means Urban Corridor Mixed Use; DT Means Downtown Transition. These are broadly equivalent to T-4, T-5, and T-6 on the Transit spectrum. (Illustration courtesy of the Stantec Urban Places Group.

- v) **Use Provisions:** A clear graphic table sets out permitted uses relative to each district. The presumption here is that different uses are permitted - even

do with the priorities of the municipality and the urban (or rural) context.

viii) **Architectural Standards*:**

Regulations controlling external architectural materials and quality. Because these matters quickly become subjective, this section should be strictly limited to special circumstances such as Historic Districts.

ix) **Signage Standards*:**

Regulations controlling allowable signage sizes, materials, illumination, and placement. It is good practice to allow a range of design options.

x) **Exterior Lighting Standards:**

Technical specifications for lighting in the public realm, including illumination levels and placement. It is good practice to allow a range of design options.

xi) **Environmental Standards:**

Regulations controlling issues such as storm water drainage and infiltration, development on slopes, tree protection, solar access, etc. For smaller, project-based codes environmental regulations may be covered in other municipal directives.

e) A Note on the Problems of Design by Numbers:

As architects know from experience, conventional, use-based zoning ordinances struggle to define aspects of physical design. They fall back instead on abstract numbers for densities and Floor Area Ratios (FARs), and when combined with legalistic language, these older zoning codes often prove difficult to understand. By contrast, if we as designers wanted to specify key conditions about a design we had conceptualized to a preliminary level and which was to be completed by others, we would most likely draw a set of notated diagrams that captured the key points that any new designer must follow. We would probably write some additional, easy to understand notes. We would talk about urban character, what the places and spaces in our proposed design might feel like when we were in those spaces. We would put in some photos of places that captured the “feel” that we wanted for our design. This is precisely how form-based codes are created; the diagrams, notations, and simple text passages in a form-based code are really nothing more than a rigorous formalization of this architectural sketch process for encapsulating the “DNA” of a project or of a masterplan. Only when that’s all sorted would we do the density calculations that the development finance industries require.

At the heart of this process is design-based thinking about how we shape public space. Specifically, how we manipulate the scale, massing and placement of buildings, and the details of their frontages that form the “walls” to our urban “rooms.” Thinking about frontages is very important in this process: in code writing, building frontages are the layers of the *private* buildings that most directly frame and create the *public* realm. As such, these outer layers of buildings are every bit as public as they are private, and therefore they become a primary site for coding. The urban designer/code writer wants to ensure good design for the “walls” to her “rooms” in just the same way as a building designer is concerned with the surfaces, textures, and details of his interior spaces.

The above illustrations give a taste of things to come in Units 3 and 4. The intention here is not to turn architects into code writers but to allow designers to understand the logic and context of form-based codes, Architects will learn enough basics about the creation and operation of FBCs to be able to use them and respond to them creatively in practice.

f) The Ambitions of Form-based Zoning:

Form-based zoning encourages mixed-use development and provides real estate developers with broad discretion to integrate civic, commercial and residential space. With more permissive mixing of uses, locations can become more urban in character in the manner of older American towns and cities. Building height is generally regulated by the number of stories, rather than the number of feet, to make differences in floor-to-floor heights less problematic across different product types. The ability to shift between allowable land uses over the course of a project is provided by-right in effective form-based codes, thereby providing the private sector with the ability to respond more nimbly to market forces without incurring rezoning costs that can mount into the hundreds of thousands of dollars in some jurisdictions. This flexibility, granted within the confines of controls on the external form of new development rather than abstract density calculations, benefits the public and private sectors by removing regulatory hurdles that have historically stifled mixed-use development projects.

There are several ways in which municipalities can implement form-based zoning to achieve these goals. Some communities, such as Miami, FL, regulate all development within their jurisdiction in this manner, while others have opted for application in smaller, or more specific geographies. The latter approach is more common, and is typically accomplished either:

- a) Through the use of form-based overlays adopted for specific corridors and/or neighborhoods covered by Small Area Plans. The first Case Study in Unit 4 of this course illustrates this latter option.

- b) Through the integration of form-based zoning that deals with specific urban conditions as a section within a larger, more conventional zoning ordinance. The second Case Study illustrates this strategy as a means of catalyzing and controlling development around light rail stations and streetcar stops in a large urban area.

As opposed to the broad-reaching aesthetic requirements typically imposed through the conditional rezoning process, form-based overlays tend to focus primarily on factors influencing how buildings interact with streetscapes and public areas. This is less subjective, and can provide developers with a higher level of predictability throughout the entitlement process.

As part of this strategy, FBCs highlight the important difference between “design” and “aesthetics/style.” A form-based code may require that building façades at street level have specific proportions of glazing for transparency between inside and outside – to promote visual interest, economic activity, and safety. It may require doors at certain intervals for access and egress so as to generate movement and activity on the street and thus enliven public space. Those are both examples of good urban *design* and serve a legitimate public purpose. By intent, form-based codes should say nothing about a building’s *style* (unless one is working in a historic district). The codes’ objectives are not to impose aesthetic requirements upon architects or real estate developers, but rather to create urban design frameworks for “designing cities without designing buildings.”¹⁵

This approach means that form-based zoning’s *primary* focus is upon creating a safe and attractive public realm for all citizens, and that means designing and regulating *the spaces between buildings* and the building façades that create and define those spaces. The importance of this intention cannot be overstated, and this topic will be discussed in more detail at several points during the remainder of the course.

Zoning in this way places the primary emphasis on making places for people and ensures that land uses are separated only when they are incompatible, not simply because they are different. This marks a major departure from zoning theory and practice in the USA during the 20th century, where, as we have noted above, the spatial separation of structures by building use became the defining criterion of urban form during the second half of the 20th century. The next section explains how this use-based practice evolved and how it became universal across the United States.

1.3 The Evolution of Zoning in America

a) Legal Underpinnings:

Property development in the USA during the nineteenth century was dominated by the concept of individual land ownership and personal property rights, with little thought for community values. However, by the end of that century, signs of a pushback became evident against this primacy of personal interests, and the uncoordinated and banal urban landscapes that resulted from this approach. The most obvious efforts can be seen in the grandiose attempts at civic beautification through the City Beautiful movement in the 1890s and 1900s. Less heralded, but longer lasting, were the first tentative legal moves to restrict and control land uses through embryonic zoning laws.

The legal underpinnings of US zoning are based on two concepts: “nuisance” law and “police power.” Nuisance law is derived from English medieval precedent and relates to conditions by which the activity of one person can “unreasonably interfere” with the value or enjoyment of another’s personal property. Its use in America dates back to colonial days.¹⁶ If one landowner acts in a manner that substantially interferes with the use or reduces the value of another’s property, the aggrieved party can sue for damages under the provisions of tort law.

Police power is, by contrast, a communal concept: it is the authority devolved to government to “regulate the affairs of its citizens in order to ensure the “health, safety, morals, and general welfare of its people.”¹⁷ It is proactive and based on the concept of a “common good,” whereby a city can act on behalf of its citizens to regulate developments to avoid nuisances before they happen. Cities zone land for specific uses in a pattern that aims to reduce or eliminate conflicts, but in pursuit of this harmony, municipalities inevitably become involved in protecting the interests of one group of property owners against the competing interests of other property owners. This dialectic, with its arcs of conflict and compromise, is inherent in the zoning system today.

b) Origins and Limits of American Zoning:

While rules and regulations about building cities can be traced back to antiquity, the modern practice of municipal zoning began in Germany in the 1870s,¹⁸ and the idea was quickly imported to the USA. Here, one of the earliest instances of this practice dates from 1885, where homeowners in Modesto, CA sought to exclude unwanted uses – in this case commercial laundries – from residential areas on the grounds that the nuisance factor of the laundries reduced the property values of the homes.¹⁹ The fact that these businesses were almost exclusively owned and operated by Chinese minorities, provided clear evidence of racist undertones, a malevolence that has dogged zoning ever since. San Francisco passed a similar law

around the same time, but that law was invalidated by the U.S. Supreme Court in 1886 on the basis that it contravened the equal protections clause of the 14th Amendment.

In 1905, in Los Angeles, CA, legislation was passed that established separate areas for residential and industrial uses to avoid noxious uses adjacent to homes, and in 1909 the city passed a more comprehensive set of land use zoning provisions.²⁰ Importantly, in 1915 the Supreme Court upheld this kind of zoning as a legal power of local government.

New York City moved fast to capitalize on these new legal powers, and in 1916 produced the first comprehensive city zoning ordinance based on a wider interpretation of the public good. These new regulations stopped huge skyscrapers rising vertically from the back edge of sidewalk and blocking light and air movement at street level. The regulations were crafted to require upper stories to comply with progressive setbacks that allowed sunlight to penetrate onto the streets below. This had a dramatic effect on the design of the city's tall buildings, and these stepped skyscrapers were famously illustrated by Hugh Ferriss in 1922, establishing the generic form of skyscrapers in New York through the 1920s and 1930s.

This new interest in proactive zoning and city planning found a champion in Herbert Hoover, who, before he became President, was the Secretary for Commerce under Presidents Harding and Coolidge in the 1920s. Hoover's Federal Department of Commerce set out two Standard Enabling Acts, the first for zoning in 1924 (revised 1926) and the other for planning in 1927 (revised 1928). Hoover believed that the clarity of the new zoning laws would promote economic and business development, and these new regulations specifically provided the frameworks for states to promote standardized planning and zoning methods at the municipal level. For many cities and states these Standard Acts still supply the basic structure for practice today, ninety years later.

Not surprisingly, there was opposition to what was seen as "top-down" government action. One commentator in the 1920s referred to zoning as "an advanced form of communism" and "worse than prohibition."²¹ Indeed one challenge to the constitutionality of the new zoning law made it all the way to the Supreme Court, focusing particularly the power of zoning to abridge personal property rights for public benefit. In a landmark case, *Euclid, OH vs. Ambler Realty*, 1926, the Supreme Court confirmed the authority of such laws and thus reinforced the concept of "Police Power," defined as the right of local governments to make, adopt, and enforce laws that affected private property for the protection and preservation of the public health, justice, safety and welfare for a community.²²

Since the 1920s, when this legislation was created to enable and encourage the states to delegate zoning authority to individual cities, the federal government has been virtually silent on matters of land use control. Contrary to all European democracies for example, there is no federal law on urban land use. Zoning remains as it began, a primarily local matter.²³ Largely because of the lack of federal action on this new zoning model that separated activities onto discrete parcels of land, most American communities continued to build their towns in traditional ways that often combined uses together – either in the same building or in adjacent buildings. However, in the expansionist decades of the late 1940s and 1950s more specialized use-based zoning became common as towns and cities sought to manage explosive growth, and the new zoning rules virtually outlawed traditional Main Street and mixed-use urban typologies across America. Each use was now to be separated from each other for greater “efficiency.” We will examine the conditions that shaped post-World War II American towns and cities in Unit 2 of this course, but first we must confront the ugly fact that from its inception, zoning carried the ugly taint of racism, and in some ways, that tragic burden of America’s past can still be found today in some aspects of zoning practice.

1.4 The Legal Landscape of Racism

a) Zoning as a Tool of Racial Oppression:

Today we may think of zoning as a dull technical instrument of land organization. But a century ago zoning rules were at the forefront of racial discrimination in the U.S.A, writing into local city policies the harsh racial suppression and disenfranchisement of black Americans at the end of the Reconstruction Period (1877). These harsh laws provided legal support to the Jim Crow²⁴ era that lasted from the end of Reconstruction until the start of the Civil Rights movement in the 1950s.

Richard Rothstein, in his groundbreaking book *The Color of Law* explains in excruciating and shocking detail how white Americans killed, brutalized and otherwise cleared black Americans from areas of towns and cities that had become integrated during the Reconstruction period after the Civil War. As a primary aid to the implementation of Jim Crow mandates, local laws began to include specifically racist language and policies. Baltimore was the first city, in 1910, to create ordinances that segregated whites from African-Americans, particularly those blacks who “had risen above their station” and desired “to get close to the company” of white people.²⁵ Zoning was explicitly designed to push them away from white populations and to “keep them in their place.” While the legal status of such laws was disputed (the Federal Supreme Court overturned a similar law in Kentucky in 1917 (on the grounds that segregated zoning interfered with the right of a property owner to sell to whomever he pleased), many other cities

ignored this ruling or developed complex work-arounds to implement zoning districts whose racial discriminatory intent was perfectly clear.²⁶

In 1922, Atlanta adopted a zoning ordinance aimed at protecting neighborhoods from damage to property values by “the encroachment of the colored race.” When this zoning was challenged in 1924, the Georgia Supreme Court found it to be unconstitutional, but despite this ruling Atlanta planners continued to use racial zoning maps for several decades thereafter.²⁷

In other examples of long-lived racial zoning, ordinance provisions based on segregation were used in West Palm Beach, Florida, until 1960, and in parts of the Orlando metro area until 1968. Even without specific ordinances, cities such as Austin, Atlanta, Kansas City and Norfolk simply designated specific areas as African-American in planning documents, and used these discriminatory designations to guide their zoning decisions. Kansas City and Norfolk continued this practice until 1987.²⁸

Because blatant racial discrimination in zoning was subject to some legal challenges, cities used other, less obvious zoning practices to enforce racial segregation without having to defend their policies in court. Beginning in 1910, officials in many cities promoted the zoning of white, middle-class areas as single-family neighborhoods, with detached homes that lower income African-Americans could not afford. The construction of apartments, that were by definition more affordable to people on lower incomes was expressly forbidden. While there was undoubtedly a large measure of social elitism and snobbery against poorer people in general underpinning this practice, there was enough racial discrimination lurking beneath the surface to make this segregation in all but name.²⁹ This practice has become known as “exclusionary zoning,” and is still in force today in many cities across the country.

Kimberly Quick, a Senior Policy Associate at the Century Foundation, a non-partisan think-tank based in New York and Washington, D.C., has analyzed how this exclusionary zoning, while based on economic exclusion, has also functioned as an effective tool of racial discrimination. She writes:

In 1916, just eight U.S. cities had zoning ordinances; by 1936, that number had grown to 1,246. Some of these policies, known as “exclusionary zoning,” require that neighborhoods consist exclusively of single-family homes, or that homes in some areas have minimum lot sizes or minimum square footage requirements. The Supreme Court upheld these policies in *Euclid v. Ambler* (1926), finding that excluding apartments and multifamily homes from entire neighborhoods was not just permissible, but could potentially prevent the degradation of an area.³⁰

During the 1930s, planning and development in the USA was dominated by the policies and provisions of President Franklin D. Roosevelt’s “New Deal,” the vast array of social and infrastructure programs designed to mitigate the economic and social deprivation of the Great Depression (1929-1941). An important part of this effort was the establishment in 1934 of the Federal Housing Administration (FHA), charged with the tasks of facilitating the process of financing the purchase of homes, improving the standards of new housing, and increasing employment opportunities in the home-building industry.

b) “Redlining” and its Legacy:

As part of the mandate to facilitate homebuying, the FHA sought to classify neighborhoods where it was deemed safe to insure mortgages and those where the risks of insurance became progressively higher. Color-coded maps were produced of every metro area in the USA, and each map indicated “safe” and “risky” neighborhoods for investment. Any parts of cities where African Americans lived were colored red to indicate the greatest level of risk, and this “redlining” announced to all and sundry that the Federal government would not support lending in these areas. At the stroke of a colored pencil, African-American neighborhoods were thereby excluded from almost all sources of investment. At the same time, the FHA was subsidizing builders who were building housing for whites — with the requirement that none of the homes be sold to African-Americans. Some of these illegal covenants were still in use in the real estate industry well in to the 1970s despite the provisions of the Civil Rights Act of 1968, commonly known as the Fair Housing Act.³¹

The Fair Housing Act was passed into law one week after the assassination of Dr. Martin Luther King, and was a crucial part of the legislation included in President Lyndon Johnson’s vision for a “Great Society,” founded on the desire to eliminate racial injustice and end poverty. While the Fair Housing Act prohibited outlawed explicit racial discrimination in the sale and rental of housing units much of this discrimination was perpetuated by the policies of exclusionary zoning, even though these zoning rules may not appear overtly discriminatory. Local zoning restrictions that ban multi-family

development from many locations, combined with extensive areas of low-density single-family zoning with minimum lot sizes severely limit where low-income families or people of color can live. This is true for both renters or owners. Simply put, single-family zoning policies can ban affordable and multi-family housing from many areas, thus preventing families of a lower economic status from enjoying the benefit of living in neighborhoods endowed with better facilities and greater opportunities.³²

Exclusionary zoning prioritizes the comfort of the rich over the security of the poor and working classes. Richard D. Kahlenberg, a Senior Fellow at the Century Foundation, has described the situation clearly:

“The hypocrisy of eagerly inviting low-income individuals into communities to provide vital child and elderly care, or work in jobs from landscapers to waitresses to checkout clerks—while effectively zoning them out from living anywhere in the community—should be more broadly exposed and reconciled.”³³

Today, exclusionary zoning remains widely used. It can artificially inflate property values, and it generates a strong legal and political defense from property owners when faced with any recommendations for change.³⁴ But the fact remains that where people live, and particularly where they grow up has a profound impact on their health, educational, and job prospects. And conventional zoning that separates everything out is the most effective tool communities have for perpetuating this segregated state of affairs. By contrast, Form-based Zoning, by virtue of its basic premise of mixing uses and housing types together while concentrating on creating inclusive and connected public spaces, can, if used correctly, begin to erode these barriers of social prejudice.

Review Questions

1. The first use of zoning in America was in which city?

- a. New York
- b. Modesto
- c. San Francisco
- d. Los Angeles

2. Which American politician created the “Standard Enabling Acts”? Was it:

- a. Theodore Roosevelt
- b. Warren Harding
- c. Herbert Hoover
- d. Franklin Delano Roosevelt

3. Amidst all its other ambitions, the *primary* objective of Form-Based Codes is:

- a. Stylistically consistent buildings
- b. Clear separation of uses
- c. Integration of uses
- d. A safe and attractive public realm

4. Which of these concepts provides one of the two most important legal underpinnings for zoning practice?

- a. The primacy of private property rights
- b. Police power
- c. The aesthetic principles of the City Beautiful movement
- d. The “takings” clause of the Fifth Amendment to the US Constitution

Unit 2:

The Need for Zoning Reform

LEARNING OBJECTIVE 3

Students will understand how the evolving zoning practice in America, which was based on pragmatic market capitalism, was reinforced by modernist theories on ideal city form imported from Europe. The blending of these two ideologies firmly established new zoning laws that unified the appearance and operation of all development in American cities after World War Two. The student will understand how the idyllic promise of post-war suburban expansion in America was limited largely to whites only, and how, for this dominant demographic group, suburban living became synonymous with the American Dream for several decades.

LEARNING OBJECTIVE 4

The student will understand how this utopia was slowly transformed by a public and professional sense of dissatisfaction, dismay, and potential crisis during the 1990s and early 2000s. The student will learn how conventional suburban design and use-based zoning were ill-equipped to deal with changing environmental, economic, social and demographic circumstances, and how urban design and zoning concepts and practices began to be rethought and redefined to meet these new challenges, giving rise to Form-based Zoning. The student will also appreciate the continued complexity of zoning issues involving difficult questions of social equity and diversity, urban sustainability, and community resilience.

CONTENT

- 2.1 American Property Development meets European Master Planning**
- 2.2 Zoning, Development, and the American Dream**

2.3 “Little Boxes, Little Boxes all the Same”- the Loss of Place in America

2.4 Redefining Suburbia and Inventing Form-based Codes

2.1 American Property Development meets European Master Planning

This part of our back story begins in the 1920s, in the aftermath of World War 1 (1914-18). After America’s participation in what was then known as the “Great War”, national sentiment turned inward and concentrated on domestic affairs. Private concerns preoccupied most Americans during the 1920s until the Great Depression of the next decade, when increasing numbers turned to the government in their collective misfortune, searching for solutions to economic problems that challenged the very basis of U.S. capitalistic society.³⁵

In Europe, devastated by the millions of deaths and the collapse of old autocratic regimes, the situation was different. In the 1920s, people’s thoughts turned towards creating a new society, one that was unencumbered by the horrors of the past. In the realms of architecture and planning, progressive thinking rejected historic concepts and styles as corrupt and decadent, and instead looked to the future. While innovations and experiments could be found in many places on the continent of Europe, not least at the Bauhaus in Germany, the main “clearing house” for architectural and planning innovation during that crucial period was CIAM (Congrès Internationaux d’Architecture Moderne), a gathering of architects and planners that met regularly between 1928-59. While building in Europe during the 1930s was limited due to the debilitating effects of the Great Depression (1929-39 in Europe) an intellectual ferment of ideas flourished across national borders for several years until that was closed down by the advent of increasingly repressive governments across continental Europe and Russia.

The most comprehensive summary of those years of debate about the city of the future was The Charter of Athens, conceptualized in 1933. This Charter was originally formulated by the participants in the IVth Congress of CIAM while sailing in a chartered steamship, the SS Patris II from Marseilles to Athens. Their charge was to consider the defining attributes of “The Functional City” in order to set forth a manifesto for future urban development and city form. While there are debates about various versions of the Charter’s text and their authorship, the edition most accepted today is the one heavily edited by Le Corbusier and published in 1943.³⁶

The Charter was to be above all else, a manifesto of the modern city. Old urban patterns of streets and squares were thought to be hopelessly outdated and unsuited to the modern world, and would be replaced by compositions of large buildings set apart in green parkland and linked by high-speed roadways. For functional efficiency, the different uses within a city were to be separated also, and accommodated in different buildings in different locations. To fulfill this ambition, the elements of the future city were drastically simplified to four separate functional groupings: Dwelling, Work, Recreation, and Transportation.

Despite the architects' sincere desire to improve the lives of ordinary people, little mention was made of the social, economic or architectural character of existing city neighborhoods or districts. The focus was on the grand work of making the new city, with new concepts for a brave new world, with the belief that better lives for all would follow. Discussion and some disagreement about the details within this four-part framework continued during the 1930s, but this intellectual freedom to speculate and to agitate for changes to society was sharply curtailed by the rise of fascism in Italy under Mussolini's dictatorship, harsh Stalinist repression in Russia, and particularly by the brutal persecution of Jews and ethnic minorities in Germany and Austria under Adolf Hitler.

This persecution led to a migration of leading architects and planners, many associated with the Bauhaus. Some went first to England, and then, fearing that Hitler would invade the UK, to the safe haven of America. Among the leading emigrants were Walter Gropius, who went to Harvard, and Ludwig Mies van der Rohe to what is now the Illinois Institute of Technology where he was joined by Laslo Moholy-Nagy and Ludwig Hilberseimer. Marcel Breuer also taught at Harvard for a while before settling in New York to practice, while Anni and Joseph Albers started a "Bauhaus in the Mountains" at Black Mountain, North Carolina, before moving to Yale. Herbert Bayer added to the Bauhaus exodus by moving first to New York before settling in Aspen, CO, where he spent the years 1946-75, during which time he oversaw the civic and cultural rebirth of the former silver-mining town.³⁷ By 1939, more than 300 modernist architects from Germany and Austria had fled, with most of them eventually finding refuge in America.³⁸

The idealistic "four functions" model of the city was thus at the heart of progressive, modernist urbanism, and was embedded in the thinking of the immigrant European architect-planners, and some of this thinking bears a resemblance to General Motors' private enterprise vision of the "City of the Future" shown by Norman Bel Geddes at the World's Fair in New York in 1939. Most importantly to our zoning narrative, the Europeans' intellectual vision of how the modern city should work closely paralleled the evolving and pragmatic collection of private development practices and use-based city zoning policies in

America that we noted in Unit 1. There was one major difference, however: Where European architects and urbanists conceptualized this spread-out arrangement of separated city functions joined by highways as the setting for a new, equitable, and just society, Americans distrusted the “socialist” overtones of this vision. American practice simply discarded the theory and embraced the bare bones of European thinking as intellectual support for their new, profitmaking development practices.

2.2 Zoning, Development, and the American Dream

a) The Great Suburban Revolution:

We noted in Unit 1 how, despite the advocacy of new zoning practices by central and state governments in the years before World War II, most American communities still built their towns in traditional ways that often combined uses in close proximity, and sometimes in the same building. However, in the expansionist decades after the Second World War, the sheer volume of new building and suburban growth necessitated a more methodical and consistent approach to land use planning and zoning to deal with new types of development such as auto-oriented shopping malls, office parks, and very large housing subdivisions,

It was this post-war time period that established the zoning priorities and methodologies that remained largely intact for the remainder of the 20th century, and which form the “web” of rules and regulations that still today dictate the form of American towns and cities. This standardization of suburban arrangements has become embedded not only in the American culture of property development but also enmeshed into the fabric of American life.

In many ways, the progress and growth in America during the 1950s and 1960s established the mythology of the “American Dream,” a concept of suburban homeownership so powerful that it still resonates today. What is less well understood is the matrix of interwoven actions and priorities between the Federal government and private industries that generated this new wonderland, and how zoning became entwined with everything.

In the late 1940s, one of the biggest problems for the Federal government was facilitating the transition from a wartime to a peacetime economy. All the factories that had spent four years churning out bombers, fighter planes, tanks, machine guns and all the hardware and supplies needed to win a global conflict, now had to switch quickly to something else to avoid financial disfunction and collapse. Economists and

politicians feared that the drop in military spending could bring back the hard times of the Great Depression.

And all the men who returned home from the armed forces wanted their jobs back.

Wartime production was only made possible by a huge influx of women into the labor force. But as the men returned home, these hardworking and patriotic women were quickly displaced from their jobs and were expected to return to their home environments and their “womanly” roles. To assuage women’s burgeoning resentment at this forcible transition, Madison Avenue and the advertising industry quickly manufactured new roles for peacetime women as a generation of suburban homemakers, and the “white goods” industries ramped up production of the new washing machines, refrigerators, stoves, and dozens of kitchen gizmos with which women could actualize their new roles.³⁹

While this switch in manufacturing absorbed a lot of the returning servicemen, many more found jobs in the homebuilding industry. Post-war housing production switched into high gear, with homebuilders such as the Levitt Brothers quickly building tens of thousands of standardized new homes. These extensive new greenfield subdivisions provided the physical settings where families – with the increasing availability of air-conditioning plus all the new domestic equipment - could live their well-advertised new American Dream. There is no doubt that this new landscape brought prosperity and delight to millions of American families. It must be noted, however, that this story is a singularly “white” narrative. In the years before the 1968 Civil Rights Act black Americans were still relegated to second class citizen status, and were excluded from any American dreaming. This segregation continued to be reflected in the zoning provisions of the time, and homes in the large new housing subdivisions constructed in the suburbs were off limits to African-Americans, either explicitly or implicitly. It’s a well-known tragedy of American urban development that while white families flocked to the new suburban subdivisions, poorer black families were trapped in decaying inner cities where the practice of “redlining” (discussed in Unit 1) deprived them of any opportunities of financial advancement.

By contrast, white families in the middle and working classes, many who had previously lived in rented accommodation, were now able to buy new homes as tens of thousands of mass-market houses became affordable in subdivisions across the nation. These demographic groups found their first-time homebuying ability vastly increased by the federal mortgage guarantees available to white Americans while their black compatriots were still trapped by redlining policies. Families who shifted from renting to owning their homes also received further assistance from the Federal government in the form of

income tax benefits derived from mortgage interest deductions, while renters received no equivalent allowances for their rent payments. This was, of course, deliberate government policy to stimulate the demand for homeownership to continue to drive the peacetime economy.

The final pieces of this financial jigsaw were transportation and car production. Under President Eisenhower, in 1956, the Federal government embarked on the massive infrastructure program of freeways that was to form the “National System of Interstate and Defense Highways”. Not only did this stimulate interstate commerce; it also opened up millions of acres of open land for new suburban development. These far-flung acres, unserved by any public transportation system, required extensive car ownership to function properly, and this need was eagerly met by the automotive industry, which made a seamless transition from producing tanks to producing Buicks, Chevrolets, and other mass-market vehicles. In 1950 alone, eight million vehicles rolled off the production lines.⁴⁰

With all this new development, public services in towns and cities needed to expand to keep pace with and serve the new private development, and some form of regulation was needed to create and maintain spatial and financial order. In this context, the practice of zoning expanded quickly. The standardized formulae set out by the Federal government in the 1920s⁴¹ delegated zoning power to the states and thence to their municipalities. This framework of rules and regulations, updated during the late 1940s and 1950s to organize suburban expansion and provide for expanded car ownership, became common across the nation. Just as private industry met the burgeoning market demand for new homes, offices, and shopping centers by specializing in defined product types, the public sector facilitated that differentiation by zoning separate parcels of land for each different single use. Home builders who built only single-family homes found acres of land zoned for that singular purpose or found public officials very willing to rezone land for that use. Developers of office parks found or rezoned land for that purpose, spatially removed from housing, while shopping center developers did likewise, finding dispersed parcels of land on the main highways. With this separation of uses tied into the invisible web of zoning, builders and developers could work efficiently on their singular agendas unencumbered by the complexities of mixing uses together.

These founding concepts remained largely unchanged for five decades, and because of their universality, became increasing and uncritically accepted as a datum for all development. This acceptance was also cemented into post-war American culture by the growing influence of focused and all-pervasive advertising. While Americans are hostile to the idea of "social engineering," that is, changing attitudes by

deliberate and extensive campaigns of government action, combined in this case with extensive participation of the private sector, the massive suburban expansion built around The American Dream has been a wildly successful example of such deliberate social change. The architectural and urban critic Dolores Hayden explains this very well:

Developers argued that a particular kind of house would help the veteran change from an aggressive air ace to a commuting salesman who loved to mow the lawn. That house would also help a woman change from Rosie the Riveter to a stay-at-home mom. . . . Exaggerated, socially created male and female roles defined not only the labor market but also the parameters of urban planning. Postwar propaganda told women that their place was in the home, as nurturers; men were told their place was in the public realm, as earners and decision makers. . . . This spatial prescription for suburban bliss . . . emphasized gender stereotypes (which became) the most salient features of every citizen's experience.⁴²

Thus began the decades of nuclear family life in low-density residential suburbs mirrored in the long-running American TV sitcoms "Leave it to Beaver" (1957-63) and "Father Knows Best" (1954-60). While smoothed out and idealized for TV audiences, the central themes of a settled suburban family, where Father always gets home from work in time for dinner, Mom cleans and cooks wearing dresses and pearls, and the kids learn lessons from their wise father, did indeed resonate with millions of Americans, in tune with the updated and pervasive gender stereotypes.

Many books have been written on the pros and cons of suburban environments, cultures, and lifestyles, and although fascinating, that subject contains too large a field of scholarship to stray further into this course. (Some key books are noted in this endnote).⁴³ The important issues here focus on the way zoning became the essential force that shaped America's post-war world and the physical, environmental, and social consequences of those rigid rules.

b) The Absence of Architects:

The repetitive and generic outcome of enforcing these zoning dictums was aided and abetted by the active absence of architects from the suburban building program. Part of this was not the profession's fault. Federal Housing Authority Guidelines actually "penalized any builder who employed a sophisticated architect by lowering the mortgageable value of houses that did not conform to their norms of design."⁴⁴ Many architects, faced with this uncompromising opposition to good design, abandoned any involvement

in suburban housing and instead focused on commissions for unique private homes. These were very often on suburban sites but they had little or no effect on the design standards of the vast majority of new homes constructed during the post-war decades.

This lack of architectural and urban design leadership was in marked contrast to the situation in the late 19th and early 20th centuries when many of the best architects and landscape architects focused their finest work in the newly developing suburbs. These included Barry Parker and Raymond Unwin in England, at Letchworth Garden City and Hampstead Garden Suburb, and in the U.S.A. Grosvenor Atterbury at Forest Hills Gardens in New York, and John Nolen at Mariemont, OH, Myers Park in Charlotte, NC, Kingsport, TN, and Madison, WI. Meanwhile the Olmsted Brothers created Ansley Park in midtown Atlanta, following in the footsteps of Frederick Law Olmsted and his prescient and influential designs for new suburbs such as Riverside outside Chicago (1868).

When leading architects did get involved in suburban issues it was as critics rather than designers. Robert Venturi, Denise Scott-Brown and Steven Izenour famously wrote *Learning from Las Vegas* in 1972, where they taught architects to appreciate and understand the space, ornament, and, most importantly, the symbolism of the car-dominated environment -- the “strip” and the tract house subdivision. The architects followed this symbolic analysis with a major public exhibition for the Smithsonian at the Renwick Gallery of the National Collection of Fine Arts in Washington, D.C. in 1976 entitled *Signs of Life: Symbols in the American City*. This exhibition was very successful, and the architects’ website noted “that *Signs of Life* provoked a major public and professional reassessment of the importance of diversity and the vernacular in our lives and of the way we perceive our environment.”⁴⁵

Despite this, most of the architectural profession still avoided, or were barred from working on major suburban projects and the standard of suburban design remained very low. Mass-produced architecture allied with standardized use-based zoning shaped the banal American landscape from coast to coast.⁴⁶

2.3 “Little Boxes, Little Boxes all the Same”- the Loss of Place in America

a) The Downside of the American Dream:

This folk song, composed by Malvina Reynolds in 1962 was a lyrical “canary in a coalmine” – an early warning of the dull placelessness that was creeping all over America. It was said to be inspired by views of houses in Daly City, California. The link below is to a classic performance of this song by the great American folk singer Pete Seeger.

“Little boxes on the hillside,
Little boxes made of ticky-tacky
Little boxes on the hillside,
Little boxes all the same
There's a green one and a pink one
And a blue one and a yellow one
And they're all made out of ticky-tacky
And they all look just the same.”

<https://www.youtube.com/watch?v=n-sQSp5jbSQ>

We noted in the previous section how single-use zoning and increasingly specialized development practices coalesced in the suburban development boom of the 1950s. Most homebuilders specialized in single-family detached housing. Other developers built apartments and yet others focused on town homes.

Each developer thus became a specialist focused on a single product, be it different types of housing, office parks, or shopping centers. Each type of development gained efficiency by simplifying its operation and excluding other kinds of buildings. Here, single-use zoning was a boon to private sector developers. Land could be divided up in advance for the different uses that - if you put them all together - would have made a town. But once they were legislated and built apart from each other, the traditional physical fabric of urban America was progressively dismantled.

We started living our modern lives in separate compartments.⁴⁷

Folk singers have often been heralded as the balladeers of their culture, giving form to the hopes, fears, and frustrations of the time. Just as the lyrics in Malvina Reynolds' song spoke eloquently to the banal placelessness of mass-produced housing in 1962, Canadian folk singing legend Joni Mitchell extended that critique of modern developments' shortcomings with her classic line “They paved paradise and put up a parking lot” from *Big Yellow Taxi*, released only eight years later in 1970. This link shows Mitchell in live performance: <https://www.youtube.com/watch?v=xWwUJH70ubM>

It is something of a cliché to call the 1960s a decade of change, dominated as it was in later years by the Vietnam War protests and the flowering of youth culture, but the same year that Reynolds was singing about soulless “boxes built of ticky-tacky”, the environmental activist Rachel Carson wrote her classic

indictment of development from an environmental perspective, *Silent Spring*.⁴⁸ In a blistering critique of the way chemicals were poisoning the natural world, Carson awoke the public conscience about pollution and public health by reminding her readers that they were part of a finely balanced ecosystem. “The balance of nature is not a status quo,” she wrote. “(I)t is fluid, ever shifting, in a constant state of adjustment. Man, too, is part of this balance.”⁴⁹ The first signs of public awareness of problems in the suburban environment were beginning to show themselves in this turbulent decade of the 1960s.

A few years later, this theme was deeply explored in terms of landscape design and planning by Ian McHarg in his famous 1969 book *Design with Nature*, and by the end of the decade environmental activism had raised the public’s awareness of some of the severe problems that surrounded them. Key legislation quickly followed, including The National Environmental Policy Act in 1969, The Clean Air Act of 1970, The Federal Water Pollution Control Act of 1972, The Noise Control Act of 1972, and The Endangered Species Act in 1973. But there remained a crucial disconnect: awareness of the negative physical consequences of development was slow to filter into the public’s understanding of their favored suburban lifestyles. For the main part, life was still good, and conventional zoning codes ruled America.⁵⁰

But beneath these “business as usual” appearances, the negative effects of continuous suburban expansion began to be felt in the everyday world. Ever longer driving distances to and from work began to wear on families, both in terms of expense and lost family time. Concerns began to arise about the ecological impact of the loss of open space and farmland, and the loss of feelings of community identity or “sense of place” due to the generic sameness of suburbia and the lack of response to local landscapes. Moreover, in many cases towns could not recoup enough money in taxes from new development to pay for the services and facilities those new suburban communities expected.

As became increasingly obvious to those watching most closely, elected officials and suburban planners were swapping long-term maintenance obligations on existing infrastructure for short-term tax revenue gained from new developments. Towns were now expanding at an unsustainable rate and allowing land to be developed in forms and locations they could rarely afford to maintain without continued injections of new taxes from yet more new development. The first generation of suburbia was built on savings and investment, but the second was built and maintained using tons of borrowed money – and that cycle of underfunded municipal expansion continues to repeat itself. This process effectively became a process of municipal gambling; towns gambled that they could financially support the ever more expensive quality of life expected by their citizens in the present by hoping to cover this expenditure from future tax moneys from developments that did not yet exist. This is the definition of a Ponzi scheme.⁵¹

b) The Professional Response

While these problems were becoming more evident, something else important was happening at the progressive edges of architectural and planning practice. In this instance, the first awareness of looming problems in urban planning design came from academia. As was discussed at length in a previous PDH Academy course, radical rethinking about urban design, urban context, and spaces designed around people rather than cars, emerged during the late 1970s and 1980s from progressive teachers in schools of architecture, including Cornell, Yale, and Berkeley.

At Cornell, a new kind of urbanism was taught by the revered Anglo-American urbanist Colin Rowe, in conjunction with visiting professionals such as Michael Dennis and Steven Peterson. This approach to urban design focused much more on the context of cities and their history, seeking a deeper understanding of the relationship between existing urban places and new architectural projects. And, marking a major break from modernist dogma and its fetish with single, separated uses, this new approach welcomed a return to a mixed-up and layered urbanism.⁵²

At Berkeley, the idiosyncratic urbanist Christopher Alexander and colleagues published *A Pattern Language* in 1977. This volume, part of a series in which Alexander set out his views on architecture and the wider world, provided an easy to understand compendium of physical rules for creating humanely scaled buildings and spaces; in doing so it provided conceptual continuity between what one might categorize as urban, suburban, and natural conditions.⁵³

The main focus of these design efforts focused on attempts to generate an authentic “sense of place” within the generic suburban realm. The small resort community of Seaside, constructed from 1980 onwards in the Florida panhandle to a master plan by Andres Duany and Elizabeth Plater-Zyberk, was the first new development to manifest this thinking in physical form, and it created a precedent whose influence far outstripped its modest size, and as befits its importance this small fragment of urbanity will be discussed again later in the course.

Later that same decade, in 1989, a slim publication entitled *The Pedestrian Pocket Book*, compiled by Doug Kelbaugh, Peter Calthorpe, and other talented architects on the west coast caused similar excitement.⁵⁴ A “Pedestrian Pocket” was defined as “a simple cluster of housing, retail space and offices within a quarter-mile walking radius of a transit system.” This urbanized node, conceptualized as one of a series of interlinked “urban villages” sought to change the ubiquitous “depersonalization and

fragmentation of suburbia with a model that relies upon mass transit, higher-density development and quality public space. The result is a mid-use town that offers its heterogeneous population true pedestrian accessibility and *a sense of place*”⁵⁵ (this author’s italics).

This shift of perception echoed also in the public imagination; the idyllic promises of suburban expansion faltered during the economic downturns of the 1970s, and by the 1990s suburbs had definitely begun to lose some of their shine. Suburbia began to be thought of as at best an environment of bland uniformity, and at worst as an ugly homogeneity that caused actual harm to people and their surroundings. Books such as James Howard Kunstler’s *The Geography of Nowhere* (1993) shook up public and professional opinion as Kunstler depicted the unlovely underbelly of suburban America. In his blistering and passionate prose that raised the impact of his writing above that of other critics, Kunstler described American suburbia thus:

Eighty percent of everything ever built in America has been built in the last fifty years, and most of it is depressing, brutal, ugly, unhealthy, and spiritually degrading—the jive-plastic commuter tract home wastelands, the Potemkin village shopping-plazas with their vast parking lagoons, the Lego-block hotel complexes, the “gourmet-mansardic” junk food joints, the Orwellian office “parks” featuring buildings sheathed in the same reflective glass as the sunglasses worn by chain-gang guards, the particle-board garden apartments rising up in every meadow and cornfield, the freeway loops around every big and little city with their clusters of discount merchandise marts, the whole destructive, wasteful, toxic, agoraphobia inducing spectacle that politicians proudly call “growth.”⁵⁶

And Jerry Adler wrote in *Newsweek* in May, 1995:

Phoenix sprawls into the desert at the rate of an acre an hour. Greater New York City stretches clear into Pennsylvania. Strip malls, traffic, fear of crime have wrecked the tranquil 'burbs of Ozzie and Harriet's time. How can we bring civility back to Suburban life?⁵⁷

This question and others like it refocused the attention of some architects, planners, and developers away from “business as usual” in the suburbs, and began to view the urban periphery as sites for types of development that were more responsive to the major changes evolving in family size, household makeup, and lifestyle. Environmental issues also began to loom large, not simply in terms of landscape preservation, although important, but also embracing transportation options and walkability.⁵⁸

At the same time, several center cities in various locations across the USA enjoyed a great renaissance, and became eagerly sought-after places to live as well as to work. The demographic and lifestyle shifts in the early years of the 21st century that underpinned these changes have been well documented.⁵⁹ After being dominated by the centrifugal forces that pushed many elements of the city into separated pods on the ever-expanding urban edge during the last half of the 20th century, “American urbanism appears to now be more equilibrated with the urban core reestablishing its importance as a place for innovation and consumption . . . , creating jobs and attracting new residents.”⁶⁰

But suburban life still held appeal for many, and the attention of progressive urban designers and planners turned to the more difficult question of how to retrofit suburbia to mitigate its problems and enhance its livability. In particular, urban designers sought to create pockets of genuine urbanity within suburbia and for the whole system of suburban design and production to become more energy efficient, sustainable, and able to support a more diverse population with a range of lifestyles. “Walkability” and “aging in place” became watchwords for new design initiatives.

The need for new thinking was urgent. The suburbs around American cities were changing. Since 1970, the portion of U.S. households that included families with two parents and children fell from 40 percent to a historic low of 20 percent in 2012. Nearly 57 percent of US households were childless, and about 29 percent included childless married couples and nearly 28 percent included people living alone. This led to a drop in the number of people per U.S. household--from 3.1 to 2.6 on average between 1970 and 2012.⁶¹

These new households sought places to live that were more walkable, contained a variety of uses close at hand for convenience, and provided transportation options. A typical demographic study of suburban residents showed strong preferences for grocery stores, cafes, restaurants and other retail services within easy walking or biking distance.⁶²

But these were options that conventional car-dominated and single-use suburbia was singularly unable to provide. In fact, most zoning over the past few decades had made such arrangements illegal.

At the time of writing this course in 2019, these statistical trends and preferences are well established, but the task of retrofitting suburbs to match today’s demographics and market preferences still remains difficult. And the main obstacle to change is . . . you guessed it: zoning. The conventional zoning theories and concepts that carved land up into single use parcels and which shaped America for 50 years

are not able to accommodate these changes and no longer fit for purpose. But they have been persistent, and their outdated rules continue to frustrate many progressive designers. The next section outlines efforts to redesign suburbia to meet today's and tomorrow's challenges – and the important role that form-based codes play in this vitally important project.

2.4 Redesigning Suburbia and Inventing Form-based Codes.

a) The Beginnings of the “Counter-Revolution” – a New Kind of Suburbia:

As we have noted above, the post-World War II period is remarkable for the relative lack of involvement by leading architects in the development of better designs for suburbia.⁶³ The architectural educator and critic Ellen Dunham-Jones has noted that the landscape of the suburban fringe, the outer suburbs and exurbs -- the landscape often called “urban sprawl”-- accounts for approximately 75% of all new construction in recent decades, yet it has been shunned by most architectural designers.⁶⁴ As noted above, landscape architect Ian McHarg (1920-2001) was a major exception to this absence, and the husband/wife duo of Andres Duany and Elizabeth Plater-Zyberk created the groundbreaking development at Seaside, in the Florida panhandle in the 1980s. Crucially, this small development incorporated a deceptively simple graphic code to control development, and this example spurred other, larger code writing initiatives in other east coast states. Meanwhile, on the west coast, Peter Calthorpe extended the concepts of “Pedestrian Pockets” around suburban train stations into the more holistic concept of mixed-use Transit-Oriented Development, or TOD for short.

The success and impact of the small development at Seaside, FL, combined with the transit-oriented projects and codes on the west coast provided vital precedents for those urban designers working in the developing field of form-based zoning (before it was even called form-based zoning). The brevity and clarity of the Seaside code was like a breath of fresh air blowing through the musty world of municipal zoning, where legalistic codes struggled and usually failed to keep pace with the changing complexity of urban development. Zoning concepts that had their roots in the 1950s – even the 1920s – had since been plastered with countless “band aid” amendments, trying to keep abreast of change. But by the 1990s most municipal zoning ordinances had become so confusing, and so devoid of anything resembling considerations of good urban design that a new wave of professionals, aware of the work at Seaside and on the west coast, took it upon themselves to pursue radical changes to the practice of zoning, and by implication, to the larger world of planning itself. But most of these concerned professionals were not planners. They were architects and urban designers, reclaiming the lost art of civic design.

However vital as a precedent, a development code for the private 80-acre development of Seaside cannot be compared to a full municipal zoning ordinance. As part of this complex transition, the practice of form-based coding evolved to a larger scale, initially a 350-acre planned unit development at Kentlands, in Gaithersburg, MD in 1989 (also by Duany and Plater-Zyberk).⁶⁵

Peter Calthorpe's leadership in the burgeoning TOD helped to create new regulations to underpin these concepts, and in 1992 Calthorpe's firm authored an important transit-oriented development code for San Diego, CA.⁶⁶ This code established urban design guidelines for the areas within a ten-minute walk of each train station, and these guidelines were written and drawn so they could be directly incorporated into section of the city's zoning ordinance.

Three years later, in this author's adopted home state of North Carolina, citizens of several towns around the city of Charlotte became alarmed that their sense of place and historic character was vulnerable to that city's fast-growing and generic suburban expansion. The residents of the affected small towns, Belmont, Davidson, Cornelius and Huntersville, all within a twenty-mile radius of Charlotte, sought ways to resist being swamped by waves of suburbanization, but soon recognized with great frustration, that their existing zoning codes gave them no tools to challenge and change the format of suburban development. In fact, conventional zoning codes mandated the very type of suburban development that was threatening the character of the towns.

With the help of professional consultants, each town commissioned new planning and design efforts to create new town vision plans in the mid-1990s, and most importantly, they sought new kinds of municipal zoning codes to implement those visions. These codes would be dramatically different from conventional zoning as they used the concept of "urban character"—what places should look like and feel like—as the basic structure of regulation. Uses within buildings became more flexible and the codes actively encouraged mixed-use development. The codes put an emphasis on the quality of public space, and in particular on connected street networks. The codes regarded buildings not as isolated, individual objects, but as "building blocks" of an urban ensemble designed to create and spatially define attractive urban spaces, usable equally by pedestrians, bicycles, transit, and vehicles.

The new plans and zoning ordinances aimed to mold new development into urban patterns that would harmonize with the existing town fabric. But unlike the Seaside Code, and similar to the San Diego code for areas around train stations which became incorporated into that city's zoning ordinance update, these new zoning codes evolved into full municipal zoning ordinances, replacing the outdated use-based codes

that mandated sprawl. The term “form-based codes” hadn’t been popularized at that time (1996), but these new zoning codes were exactly that.⁶⁷ (See Fig. 11).

Fig. 11. A page from The Davidson Land Plan Code. 1995 The Davidson (NC) Land Plan Code was one of the first form-based codes in the USA, several years before the term "form-based code" became accepted terminology. It was authored by Davidson Town Planner Tim Keane and the Town's urban design consultant, David Walters. Before the Smart Code was developed, towns and consultants evolved their own graphic content and styles.

IV. URBAN REGULATIONS		STOREFRONT BUILDING		DAVIDSON LAND PLAN CODE	
Building Placement/Parking/Vehicular Access		Encroachment/ Pedestrian Access to Building		Permitted Height	
<ol style="list-style-type: none"> Buildings shall be placed on the lot within zone represented by the hatched area. Generally, building and street facades must extend parallel to frontage property lines. Parking shall be located to the rear of the building. Points of permitted access to the parking indicated by arrows. Hedges, garden walls, or fences may be built on property lines or as the continuation of building walls. A garden wall, fence, or hedge (min. 3' in height) shall be installed along any street frontage adjacent to parking areas. Parking areas on adjacent lots should be connected. Trash containers shall be located in the parking area (see Parking Regulations). Mechanical equipment of ground level should be placed on the parking lot side of building and away from buildings on adjacent sites. 		<ol style="list-style-type: none"> Balconies, bay windows, porches at an upper level and their supports at ground level, together with awnings above head height are permitted within the sidewalk as shown by the hatched area. Main pedestrian access to the building is from the street (indicated by larger arrow). Secondary access may be from parking areas (indicated by smaller arrow). 		<ol style="list-style-type: none"> Building height shall be measured as the vertical distance from the highest finished grade relative to the street frontage, up to the eaves or the highest level of a flat roof. The height of parapet walls may vary depending upon the need to screen mechanical equipment. Building height to ridge may vary depending upon the roof pitch. 	
<p>Permitted Uses</p>		<p>Permitted uses are indicated above.</p>		<p>Permitted uses are indicated above.</p>	
<p>Description:</p> <p>The storefront building is a small scale structure which can accommodate a variety of uses. The structure is typically a maximum of 15,000 square feet. A group of storefront buildings can be combined to form a mixed-use neighborhood center. Individual storefront buildings can be used to provide some commercial service, such as a convenient food store, in close proximity to homes. Davidson's Main Street provides a good example of a neighborhood center of storefronts and the Village Market Cafe at Southern Village, Chapel Hill, NC., serves as a good single building example.</p> <p>Photo: Neighborhood Center, Seaside, FL.</p>		<p>Special Conditions:</p> <ol style="list-style-type: none"> The intention of buildings in all locations must be to relate the principal facade to the sidewalk and public space of the street Drive-thru customer services are permitted only at the rear of building. Drive-thru facilities are prohibited in the Village Center. Corners: Setback at street corners will generally replicate frontage conditions. Front and side setbacks will vary depending upon site conditions. Setbacks should be used in a manner which affords pedestrian activity. Squares or plazas within building setback areas can act as focal points for pedestrians. 			

Fig. 11. A page from The Davidson Land Plan Code. 1995 The Davidson (NC) Land Plan Code was one of the first form-based codes in the USA, several years before the term "form-based code" became accepted terminology. It was authored by Davidson Town Planner Tim Keane and the Town's urban design consultant, David Walters. Before the Smart Code was developed, towns and consultants evolved their own graphic content and styles.

That same year, 1996, also saw the 4th annual meeting of the radical new movement known as New Urbanism, and at the annual conference in Charleston, S.C. a new “Charter” was ratified setting out the principles of a rediscovered urbanism for the 21st century. The declaration and signing of the Charter of the New Urbanism at the 4th Congress “can be read as a deliberate repudiation and overwriting of the modernist concepts in the Charter of Athens, originally produced, as we have noted earlier, at a different IVth Congress, that of CIAM in 1933. The new Charter set out a clear call for returning to the traditional

urban typologies that had structured towns for centuries, even millennia, thus the new Charter became a rallying cry for the redesign of American towns and cities.”⁶⁸

This may sound like a smooth and coherent sequence of events, but architects understand all too well that in matters of local politics and development, this is never the case. Using the North Carolina examples mentioned above, (disclosure: three of which involved this author) developers and their lobbying organizations fought hard to retain the use-based system that relied on extensive “conditional rezonings” for most specialist design and architectural matters. This extensive process of negotiation about technical details gave political and procedural advantages to the developers’ teams of paid professional consultants over volunteer local residents. In all four of the North Carolina towns mentioned above, this pressure by the development community was successfully resisted by:

- i) Stable civic leadership with a longer term vision,
- ii) Combined with extensive local activism from citizens,

Leaders and citizens in the towns learned quickly from the extensive professional outreach seminars and public meetings set up by the consultants. New municipal zoning codes were approved in the towns, forcing developers to adapt and learn the communities’ new procedures and priorities. In the intervening years since the late 1990s to the present day, it has been interesting to observe the definite shift in developers’ attitudes towards the principles of traditional urbanism, or New Urbanism as it is still called, and more latterly the use of those design principles in form-based codes.

Over that period, the mood of many in the development community shifted from ridicule and opposition towards grudging acceptance. It was becoming apparent that a significant chunk of public opinion had embraced the urban designers’ concepts of more characterful and mixed-use communities as being preferable to conventional suburbia.⁶⁹ Influenced by demographic changes, housing preference surveys, and psychographic surveys of Americans’ attitudes, aspirations, values, and lifestyles, many in the development community slowly came around to align with the urban designers’ approach to building a more sustainable future. Today, these once radical design and zoning ideas have become embraced by large sections of the development community to the extent that they have become standard practice in many cities across the nation.

b) Socio-Economic Issues:

But significant difficulties remain. Beyond physical design issues, problems in our communities manifest themselves in the lack of equal opportunity, and the lack of social diversity, both important factors that

can help make communities become more economically prosperous and socially resilient to future changes. Research shows clearly that “diversity spurs economic development and homogeneity slows it down.”⁷⁰

Economist and author Richard Florida demonstrates that “(p)roximity, openness and diversity operate alongside technological innovation and human capital as the key engines of economic prosperity.”⁷¹

In relation to these socio-economic issues, we have seen earlier in this course how zoning has, for many decades, been a tool of social division, oppression, and exclusion. And we noted, by contrast, how form-based zoning’s basic premise of inclusivity by incorporating different uses, different building types, and different types of housing within the “character zones” of the “Transect” can loosen these bonds of exclusivity and segregation. Cities and projects that utilize form-based codes are able to reshape communities in ways that more actively support ideals of community diversity, sustainability, economic opportunity, and social equity. This is part of the “invisible web” that can be invoked to remedy, or at least ameliorate some of the social and environmental inequalities that plague our towns and cities. No project or code on its own can deal with all the urban problems facing our towns and cities. But each one, if properly designed and implemented can achieve some progress towards a more equitable and prosperous community.

Review Questions

1. Who has authored the most passionate and effective critique of American suburbia in recent decades? Was it:

- a. Herbert Gans
- b. James Howard Kunstler
- c. Richard Florida
- d. Jane Jacobs

2. What is the biggest challenge in fixing the twin crises of housing affordability and lack of social mobility in American cities? Is it:

- a. Lack of action by the Federal Government
- b. Rigid zoning rules
- c. Racial animosity
- d. Political disagreements between the two main parties

3. What is the latent symbolism behind the Charter of the New Urbanism? Is it:

- a. It was signed in Charleston, a city renowned for its historic architecture
- b. Its list of signatories included a wide diversity of professionals
- c. A direct repudiation of the tenets of modernist urbanism as set out in the Charter of Athens
- d. It was a celebration of the successful takeover of urban planning by design-based architects from planners.

4. At their inception, the ideas behind New Urbanism were greeted by the development community with:

- a. Delight
- b. Boredom
- c. Cynicism
- d. Ridicule

Unit 3:

Writing the Code: Plan First – then Code

LEARNING OBJECTIVE 5

The student will understand best practices for creating a form-based code, written in coordination with and preceded by the relevant plan. This may be a community-wide Comprehensive Plan, a Small Area Plan, or a project-specific masterplan, and the student will understand how codes can be tailored to the scale and scope of each plan and location. The objective being to create towns, cities, and suburbs that are more sustainable and resilient to future changes in climate and demographics.

LEARNING OBJECTIVE 6

The student will understand the organizational structure and components of a form-based code, including their relationships with each other and with the Regulating Plan – a more design-oriented version of a zoning map that is a central element of form-based codes. The student will be introduced to the “Smart Code” methodology of creating form-based codes, and will understand how the scope of form-based codes can produce variants of “model” practice, including “hybrid codes” and “floating codes.”

3.1 Architecture in Context: Urban Design as the Basis of Form-based Codes

3.2 Understanding the Transect and Using it within the “Smart Code” Methodology for Form-based Codes

3.3 Converting the Plan to Code: Moving from Vision to Law

3.4 Designing and Coding the Public Realm: Spatial Typologies and Building Frontages

3.5 A Brief Note on Legal and Social Issues

3.1 Architecture in Context: Urban Design as the Basis of Form-based Codes

a) Urban Design as the Generator of Plans and Codes:

Unsurprisingly, the term “urban design” has featured quite extensively in the first two units of this course. If form-based codes are part of the “invisible web” that sets the rules for building our towns and cities, then urban design is the physical manifestation of those rules in practice. Form-based codes and urban design principles are inextricably linked.

Architecture is clearly an important element of urban design, but urban design is bigger than architecture; it embraces a wider variety of factors and community inputs into the design process. In urban design architecture is always seen “in context,” that is, set within a larger frame of reference, one that includes urban space and urban systems, such as transportation and landscape ecology. To recap our definition here, urban design involves the design of buildings, groups of buildings, spaces, and landscapes, and *the establishment of frameworks and processes that facilitate successful development.*⁷² (This author’s italics).

The italicized phrase “the establishment of frameworks and processes that facilitate successful development” provides a clear definition of the purpose of form-based codes. Urban design, and the role of architecture within that discipline, are together the most vital attributes in creating and operating a form-based code.

All of these discussions take place in the context of an overriding objective: to create towns, cities, and suburbs that are more sustainable and resilient to future changes in climate and demographics. One key to achieving this goal is to reduce CO² emissions from development, as almost 50 percent of total U.S. carbon dioxide emissions are associated with residences and cars. Redesigning our patterns of urban development and transportation can therefore significantly impact emissions. For example, the average carbon footprint of households living in the central areas of large, walkable and population-dense urban cities is about 50 percent below average, while households in that city's car dominated suburbs are up to twice the average.⁷³

It is clear, therefore, that using form-based codes as primary tools to create and maintain these more energy efficient urban areas and lifestyles is a way for all designers and planners to aid the fight against global warming and its attendant threats to our towns and cities.

As we noted in the Preface to Unit 1 of this course, there are many issues to be considered when creating or responding to the provisions of a form-based code, but one of the most important topics is the character, safety, and attractiveness of the public realm. This concern for the utility and beauty of the

spaces between and around buildings is the feature that most distinguishes form-based codes from conventional used-based zoning.

The collection of spaces around and between buildings, formal and informal, comprises our “public realm.” This is best defined as the connective tissue of shared public life in towns and cities, created by spaces that can be occupied by people. This attribute of public occupation easily leads us to think of urban spaces as “public outdoor rooms.” These include streets, including boulevards and avenues, alleys, lanes, squares and plazas, parks, playgrounds, greenways and other landscaped areas within urban settings.

The role of building design in this context is, for the most part, to create and articulate the enclosing “walls” to these “rooms”, where a large degree of emphasis falls upon the placement and detailing of building façades and their threshold spaces, or “frontages” in code terminology. When the walls of buildings acknowledge their function of creating exterior urban spaces it becomes apparent that the design of fronts, sides and backs of buildings each have distinct roles and responsibilities in framing different outdoor spaces, all in addition to serving the needs of interior spaces. This focus on the role of building edges is one of the primary venues where form-based codes establish good principles of urban design. (See also Section 3.4, below).

The other venue where urban design has a controlling influence in form-based coding is the matter of urban or community character. What kind of place are we designing or responding to? Is it a walkable area that supports a variety of different activities? Is it the focus of a neighborhood or district? Is it some kind of sleepy backwater where hidden spaces can delight the resident or visitor? Once those parameters are clear, we can move forward to translate that vision into plans and codes.

b) Translating the Urban Design Vision from Masterplan to Code:

As architects we can all envisage such places – either calling on our memories or simply projecting our design thinking. Such places will differ in urban intensity, the scale of buildings and spaces, and probably in the range of uses they accommodate – although that may change quite drastically over time. The point is that we, as architects, can bring three-dimensional thinking to bear on these places. We can create or interpret that kind of urbanism before we start thinking about individual buildings. The buildings themselves are the literal building blocks of our urbanism. The scope of a hypothetical contract for creating this urban place may include the design of one or more of the buildings we see in our mind’s eye, but it’s unlikely we would have design control over every structure and space. Indeed, if we are

functioning as master planners, it is quite possible that our design services may terminate with the delivery of the master plan.

So what happens after that?

Masterplans provide attractive drawings and visualizations, vital steps in initiating and catalyzing any project, but on their own they lack any tools for implementation. Accordingly, there is one basic thing an urban designer learns very quickly in her profession: *Cities are not made by plans but by codes*. These codes, and the process by which they are created, comprise the “invisible web” in operation.

The most effective way of managing this process of turning plans into reality is by means of a four-part process:

- i) **Create the Masterplan** by a public process of community involvement – ideally a charrette⁷⁴ preceded by extensive site and community analysis. This masterplan should be as detailed as possible to act as an efficient basis for the zoning code.
- ii) **Identify the different Transect zones inherent in the masterplan.** These can be customized to suit local parameters. There could, for example, be a T-4a for a general neighborhood condition and a T-4b for a more particular urban corridor that was not dense or scaled high enough to merit a T-5 designation.
- iii) **Transform the Masterplan into a Regulating Plan** by mapping the different zoning districts *using the rural-to-urban Transect* as the basic yardstick of urban character.
- iv) **Write and Draw the Form-based Code**, comprising:
 - a) District Designations that describe the general urban character of each zoning district on the masterplan
 - b) District Provisions (design controls) that amplify and define the urban characteristics for each district in detail
 - c) Typologies of public urban spaces
 - d) Typologies of building frontage conditions.
 - e) A map showing a defined range of different street types, with cross-sections. (If necessary a separate regulating plan specially for streets may be included).
 - f) Any and all project specific calibrations of the code text that customize the code to the project and locality. (These sections are highlighted in green in the Smart Code template).

There is an important feedback loop between steps (ii) and (iii). Developing the code provisions in detail inevitably sharpens the designers' understanding of the urban design character of the intended zoning districts. This can lead to some modifications of the initial district mapping.

An example of this methodology is set out in the first of the Case Studies in Unit 4 of this course, and below, in Section 3.3, we explain the various steps in this process of converting urban design plans into regulations.

The key armature of this urban masterplan-to-code process is the definition of areas of different urban character and the connections between them – e.g. neighborhoods, districts, centers, and edges, and the different types of urban corridors, each of which may constitute its own zoning district. Each district will have its own urban character as part of the masterplan, defined by its placemaking characteristics of scale, intensity, and mixture of uses.

Organizing this complexity is exactly what the Transect enables urban designers to do, and this is the main reason it has become such a successful design and planning tool. It is thus now time to look at this urban design and planning device in more detail.

3.2 Understanding the Transect and Using it with the “Smart Code” Methodology for Form-based Codes⁷⁵

a) The Transect as a Tool of Creating and Managing Urban Places:

The Transect as we know it today was formalized by Andres Duany, Elizabeth Plater-Zyberk and their firm DPZ in 2000.⁷⁶ Like other geographic transects before it, the modern version comprises a morphological classification of areas along a scale of intensity from rural to dense urbanity and is represented as a conceptual section through a hypothetical settlement. (See Fig. 2 in Unit 1 of this course). This urban design version of the Transect follows the precedent of Patrick Geddes' famous Valley Section of 1905, whereby places within each geographic region were evaluated and described according to their location on a geographic scale from mountain to sea. This new Transect has become a central planning tool of the “Smart Code,”⁷⁷ again a DPZ development and one that encapsulates a successful and user-friendly methodology of creating a form-based code from the complexity of detail in a typical masterplan.

Geddes and other users of a similar concept utilized this sectional technique to describe existing situations. By contrast, urban designers active in this field since the late 1990s began to use the Transect to describe the way things *ought to be*,⁷⁸ that is, to synthesize a future vision and establish rules and parameters for implementation. In this way, the use of the Transect as a design tool to define and manage the future is characteristic of most form-based zoning codes. The key to using the Transect in conjunction with the Smart Code lies in the Code's ability to give legal zoning weight to concepts of what is sometimes referred to as "morphological" urban design. That's just a slightly fancy word for a way of thinking about urbanism that classifies different types of urbanism by analyzing the patterns of their elements – for example, building types; building sizes, massing, and spacing; street types and circulation patterns; urban squares, parks, plazas, and other public spaces.

As illustrated in Fig. 2, the Transect does this by drawing a cross section through an imaginary landscape, identifying six types of environmental zones, each defined by its basic morphological character and moving from T-1 (rural preserve) through ascending scales of suburban and urban areas leading to the densest area T-6 (urban core).⁷⁹ A seventh classification, an "assigned" or "specialized district," is similar to conventional planning's "special use districts," and is used for non-urban or self-contained conditions such as hospital complexes, university campuses, airports, landfills and the like that do not fit easily into urban or suburban zones, or which, because of noxious by-products such as dust and noise, need to be kept at a distance from residential areas. This hierarchical scale of T-1 to T-6 enables designers, planners and the public to see the various kinds of rural and urban landscapes as part of a continuum that relates urban uses to the conditions of particular zones. This simplified spectrum enables the design and planning team to work out where different types of buildings, spaces and uses fit best.

And, remembering the explanations from Unit 1, The Transect manages this process without recourse to the abstract numbers of density or Floor Area Ratio (FAR). Instead of abstract numbers, we use experiential, environmental, and placemaking criteria. Density may enter the equation later (it usually does in some form as developers' and lenders' calculations still rely on those kinds of numbers) but in terms of creating, defining, and coding urban areas, it is not a primary factor.

The Transect model, because it's a generic section without a specific scale, can be applied to a planning problem as large and complex as a polycentric region, or as discrete as district within a single community.⁸⁰ The methodology can be adapted to each new site condition, and can be used as a regulating mechanism for growth management in any location and for any size of urban design and planning project.

Neither does the Transect have to exist in its entirety. The project described in Case Study #1 uses a Transect model to describe a limited hierarchy of three urban conditions in the redevelopment of a problematic urban area. In Case Study #2, a Transect-based method is used (without using the term) to create a partial hierarchy of four urban districts related to areas around light rail stations. Here, the form-based elements are integrated into a much larger city ordinance, and this creates a “hybrid” code, where the newer parts focusing on redevelopment and new building are form-based while several older provisions of the use-based ordinance remain in place.

One of the major advantages of form-based codes, whatever regulatory format they fit into, is to manage more effectively the different timescales of urban development. The uses inside buildings change the fastest. The buildings themselves change more slowly; adaptive reuse can allow buildings to absorb several changes of use with only relatively minor changes to the building fabric. The urban neighborhood or district with its network of streets, squares, parks and other public spaces, changes most slowly of all. This third timescale is the one that receives most regulatory focus in form-based codes; changes of use, while important, can often be accommodated without any significant change in the spatial structure of the district.

The example of Boston’s Back Bay shows how the original rows of terraced houses can absorb dramatic alterations in use without major urban surgery (see Fig. 12). Shops, offices, restaurants and apartments illustrate how social, commercial and cultural changes have all taken place within areas of stable urban form, and this interchange between change and stability has leant a layered patina of interest and sophistication to the distinctive urban area. Crafting and managing that kind of urban richness is one of the main objectives of form-based coding.



Fig. 12. Newbury Street, Boston. .Once row houses for the well-to-do, Newbury Street has evolved into one of the premier hopping streets in America, with multiple uses within the former row houses. Photo by David Walters

In the same way that the urban density and cultural profile of Boston’s Back Bay has evolved over the decades without major changes in urban form, it is quite possible to imagine a future densification of districts within a new masterplan. A “General Urban” T-4 Transect zone can morph into a T-5 “Neighborhood Center ” without necessarily substantial changes in building fabric. If a T-5 “Neighborhood Center” evolves into a T-6 “Urban Core” there may be changes in building size and massing, but the spatial structure of streets, squares, alleys, and parks is unlikely to change. In this way, form-based codes provide the legal tools by which a community can grow and adapt within its place-generated parameters, within the patterns of its own unique urban “DNA.”

b) The Importance of the “Smart Code”:

One of the easiest and most “design-oriented” methods of creating a form-based code is to use the “Smart Code,” the system devised by Duany and Plater-Zyberk in the early 2000s. The Smart Code is a model urban code and a unified land development ordinance that uses the Transect methodology to integrate planning and urban design into the code’s legal requirements.⁸¹ Indeed, as its authors state, the SmartCode was created to deal with the problems of America's urban environment "at the point of decisive impact -- the intersection of law and design."⁸²

While several municipalities and their consultants used Transect-based zoning principles in the late 1990s,⁸³ before the common adoption of these terms, the Smart Code is significant because it neatly

conjoins urban design standards with the administrative provisions necessary for the adoption and management of a complete municipal ordinance. The Smart Code is designed to be adapted to any community, large or small. Because of its intentionally generic applicability, the Smart Code doesn't include regulating plans – these site-specific constructs, such as the one illustrated in the first Case Study in Unit 4 of this course, are the responsibility of individual municipalities – but the Transect formula provides the practical framework for creating such plans.

The Smart Code is perhaps the most significant effort to reform American land use regulations since the introduction of zoning in its conventional form in the early twentieth century. Its logic and provisions attempt to reverse more than fifty years of development control based on separated single-use districts with little or no urban design content. It replaces these outdated methods with a comprehensive instrument based intentionally on urban design concepts -- but formulated in ways that make it usable by planners and other municipal officials who don't have design training.

The key to success in using the Smart Code lies in the process of tailoring its generic provisions to particular locations and community conditions. The urban design provisions are sensible and straightforward, based on concepts of human-scaled urban spaces and hierarchies overlaid with standards for the protection and conservation of open space and natural habitats. These provisions are applicable in many different locations, and the process of tailoring the Smart Code to a particular community may consist less of adapting the technical standards and more of enabling a full process of public participation and education, so that the community feels it owns the code, rather than having it thrust upon them.

3.3 Converting the Plan to Code: Moving from Vision to Law

a) The Process:

The basis of any good code is - or should be - a good plan. Clear community plans are vitally important to establish and promulgate a community's vision of its future -- and good urban design communicated with beautiful graphics are necessary components of that process. Plans that do not connect with the regulatory and economic means of implementation will likely be doomed to sit on a shelf, gathering dust. This author, several years ago, was a member of a team that completed a good, design-based development plan for a coastal community, but our contract stopped short of creating a zoning code to match the plan and facilitate the implementation of appropriate private sector development projects. That plan even won a state design and planning award, but it sat on the shelf, ignored, as there were no effective zoning regulations to implement it.

However, this is *not* a reason to give up on a good plan. Good codes are generally founded on good plans, especially at the localized district, or Small Area Plan scale shown in Case Study #1 in Unit 4. At these scales of operation, the more precise the detail in the plan, the more specific the rules can be. In masterplans, parcel-level detail provides the greatest guidance for coding.

Once the plan is in place, creating the form-based code usually follows the methodology noted below:⁸⁴

1. Identify the areas of different urban character as the basis for creating the T-zones on the Transect scale. These will include existing areas and the new areas put in place by the plan. Mapping this initial assessment over the masterplan becomes the first draft of the Regulating Plan.
2. Figure out what makes these character areas different from each other. This means evaluating several factors. For example, these generally include:
 - a) Building Type
 - b) Frontage Type
 - c) Public Space Typology - Street Types, Urban Squares, Parks, Playgrounds, Greenways etc.
 - d) Building Setbacks
 - e) Mix of Uses
 - f) Density (in broad terms only – don't get hung up over precise numbers)
3. Develop and map these districts in more detail. Use the Transect and its spectrum of T-zones to help organize your thinking. This becomes the second draft of the Regulating Plan .
4. Create a set of proposed zoning districts based on the Transect classification and use the Smart Code template to establish the basic standards for each district. These standards are often called “District Designations” and are set out in clear summaries together in a 1-page graphic tabulation. These Designations establish the general parameters of each different zoning district in terms of its design and character. Uses in each district are established in general terms only at this stage. (See Fig. 21 in Unit 4 of this course).
5. Develop the more specific standards for each district in a tabulation of “District Provisions” -- again in a 1-page graphic format - this time using one page per district. These standards establish specific dimensions of building placement, massing, and the range of permitted Frontage Conditions in each district. These Frontage Conditions regulate how the buildings face onto public space, and define the type and extent of private space between the building and street. In

this way, the code can make sure that the integrity of the “external rooms” of streets or squares is not compromised. These Frontage Conditions are tabulated diagrammatically in a separate graphic page. (See Fig. 22 in Unit 4 of this course).

b) What to Code:

There are always questions about what to code in any masterplan and coding project. Should a code for a large area concentrate on the creation of the urban infrastructure and the public realm by focusing only on the layout of urban space and building massing? Or should architectural aesthetics specific to a place be considered, because regional character and climate are important considerations, and the building façades act as the defining and sheltering walls to the urban rooms of public streets and squares? Or, should historic details be replicated or used as a direct inspiration because a community possesses a valuable but fragile historic architectural heritage?

While form-based codes deliberately back away from mandates about architectural styles, these questions arise frequently in the public debates about what should and should not be coded. How can a code establish the basic rhythms of urbanity and scale of a neighborhood and promote contemporary design that’s respectful of its context without enshrining a nostalgic image of the past into new development? How can codes control poor design in problematic new projects while prompting appropriate innovation in others?

The author’s experience over more than two decades shows that if codes back away from the levels of prescription necessary to achieve urban order and clarity in spatial layout, they run the real danger of becoming too flexible and allowing bad design to flourish alongside more creative interpretations. The key is to allow scope for architectural ingenuity without individual buildings destroying the urban integrity of the whole. This author has found over many years that *talented* architects have little trouble matching contemporary ideas with community standards. The codes exist, in part, to limit the damage bad architectural design can cause in communities, and while form-based codes will include some options to provide flexibility in design and implementation, the key principles of good urban design are not optional.

In many instances, the need for better contextual design in development projects is increasingly evident, and form-based codes provide that dose of architectural discipline so indispensable for coherent urban areas. This may focus on creating an urban texture in sufficient quantity and quality to allow significant civic or institutional buildings to stand apart as distinctive architectural landmarks.

In the general practice of form-based coding, “landmark” buildings such as town halls, courthouses, museums, libraries, churches, mosques, and temples are excluded from all but the most basic zoning controls (no parking between the sidewalk and the building, for example is non-negotiable) so that buildings of this civic importance can respond to their particular programs and architectural languages. (See Fig. 13).



Fig. 13. Walt Disney Concert Hall, Los Angeles. Architect Frank Gehry, opened in 2003. Photo by David Walters

3.4 Designing and Coding the Public Realm: Spatial Typologies and Building Frontages

a) How the Urban Designer Thinks about Architecture -- Urban Rooms and Fronts and Backs:

Staying with some weighty issues for the moment, it’s fair to say that at the heart of any democratic culture lies public space that is accessible to all – the public forum. This brings our focus right back to one of the central precepts and priorities of urban design practice – the creation of a network of public spaces that act as the “living rooms” of the city and the setting for public life and community discourse.

Leon Battista Alberti (1404-72), the great architectural theorist of the early Renaissance in Italy, famously compared a city to a “great house,”⁸⁵ where the public urban spaces correlated to the grand rooms, hallways, and service passages of domestic life –that is, a similar typology of spaces with similar functions, simply writ larger.

This simple analogy remains one of the best and easiest ways of understanding the role architecture plays in creating good urbanism. In Alberti’s great house, all the spaces, whether formal reception rooms or simple service corridors, were formed by walls. Sometimes these were ornate and embellished with

decoration; at other times they were unadorned surfaces. Walls contained windows, usually in aesthetically ordered compositions, that organized views between inside to out, and doorways big and small that provided access to other rooms – sometimes out of simple convenience or more importantly as part of an orchestrated procession.

All of that, of course, translates directly to urban design, with grand open vistas, tight sequences of spaces where destinations first conceal and then reveal themselves, and many other compositional devices. And the walls to all of this urban composition are our buildings, more particularly their main, front façades. It is therefore clear that the façades of buildings that create the public spaces of the community carry greater responsibility than the other building edges, and thus need a special level of consideration in the code.

Nowhere is this urban condition of frontage clearer than in the famous Royal Crescent at Bath, England, possibly one of the most famous urban compositions in history. Designed in 1767 by John Wood the Younger, and completed in 1774, this long block of 30 attached town houses completes the great urban sequence of square, circus, and crescent, begun in 1728 by Wood's father, John Wood the Elder. This grand sequence of spaces shaped by coherent building massing and façade design helped transform Bath from a medieval huddle of buildings around the nearly-forgotten Roman baths into an eighteenth metropolis of high fashion.

The grandly scaled front façade with its repetitive giant order of attached ionic columns is a composition well-known for its elegance and consistent aesthetics. It fronts onto a large open green and overlooks the older parts of town as the land falls to the river. (See Fig. 14). This is also a good illustration of the form-based code concept of Frontage Conditions. The private space from the public sidewalk to the façade itself - the threshold - is a three-dimensional composition of transition via changes of level and the diagonal lines of staircases. That transitional threshold space, plus the façade, comprises the full Frontage Condition.



Fig. 14. Front Façade, Royal Crescent, Bath, UK .Architect John Wood the Younger .Designed 1767-84. This iconic building overlooking the town of Bath simply comprises 30 town homes, but the frontage design transforms row houses into a palace. Photo by David Walters

Meanwhile, viewed from the service lane at the rear of the building, the Crescent presents a very different picture, where a hodgepodge of different shapes has been created by many *ad-hoc* additions and conversions over the intervening centuries. (See Fig. 15).



Fig. 15. Rear Façade, Royal Crescent, Bath, UK. Generations of alterations and additions have created an informal arrangement that is the antithesis of the front, but which perfectly suits the rear service street. Photo by David Walters

This dialogue between front and back enriches the experience of the building. The front façade in an equivalent contemporary situation would be coded to ensure it plays its part in the new town order. The rear agglomeration of extensions and additions would intentionally be free of any such controls.

When considering frontage conditions, the first thing that codes point out is that the bottom one or two stories are different to the rest of the building: They have special responsibilities the upper stories do not have. These lower levels of building façades are the walls that most directly create the pedestrian experience of the outdoor “urban rooms” as this “base” of the building is experienced visually and tactilely by all pedestrians at close quarters. By contrast, the top few stories tend to be seen from a distance, and thus can contribute to the overall image of the cityscape seen in perspective. The in-between middle band of most buildings receives the least visual attention, and thus is available for potentially different and economical architectural solutions.

This way of looking at buildings allows designers to understand more fully that building façades and frontages have clear programmatic and aesthetic roles in creating the external spaces of the city over and above their functions of enclosing internal spaces. This is a key principle of urban design that is embedded in all form-based codes.

b) The “Golden Triangle” of Urbanism:

One simple way of understanding this issue, and one which is useful for all architects working in urban settings, involves what’s known as “The Golden Triangle of Urbanism.” (See Fig. 16).

The Golden Triangle of Good Urbanism

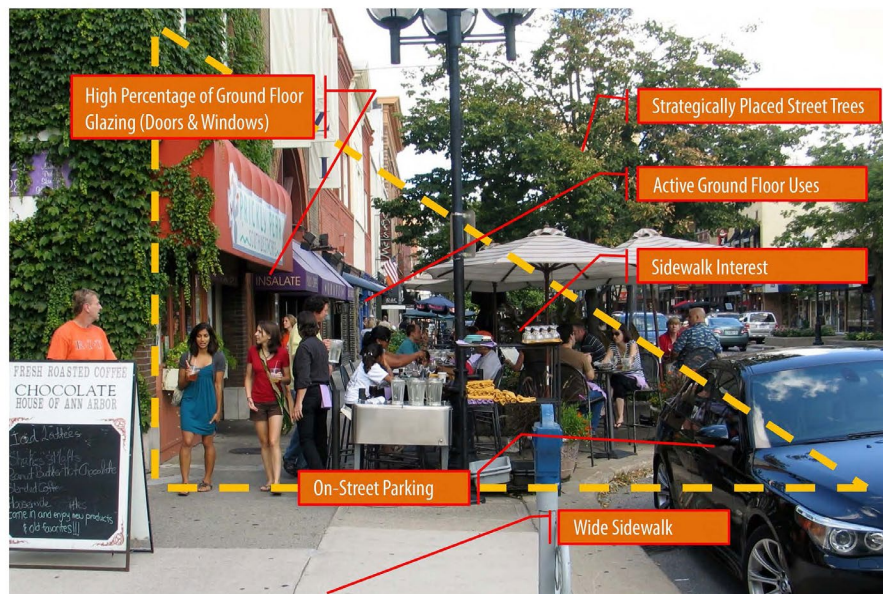


Fig. 16. The Golden Triangle of Urbanism. This diagram illustrates the basic requirements for an active, pedestrian-focused urban street, and these attributes can all be captured within the hypothetical triangle shown on the diagram. This design strategy can be customized to all locations where "active edges" are required to public space

This annotated image shows clearly the successful and interdependent relationships between building façades and the design of the exterior public space of the street, and how they are accommodated within a hypothetical triangle of space formed by the ground plane, the façade at 90 degrees, and the area contained within the hypotenuse. The buildings that encompass the active street scene in Figure 16 (in Ann Arbor, MI) are from an older era when streets such as this were the mainstay of American towns and cities. As such, they were designed to support active pedestrian environments as a way of creating the most effective setting for economic development. Therefore, older and relatively ordinary buildings like these can teach us important lessons about how to code for effective urbanism today as they play a crucial role in making this contemporary urban ensemble work.

The most important elements of the buildings, from an urban placemaking point of view, are their frontages, facing and shaping the public space of the street. The uses inside the building are obviously relevant but mainly in the way they can generate and support an active pedestrian environment. What is most important is the design of the lowest stories of the building, up to a height of approximately 20 feet. Form-based codes therefore require a minimum percentage of ground floor glazing--windows and doors—for transparency from inside to out. This encourages economic activity and increases safety through informal observation of the public realm from within. In an active pedestrian area the code will also require that the uses at ground floor level are ones that maintain and enhance this activity and prohibit those that stifle or inhibit pedestrian activity.

c) Blank Walls Damage the Public Realm:

Imagine that sidewalk if the building façade were an expanse of mirrored glazing, or a windowless blank wall. (See Fig. 17 - and compare with Fig. 16). The architecture of the building in this instance (sadly repeated in towns and cities across the nation) is intimidating in appearance, and shuns pedestrian activity with no visibility with or connections between inside and outside. Long blank walls kill the life of the street. People simply do not want to be there.



Fig. 17. Windowless Blank Façade. Wells Fargo bank building, Morganton, NC. This façade, blank and uninviting at pedestrian level, sits directly across from the town's delightful neo-classical courthouse. Form-based codes are designed (in part) to stop architects and developers from making bad mistakes like this. Illustration courtesy of Stantec Urban Places Group

In this instance that blank wall faces the town square and the historic courthouse – an act of shocking disrespect and urban vandalism to the community’s heritage.

If an architect was involved in this kind of design failure we should be chastened at the incompetence of a member of our profession, but whether an architect was involved or not, form-based codes would simply make that kind of blunder illegal. Form-based codes are explicitly designed to eradicate such dreadful design errors by requiring the walls to urban rooms to be more pedestrian-scaled, approachable, and transparent in their design. The codes do this by specifying degrees of transparency in building façades, and the placement of doors and windows on the lower stories that help create an active streetscape at the pedestrian level. They also illustrate the range of options available to designers in terms of how their buildings might “address” the street, for example, by porches, stoops, forecourts, galleries and arcades. (See Figs. 7 and 8)

The code controls:

- i) The building setback (zero feet in the case shown in Fig. 16) to create a clear and consistent urban edge
- ii) The sidewalk width to support pedestrian movement and commercial activity
- iii) On-street parking to provide an extra safety buffer for pedestrians from moving traffic.
- iv) A wide range of building signage for visual interest and to support the market identity of the stores and businesses.
- v) Tree spacing and lighting; these are also important design considerations for the pedestrian experience.

In a case like this, the building height is less important, as all the focus is on the pedestrian realm, although in some cases there may be some community plan objectives that set basic height parameters. The materials of the building are generally only controlled in as much as they must create a rich field of visual interest to the pedestrian (absent any special conditions such as historic districts). What this means in an urban composition is the façade design should have some limited variety of *vertical* punctuations so that one's eye does not "skid off" into the distance when viewing in perspective. Building façades need to hold the pedestrians' interest in the space to encourage people to linger, and in that way potentially to generate economic activity as well as the social capital of community.

Some version of each of these urban conditions can usually be found written somewhere in the texts of conventional zoning ordinances, but not presented as a holistic urban design and placemaking concept, nor illustrated with easy-to-understand photographs and diagrams. In form-based codes it is these urban design elements and the three-dimensional reality of spaces that drives the details of the zoning regulations from their conception.

3.5 A Note on Legal and Social Issues

a) Legal Validations and Constraints:

Form-based ordinances fall into three main types: those that deal with a specific locale and are tied to a master plan; those that comprise 'floating zones' that are more generic and can be overlaid onto particular areas according to the request of the property owner or the mandate of the local authority; and those that become a crucial part of a municipality's zoning rules, ideally as part of a Unified Development Ordinance (UDO). The two case studies in Unit 4 of this course illustrate the first and the third of these scenarios.

Any form-based code is constrained by American law regarding the amount of architectural detail that can be controlled (although this varies from state to state), and the code thus concentrates primarily on issues of public spatial infrastructure – the design of good streets, for example – and regulates buildings to the extent that they must play their roles in creating these spaces, acting – as we have emphasized -- as human-scaled walls to urban rooms. Zoning codes can control what one might call "the public aspects of private buildings" in a similar way that private covenants controlled the development of many London squares in the eighteenth and nineteenth centuries.

Many codes thus focus their ambitions at the level of urban structure rather than engage architectural aesthetics beyond the urban design concepts relative to frontages discussed above. But even within these limits, codes can have profound effects. In one community this author worked for, citizens and elected officials wanted to stop the proliferation of generic shopping centers with acres of parking next to the street. Citizens correctly understood that this formula was tearing the urban fabric of their town apart. But they still craved the convenience that strip centers can provide.

This problem was largely resolved by writing into the code the simple mandate that all buildings were required to front onto a public street, and that main building entrances must open off the sidewalk. These apparently innocuous and common sense requirements were perceived as very radical back in the mid-1990s, but they effectively outlawed conventional strip shopping centers with buildings set well back from the street behind large areas of parking. With the code in force, such shopping centers had to be configured to include publicly-owned and pedestrian-oriented shopping streets with on street parking, street trees, and wide sidewalks, and wherever possible, be part of a mixed or multi-use development. (See Fig.18). Parking lots still existed, but as can be seen in Fig. 18, they have been "tamed", and set within a grid of connecting streets and consistently aligned buildings. What would have been the "fire lane" in front of the supermarket and adjacent stores became a public street, with on-street parking and other safety features and amenities that are part and parcel of good street design.



Fig. 18. .Mixed-Use Center with Public Streets. Rosedale Commons, Huntersville, NC. The town's form-based zoning code (adopted in 1997) required all buildings to front directly onto public streets, not parking lots. Illustration courtesy of the Town of Huntersville, NC

b) “Police Power”:

Zoning based on urban design principles falls generally within the scope of constitutional “police power” as defined in Unit 1, Section 3 of this course. Design goals to create a pedestrian-oriented environment, or more broadly, “to preserve the small town character,” or “creating a traditional Main Street” has been validated by, amongst others, the United States Court of Appeals for the Eleventh Circuit in *Restigouche, Inc. v. Town of Jupiter*, where the court affirmed the denial of an automobile dealership on a pedestrian-oriented street.⁸⁶

The landmark zoning case, *Euclid vs. Ambler Realty* from 1926 also contained judicial support for the form-based codes that today are replacing use-based zoning. Although usually credited with upholding single-family zoning districts, *Euclid vs. Ambler* specifically allowed “regulations fixing the height of buildings within reasonable limits, the character of materials and methods of construction, and the adjoining area which must be left open.” This judgement reasoned that the municipality’s zoning decision was a “reasonable, non-arbitrary extension of the Village’s police powers.”⁸⁷

Another legal avenue through which form-based zoning obtains its validity is through legal precedent regarding "aesthetic" zoning and "design review," whereby communities seek to control how buildings are designed, usually to help ensure a fit between new buildings and the preferred or established urban character of an area. American courts have demonstrated frustration with vague wording and criteria regarding concepts like "community character," and accordingly, design standards in form-based zoning should be tied to measurable outcomes, such as increasing pedestrian activity and safety. Additional legal strength is achieved by linking the provisions of form-based zoning to other, tangible, public policy goals such as avoiding congestion, or economic development. While aesthetic-based regulations have been subjected to many legal challenges, American courts have, for the most part, supported such regulations as long as they are grounded in enabling authority and are based on clear, objective standards.⁸⁸

This attitude was typical of courts in America during the first half of the twentieth century; regulations intended to uphold visual and aesthetic matters would be supported only if they were inextricably linked to other considerations of public safety or economics – the so-called “aesthetics-plus” doctrine. Not until the 1950s did the U.S. Supreme Court validate laws dealing with aesthetic regulations without the covering support of other, functional criteria. In *Berman v. Parker*, 348 U.S. 26 (1954) the court gave strong support for government action based on aesthetic considerations, stating that the definition of "public welfare" includes physical and aesthetic values.⁸⁹ This legal precedent was strengthened quickly

in subsequent years, and in the case of *People v. Stover*, 191 N.E. 2d 272, 275 (N.Y. 1963) the court held that once aesthetics had been deemed a valid subject of legislative concern, “reasonable legislation” for that purpose was “a valid and permissible exercise of the police power.”⁹⁰

In a definitive and well-researched essay, Richard Geller, an expert in planning law, summarized the legal grounding for form-based codes as follows:

Well-established police powers authorize, and provide ample justification for a local government to adopt form-based zoning to improve aesthetics, reduce pollutants, more efficiently use government resources and improve health and safety.

In the long run, good urbanism always trumps bad architecture. Peter Calthorpe, one of the innovators of Transit-Oriented Development, made this point quite bluntly when critiquing a new but architecturally mediocre infill building in Berkeley, CA. Calthorpe stated:

But do I care [about the aesthetics]? Not really. What I care about is that 20 percent of the housing is affordable; what I care about is that the ground floor is retail and active; what I care about is that there are windows overlooking University Avenue and the drug dealings and the muggings are going down.⁹¹

Ultimately, the aesthetics of the building’s style are down to the talent of the architect. What form-based codes care most about is the attractiveness, efficiency, and safety of the pedestrian realm, the literal heartbeat of good urbanism. That can’t be left to chance, and form-based codes provide the legal basis for *requiring* good urbanism from every project.

c) Socio-Economic Issues:

As noted in Unit 2, another major, and difficult, issue is to what extent form-based codes can address socio-economic problems within society. This is important enough to stress this issue once more. As a matter of basic professional responsibility, we should expect our designs and codes to tackle environmental problems of sustainability and resilience in the face of future change. That means making a potentially radical reassessment of the unsustainable patterns of living and consumption that are the norm in our suburban lifestyles. Minimizing our communities’ carbon footprints by creating and implementing compact, multi-use developments that are supportive of a range of mobility options, and how best to integrate such developments in to our mono-functional suburban landscape, are all difficult challenges for our profession. However, good architects possess the design skills for that task, and form-based zoning gives us the tools.

But how can we use zoning as a tool for equitable social policy and to help remedy zoning's history of racial discrimination?

At the heart of the difficult problems surrounding this topic are two strategies that relate directly to the physical design of cities and thus to the zoning rules that create them:

- i) We can increase people's access to housing that is affordable by diluting the exclusionary power of single-family zoning. Form-based codes enable a wider range of housing to be built in communities; this allows a more diverse mix of people to live and work in those communities and, by so doing, to benefit from better housing and lifestyle opportunities.
- ii) We can reduce household transportation costs by designing more compact settlement patterns that reinforce walking and cycling, and that are supported by transit options. This can reduce a family's reliance on cars and substantially reduce that proportion of the family budget, which then can be reapportioned towards better housing choices. These urban design solutions are deliberately and unequivocally supported by form-based codes.

This author has been accused more than once of “un-American social engineering” when working with communities on these sensitive issues. Ironically, this charge has always been levelled by people who have benefitted the most from America's greatest social engineering project of modern times -- the creation of exclusive single-family suburbs accessible only by car, and available only to a relatively privileged demographic.

We have seen in previous course units how this giant social engineering project of suburbia, with its mandates for separating uses into single-use pods of development, was created and supported by government through zoning laws, road building, and targeted tax policies. This social engineering experiment has been a huge success, and has brought wealth and happiness within the reach of untold millions of Americans. But these advantages were deliberately conferred by zoning on some demographic groups and not others, who were deliberately excluded – by law.

The inclusivity of form-based coding helps to establish a future that is more equitable and socially just. How to grasp this future is up to the individual conscience of each and every designer and zoning code writer. The “invisible web” retains its power to shape our cities and shape our society – for better or for worse. How we approach that challenge and use our skills to good ends is our individual choice.

Review Questions

1. What most clearly distinguishes form-based codes from conventional zoning? Is it:

- a. Because form-based codes allow uses to go anywhere
- b. Uses are strictly controlled
- c. Concern for the utility and beauty of the spaces between and around buildings
- d. There isn't much difference, just more diagrams

2. What is the ideal way for creating a masterplan that can become the directing influence on a form-based code? Is it:

- a. Private meetings with stakeholders and politicians
- b. Following the lead of the development community
- c. Taking direction from elected officials
- d. Engaging in a public design charrette

3. The "Smart Code" is important for many reasons, but *primarily* because it:

- a. Uses lots of drawings
- b. Uses lots of photographs
- c. Gives the legal weight of zoning law to the urban design concepts of the Transect
- d. It was created by architects

4. Once a project masterplan is in place, the first step in creating a form-based code is to:

- a. Seek legal advice for drafting the code
- b. Cut and paste the Smart Code provisions
- c. Identify the areas of different urban character from the masterplan as the basis for creating the T-zones on the Transect scale
- d. Create the Regulating Plan by mapping the areas of different urban character

Unit 4:

Practice Case Studies

LEARNING OBJECTIVE 7

The student will understand the intimate relationship between urban design master planning and form-based code writing at the scale of Small Area Plans. The student will understand the importance of illustrations, clear tables, straightforward English, and good graphic design in the production of the code.

LEARNING OBJECTIVE 8

The student will understand how the form-based zoning provisions fit within the larger, all-embracing municipal code, and how this code relates to a community's process towards a new Comprehensive Plan and Unified Development Ordinance (UDO).

CONTENT

1.1 Small Scale: Form-based Code for a Small Area Plan

1.2 Large Scale: Form-based Code for Transit-Oriented Development as Part of a Hybrid Municipal Code for a Large City

General Note:

One of the great advantages of using form-based codes is that the integral urban design methodology can be customized to suit a wide range of scales and situations. This author, as an urban design practitioner and educator, has been involved since 1995 in projects that have used form-based coding for whole communities at the larger scale, individual neighborhoods at the smaller scale, and other, intermediate conditions tailored to special projects. Many other urbanists have similar -- and/or broader -- experience. This kind of range and variation of application is typical of master planning and coding at the progressive edge of practice.

These two case studies illustrate part of this range. They comprise the code for an older, minority neighborhood just south of downtown Greenville, South Carolina, and Transit-Oriented Development code provisions along a 20-mile light rail line in Charlotte, North Carolina.

1.1 Small Scale: Form-based Code for a Small Area Plan:

The Haynie-Sirrine Neighborhood, Greenville, South Carolina.

a) The Background to the Case Study:

Haynie-Sirrine, as the name suggests, is an amalgam of two neighborhoods. They are located immediately to the south of Greenville's downtown, and separated from it by Falls Park, a linear park set in the dramatic river gorge of the Reedy River. At the time of the initial studies for this area in 2002, Haynie and Sirrine were predominantly African-American neighborhoods bisected by Church Street, a major traffic artery bridging the river and heading south from downtown. The area had suffered from years of disinvestment and racial segregation, and by the time the first of two Small Area Plans and Form-Based Codes was initiated in 2002 much of the original housing was in severe disrepair.⁹²

That 2002 plan was a partnership between the City of Greenville, the local residents' organizations, and a group of interested private partners, many of whom owned property in the neighborhoods. This first Haynie- Serrine Neighborhood Master Plan illustrated redevelopment opportunities that included commercial and mixed-used buildings, parks, and the development of a variety of housing types. It also sought to stabilize the declining areas and focus new development along an improved Church Street and at the northern end of the site nearest to downtown.

Components of the 2002 plan also included recommendations for affordable housing, leveraging public funds with key infrastructure investments, and a new, form-based Regulating Plan. The Haynie-Serrine Master Plan and Zoning Code was adopted by City Council in 2003 and the neighborhood was rezoned to a Planned Development District with its own form-based regulatory zoning code.

Little new development had taken place before the recession of 2008 torpedoed any redevelopment plans, and meanwhile many of the old timber frame cottages had deteriorated further, leading to their eventual demolition. At the same time, County Square, a large county-owned site of a defunct strip mall at the northernmost edge of the site along University Ridge Road, a major east-west artery, was brought into play as a major redevelopment opportunity. This site had dramatic views to downtown and across the river gorge, but these assets had been ignored by the original strip mall development. The combination of these changes spurred the need for an update to the Small Area Plan and Code which took place in 2013.

b) The Planning Process:⁹³

In the years since the 2002 plan, the City's downtown, just to the north of the neighborhood, saw tremendous redevelopment as the city emerged from the 2008 recession. This growth catalyzed new development interest in some areas in Haynie-Serrine that had remained under-developed since the economic downturn. Additionally, the demolition of some substandard housing resulted in more vacant land becoming available in 2013 compared to the original plan of 2002. Since most of this vacant land was controlled by only a few individuals, larger redevelopment tracts became available and ready for more intense redevelopment. The Haynie-Serrine Neighborhood Master Plan was thus updated to address these new market opportunities and pressures while retaining key elements of the original 2002 plan, and trying hard to retain some levels of affordability in new housing.

The updated Haynie-Serrine Master Plan illustrated an urban, mixed-use redevelopment on the County Square site. Two major streets, University Ridge, running east-west, and Church Street, running north-south, both became high-density, mixed-use corridors. Development heights in the plan averaged four to

five stories and peaked at eight stories. (See Fig.19) Having created this updated and more ambitious vision for the area, the City’s best tool for capturing the value of proposed civic investments and realizing the type of development envisioned in the new plan was to update the neighborhood’s form-based regulatory code to align with new conditions and development opportunities.



Fig. 19. Haynie-Sirrine Masterplan, 2013 On this plan, downtown Greenville is to the north off the map to the top. The end of the Reedy River Park can be seen top right. Church Street is the main north-south artery running diagonally through the neighborhood. The highest intensity of redevelopment is on the site of a large strip center north of University Ridge Road, marked #11 on the map. (Image courtesy of the Stantec Urban Places Group)

c) The Code Structure and Content:

The zoning in the Haynie-Sirrine Neighborhood set out in the 2002 masterplan was a “Planned Development District,” which incorporated the original, and now outdated, standalone form-based code derived directly from that first masterplan.⁹⁴ The updated 2013 plan recommended rezoning property in this area to three new transect-based districts: T-5 – Downtown Transition; T-4/5 – Urban Corridor Mixed-Use; and T-4 – Urban Neighborhood. (See Fig. 21). In this process, it was important to delineate

proposed districts in a manner that allowed some flexibility to changing property lines as properties are likely to be consolidated and re-platted for redevelopment. Note also that the coding process allows for the creation of "hybrid" districts, as shown here with the T-4/5 designation for the Urban Corridor mixed Use District. This applies to the Church Street corridor, that transitions from high intensity at the north end (T-5) to a lower intensity as it moves south (T-4). But the masterplan called for a degree of unity in the corridor itself, leading to a coding approach which balances this sense of spatial unity with the changes in the context of the properties behind the corridor. Hence the hybrid coding strategy.

Most of the City's conventional zoning provisions were based on density ratios, so the design team decided that the best way of making the new form-based code regulations as seamless as possible with existing legislation was to include some similar density-related criteria in the new code (See Fig. 22). While density criteria are never a primary tabulation in a form-based code, they are sometimes included as a means of integrating the new code provisions into an existing larger system of older, more rigid regulations.

The new code specified that these districts could be used to create a new Planned Development District that replaced the existing one for the neighborhood, or – preferably in the team's view -- as new districts that would be incorporated within the City's existing code hierarchy and tables. The latter course of action would allow the flexibility of using the transect-based districts in other areas of the City when appropriate. Because this decision had not been made when the code was completed, the new regulatory plan for Haynie-Sirrine used as much of the City's existing code language and standards as appropriate to reduce complexity for landowners and designers and to streamline enforcement. Ultimately, the City decided to take the simplest course of action in the short-term, which was to completely replace the old Planned Development District with the new one.

The code followed the template set out in the Smart Code, but was, as is normal in such circumstances, edited and customized to suite the concepts and details of the approved Small Area Masterplan (See Fig. 19) . The most relevant sections for architects are:

a) The Regulating Plan (See Fig. 20)

2.4 REGULATING PLAN

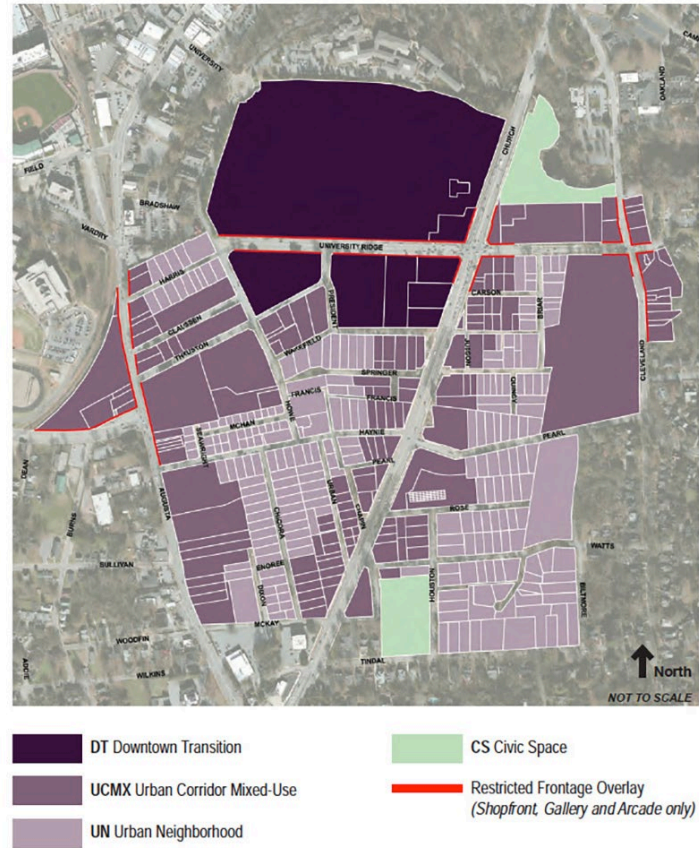


Fig. 20. Haynie-Sirrine Regulating Plan, 2013. The Downtown Transition District (T5 equivalent on the Transect scale) also incorporates some Frontage Conditions restrictions. This is to ensure all buildings in those locations incorporate pedestrian-friendly conditions along those streets where retail development is most likely to take place. Retail can take place anywhere in that district according to market variables, but some locations are always going to be better than others. (Image courtesy of the Stantec Urban Places Group)

b) District Designations (See Fig. 21)

2.1 DISTRICT DESIGNATIONS

The districts in this Code have been established using a continuum of development intensity. The diagram below illustrates the three districts established in this Code as they would apply within the City, from predominantly residential neighborhoods to the areas outside downtown that are intended to support, first and foremost, pedestrian-oriented development and a high-intensity mix of uses.

NOTE - For the purposes of applying certain standards set forth in the Municipal Code for "residential" vs. "nonresidential" districts, the UN district shall be considered a "residential district" and the UCMX and DT districts shall be considered "nonresidential" districts.

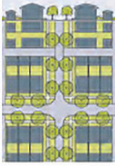
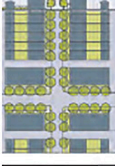

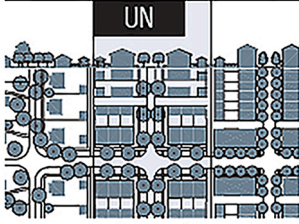
	<p>UN URBAN NEIGHBORHOOD The Urban Neighborhood district is intended to preserve and encourage traditional medium density residential neighborhoods. It may have a wide range of building types: single, side yard, and rowhouses. Setbacks and landscaping are variable. Streets with curbs and sidewalks define medium-sized blocks.</p>	<p>General Character: Mix of Houses, Townhouses & small Apartment buildings, with scattered Commercial activity; balance between landscape and buildings; presence of pedestrians</p> <p>Building Placement: Shallow to medium front and side yard Setbacks</p> <p>Frontage Types: Common Lawn, Porch & Fence, Terrace or Lightwell, Forecourt, Stoop</p> <p>Typical Building Height: 1- to 3-Story</p> <p>Type of Recreation Space: Greenway; Park or Green; Playground; Community Garden</p>
	<p>UCMX URBAN CORRIDOR MIXED USE The Urban Corridor Mixed Use district is intended to preserve and encourage pedestrian-oriented development along major urban corridors. It consists of higher density, mixed use buildings that accommodate retail, offices, rowhouses and apartments. It has wide sidewalks, steady street tree planting and buildings set close to the sidewalks.</p>	<p>General Character: Shops mixed with Townhouses, larger Apartment houses, Offices, workplace, and Civic buildings; predominantly attached buildings; trees within the public right-of-way; substantial pedestrian activity</p> <p>Building Placement: Shallow Setbacks or none; buildings oriented to street defining a street wall</p> <p>Frontage Types: Terrace or Lightwell, Forecourt, Stoop, Shopfront, Gallery, Arcade</p> <p>Typical Building Height: 2- to 4-Story with some variation (Up to 5 stories permitted)</p> <p>Type of Recreation Space: Greenway; Park or Green; Square or Plaza; Playground; Community Garden</p>
	<p>DT DOWNTOWN TRANSITION The Downtown Transition district is intended to extend the Central Business District with greater controls on height and density. It consists of high-density, mixed use buildings that accommodate retail, offices, rowhouses and apartments. It has a tight network of streets, with wide sidewalks, steady street tree planting and buildings set close to the sidewalks.</p>	<p>General Character: Shops mixed with Townhouses, larger Apartment houses, Offices, workplace, and Civic buildings; predominantly attached buildings; trees within the public right-of-way; highest pedestrian activity.</p> <p>Building Placement: Shallow Setbacks or none; buildings oriented to street, defining a street wall</p> <p>Frontage Types: Forecourt, Stoop, Shopfront, Gallery, Arcade</p> <p>Typical Building Height: 3- to 5-Story with some variation (Up to 8 stories permitted)</p> <p>Type of Recreation Space: Greenway; Park or Green; Square or Plaza; Playground; Community Garden</p>

Fig. 21 .District Designations. This is one of the most important elements of a form-based code. This 1-page of text and diagrams summarizes the major issues of urban character, building types, placement, size, and massing, including broad and inclusive indications of permitted uses. This information is then extended into more detail in the District Provisions, see Fig. 22. (Image courtesy of the Stantec Urban Places Group)

c) District Provisions (See Fig. 22)

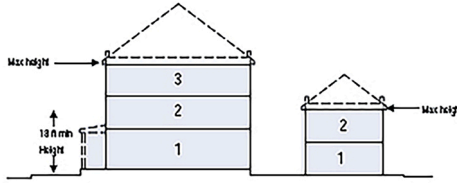
4.1 URBAN NEIGHBORHOOD



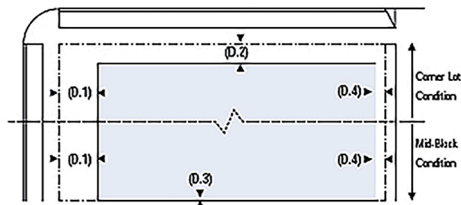
A. BUILDING HEIGHT	
1. Principal Building	3 stories max; 18 ft min
2. Outbuilding	2 stories max
B. LOT OCCUPATION	
1. Residential Density	12 dwelling units/acre max
2. Lot Width	18 ft min; 96 ft max
3. Lot Coverage	70% max
C. BUILDING DISPOSITION (see Section 4.5)	
1. Edgeward	permitted
2. Sideyard	permitted
3. Rearyard	not permitted
4. Courtyard	not permitted
D. SETBACKS - PRINCIPAL BUILDING	
1. Front Setback Principal	10 ft min; 18 ft max
2. Front Setback Secondary	10 ft min; 18 ft max
3. Side Setback	0 ft or 6 ft min
4. Rear Setback	10 ft min*
5. Frontage Buildout	160% min at setback
E. SETBACKS - OUTBUILDING	
1. Front Setback	20 ft min + bldg. setback
2. Side Setback	0 ft min or 3 ft at corner
3. Rear Setback	3 ft min
F. PRIVATE FRONTAGES (see Section 4.6)	
1. Common Lawn	permitted
2. Porch & Fence	permitted
3. Terrace or Lightwell	permitted
4. Forecourt	permitted
5. Sloop	permitted
6. Shopfront & Awning	not permitted
7. Gallery	not permitted
8. Arcade	not permitted
G. PARKING PROVISIONS	
See Section 7.1	

*or 15 ft from centerline of alley

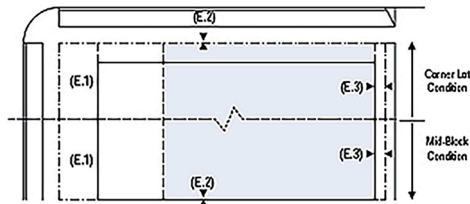
BUILDING HEIGHT
1. Building height shall be measured per Section 5.2.



SETBACKS - PRINCIPAL BLDG
1. The Facades and Elevations of Principal Buildings shall be distanced from the Lot lines as shown.
2. Facades shall be built along the Principal Frontage to the minimum specified width in the table.



SETBACKS - OUTBUILDING
1. The Elevations of the Outbuilding shall be distanced from the Lot lines as shown.



NOTE - For the purposes of applying certain standards set forth in the Municipal Code for "residential" vs. "nonresidential" districts, the UN district shall be considered a "residential district".

Fig. 22. District Provisions (for Urban Neighborhood, T-4 equivalent) This 1-page sheet of graphics and text provides more detail about the major requirements building size, massing, placement, and frontage requirements identified in Fig. 21. This example is for a fairly low density, mainly residential district, and each zoning district has an equivalent sheet of information. Taken together, the information contained in Figs. 21 and 22 provides designers with the information necessary for individual buildings and projects to comply with the required urban design character of each district. (Image courtesy of the Stantec Urban Places Group)

d) Building Design Standards / Frontages (See Fig. 23)

4.5 TABLE OF PRIVATE FRONTAGES

The Private Frontage is the area between the building Facades and the Lot lines. The Private Frontage of buildings shall conform to and be allocated in accordance with the allowances for each district specified below.

	SECTION		PLAN		
	LOT PRIVATE FRONTAGE	R.O.W. PUBLIC FRONTAGE	LOT PRIVATE FRONTAGE	R.O.W. PUBLIC FRONTAGE	
A. Common Lawn: a planted Frontage wherein the Facade is set back substantially from the Frontage Line. The front yard created remains unfenced and is visually continuous with adjacent yards, supporting a common landscape. The deep Setback provides a buffer from the higher speed Thoroughfares.					UN
B. Porch & Fence: a planted Frontage wherein the Facade is set back from the Frontage Line with an attached porch permitted to Encroach. A fence at the Frontage Line maintains street spatial definition. Porches shall be no less than 8 feet deep.					UN
C. Terrace or Lightwell: a Frontage wherein the Facade is set back from the Frontage line by an elevated terrace or a sunken Lightwell. This type buffers Residential use from urban Sidewalks and removes the private yard from public Encroachment. Terraces are suitable for conversion to outdoor cafes.					UN UCMX
D. Forecourt: a Frontage wherein a portion of the Facade is close to the Frontage Line and the central portion is set back. The Forecourt created is suitable for vehicular drop-offs. This type should be allocated in conjunction with other Frontage types. Large trees within the Forecourts may overhang the Sidewalks.					UN UCMX DT
E. Stoop: a Frontage wherein the Facade is aligned close to the Frontage Line with the first Story elevated from the Sidewalk sufficiently to secure privacy for the windows. The entrance is usually an exterior stair and landing. This type is recommended for ground-floor Residential use.					UN UCMX DT
F. Shopfront: a Frontage wherein the Facade is aligned close to the Frontage Line with the building entrance at Sidewalk grade. This type is conventional for Retail use. It has a substantial glazing on the Sidewalk level and an awning that may overlap the Sidewalk to within 2 feet of the Curb.					UCMX DT
G. Gallery: a Frontage wherein the Facade is aligned close to the Frontage line with an attached cantilevered shed or a lightweight colonnade overlapping the Sidewalk. This type is conventional for Retail use. The Gallery shall be no less than 10 feet wide and should overlap the Sidewalk to within 2 feet of the Curb.					UCMX DT
H. Arcade: a colonnade supporting habitable space that overlaps the Sidewalk, while the Facade at Sidewalk level remains at or behind the Frontage Line. This type is conventional for Retail use. The Arcade shall be no less than 12 feet wide and should overlap the Sidewalk to within 2 feet of the Curb.					UCMX DT

Fig. 23. Table of Private Frontages This establishes the permitted typologies of façade conditions for private buildings as they front onto and create the public realm--the oft-quoted "walls" to "urban rooms." This page details which frontages are permitted in which zoning districts (UN, UCMX, and DT--see Figs. 19 and 20 for information on the location and character of each of these districts). Image courtesy of the Stantec Urban Places Group

- e) Site Standards / Parking (not illustrated here)
- f) Public Open Space Standards (See Fig. 24)

8.5 RECREATION SPACE TYPES

All land dedicated to satisfy the Recreation Space Dedication requirement of this section shall conform to one or more of the following typologies:



Fig. 24. Public Space Types sometimes entitled Recreation Space Types These are sometimes entitled Recreation Space Types, as in this example. Similar to Frontage conditions, the diagrams of Public Space Types are keyed to each zoning district. In this example, most public space types are allowed in all districts, with the exception of the formal square or plaza. This most urban public space type is reserved for districts with medium to high urban character. The lowest intensity district in this example--UN-Urban Neighborhood--does not meet this level of urbanity. Image courtesy of the Stantec Urban Places Group

g) Street Standards / Connectivity (See Fig. 25 and 26)

9.4 STREET REGULATING PLAN

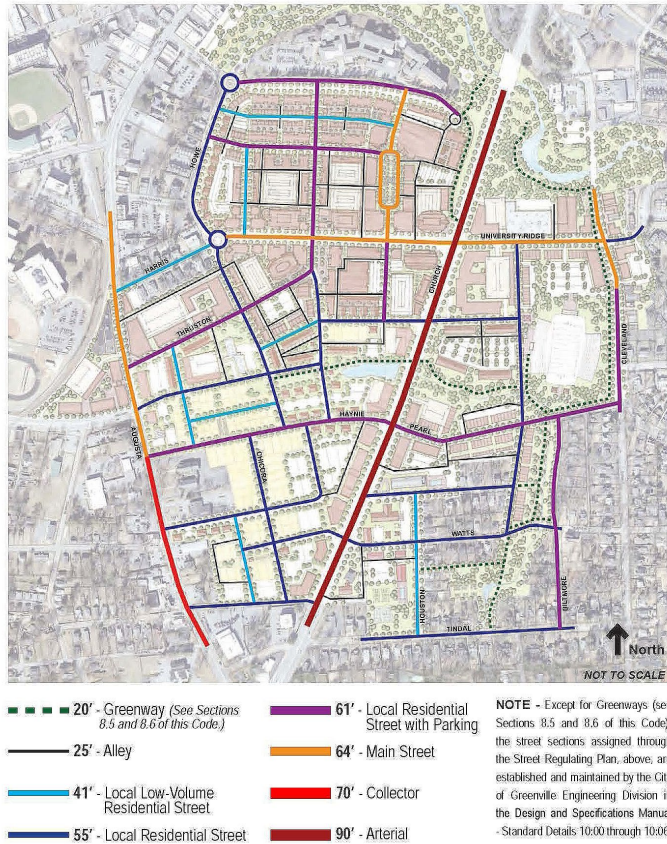
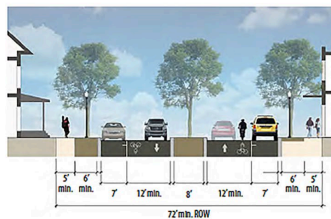
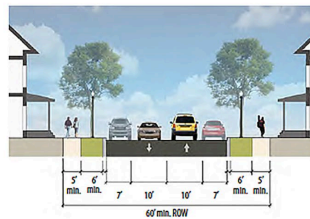


Fig. 25. Street Regulating Plan This clearly identifies the different types of street, their dimensions and their connectivity. Regulating plans are often accompanied by more detailed street sections. See Fig. 26. Image courtesy of the Stantec Urban Places Group

C. URBAN AVENUE / BOULEVARD



D. NEIGHBORHOOD GENERAL STREET



1. Street Type	Urban Avenue / Boulevard
2. Description	Urban Avenues/Boulevards are urban in character and provide low-speed, pedestrian-friendly access to neighborhoods and mixed-use areas. They serve as a primary neighborhood connector, often terminating at prominent buildings or plazas. On-street parking is provided on both sides of the street.
3. Right-of-Way Width	72 ft minimum
4. Travel Lanes	2 lanes (12 ft each) separated by an 8 ft landscaped median
5. Design Speed	20 - 25 mph
6. Parking Lanes	Parallel on-street, both sides
7. Bicycle Facilities	Shared lanes with sharrows
8. Planting Strip	6 ft on both sides
9. Sidewalk	5 ft on both sides

1. Street Type	Neighborhood General Street
2. Description	Neighborhood General Streets are the most common street type. These versatile streets are typically unmarked in residential neighborhoods to allow for informal parking, but can be striped with bike lanes and/or a lane of on-street parking as necessary in more urban situations.
3. Right-of-Way Width	60 ft minimum
4. Travel Lanes	2 lanes (10 ft each)
5. Design Speed	20 - 25 mph
6. Parking Lanes	Parallel on-street, both sides - 1 side only with inclusion of bike lane(s)
7. Bicycle Facilities	Signed route OR Bicycle lanes
8. Planting Strip	6 ft on both sides
9. Sidewalk	5 ft on both sides

Fig. 26. Typical Street Sections These street sections are from a different masterplan and code, but they have been chosen here for their diagrammatic clarity and economical layout of the critical information needed by architects and urban designers. Image courtesy of the Stantec Urban Places Group

Of particular note are the hierarchical relationships between the District Designations and the District Provisions noted earlier in Unit 3. The Designations amplify the content and character of each zoning district delineated on the Regulating Plan, while the Provisions present details concerning the siting, massing, and Frontage Conditions of buildings. This latter provision also gets its own graphic illustration, keyed to each zoning district.

The Frontage Conditions are a key component of the section on Building Design Standards, and this latter section can vary considerably in the level of detail covered by different codes. In this case study, we have stripped away some levels of detail particular to Greenville in order to reveal the deliberate concatenation of design thinking that is interwoven through aspects of this and other form-based codes.

As a key to understanding the District Provision diagrams in Fig. 22, the most important datum is the dotted line on each of the two plan diagrams. This dotted line denotes the diagrammatic location of the site boundary between adjacent public and private property. In many cases this demarcation is the same as the public right-of-way line which appears on the Frontage Conditions diagrams (Fig. 23) and the Street Sections (Fig. 26) that are derived from the Street Regulating Plan (Fig. 25).

Likewise, the most important line on the Frontage Conditions diagrams is the dotted one in plan and section that establishes the location of this same right-of-way (ROW) condition. This is the defining line between public and private land and this becomes the datum for many design decisions about the design of, and the transitions between public and private realms. The Frontage Conditions should specifically be read in conjunction with the Street Sections (Fig. 26) and the District Provisions (Fig. 22) so that the designer can construct the appropriate building edges (or "walls" to the urban rooms). These building edges are often the defining characteristics of any district's public space design, and the way these different but related design controls weave together is part of the "invisible web" made tangible in design terms, and which becomes part of the masterplan's DNA, ready to be passed on to future projects.

As part of this set of interconnected design relationships, the Streets Regulating Plan (Fig.25) and the accompanying Street Sections (see Fig. 26 for a typical example) establish a critical pairing, and reinforce the importance of public space design. These plans and sections establish a clear hierarchy of connecting streets and the design requirements for each of these important public spaces so that they are safe and attractive to use by pedestrians, cyclists, and drivers (and transit where applicable). As noted above, the critical design dimensions relate to the rights-of-way lines (ROW) that define the land in public ownership. On the private land enfronting the street, square or other public space it is the Frontage

Conditions and build-to lines/setbacks that establish the location and character of the space defining external "walls" to the public space. In our architectural design process, seeing the external façades of our buildings as not merely the expression of our building's aesthetics, but also a critical part of a larger composition seen from outside our site becomes a critical extension of our design thinking. We are *required* to consider contextual relationships and the responsibilities of our building(s) across a wider urban area -- extending beyond our building and into the urban public realm. It is this higher and more inclusive standard of design that form-based codes seek to engage and to nourish.

d) Development since the Adoption of the Masterplan and Form-based Code

As all architects know, project development from the time of inception to completion can be long and tortuous on even fairly simple projects. Community masterplanning, with all its political infighting and ownership dynamics, can take even longer, and frustrations can build over a number of years. However, having a good plan and code in place can and does attract development interest. This was the case in Haynie-Sirrine the second time around.

The prime site in this masterplan is the large, outdated strip center used as government offices at the northern end of the site. It has fine views across the river gorge and linear park directly to downtown, only minutes away. At the time of writing (2019) this site is under active consideration for an extensive mixed-use development. As reported in the Greenville newspaper in the fall of 2018, the developer's proposal includes an exciting design for a new County Hall by the global practice of Foster + Partners of London. This centerpiece sits within a masterplan that "could add as many as 1,125 apartments to downtown as well as 350 hotel rooms, 450,000 square feet of retail space and 650,000 square feet of offices" in addition to the government complex.⁹⁵ (Images of these development proposal can be viewed at <https://www.greenvilleonline.com/story/news/2018/05/15/1-b-county-square-redevelopment-gets-green-light/612079002/>)

Although different from the precise layout illustrated by the Small Area Plan, the new development proposal fits neatly within the code provisions for: a) the required urban character and intensity; b) a connected street network, and; c) an organized set of public spaces. This provides a clear example of how a good form-based code embodies the "DNA" of the masterplan and transfers it to new design solutions without relying on superficial visual similarities. The design projects that fill out a masterplan over a period of several years rarely look exactly as the masterplan envisaged future development. The purpose of this masterplan, and the one illustrated in Unit 1 of this course, was to give a formal expression to the wishes and values of the public and private partners involved in the project, and to establish a coherent

vision that could catalyze future economic and physical development. The key take-away here is that it's the form-based code that carries the binding "DNA" of embedded urban design principles that guide the growth of all future design projects. The masterplan's task is different. Its main task is to start people thinking about opportunities they may not have realized from a more limited perspective.

We can also think of the form-based code as a composer's "score" for a musical composition, where all the required information for each instrument is gathered together to guide the orchestra's performance of the work. But each conductor will interpret the music slightly differently, and musicians may bring individual brilliance to passages. So, in this analogy, each performance (building design) can express some individuality, while the integrity of the composition (the masterplan vision) retains its overall cohesion.

At the same time (to continue the music analogy) one can enjoy a song where a "cover band" has kept as close to the original performance as possible. This (slightly clumsy) correlation applies to a site directly adjacent to the County Hall proposal where a different development company has constructed a new apartment complex very much in line with the illustrations contained in the masterplan proposals. This contrasting example shows how a development proposal can be very closely tied with the vision and the code; this has the clear advantage for the developer of facilitating fast and straightforward project approvals. (See Fig. 27). At the time of writing this course (Summer 2019), the developer's photographs of this new building could be found at <https://www.southridgeliving.com/Marketing/Home/Media>



Fig. 27. Master plan Street Façade Illustration of a Mixed-Use Building. While this illustration was intended merely as a guide to what a building following the code might look like on an important corner site, the developers and their architects took this illustration literally and produced a building on site that looks very similar.

The appropriate images are somewhat buried in the Gallery section of the website (they cannot be reproduced here for copyright reasons) but by comparing street level photographs of the new apartments on their corner site with the masterplan street facade drawing (Fig. 27), it is fairly straightforward to find the appropriate images and to note their similarity with those in the masterplan.

Since the original masterplan and form-based code was created for Haynie-Sirrione in 2002, it has taken seventeen years to get to this promising new stage of development, spurred by the new masterplan and code. It will likely take another several years for development to mature, creating a timespan of more than two decades from plan inception to a critical mass of development on the ground. During that kind of time scale architectural trends and fashions can come and go, and aesthetic preferences can vary. But what doesn't change is the set of urban design principles embodied in the form-based code. They are an axis of stability and quality around which changing fashions in architecture can evolve. Urban designers and code writers are in it for the long haul!

1.2 Large Scale: Form-based Code for Transit-Oriented Development as Part of a Hybrid Municipal Code for a Large City

a) The Background to the Case Study:

The city of Charlotte, North Carolina, is the sixteenth largest city in the USA (872,498 pop. in 2019) and one of the fastest growing metropolitan areas in the “New South” A lot of this growth has focused on reurbanizing its downtown core and rehabilitating the surrounding first generation “streetcar” suburbs. Downtown, or “uptown” as Charlotteans call their center city, has long been a regional business hub, but over the past two decades it has become home to 32,300 residents and hosts a wide variety of bars, restaurants, entertainment, and retail options.⁹⁶ Part of this success has been tied to the completion of a 19-mile, north-south light rail line that links downtown with southern and northern suburbs, including the northern terminus on the campus of the University of North Carolina Charlotte, home to nearly 30,000 students and 3,000 faculty and staff.⁹⁷ The city is also constructing an east-west streetcar line that intersects with the light rail line in the heart of downtown.

Since the first, rudimentary transit-oriented (TOD) zoning districts were adopted in 2003 in advance of train operation in 2007, more than 12,000 new housing units, over 3 million square feet of office and commercial space, and more than \$2 billion in private investment have been added, according to city officials.⁹⁸ Since that analysis several more large office developments have been started adjacent to train stations, and the cycle of development spirals upward.

While several stops on the light rail line are conventional park-and-ride stations, others have become nodes of new high-density, mixed-use development. The first phase of the line, from the city's southern edges to downtown spurred a lot of private investment in the area known as “South End,” a former manufacturing district just south of downtown. Parts of this new development were of reasonable quality and good design for the period in which it was built, now a decade of more ago. The streetscape and

connectivity requirements of the original TOD regulations have helped build better sidewalks and trails, -- including a popular “Rail Trail” for walkers, joggers, cyclists, dog owners and scooter riders -- as well as other mobility infrastructure such as new streets to create smaller blocks and bike lanes. All these interventions have helped to create a more connected transportation network. The train stations themselves have all been enriched with high-quality public art in a wide variety of media.

However, as the City’s own analysis admits:

Some TOD development has been criticized as being bland, beige, and boring. Sometimes, the development standards of TOD have not done enough to activate a building’s ground floor street frontage, or screen parked cars from view of the sidewalk. To respond to these and other issues, the City has steered most TOD rezonings in the past few years to a conditional district, such as TOD-M(CD), rather than to conventional or “straight-up” TOD.

Conditional TOD zoning has allowed City staff and neighborhood residents to work with developers to incorporate enhanced design and development requirements into rezoning plans. This results in a higher level of standards above what conventional TOD would require, to address some of the aforementioned issues. Many of these enhanced standards and best practices have been consolidated by Planning staff into standard notes . . . (which) are often included in conditional TOD rezoning plans, thus becoming actual development requirements when the development is built.⁹⁹

From analyzing this process and products for the first phase of development it became clear that the initial regulations were too imprecise, lacked sufficient rigor in their formulation, and were not underpinned by urban design concepts of sufficient quality. Hence the blizzard of *ad-hoc* conditional approvals. However, the Planning staff’s moves to consolidate the best elements of these conditional design approvals into more standardized lists sowed the seeds of the second, improved set of TOD regulations put in place in 2019 for all future development. The main ambition of the new regulations is to eliminate as far as possible all conditional rezonings.

Conditional rezonings are problematic when they become the norm rather than the exception. When every project is negotiated individually, with no fixed standards, then decision-making often becomes a matter of who has the most expertise, time, and money to influence city staff and elected officials. And that,

obviously, is the development community. This lopsided process led to intense frustration on the part of neighborhoods, and one of the reasons that neighborhood advocates willingly involved themselves in the advisory process for these TOD regulations was to ensure that more stringent and consistent regulations applied to all development projects along the rail line.

Determined not to repeat the mistakes of the first phase, the City engaged consultants to help produce the new regulations, and City planning staff created not one but two advisory committees. One group was formed from design and development professionals and the other comprised citizens from a city-wide range of community organizations. Both groups met regularly over a two year period, during which time they debated and reviewed every detail of the proposed regulations.¹⁰⁰ There were very active discussions amongst both interest groups, with most of the developers and neighborhood representatives eventually seeing the advantages of the new code.¹⁰¹

The new TOD form-based code was approved unanimously by Charlotte City Council in 2019. This marked a welcome upgrade in the urban design quality required of private development along the publicly-funded transit infrastructure (See Fig. 28). This new code was inserted as Chapter 15 in the city's zoning ordinance, and thus followed the early precedent of San Diego in 1992, when Peter Calthorpe's TOD code provisions were similarly inserted into that city's full ordinance. (See Unit 2).



CITY OF CHARLOTTE
CHAPTER 15. TRANSIT ORIENTED DEVELOPMENT DISTRICTS

ADOPTED BY CHARLOTTE CITY COUNCIL APRIL 15, 2019

Fig.28.Charlotte TOD Zoning Regulations Cover. The cover photograph illustrates the environment at the Bland Street Station in South End (part of the development created by the first phase of the transit line). Charlotte "Uptown" is in the background and it should be noted that in recent years that skyline has filled out considerably. This photograph also shows the first phase of the "Rail Trail," and extensive multi-use pathway that parallels the tracks. The fact that this photo is a few years old is also indicated by the absence of Lime, Byrd, and Spin micro-transit scooters that now share this multi-modal public space. Here, the façade design of the apartments and associated retail does a good job of creating a pedestrian-friendly wall to the long, linear public room of the rail trail and train platform. Image courtesy of City of Charlotte.

At the time of writing in the summer of 2019, the City is in the process of "correctively" upzoning dozens of properties along the rail line to match the new TOD categories. This involves a lot of outreach to property owners, but as the upzoning increases the development potential of most sites - sometimes considerably - at the time of writing in 2019 there has not been any groundswell of citizen opposition.

These new form-based regulations are divided into four categories:

TOD-UC Transit Urban Center

TOD-NC Transit Neighborhood Center

TOD-CC Transit Community Center

TOD-TR Transit Transition

These read from top to bottom in levels of development intensity, with the higher intensities adjacent to train stations or streetcar stops, "feathering out" in intensity as development integrates with existing neighborhoods. Fig. 29 illustrates graphically the intent of the Transit Urban Center District and its relationship to the less intense Transit Neighborhood Center. The code states that:

TOD-UC will permit the greatest building heights, demand the uppermost level of site and architectural design, permit the least amount of vehicle parking, and require the most urban form of streetscape and public realm.¹⁰²

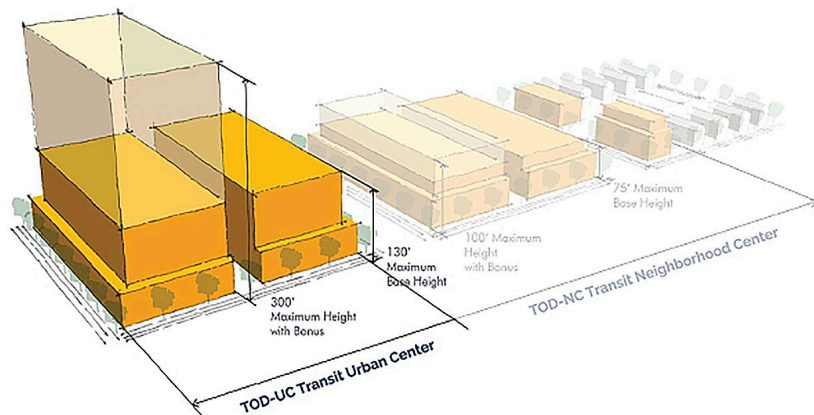


Fig.29.Massing Diagram for TOD Urban Center District. This simple diagram illustrates the relationships between what is allowed "by-right," and what can be added with bonus increments. See Fig. 33 for information on the bonus structure. Image courtesy of City of Charlotte.

All four code districts included what is probably the most important provision: strict limits on car parking. The new code abandoned minimum requirements for parking (with some minor exceptions) and established strict limits for maximum parking ratios for apartments and offices. To many observers, even

these limits did not go far enough in restraining car use near train stations. A substantial minority of members of the public advisory committees for the TOD ordinance urged the city to enact a complete ban on off-street parking provisions next to train stations, citing increasing use of the light rail, Uber and Lyft, and micro-transit scooters. However, the voice of the developers' lobby carried the day, arguing that while in the future we may not use cars as much, today they are a necessity.

The activists' pushback on this point questioned the need for large parking decks, pointing out that they're expensive, use a lot of natural resources to build, and may well be obsolete in the next 10-15 years. This debate continues, and it is likely that text amendments reframing maximum parking standards so that decks are much less common will need to be enacted in the future.

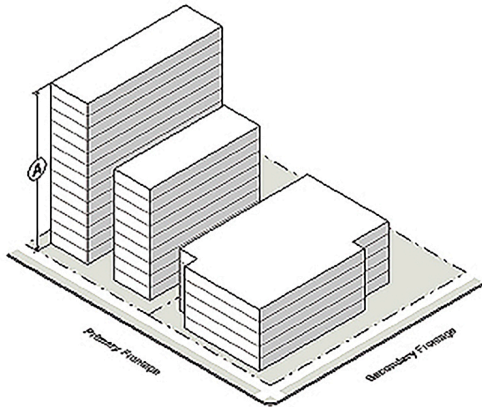
There is much to like about this form-based code TOD insert into an old-fashioned conventional document, but one drawback about this code is that it does not utilize any templates from the Smart Code, and therefore uses a lot more words and has fewer diagrams than would otherwise be the case.¹⁰³ For example, rather than draw diagrams to explain certain issues, the code writers fall back too easily on text to describe key visual conditions:

New development in the TOD-UC district should be multi-storied, with street frontages activated by commercial, residential, or institutional uses. . . . Vehicle parking should be in wrapped parking structures or located to the rear of buildings, and buildings should be built at the back of the sidewalk to provide a dense, urban street edge.

All of this could be communicated via notated diagrams. Not only do graphics communicate effectively, but the diagrams break up the page layout, and make the document's design more interesting. This makes the code much more user-friendly, and thus makes compliance more straightforward.

E. Building Height

Building height standards govern the minimum and maximum heights of buildings, and are intended to provide flexibility while maintaining appropriate transitions to adjacent areas.



Building Height

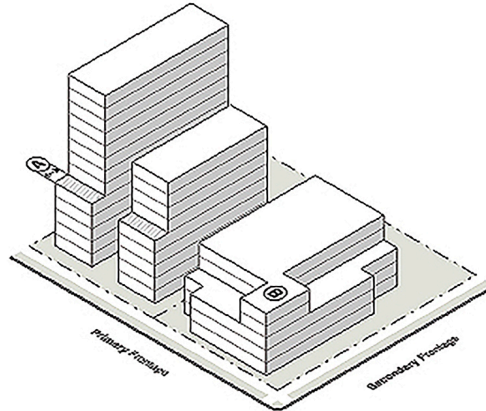
		TOD-UC	TOD-NC	TOD-CC	TOD-TR	
A	Building Height *	Min. **	24' for parcels less than 1/4 acres in area 40' for parcels greater than or equal to 1/4 acres in area	24'	24'	N/A
		Max.	130'	75'	90'	50'
		Max. (with Bonus)	300' unless located within 1/4 mile walking distance from a rapid transit station, then maximum height is unlimited	100'	130'	75'

* In the TOD-NC, TOD-CC, and TOD-TR districts, the maximum building height of any structure within 200' of a single-family residential zoning district parcel boundary is limited to 65'. In the TOD-UC district, the maximum building height of any structure within 200' of a single-family residential zoning district parcel boundary is limited to a maximum building height of 65' within the first 100' and a maximum building height of 75' within the area greater than 100' and up to 200' of a single-family residential zoning district parcel boundary. These standards apply only to that part of a structure within the 200' boundary. This limitation does not apply to public parks of 3 acres or greater within a single-family residential zoning district or a single-family residential zoning district of two or fewer parcels.

** Lots within the TOD-UC, TOD-NC, and TOD-CC Districts with 30' or less in lot width are exempt from minimum building height requirements.

F. Required Height Stepback

Required height stepback standards are intended to ensure the maintenance of light, air, and a comfortable pedestrian experience at ground level within Charlotte's TOD Districts.



Required Height Stepback

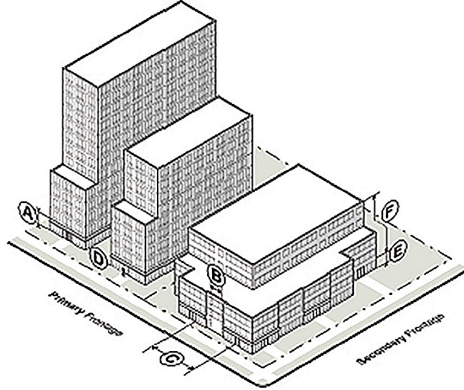
		TOD-UC	TOD-NC	TOD-CC	TOD-TR
A	Required Stepback *	Main Street	Height above 65' requires a minimum stepback of 10' from the building facade line. Such stepback shall occur above the ground story, and no higher than the 4th story.		
		4+ Lane Ave/Blvd	N/A		
		Other - Primary	Height above 120' requires a minimum stepback of 10' from the building facade line. Such stepback shall occur above the ground story, and no higher than the 6th story.		
		Other - Secondary	N/A		
		Limited Access	N/A		
B	Permitted Corner Tower Element - Corner Lots Only	Limited in width and depth to a maximum 25% of the building frontage. May exceed height at which stepback is required, but may in no case exceed the overall building height.			

* The required stepback applies to each facade located along a frontage type. Where more than one frontage is present, the requirement for such frontage applies to that facade. The following are exempt from stepback requirements: 1) stepback requirements do not apply to side or rear facades; and 2) any facades located along a frontage, where the lot width of such frontage is 50' or less in length, are exempt from stepback requirements.

Fig. 30. Dimensional Standards for TOD Districts. Note that building height in the TOD Urban Center District is unlimited very close to train stations with the help of the bonus structure. This is to encourage very high intensity development in certain key station areas where real estate interest is at its maximum. In order to create a visual datum to more easily relate very tall buildings with their lower neighbors, and to establish some visual coherence within the district, unified façade setbacks for the upper floors establish a regular building "base" at lower levels. Image courtesy of City of Charlotte.

G. Building Articulation

Building articulation standards govern the dimensions of building facade elements, and entry features, and are intended to facilitate the enhancement of a pedestrian-oriented environment in Charlotte's TOD Districts.



Building Articulation

	TOD-UC	TOD-NC	TOD-CC	TOD-TR
Ground Floor Height (Floor to Floor) *				
A Frontage Type	Main Street	16' Min.		
	4+ Lane Ave/Blvd			
	Other - Primary	16' Min., unless ground floor is non-convertible residential, then 12' Min. **	14' Min., unless ground floor is non-convertible residential, then 10' Min. **	
	Other - Secondary			
	Limited Access	N/A		
Blank Wall Area (Horizontal or Vertical)				
B Frontage Type	Main Street	20' Max.		
	4+ Lane Ave/Blvd			
	Other - Primary	20' Max.		
	Other - Secondary	20' Max.	35' Max.	
	Limited Access	50' Max.		
Prominent Entrance Spacing (Maximum Distance Between Entrances)				
C Frontage Type	Main Street	75' ***		
	4+ Lane Ave/Blvd	150' ****		
	Other - Primary	75' ***	150' ****	
	Other - Secondary	150' ****	N/A	
	Limited Access	N/A		

- * At least 70% of the total ground floor height shall meet the minimum ground floor height requirement.
- ** The ground floor of residential developments is still considered residential when leasing or management offices and/or tenant facilities, such as gyms and community/party rooms, are located on the ground floor.
- *** Applies to buildings 100' in length or more.
- **** Applies to buildings 150' in length or more.
- ***** City Engineer may allow adjustments to standards if adjacent average sidewalk grade is greater than 10% or to comply with federal and state law.
- ***** Non-residential ground floor transparency area shall maintain a visibility zone to meet the standard.
- † Residential units located below sidewalk grade are permitted to have below-grade entrances, which shall be between 1' and 3' below sidewalk grade.

TOD-UC TOD-NC TOD-CC TOD-TR

	TOD-UC	TOD-NC	TOD-CC	TOD-TR
Vertical Distance Between Building Entry and Sidewalk *****				
D Frontage Type	Main Street	75% of required prominent entrances along the sidewalk/building exterior shall meet grade. Other entrances shall be between 0' and 4' above sidewalk grade.		
	4+ Lane Ave/Blvd	Non-residential: 50% of required prominent entrances along the sidewalk/building exterior shall meet grade. All other ground floor entrances shall be between 0' and 4' above sidewalk grade.	Non-residential: One prominent entrance at grade required. All other ground floor entrances shall be between 0' and 4' above sidewalk grade.	
		Residential entrances to individual units: All ground floor entrances along the sidewalk shall be between 1' and 7' above sidewalk grade.†		
	Other - Primary	Non-residential: 50% of required prominent entrances along the sidewalk/building exterior shall meet grade. All other ground floor entrances shall be between 0' and 4' above sidewalk grade.	Non-residential: One prominent entrance at grade required. All other ground floor entrances shall be between 0' and 4' above sidewalk grade.	
		Residential entrances to individual units: All ground floor entrances along the sidewalk shall be between 1' and 7' above sidewalk grade.†		
Other - Secondary	Non-residential: One prominent entrance at grade required. All other ground floor entrances shall be between 0' and 4' above sidewalk grade.	Residential entrances to individual units: All ground floor entrances along the sidewalk shall be between 1' and 7' above sidewalk grade.†		
Limited Access	N/A			
Ground Floor Transparency Area (Measured 3' to 10' From Grade) *****				
E Frontage Type	Main Street	60% Min./Residential: 25% Min.		
	4+ Lane Ave/Blvd	60% Min./Residential: 25% Min.	40% Min./Residential: 20% Min.	
	Other - Primary	60% Min./Residential: 25% Min.	40% Min./Residential: 20% Min.	
	Other - Secondary	50% Min./Residential: 25% Min.	40% Min./Residential: 20% Min.	
	Limited Access	N/A		
Upper Floor Transparency (% Wall Area of Story)				
F Frontage Type	Main Street	25% Min.		
	4+ Lane Ave/Blvd	15% Min.		
	Other - Primary	25% Min.	N/A	
	Other - Secondary	N/A		
	Limited Access	N/A		

Fig. 31. Building Articulation Standards for TOD Districts This set of standards deals with more detailed design matters, such as sidewalk entrance conditions and spacing, ground floor heights (that affect Frontage Conditions), ground floor and upper floor facade transparency requirements, and limitations on blank wall areas. The architects of the building illustrated in the cover shot in Fig. 28 understood a lot about urbanism, and their building design benefitted from this knowledge. Other designer working only blocks away demonstrated much less talent with designing buildings in urban contexts. The early TOD codes in Charlotte were unable to stop bad design from happening, so the new code is much more stringent about its requirements, enshrining established principles of urban design as non-negotiable. Image courtesy of City of Charlotte.

Figures 30 and 31 go some way to alleviating this problem. They illustrate each district's Dimensional Standards and Building Articulation requirements in graphic and tabulated form. These regulations are much more sophisticated than the city's first efforts in 2003, and reflect the more recent understanding of the central role of urban design concepts at the heart of the code, and also the importance of using simple descriptive wording instead of confusing acronyms. The code section on Signs also uses graphics to illustrate possibilities instead of leaden language that stifles creativity. (See Fig. 32).



Fig. 32. Typical Diagram from TOD Sign Regulations Sign regulations in any zoning ordinance are usually cumbersome and often arbitrary. This ordinance benefits from the use of clear drawings to illustrate the range of signs that are wanted, not prohibited. Signs can be a source of great creativity, and ordinances should aim to spur innovation and artistic creativity. Image courtesy of City of Charlotte.

Charlotte, like many cities, is plagued by a lack of affordable housing, especially in areas served by transit, so the new TOD code specifically ties expansive bonus provisions to the provision of affordable housing and other important environmental and social goals. (See Figs. 29 and 33). In addition to creating a large building height bonus for meeting the City's goals for housing and social mobility, the code provides bonus opportunities for public open space, sustainable design, and transportation improvements.

Table 15.1: Bonus Menu

Economic Mobility		
Affordable Housing and the Charlotte Business Inclusion program are designed to promote economic opportunity in the transit station areas.		
Bonus Actions	Bonus Awarded	
1.	<p>Affordable Housing. Devote 10% of Gross Floor Area of each floor having occupiable space above the maximum (without bonus) permitted building height (calculated to number of units) to affordable housing, using local unit size averages. •</p> <ul style="list-style-type: none"> Affordable housing must be set aside for affordable units or equivalent space for special purpose or supportive housing development. Options and administration requirements to provide housing include fees-in-lieu, off-site housing within ½ mile of an existing rapid transit station, and donation of land as outlined in the Charlotte Affordable Housing Bonus Administration Manual. 	<p>Height Bonus: All Districts: Additional Height per Floor up to Maximum Height Allowed by Ordinance</p>
2.	<p>Affordable Housing On-Site. Devote 5% of Gross Floor Area (calculated to number of units) of total building(s) to affordable housing, using local unit size averages. •</p> <ul style="list-style-type: none"> Affordable housing units must be set aside for households earning 80% AMI or less, with no more than 20% of the bonus units set aside for households earning between 110% and 81% AMI. 	<p>Open Space/Height Bonus: 50% Reduction of Open Space Requirement and One Floor of Additional Height.</p> <p>Open Space Requirement may be reduced by 75% if 80% of affordable units are set aside for households earning 60% AMI or less.</p> <p>OR</p> <p>Building Length/Height Bonus 500 ft. Maximum Building Length and One Floor of Additional Height •</p> <p>Maximum building length may be extended to 600' if additional building mass standards are met (Section 15.2.2.B.e.ii).</p> <ul style="list-style-type: none"> This bonus is per building
3.	<p>Design Bonus. Must be used in conjunction with 1 or 2 above.</p> <p>Devote 5% of Gross Floor Area (calculated to number of units) of total building(s) to affordable housing, using local unit size averages. •</p> <ul style="list-style-type: none"> Affordable housing units must be set aside for households earning 60% AMI or less, with no more than 20% of the bonus units set aside for households earning between 110% and 61% AMI. 	<p>Prominent Entrance Requirement Bonus: Only 1 prominent entrance required •</p> <ul style="list-style-type: none"> This bonus is per building
4.	<p>Charlotte Business Inclusion targets met (Minority Women Small Business Enterprise requirements).</p>	<p>TOD-UC: 20 points</p> <p>TOD-NC, TOD-CC, TOD-TR: 12 points</p> <p>For every percentage point above target met, 1 additional point will be given.</p>

Fig. 33. TOD Bonus Menu (excerpt) Trying to get affordable housing built close to transit is a primary social policy objective of the TOD ordinance. Inclusionary zoning for affordable housing is illegal in North Carolina, and so the code relies on incentive provisions, mainly related to increases in building height. At the time of writing this course in 2019, the jury is out regarding the effectiveness of this approach. Image courtesy of City of Charlotte

The new code handles parking along the transit line by setting maximums and eliminating minimum requirements so as to encourage the use of the light rail system together with walking, cycling, ride

sharing and micro-transit scooters. All these modes are in evidence at the major activity hubs along the line.

One of the first new projects to be approved was the proposed redevelopment of a former concrete production plant into a classic high-density mix of residential, retail, and office uses all within walking distance of the light rail line. A City Council member praised the proposed development as a “poster child” for the new TOD regulations.¹⁰⁴

The City of Charlotte is also in the process of updating its Comprehensive Plan, and starting on a major program of public outreach prior to redrafting all its various development control ordinances into a new Unified Development Ordinance (UDO). This is at least a two-year process, and the formulation of the new form-based codes for TOD development operates as a test for rolling out the larger UDO in the future. There is little doubt that the UDO for a large city like Charlotte will be a “hybrid” code, one that incorporates some older traditional concepts with the newer form-based regulations. However, the success and public acceptance of form-based thinking and representation embodied in the TOD regulations will allow the design reasoning that’s at the heart of form-based codes to become one of the main armatures of new zoning across the city. This will provide Charlotte with much improved zoning tools to tackle critical problems of environmental sustainability and social (in)justice. For much of the 20th century zoning was a tool of oppression and discrimination. The 21st century revolution in zoning practice gives all professional planners and designers the opportunity to put forth a new, more optimistic narrative of urban living, with more equal opportunity for all.

Review Questions from Course

1. A founding premise of this course is:

- a. Zoning is a bargaining chip in the struggle between developers and neighborhood groups
- b. Zoning is an instrument of social policy no less than an instrument of control of a city’s physical form
- c. America learnt all its zoning methods from Europe
- d. In order to achieve an urbanism that is sustainable for future generations, all uses need to be kept separate

2. The standardization of separated suburban arrangements in the US since World War 2 is because of:

- a. The doctrine espoused in the Charter of Athens
- b. The stranglehold that lenders have on the development process
- c. Developers have a “herd instinct” and feel safer with standard products
- d. The web of zoning rules and regulations

3. "Police Power" in the context of the use and development of property is:

- a. The use of police, or county sheriffs to serve legal notices, court orders, and eviction notices.
- b. The ability of the police to use reasonable force to preserve order in public space

- c. The authority devolved to government to regulate the affairs of its citizens in order to ensure their health, safety, and general welfare
- d. The authority of law officers to prevent “takings” of property under the Fifth Amendment to the US Constitution

4. What was the USA's largest social engineering project in modern times? Was it:

- a. FDR's New Deal
- b. The development of Post-World War II Suburbia
- c. “Smart Growth” and the quest for sustainable development
- d. New Urbanism

Answers to review questions

UNIT I Review Answers

1. The first use of zoning in America was in which city?

a) New York

Incorrect: New York is justifiably known for its landmark 1916 zoning ordinance that created the first *comprehensive* framework of regulations for the city. Because of this New York is often wrongly credited with inventing zoning in the USA. But several other cities, notably in California, had instituted earlier zoning laws, even though none were as comprehensive as New York's.

b) Modesto

Correct: Most sources credit Modesto, CA, with the dubious distinction of being the first to use zoning in 1885 -- not simply as a way of separating land uses, but also as a tool of racial discrimination. Modesto residents felt that the presence of Chinese-operated laundries reduced the value of their adjacent properties. But this zoning law was a singular legislative move; it did not presage a more comprehensive scheme of land use regulation in that community.

c) San Francisco

Incorrect: However, this is a close run thing. Also in 1885, San Francisco passed a law similar to Modesto's, with similar racial intent, at about the same time. However, that law was invalidated in 1886 by the U.S. Supreme Court as a violation of the Equal Protection clause of the 14th Amendment. This was not San Francisco's first attempt at racially-oriented legislation. An earlier effort, commonly known as the Cubic Air Ordinance, was proposed in 1870. Although not zoning in the sense we understand it today, the new law required boarding houses to offer a minimum amount of space per tenant. Officials claimed this would promote safer housing and improve residents' quality of life. But the law's true purpose—to criminalize Chinese citizens living in smaller spaces so their property could be reclaimed for San Francisco's white residents—set an ominous racialized precedent for future, more comprehensive zoning initiatives across the USA in the early 20th century.

d) Los Angeles

Incorrect: Wikipedia will tell you that the earliest zoning laws originated with the Los Angeles zoning ordinances of 1908 and the New York City Zoning resolution of 1916. However, this is not correct (see above for earlier examples). In 1909 Los Angeles experimented with a city-wide regulation that expanded a 1905 initiative to keep heavy industry and commerce out of certain neighborhoods. Initially, city officials were reluctant, to expand the original local ordinance fearing that LA would lose businesses to neighboring cities. But influential land-owners of residential property were insistent, arguing that their properties had lost value because of noxious heavy industries, and their political pressure won the day.

2. Which American politician created the “Standard Enabling Acts”? Was it:

a) Theodore Roosevelt

Incorrect:

Roosevelt believed that the government should use its resources to help achieve economic and social justice; indeed, his domestic policies sought to balance competing interests to create a "fair deal" for all sides: labor and management, consumer and business, developer and conservationist. Roosevelt today is best known for his attitudes to nature and its conservation. After he won reelection in 1904, Roosevelt used his presidential authority to create 150 new national forests, five national parks, eighteen national monuments, and 51 wildlife refuges. For all this emphasis on social justice and conservation, Roosevelt's tenure in the White House (1901-09) was too early to include any action that might involve zoning. That urban strategy was still in its infancy at that time.

b) Warren Harding

Incorrect:

In office, Warren Harding followed a predominantly pro-business, conservative Republican agenda. He reduced taxes for corporations and wealthy individuals, and enacted high tariffs on imports to support American businesses. He also agreed to place limits on immigration and signed the Budget and Accounting Act of 1921. This is, along with the creation of the General Accounting Office to audit government expenditures earned him credited for promoting business and streamlining the federal budget system. For all Harding's attention to pro-business legislation he did not however engage with matters of zoning or land use.

c) Herbert Hoover

Correct:

Following the enactment of New York's comprehensive zoning laws in 1916, cities across the nation began to explore their own ways of regulating land use, but in the absence of specific authority to do so from state legislatures, such new laws could easily be challenged in the courts. (While New York's 1916 Zoning Act gets the headlines, it is less well understood that this radical move was made possible by New York state legislation in 1914 that granted the city the express power to control land use within its boundaries.) There was a clear need for legislation in all states to create uniform and effective methods of delegating control of land uses to municipalities, and Hoover, as Secretary of Commerce before he became President, firmly believed that American businesses would benefit from such legal consistencies.

Hoover's initiative led to the passage of the Standard State Zoning Enabling Act in 1926, and its companion the Standard City Planning Enabling Act in 1928.

d) Franklin Delano Roosevelt

Incorrect: FDR is best known in peacetime as the architect of America's New Deal (1933-39) enacted during the depths of the Great Depression as a means of reviving America's economy. As part of the New Deal, Roosevelt created the Tennessee Valley Authority, enabling the

federal government to build dams along the Tennessee River that controlled flooding and generated inexpensive hydroelectric power for the people in the region. FDR also created the Works Progress Administration to provide jobs for unemployed Americans, building projects such as post offices, bridges, schools, highways and parks. One of his most notable efforts was the creation of three new towns, the so-called “Greenbelt Towns” founded to create new affordable homes for American workers. These towns are Greenbelt, MD, outside Washington, Greenhills, OH, north of Cincinnati, and Greendale, WI, near Milwaukee. Work ceased on any more such projects when conservative opponents whipped up political opinion against such “communitistic” activities, and the courts ruled against FDR and his Resettlement Administration, saying that the actions of building new towns exceeded his Presidential power. Ironically, despite all his activist urban ambitions, FDR is not known for any significant action on zoning.

3. Amidst all its other ambitions, the *primary* objective of Form-Based Codes is:

a) Stylistically consistent buildings

Incorrect: Form-based codes are often misunderstood – or misrepresented - as requiring specific aesthetics or styles of architecture. Codes affect the design of buildings only to the extent that every building in an urban setting must contribute positively to that setting, be it a street, a boulevard, an urban square, an alley or lane. In practice this means that the building façades need to acknowledge their context and be designed to create the best possible public realm.

b) Clear separation of uses

Incorrect: This is a hangover from conventional zoning codes that are based most directly on separating out different land uses. Form-based codes acknowledge that there are several uses that still need to be segregated and which are not compatible with areas and districts focused on walkable urbanism, and uses such as hospitals or airports are separated out into “Special Districts” or “Assigned Districts.” But this is a tactical decision for each code.

c) Integration of uses

Incorrect: This is a high priority for form-based codes, but not the *primary* objective. Thriving urban areas clearly benefit from having a mixture of uses gathered together, either within buildings or close to each other in different structures, thus giving people different reasons for being in that location at different times of the day and night for different purposes. In this way, mixed-use urbanism can promote urban life and economic development, but only if this activity exists in and is nourished by a safe and attractive public realm.

d) A safe and attractive public realm

Correct: This is the mission at the heart of form-based codes. All other ambitions, strategies and techniques are in the service of this overriding objective. After many decades of car-dominated city design, form-based codes, and the masterplans they serve, “put people first.” The key here is designing the public spaces of towns and cities for as many different modes of travel as possible, with the emphasis always on modes that are low in energy consumption and produce least pollution. That means walking, cycling, micro-transit (electric scooters etc.) and public transit. Creating a great pedestrian experience in urban space is primarily about the interaction between the design of the open spaces of the city and the building façades that shape those urban rooms.

4. Which of these concepts provides one of the two most important legal underpinnings for zoning practice?

a) The primacy of private property rights

Incorrect: Much American property law derives from principles of English Common Law set down in the Middle Ages, and prime amongst these historic precedents is the importance of personal property. Many early legal challenges to zoning in America came from property owners exercising those rights. However, over many decades, American case law has recognized that one person’s property rights can adversely affect those of another property owner, and as such that concept alone cannot have judicial primacy. In its stead, courts established the safeguarding of the health, safety, and welfare of the general public as a primary concern of the courts, which have thus delegated to municipalities the authority to regulate the uses to which personal property may be put.

b) Police power

Correct: This is at the core of the discussion about the legality of zoning. It is generally defined as “the fundamental right of a government to make all necessary laws. In the United States, state police power comes from the Tenth Amendment to the Constitution, which gives states the rights and powers not delegated to the United States.’ States (and by extension their municipalities) are thus granted the power to establish and enforce laws protecting the welfare, safety, and health of the public.” (*Nolo’s Plain-English Legal Dictionary*, 2009. Gerald N. Hill and Kathleen Thompson Hill, eds. p. 322). This was the key argument in the landmark 1926 zoning case *Town of Euclid v. Ambler Realty* decided by the U.S. Supreme Court which established the constitutionality of zoning.

c) The aesthetic principles of the City Beautiful movement

Incorrect: The City Beautiful movement (1890s-1900s) was a philosophy of urban reform that intended to eradicate the extensive slums that characterized large areas of American cities and to reshape them as simulacra of much admired European cities. The aesthetic ideals of the movement were modelled on French Beaux-Arts principles, largely due to the practice of many American architects studying at L’École des Beaux Arts in Paris during the late nineteenth century. These aesthetic ideas were linked with progressive politics of the time, focusing on efficiency, technology and improving the morality of “the poor.” For all its “top-down” priorities of reform and beautification, the movement showed surprisingly little interest in the fledgling practice of zoning, although legislative initiatives were made in New York that later made that city’s 1916 Zoning Act possible.

d) The “takings” clause of the Fifth Amendment to the US Constitution

Incorrect: The concept of “takings” enshrined in the Constitution is often thought of as the physical seizure of property by government agencies, as was in the mind of the original framers. The Constitution places clear demands for just compensation in such an instance. However, a U.S. Supreme Court decision in 1922 established that even if government regulation leaves the property intact, but restricts the use of that property to such an extent that it effectively deprives the property of value then that also constitutes a “taking” under the terms of the Constitution. It is easy to see why many Americans dislike zoning that places regulations on the use of their land, but to be a taking, the restrictions must be so extensive as to render the land worthless. Simply downzoning property, or denying an upzoning request does *not* constitute a taking under law. Court decisions over the decades since the 1922 decision, along with the Euclid v. Ambler decision of 1926 have placed a very high bar for meeting the criteria for a “taking.” Thus in the majority of zoning cases, issues of “takings” are not relevant.

Unit 2 Review Answers

1. Who has authored the most passionate and effective critique of American suburbia in recent decades? Was it:

a) Herbert Gans

Incorrect:

The 1950s and 60's were characterized in part by books and articles that were very critical of suburbia. For example, Lewis Mumford, *The City in History: Its Origins, Its Transformation, and Its Prospects* (New York: Harcourt, Brace and World, 1961), and William Whyte, *The Organization Man* (New York: Simon and Schuster, 1956) both painted restrained but critical portraits of suburban life, and the stereotype of suburbia as dull and boring became entrenched in popular culture at that time. Gans' masterful book on one of the new suburban Levittowns and its residents, *The Levittowners: Ways of Life and Politics in a New Suburban Community* was the product of two years of living in Levittown, and Gans used his research to reject the charge that suburbs were sterile and pathologically dull. By contrast, Gans painted a sensitive portrait of working-class and lower-middle-class life in America.

b) James Howard Kunstler

Correct:

In his groundbreaking book, *The Geography of Nowhere* (1993), Kunstler eviscerated suburban design and the system of professional enablers who produce it with brilliant and expressive prose. He pulled no punches and wrote directly from the heart of one who has seen the urban environment of his home town and countless others destroyed. He mercilessly identified the culprits: an unholy alliance of tragically misguided planning and design dogma combined with a development industry that had no conscience about defiling the American landscape in the pursuit of maximum profit.

c) Richard Florida

Incorrect:

Florida's most famous book, *The Creative Class* (2002), was a polemic of praise for the role of creative professionals in revitalizing urban neighborhoods and districts. The venue for these transformations were always urban and high-density locations where people could interact with each other directly and in person as often as possible. Florida saw the development of knowledge and creativity as products of agglomerations of people and companies in clusters, closely related in space and time. There was no role for low-density suburbs in this scenario, but Florida didn't demonize them. Indeed his more recent book, *The New Urban Crisis: Gentrification, Housing Bubbles, Growing Inequality, and What We Can Do About It* (2017) is a much more nuanced evaluation of what is happening in urban and suburban areas of our cities.

d) Jane Jacobs

Incorrect:

Jacobs' most famous book, *The Death and Life of Great American Cities*, published in 1961, has long been a classic city design. Jacobs was a determined advocate of the need for dense, mixed-use urbanity, and a critic of other, lower density city concepts, such as Ebenezer Howard's Garden Cities. While no fan of low-density suburbs, Jacobs tolerated them, and indeed hoped that eventually they might densify to a level where they could gain the advantages of diversity, walkability and a rich mixture of uses - to become in effect, urban. But her tone when discussing suburbs is cool and dispassionate, as she evidently feels no real attachment to them as places of interest for her.

2. What is the biggest challenge in fixing the twin crises of housing affordability and lack of social mobility in American cities? Is it:

a) Lack of action by the Federal government

Incorrect:

The federal government tried to take effective action to solve housing problems on a national scale in the 1950s and 1960s when the government enacted a massive program of urban renewal in many American cities. In those federal programs the government provided funding for cities to demolish "slum" neighborhoods, which at that time was taken to be synonymous with African-American neighborhoods. Although improved housing was the ostensible goal, cities (mis)used federal funds to construct mainly commercial development for the white business communities. As part of this program, cities displaced hundreds of thousands of black American families from their homes and neighborhoods.

The only other significant federal attempt to address these issues has been the HOPE VI program, started in 1993. (HOPE is an acronym for Homeownership Opportunities for People Everywhere). This program combined public, private and non-profit funding for urban revitalization projects and it has been successful in creating attractive mixed-income communities in several cities, including First Ward, in Charlotte's center city, and Martin Luther King Plaza in the Hawthorne Park neighborhood in south Philadelphia. However, funding was drastically cut in 2003 and since then the program has withered on the vine.

b) Rigid zoning rules

Correct: Since the end of the Second World War in 1945, the practice of single-use zoning spread like wildfire across the American landscape. Today, in 2019, 75 % of land in Los Angeles is zoned for single-family zoning. In Portland it's 77% Seattle 81%, Charlotte 84%, and the list goes on. In the vast majority of American communities, it is illegal to build what is effectively more affordable housing - duplexes, fourplexes, and small apartment buildings.

c) Racial animosity

Incorrect:

While it is very evident from the history of zoning in America that it began with, and maintains today a nasty streak of racism that negatively impacts lower income African-American and Latino-American families, the zoning restrictions that make affordable housing illegal in vast areas of American cities affects white Americans also.

d) Political disagreements between the two main parties

Incorrect:

This is too simplistic an answer to the complex question. While it may be true based on empirical evidence to say that on the whole Republicans do not favor government action to diminish social injustice (Republican administrations all but cancelled the successful HOPE VI projects) and Democrats generally support such policies, there is considerable variation from state to state across the USA.

3. What is the latent symbolism behind the Charter of the New Urbanism? Is it:

a) It was signed in Charleston, a city renowned for its historic architecture

Incorrect:

Charleston is indeed a beautiful historic city, and the fact that it hosted the IVth Congress of The New Urbanism when the Charter was signed has ironically done something of a disservice to the New Urbanism movement by linking New Urbanism with historic architectural styles in the minds of many people. In fact the Charter is very explicit in rejecting the kind of simplistic grab-bag of stylistic architecture that is all too common today. Instead, the Charter affirms simply that in order to help create an authentic sense of place:

Individual architectural projects should be seamlessly linked to their surroundings. This issue transcends style.
(Principle 20)

b) Its list of signatories included a wide diversity of professionals

Incorrect:

Of the 266 attendees at the 1966 Charleston meeting the vast majority were white males. Of the 27 people who were invited to contribute essays to the publication of the *Charter of the New Urbanism* in 1999, only 5 were women and only one of this minority was African-American. As such, CNU at its inception mirrored the general, white male dominated demographics of the design professions.

c) A direct repudiation of the tenets of modernist urbanism as set out in the Charter of Athens

Correct:

The symbolism here is very clear. The Charter of Athens was produced from the proceedings of the IVth Congress of CIAM in 1933, and was promoted as the authoritative source of modernist city design for many years after World War II. The IVth Congress of the New Urbanism at Charleston, S.C. in 1996 crafted its manifesto for the post-modern city as a Charter of the *New Urbanism* that completely repudiates what are now seen as the damagingly reductionist concepts of *old* urbanism enshrined in the Athens Charter. The tenets of the Charter of the New Urbanism have now spread well beyond the New Urbanist movement. to become the backbone of progressive, sustainable urbanism in the USA.

d) It was a celebration of the successful takeover of urban planning by design-based architects from planners.

Incorrect:

While the Charter of the New Urbanism is very much a design-based document, its focus is unremittingly on the creation of better towns and cities in America, an ambition that transcends the parameters of architectural and urban design. While much of contemporary planning practice has undoubtedly benefitted from the influx of architecturally-trained urban designers over the past 20 years it is not correct to say that architects have "taken over" planning. Planning as a discipline has many considerations that do not necessarily mesh neatly with design practice, and professional planners still maintain control of their discipline.

However, the mini-revolution of form-based zoning stems directly from the work of architect-urbanists, and will historically be recognized as such.

4. At their inception, the ideas behind New Urbanism were greeted by the development community with:

a) Delight

Incorrect:

The urban ideas of the New Urbanist movement as they began to be formulated through progressive practice in the early 1990s were regarded by many in the development community as anathema to their operating systems at that time. The New Urbanist arguments for connected grids over dendritic cul-de-sac layouts and for mixed-use developments over single-use monocultures were not welcome. Now of course they are standard practice in the development community of 2019.

b) Boredom

Incorrect:

During the 1990s, developers' and Realtors® associations were very active in fighting New Urbanist urban design concepts. The development community was extremely agitated and active in the defense of the status quo.

c) Cynicism

Incorrect:

The "threat" of New Urbanist design principles was taken seriously by the real estate and development industry during the 1990s, as they fought to maintain their hold on what had become conventional and profitable formulae for development in American communities, based primarily on single-use zoning and car-dominated suburban design. The new generation of urban designers, whether "New Urbanists" or not, promulgated progressive ideas about sustainable urbanism that flatly contradicted conventional development practice, and the development community reacted very directly to what many perceived to be a danger to their livelihood.

d) Ridicule

Correct:

One of the favorite tactics developers used to attack the progressive urban agendas of the activist urban design reformers in the 1990s was to ridicule them as being hopelessly naive and out of touch with reality - that is, the conservative reality of conventional development practice, particularly in the suburbs. This tactic backfired when it became increasingly clear through demographic and psychographic research that increasing sections of suburban opinion were aligned with the vision set forth by the architect-urbanists; popular opinion was swinging markedly behind the concepts of mixed-use and walkable communities. It became clear to many developers that in fact it was they who had fallen out of touch with the changing reality of urban and suburban development. With that, the ridicule ceased.

UNIT 3 REVIEW Answers

1. What most clearly distinguishes form-based codes from conventional zoning? Is it:

a) Because form-based codes allow uses to go anywhere

Incorrect:

The fact that form-based codes are a lot more relaxed about mixing uses together than older, use-based zoning, whose main purpose was to separate uses onto different parcels, gives rise to the misconception that form-based codes don't care about uses. The opposite is true; such codes pay great attention to uses. But instead of segregating them apart, form-based codes curate different uses together in order to generate and support a lively pedestrian environment. But some uses that are not pedestrian friendly, such as distribution centers with high volumes of truck traffic, are generally located in a Special District.

b) Uses are strictly controlled.

Incorrect:

Traditional zoning began by rigidly separating uses apart and that ethos has remained constant ever since, despite evidence that this practice has spawned many negative effects. A lot of attempts to create a more sustainable urbanism in America seek to learn from historical precedent. American small towns and streetcar suburbs from the nineteen-teens and twenties, where many uses were mixed sociably together, are now some of the most sought after places to live across the nation, and their design was the norm until use-based zoning outlawed that old-fashioned urbanism we love today. Form-based codes therefore specifically encourage developers to recreate companionable mixes of uses in walkable environments

c) Concern for the utility and beauty of the spaces between and around buildings

Correct:

The overriding goal of form-based codes is to create more sustainable and resilient urban places. That means less dependence on cars and more emphasis on walking and other forms of personal mobility. Meaningful pedestrian activity will only take place in environments that support walking; that is, these places must be safe and attractive, and destination-oriented. There must be some significant place to walk *to*. This requires a set or sequence of attractive urban spaces; urban designers, and the codes they help write, pay more attention to these spaces between and around buildings than they do to the buildings themselves.

d) There isn't much difference, just more diagrams

Incorrect:

This rather cynical, but very mistaken observation has been made by people who have seen so many decent design ideas ruined by the hardline application of conventional, use-based zoning.

It is little wonder that many architects resent the impact of conventional zoning rules on their designs. Those rules almost never consider good design principles, and that kind of zoning can squeeze a lot of the fun out of the design process. But form-based zoning *is* different; it is predicated on principles of good, sustainable urban design, and everything else subordinates itself to that overarching premise.

2. What is the ideal way for creating a masterplan that can become the directing influence on a form-based code? Is it:

a) Private meetings with stakeholders and politicians

Incorrect:

The process of creating a masterplan and its companion code is based on a process of information gathering and sharing. Meetings with politicians are often governed by open meetings laws, and stakeholder groups usually cast a wide net of membership. The premise of the process from start to finish is that when working on community plans and codes, everything - meetings, emails, and other conversations with interested parties - should be open and transparent.

b) Following the lead of the development community

Incorrect:

The development community are very important players in the process of plan making and code writing. Their members can provide market-based inputs that are vital as plans and codes strive to find the correct balance between legitimate public and private interests. However, usually the client for these plans and codes are organizations in the public sector, and as such are charged with protecting and enhancing the public interest in the long term. The development community may not be looking beyond the next project.

c) Taking direction from elected officials

Incorrect:

Elected officials are vital players in the plan making and code writing process. Ultimately, they will be the people charged with approving, implementing, and interpreting the documents. Having said that, elected officials are busy people who often find it hard to give priority to future plan making when they have constituents clamoring for immediate action on today's problems. Very often, elected officials don't know in advance what direction they want to take on future planning issues; they rely on the process and its outcomes to help them develop a position on various matters. It can be a problem if a council member enters the process with fixed ideas of what he or she wants without listening to the evidence unearthed in the public process. This can place great stress on the diplomatic abilities of the consultant team leader.

d) Engaging in a public design charrette

Correct:

One essential premise of the masterplanning process, and its subsequent code development, is that both benefit from a fully open public process of community analysis, outreach and engagement. The term "charrette" in this context, it is a short, time-limited period of intense publicly-focused design activity, with the important corollary that there must be a defined design product at the conclusion of the process. It is NOT simply a talking shop or discussion. Urban design and planning charrettes are usually between 3 and 6 days' duration, and are predicated on intense public involvement. Most importantly, the design process is open and transparent to all.

This public democratic process is important in validating the conclusions of the plan and the code provisions derived from it.

3. The "Smart Code" is important for many reasons, but primarily because it:

a) Uses lots of drawings

Incorrect:

This is one of the other "many reasons" in the question, but not the primary one. The use of drawings and tables to communicate information that conventionally was wrapped up in legalistic language is an important breakthrough in zoning practice. That may seem obvious to designers, but historically, zoning codes have been written by lawyers or by planners with little or no design training.

b) Uses lots of photographs

Incorrect:

The Smart Code, in its published form, does not include any photographs. However, many customized versions prepared by consultants for their municipal clients do use photos to good purpose. The obvious advantage of photographs, when used primarily to illustrate good examples and

precedents, is that they often speak for themselves, and both expert and non-technical users of the ordinance can understand the provisions more easily.

c) Gives the legal weight of zoning law to the urban design concepts of the Transect

Correct:

This is the big one. The Smart Code is drafted in a way that its provisions can be customized to suit the legal requirements of a particular municipality. The fact that many of the founding concepts of the Smart Code are predicated upon good urban design practice is a veritable boon for designers. The relationship between urban design and zoning law has never been easier, more direct, or more useful to architects, landscape architects, urban designers, and planners. The authors, Andres Duany & Liz Plater-Zyberk, deserve a great deal of credit for this work.

d) It was created by architects

Incorrect:

This is another of the "many reasons" that the Smart Code is important, but again, *not the primary one*. The primary authors, DPZ & Co, are architect-planners, but the model code also contains a lot of legal provisions required by law. These are outside the immediate purview of architects, but the design thinking that is at the core of the Smart Code manages to incorporate these non-design elements effectively and in a straightforward manner. A longer and highly illustrated appendix, the *Smart Code Manual* is also available with more graphic, precedent, and procedural information.

4. Once a project masterplan is in place, the first step in creating a form-based code is to:

a) Seek legal advice for drafting the code.

Incorrect:

Except in the most unusual or unique circumstances, the legal provisions in the Smart Code are robust enough for the general purposes of legal authority. It has been tested in many locations and under many different circumstances. So code writers, be they urban designers or planners, have a sound legal basis from which to start creating the code.

b) Cut and paste the Smart Code provisions

Incorrect:

The Smart Code will need to be *calibrated* to suit each individual condition and context, but this is a more refined and, in some cases, delicate process. Cutting and pasting is not a method that suits the detail-specific nature of this work. The Smart Code is constructed and written in a manner that specifically indicates the areas where customizing may be appropriate, but that customization has to be original and place-specific.

c) Identify the areas of different urban character from the masterplan as the basis for creating the T-zones on the Transect scale.

Correct:

Of all the things that need to be accomplished in short order, this is *always* the first step in starting the code process. The Smart Code and the Transect are deliberately and inextricably intertwined in an effective and step-by-step processes for creating a form-based code. As part of the masterplanning process, many urban designers will notate potential T-zone classifications as the plan develops. It is these areas of different urban character that are the armature of the plan. So it is usually a simple process to establish this information as the basis of both the Regulating Plan and the District Designations.

d) Create the Regulating Plan by mapping the areas of different urban character.

Incorrect:

This follows almost immediately after identifying the T-zones. In some instances the two operations are nearly simultaneous, but it's not possible to map the districts without first having identified their characteristics relative to the Transect.

Unit 4 Review Answers

1. A founding premise of this course is:

a) Zoning is a bargaining chip in the struggle between developers and neighborhood groups

Incorrect:

Statement (a) is correct in itself, but it is *not* the founding premise of the course. Zoning, as a way of conferring and negotiating value on a piece of land, is very much part of the economic equation of development, and battles between developers and residents usually come down to the size of the development proposal. The more density a developer can place on a parcel of land, the more money he or she can make. From a neighborhood perspective, the more development goes on a site, the more traffic is generated, the more "overcrowded" the schools become. These "externalities" negatively affect residential property values, or so the neighbors feel, and they fight determinedly to reduce the density. In this was the battle of abstract numbers wages on, usually with little thought to good design. But all these economic variables do not cover other instrumental purposes of zoning practice.

b) Zoning is an instrument of social policy no less than an instrument of control of a city's physical form

Correct:

This is what's missing from the purported answer in option (a) above. Zoning began life as an instrument of social policy used to discriminate against minorities in America, and to a greater or lesser extent it has remained so throughout its history. But as more recent innovations demonstrate, zoning can be used as an instrument of good social policy, by, for instance promoting affordable housing. The ethos of compact and mixed-use development that's embedded in the Smart Code is tied to objectives to help create communities that are more sustainable and which can provide opportunities for social mobility. Zoning is never just about economics. It always has a social agenda.

c) America learnt all its zoning methods from Europe

Incorrect:

In keeping with the Q & A scheme for this question, this answer is partly true in that America borrowed ideas from Germany in the later 1800s, but it leaves out all the home grown innovation and practice in America since that time. For better or worse, the way zoning operates in America is unlike anywhere else in the world. Sonia Hirt, in her book *Zoned in the USA: The Origins and Implications of American Land-Use Regulation* (Cornell University Press, 2014) explains the many ways American planning and zoning are substantially different from other Western nations, sometimes to the extent of mutual professional bafflement. This book is well worth reading by anyone interested in understanding more about America's idiosyncratic land use regulation. Some years ago this author was in a friendly meeting between visiting planners from Germany and their American hosts. It soon became clear that neither side understood how the other's system worked, and each side had trouble understanding the substantial differences between the roles of public and private sectors.

d) In order to achieve an urbanism that is sustainable for future generations, all uses need to be kept separate

Incorrect:

This was the mantra for the new, modernist city envisaged by avant-garde architects in the 1930s, and enshrined in the "Four Function Model" of the modern city. Here, the pioneers of modernism surmised that the most efficient method of building and living in the city of the future was to separate out the four main functions of the city: Dwelling, Working, Recreating, and Moving (circulation). The predominant attitude of that time was that the city could be compared to a giant machine, and that this "city machine" would be most efficient if its components were separate and refined to their most efficient form without having to deal with extraneous factors like other uses. Hence the dominant idea of separating each use into a separate zone and moving efficiently between them by car. This model has been discredited in recent decades with the recognition that urban life is much more complex and nuanced.

2. The standardization of separated suburban arrangements in the US since World War 2 is because of:

a) The doctrine espoused in the Charter of Athens

Incorrect:

There is an element of truth in this answer but it does not account for other important factors in the American socio-economic system after World War II. The separation of different uses in a city into different zones was a basic tenet of modernist urbanism in the 1930s, but this remained mainly a theory in Europe before World War II. Some innovative housing developments were completed around Frankfurt in Germany under the direction of Ernst May, the city architect, but the political dangers of fascism in Germany, Italy, Austria, and Spain made modernist experimentation actually dangerous for architects, who left Europe in their droves during the 1930s. This set of theories dovetailed neatly into the evolving single-use zoning paradigm adopted by most American towns and cities in the 1950s, but other factors were as or more important. Chief amongst these was the need to shift American factories from a war production mode to a new peacetime regime, and this meant that large scale standardization of housing, building methods, and consumer goods became the norm.

b) The stranglehold that lenders have on the development process

Incorrect:

One could argue that this answer is partially true, but it is by no means the only reason, nor is it the defining one. Many architects know how difficult it can be for clients to get funding for innovative ideas, and the practice of allocating funding with reference to financial "comparables" almost always looks backwards at what's been done before, rarely forward at new possibilities. But innovative ideas do win through often enough to render this answer false.

c) Developers have a "herd instinct" and feel safer with standard products

Incorrect:

You will see by now that there is an element of truth in all the answers so far, but none of them can explain the unified suburban phenomenon *on its own*. It is true that developers will flock to build a product that has proven to be economically successful, and they will keep doing this until that market flattens out or declines. But because these similarities, powerful though they are, can be affected by market fluctuations in different regions, geographic and historic context, and cultural preferences, to name just a few variables, this herd instinct is not sufficient in itself to explain the unified formulas that have controlled suburban building across America.

d) The web of zoning rules and regulations

Correct:

With the wave of new development in the 1950s a 1960s, public services in towns and cities needed to expand to keep pace with and serve this new private development, and some form of regulation was needed to create and maintain spatial and financial order. In this context, the practice of zoning expanded quickly. The standardized formulae set out by the Federal government in the 1920s delegated zoning power to the states and thence to their municipalities, and this framework of rules and regulations was updated during the late 1940s and 1950s to organize suburban expansion and provide for expanded car ownership. Very quickly this became common across the nation. Just as private industry met the burgeoning market demand for new homes, offices, and shopping centers by specializing in defined product types, the public sector facilitated that differentiation by zoning separate parcels of land for each different single use. Home builders who built only single-family homes found acres of land zoned for that singular purpose or found public officials very willing to rezone land for that use. Developers of office parks found rezoned land for that purpose, spatially removed from housing, while shopping center developers did likewise, finding dispersed parcels of land on the main highways. With this separation of uses tied into the invisible web of zoning, builders and developers all across America could work efficiently on their singular agendas unencumbered by the complexities of mixing uses together.

3. "Police Power" in the context of the use and development of property is:

a) The use of police, or county sheriffs to serve legal notices, court orders, and eviction notices.

Incorrect:

Legal notices regarding property matters are all part and parcel of land ownership and development, and the resolution of disputes through the courts are an essential part of private property ownership. However, the use of sheriffs or other officers of the court to enforce legal judgements is very different from the use of the term "police power" in the context of zoning.

b) The ability of the police to use reasonable force to preserve order in public space.

Incorrect:

The First Amendment US Constitution guarantees that Congress shall not restrict the "right of the people peaceably to assemble, and to petition the government for a redress of grievances." Many Americans regard this right to assemble in public space as a cornerstone of democracy; indeed under many repressive political regimes in other countries this ability to assemble in groups in public is the first right to be taken away and to be repressed by armed forces of the state. America has witnessed many instances of confrontations between citizens and police in America's cities, during recent decades, all with mixed results. This is an issue of national importance, but not one directly affected by zoning matters.

c) The authority devolved to government to regulate the affairs of its citizens in order to ensure their health, safety, and general welfare.

Correct:

This authority is proactive and based on the concept of a "common good," whereby a city can act on behalf of its citizens to regulate developments to *avoid nuisances before they happen*. Cities zone land for specific uses in a pattern that aims to reduce or eliminate conflicts, but in pursuit of this harmony, municipalities inevitably become involved in protecting the interests of one group of property owners against the competing interests of other property owners. This dialectic, with its arcs of conflict and compromise, is inherent in the zoning system today. The constitutionality of using police power in this way was validated in the 1926 U.S. Supreme Court case *Town of Euclid vs. Ambler Realty*. That

landmark judgement upheld police power as the right of local governments to make, adopt, and enforce laws that affected private property for the protection and preservation of the public health, justice, safety and welfare for a community.

d) The authority of law officers to prevent "takings" of property under the Fifth Amendment to the US Constitution

Incorrect:

The Fifth Amendment states that no "private property (shall) be taken for public use, without just compensation." The legal arguments regarding what constitutes a legal "taking," and the role of a municipality's police power are extensive. (A good summary article from 2004 by Prof. D. Benjamin Barros provides more detail for those interested. This can be found at:

<https://repository.law.miami.edu/cgi/viewcontent.cgi?article=1414&context=umlr>)

The term "police power" was first introduced into US jurisprudence in 1827, and since then it has always been used to define the right of local governments to make, adopt, and enforce laws that affected private property. It does not refer to the authority of actual police forces and their members.

4. What was the USA's largest social engineering project in modern times? Was it:

a) FDR's New Deal

Incorrect:

President Roosevelt's efforts to pull America out of the Great Depression (1929-41 in America) were broad in scope, including large infrastructure projects, building new towns for displaced workers and their families, major banking reforms, aid to farmers, and the creation of the Social Security safety net for retirement. Many of these programs were branded as "communism" by conservatives, and several did not develop to their full potential (the new towns program was scrapped) while others still affect us today. However, it's fair to say that the aims of the program were focused on the reconstruction of American prosperity rather than a transformation of the way Americans lived their lives.

b) The development of Post-World War II Suburbia

Correct:

Social engineering is the practice of influencing peoples' attitudes and behavior on a large scale. It can be undertaken by governments or by private groups in order to produce the desired results in a target population. Such manipulation was especially evident in the US in the years after WW II, with the matrix of interwoven actions and priorities between the Federal government and private industries that generated the mythology of the "American Dream," a concept of idyllic suburban homeownership so powerful that it still resonates today.

To refresh our memory: Wartime production was only made possible by a huge influx of women into the labor force. But as the men returned home, these hardworking and patriotic women were quickly displaced from their jobs and were expected to return to their home environments and their "womanly" roles. To assuage women's burgeoning resentment at this forcible transition, Madison Avenue and the advertising industry quickly manufactured new roles for peacetime women as a generation of suburban homemakers, and the "white goods" industries ramped up production of the new washing machines, refrigerators, stoves, and dozens of kitchen gizmos with which women could actualize their new roles. Government financial policy gave tax advantages to homeowners but not to renters and this helped feed the demand for new homes. The government also insured mortgages so as to reduce the risk to private banks, and with all these stimuli post-war housing production switched into high gear. Homebuilders such as the Levitt Brothers quickly built tens of thousands of standardized new homes. These extensive new greenfield subdivisions, on land zoned exclusively for single-family housing by local governments, provided the physical settings where families – with the increasing availability of air-conditioning plus all the new domestic equipment - could inhabit their well-advertised new American Dream. This new and consciously engineered environment brought prosperity and delight to millions of American families who flocked to the ready-made new suburbs in search of a better life.

c) "Smart Growth" and the quest for sustainable development

Incorrect:

While highly criticized as "social engineering" by conservatives because of the Smart Growth movement's advocacy for major changes in Americans' suburban lifestyles, the impact of this quest for more sustainable development, especially in the suburbs, has had little effect overall. The suburban single-family mythology of the American Dream has such a "lock" on the American public's imagination and sense of identity that any suggestion that this needs to change is strongly resisted. With totally unrecognized irony, people who have benefited hugely from one successful era of social engineering unhesitatingly use that same term to denigrate those who now argue for change.

d) New Urbanism

Incorrect:

Once the favorite "whipping boy" of developers' attacks on the trend for more walkable and mixed-use development, the urban design concepts of New Urbanism have now been largely assimilated into current development practice. While the Charter of the New Urbanism (1996) contains some goals relative to social policy and lifestyle, the majority of the objectives are tied to better urban design of towns and cities, especially public spaces. Most of these are now standard elements of urban design and development practice.

¹ Haar, C., and J. Kayden, eds. (1989) *Zoning and the American Dream: Promises Still to Keep*. Chicago: Planners Press. xi.

² Hirt, S (2014). *Zoned in the USA: The Origins and Implications of American Land-Use Regulation*. Ithica: Cornell University Press. 3.

³ Hirt, op. cit.

⁴ Lai, R (1998). *Law in Urban Design and Planning: The Invisible Web*. New York: Van Nostrand Reinhold Company.

⁵ Dunham-Jones, E. (2000). "Seventy-Five Percent: The Next Big Architectural Project." *Harvard Design Magazine* no. 12. *Sprawl and Spectacle*. <http://www.harvarddesignmagazine.org/issues/12/seventy-five-percent>

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- ⁶ Dunham-Jones, and E. Williamson, J. (2011) *Retrofitting Suburbia: Urban Design Solutions for Redesigning Suburbs*. Hoboken, New Jersey: John Wiley & Sons, Inc.
- ⁷ New York provides good examples of early attempts to relate architectural and urban form to zoning regulations. See Talen, E. (2012) *City Rules: How Urban Regulations Affect Urban Form*. Washington: Island Press, and Barnett, J. (2011). *City Design*. London and New York: Routledge.
- ⁸ Berman, A. (2017) "How Zoning Shapes Our Neighborhoods." *Off the Grid: The Blog of the Greenwich Village Preservation Society*. <https://gvshp.org/blog/2017/07/25/how-zoning-shapes-our-neighborhoods/>
- ⁹ Hardwick, M.J. (2004) *Mall Maker: Victor Gruen, Architect of an American Dream*. Philadelphia: University of Pennsylvania Press.
- ¹⁰ Dunham-Jones (2000). op. cit.
- ¹¹ Talen, op.cit. xii.
- ¹² Semuels, A. (2017) "Why It's So Hard to Get Ahead in the South" *The Atlantic*, April 4th. <https://www.theatlantic.com/business/archive/2017/04/south-mobility-charlotte/521763/>
- ¹³ <https://www.dpz.com/Initiatives/Transect>
- ¹⁴ Figures 4-7 are taken from the same project, a new Garden Suburb in a small town. All other code diagrams in this course unit are from various other masterplanning and coding projects this author has been involved with.
- ¹⁵ Barnett, J (1982). *An Introduction to Urban Design*. New York: Harper & Row.
- ¹⁶ Hirt, op. cit. 111.
- ¹⁷ <https://www.strongtowns.org/journal/2017/6/28/a-history-of-zoning-in-three-acts-part-i>
- ¹⁸ Talen, op.cit.
- ¹⁹ <https://people.uwec.edu/ivogeler/w270/zoning-history.htm> .
- ²⁰ Hall, P (2002). *Cities of Tomorrow* 3rd Edition. Oxford (UK): Blackwell Publishing.
- ²¹ Hirt, op. cit. 143-144.
- ²² The concept of "police power" derives from the Tenth Amendment to the Constitution, which gives states the rights and powers "not delegated to the United States." States are thereby granted the authority to establish and enforce laws protecting the health, safety and welfare of the public.
- ²³ Hirt, op. cit. 35.
- ²⁴ The Jim Crow era of racial segregation and the harsh laws that enforced the "inferior" status of African-Americans gets its name from a fictional character played by a white American actor, Thomas Dartmouth "Daddy" Rice in the 1830s. Rice, and many other white actors in minstrel shows during the 19th century, portrayed Jim Crow as a stupid black slave, and the term became a derogatory epithet for African-Americans, and by extension an nasty label for their segregated, subservient status.
- ²⁵ Rothstein, R. (2017). *The Color of Law: A Forgotten History of How Our Government Segregated America*. New York: Liveright Publishing Corporation, 44.
- ²⁶ Rothstein, op. cit. 45.
- ²⁷ Rothstein, op. cit. 46.
- ²⁸ Rothstein, op. cit. 47-48.
- ²⁹ Rothstein, op. cit. 48.
- ³⁰ <https://tcf.org/content/commentary/exclusionary-zoning-continues-racial-segregations-ugly-work/?session=1>
- ³¹ loc. cit
- ³² <https://commons.trincoll.edu/cssp/2012/09/17/exclusionary-zoning-what-it-means/>
- ³³ <https://tcf.org/content/commentary/exclusionary-zoning-continues-racial-segregations-ugly-work/?session=1>
- ³⁴ <https://tcf.org/content/facts/understanding-exclusionary-zoning-impact-concentrated-poverty/>
- ³⁵ <http://www.scholastic.com/browse/subarticle.jsp?id=1674>
- ³⁶ Le Corbusier (1943. English edition 1973). New York: Grossman.
- ³⁷ An interesting reminder of Bayer's work, which is less well-known than it should be, can be found in Hirschfeld, C. (2019) *Bauhaus Spirit Thrives Amid Colorado's Peaks*, [The New York Times](https://www.nytimes.com/2019/06/23/travel/bauhaus-spirit-thrives-amid-colorado-peaks.html), June 23, TR 7.
- ³⁸ <http://www.bbc.com/culture/story/20190329-the-design-geniuses-who-fled-turmoil>
- ³⁹ For a full discussion of this topic, and its effect on the form of American towns and cities, see Hayden, H (2002). *Redesigning the American Dream: Gender, Housing, and Family Life*. New York: W.W. Norton & Company.
- ⁴⁰ https://en.m.wikipedia.org/wiki/1950s_American_automobile_culture
- ⁴¹ See the *Standard Enabling Acts*, discussed in Unit 1.

⁴² Hayden, D. (2003) *Building Suburbia: Green Fields and Urban Growth, 1820-2000*. New York: Vintage. 59-60.

⁴³ A selection of provocative books on suburban history and development :

Gallagher, L. (2013) *The End of the Suburbs*. New York: Penguin.

Hayden, D. (2003) *Building Suburbia: Green Fields and Urban Growth, 1820-2000*. New York: Vintage.

Jackson, K. T. (1985) *Crabgrass Frontier: The Suburbanization of the United States*. Oxford, UK: Oxford University Press.

Kunstler, J.H. (1993) *The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscape*. New York: Simon & Schuster.

Waldie, D.J. (1996) *Holy Land: A Suburban Memoir*. New York: W.W. Norton & Company.

⁴⁴ Wright, G. (1981) *Building the Dream: A Social History of American Housing*. New York: Pantheon. 251. Quoted in Hayden, op. cit. 61.

⁴⁵ <http://venturiscottbrown.org/pdfs/SmithsonianInstitutionSignsofLife01.pdf>

⁴⁶ One obvious counterpoint to this lack of architectural invention in the suburbs is the work of Victor Gruen (1903-80) who is credited with inventing the enclosed shopping mall, a product type well suited to the single-use zoning system. Malcolm Gladwell, writing in *The New Yorker*, suggested that "Victor Gruen may well have been the most influential architect of the twentieth century." See: Gladwell, M. (2004) "The Terrazzo Jungle," *The New Yorker*, March 15.

⁴⁷ Walters, D. (2017) *Urban Design for Architects*. Pewaukee, WI: PDH Academy.

⁴⁸ Carson, R. (1962) *Silent Spring*. Boston: Houghton Mifflin.

⁴⁹ Carson, op. cit. 218.

⁵⁰ There is one very important exception to this tide of negativity towards America's post-war suburbs, namely Herbert J. Gans's superbly researched book *The Levittowners: Ways of Life and Politics in a New Suburban Community*, published in 1967 by Columbia University Press. In short, Gans contradicted much contemporary scholarship and themes of popular culture. Instead of reinforcing the commonplace cliché of suburbs as dull and boring places, Gans affirmed that residents of the new suburbs brought their old cultures with them, and recreated "old lifestyles and institutions on new soil" (p.149).

⁵¹ Lincoln, K. and R, Johnson. (2011). "A Complete Guide To The Ponzi Scheme That Is Suburban America," *Business Insider*, Oct. 7th. <https://www.businessinsider.com/suburban-america-ponzi-scheme-case-study-2011-10>

⁵² Walters, D. (2017) *Urban Design for Architects*. Pewaukee, WI: PDH Academy

⁵³ Alexander, C. et al. (1977) *A Pattern Language: Towns-Buildings-Construction*. New York: Oxford University Press.

⁵⁴ Calthorpe, P., Kelbaugh, D. (ed.), et al (1989) *The Pedestrian Pocket Book*. New York: Princeton Architectural Press

⁵⁵ Calthorpe, P. et al, op.cit.

⁵⁶ Kunstler, J.H (1993) *The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscape*. New York: Simon & Schuster, 10.

⁵⁷ Adler, J (1995) "Bye-Bye, Suburban Dream". 5/14/1995. Accessed at <https://www.newsweek.com/bye-bye-suburban-dream-183430>

⁵⁸ These topics are well examined in: Duany, A, Plater-Zyberk, E, and Speck, J. (2000). *Suburban Nation: The Rise of Sprawl and Decline of the American Dream*. New York: North Point Press.

⁵⁹ <https://www.theatlantic.com/national/archive/2014/03/more-americans-moving-to-cities-reversing-the-suburban-exodus/359714/>

⁶⁰ https://www.pennur.upenn.edu/uploads/media/City_and_Suburbs_-_Has_There_Been_a_Regime_Change_web.pdf

⁶¹ <https://www.reuters.com/article/us-usa-families/u-s-families-shift-as-fewer-households-include-children-census-idUSBRE97QOTJ20130827>

⁶² <https://www.jturnerresearch.com/hubfs/Docs/ResidentLifestylePreferencesSeptember2014.pdf>

⁶³ Ian McHarg is a major exception to this absence, and later in the 1980s and 1990s, the husband/wife duo of Andres Duany and Elizabeth Plater-Zyberk on the east coast, along with Peter Calthorpe, Daniel Solomon, and Doug Kelbaugh on the west coasts achieved some notable successes.

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- ⁶⁴ Dunham-Jones, E. (2000) "Seventy-Five Percent " in "Sprawl and Spectacle," *Harvard Design Magazine* no. 12, Fall, 2000. <http://www.harvarddesignmagazine.org/issues/12/seventy-five-percent>
- ⁶⁵ <https://www.dpz.com/Projects/8805>
- ⁶⁶ <https://www.sandiego.gov/.../transitorienteddevelopmentdesignguidelines1992.pdf>
- ⁶⁷ Walters, D. and Keane T. (1995). Davidson Land Plan: Policies, Regulating Plan and Code. Davidson, N.C. Town of Davidson. See also Walters, D. and Hammond, A. (1996). Revised Huntersville Zoning Ordinance. Huntersville, N.C. Town of Huntersville.
- ⁶⁸ Walters, D. (2017) *Urban Design for Architects*. Pewaukee, WI: PDH Academy
- ⁶⁹ https://www.multifamilyexecutive.com/property-management/demographics/uli-survey-mixed-use-communities-a-growing-preference-1_o
- ⁷⁰ Florida, R. (2011). *How Diversity Leads to Economic Growth*. <https://www.citylab.com/life/2011/12/diversity-leads-to-economic-growth/687/>
- ⁷¹ Florida, op.cit.
- ⁷² The Urban Design Group. U.K. <http://www.udg.org.uk/about/what-is-urban-design>
- ⁷³ <https://news.berkeley.edu/2014/01/06/suburban-sprawl-cancels-carbon-footprint-savings-of-dense-urban-cores/>
- ⁷⁴ For anyone unfamiliar with the term "charrette" in this context, it is a short, time-limited period of intense publicly-focused design activity. The most important requirement, after the mandate for public involvement, is the obligation to produce a defined urban design product at the conclusion of the process. A charrette is NOT simply a talking shop or discussion. Urban design and planning charrettes are usually between 3 and 6 days; duration, and are predicated on intense public involvement. Most importantly, the design process is open and transparent to all.
- ⁷⁵ The Transect is discussed in more detail in several sources, including The Center for Applied Transect Studies, at <https://transect.org> and in Walters, D. (2007) *Designing Community: Charrettes, Masterplans and Form-based Codes*. Oxford, UK: The Architectural Press, Chapter 5, from which edited excerpts are reproduced here.
- ⁷⁶ New Urban News, the primary trade publication in the early years of the New Urbanist movement, first described the urban-to-rural Transect in the Sept. 2000 issue.
- ⁷⁷ <http://smartcodecentral.com>
- ⁷⁸ Brower, S. (2002). "The Sectors of the Transect." *Journal of Urban Design*, Vol. 7, No. 3. October. 313-320.
- ⁷⁹ Duany Plater-Zyberk & Co (2002). *The Lexicon of the New Urbanism, Version 3.2*. Miami, FL: DPZ.
- ⁸⁰ Duany, R. & E. Talen (2002) "Transect Planning." *Journal of the American Planning Association*. Vol. 68, No. 3, Summer, 245-266.
- ⁸¹ See: www.dpz.com and www.placemakers.com/info/workshop.html
- ⁸² Duany Plater-Zyberk & Co (2003 with updates). *Smart Code version 9.2*, p.v.
- ⁸³ For full disclosure, this author was the author or co-author of several form based zoning codes in North Carolina between the years of 1994 and 1998, all before the term "form-based codes" became common terminology.
- ⁸⁴ The Code illustrated in Unit 1 and in Figures 1 through 10 varies this format slightly, illustrating how such codes can be customized to suit each particular design and development project.
- ⁸⁵ Alberti, L. B. (written 1443-1452; published 1485) *De re Aedificatoria*
- ⁸⁶ 59 F.3d 1208, 1214 (11th Cir. 1995), quoted in Geller, R. (2010). "The Legality of Form-based Zoning Codes," *Journal of Land Use and Environmental Law*, Vol. 26, No. 1 (Fall 2010), pp. 35-91.
- ⁸⁷ *Euclid vs. Ambler Realty Co.*, 272 U.S. 365 (1926).
- ⁸⁸ Duerksen, C.J. and Goebel, R.M. (1999). *Aesthetics, Community Character and the Law*. Chicago: Planning Advisory Service Report Number 489/490, American Planning Association and Scenic America, p.5.
- ⁸⁹ Duerksen and Goebel, op.cit. p. 7
- ⁹⁰ Garvin, E. A. and LeRoy, G. S. (2003). "Design Guidelines: The Law and Aesthetic Control." *Land Use Law and Zoning Digest*. Chicago: American Planning Association, April.
- ⁹¹ Calthorpe, P. (2005). "New Urbanism: Principles or Style?" In: Fishman, R. (ed.) (2005). *New Urbanism: Peter Calthorpe vs. Lars Lerup. Michigan Debates on Urbanism, Vol. II*, 16-38. Ann Arbor, Michigan: The University of Michigan A. Alfred Taubman College of Architecture + Urban Planning, p.25.
- ⁹² Templeton, B., (2015). "The Poverty Tour Changed for Me," July 10. <http://oewo.org/the-poverty-tour-changed-for-me/>

⁹³ These notes are derived from the masterplan update public document prepared for the City of Greenville by the Lawrence Group, whose urban design and planning unit (including this author) was subsumed by the Stantec Urban Places Group in 2015.

⁹⁴ The original form-based code for Haynie-Sirrine was produced before the use of the Smart Code became the norm for this kind of code production, and while highly graphic, the graphics in that document were less sophisticated compared with the later developments in the standardized Smart Code format.

⁹⁵ <https://www.greenvilleonline.com/story/money/2018/09/27/greenville-county-square-whats-next-1-b-project/1433425002/>

⁹⁶ https://www.charlottecentercity.org/wp-content/uploads/2019/01/SoCC2019_Brochure_01.08.18_Final-3.pdf

⁹⁷ <https://inside.uncc.edu/news-features/2018-09-20/record-student-enrollment-unc-charlotte-closes-30000>

⁹⁸ <https://charlotteudo.org/wp-content/uploads/2019/03/EconomicAnalysisReport-updated.pdf>

⁹⁹ *ibid.*

¹⁰⁰ In full disclosure, this author was a member of the TOD design and development advisory subcommittee appointed by the City, and currently serves on the TOD “Alternative Compliance Commission” that evaluates potentially innovative alternatives to code requirements on challenging sites.

¹⁰¹ This author (and others) worked extensively with private developer groups in the years prior to adopting the TOD regulations, so there was a greater level of shared expertise and mutual understanding from local developers than might otherwise have been the case. See for example: Walters, D. and D. Read, (2014). *Form-based Zoning from Theory to Practice* in *Real Estate Issues*, Vol. 39, No. 1. This can be viewed at:

<https://plancharlotte.org/sites/default/files/pdf/FBC%20Short%20-%20Theory%20to%20Practice.pdf>

¹⁰² City of Charlotte, (2019). *City of Charlotte Zoning Code: Chapter 15. Transit Oriented Development Districts*. Section 15.1.3.

¹⁰³ This author spent ten years creating form-based codes without the benefit of the Smart Code, and now nearly fifteen years using and adapting the Smart Code to a wide range of circumstances. The opinions expressed in this course are thus bred and tested through extensive professional practice experience. This author also taught form-based coding to graduate urban design students for several years using Smart Code methodology with successful results.

¹⁰⁴ <https://www.charlotteobserver.com/news/business/biz-columns-blogs/development/article231654728.html>