Code Review

The Transect as descriptive theory does not assume spatial relationships between the sectors.

The Form-based Code and its applicability to urban arterial infill:
Current Trends in Zoning and their effects on the shaping of urban areas

Form-based coding is a legal tool developed by New Urbanists to replace the pre-dominant suburban/exurban development pattern through modification of zoning ordinances. To date, it has not been widely used in existing urbanized conditions because of its conflicting nature with Euclidean zoning ordinance organization. Andres Duany, primary author of the Smart Code form-based code expressed this conflict in the following: "Just throw your existing zoning in the garbage,"(Katz 2004, 1). Form-based coding directly addresses sprawl by proposing a more compact version of sprawl. Call it sprawl-lite. By writing a comprehensive code for greenfield development, it is taking action against the land-gobbling tradition of auto-oriented suburbanization, but it is still perpetuating suburbanization in the form of exurban community formation, which still perpetuate much of the same issues as suburbia: infrastructure costs, increased vehicle miles traveled for commuting to job centers, economic and social segregation, and so on. The single-family house is still pervasive in this coded landscape; they're just closer together. Much has been written about New Urbanism Theory and Practice (Calthorpe, 1993; Katz, 1994; Harvey, 1997; Duany, 2000 & 2002; Talen, 2002 & 2005; Southworth 2003), but very little has been written about the codification of New Urbanist Principles as presented by the Transect theory and its form-based code manifestation, the Smart Code. What has been written about form-based codes mostly deals with the construction and administration of the codes as technical writings for professionals (Parolek *et al,* 2008). Even within these technical writings, very little is discussed about the application of form-based codes to urban infill sites.

This chapter is going to focus only on the applicability of form-based codes in urban infill situations at the scale of urban arterials.

Code Comparisons

Over the decades, municipal zoning ordinances have grown into complex creatures, of which this author does not pretend to have complete control. However, to understand the implications of this transformation in the coding of our landscape, it is worth illuminating several pertinent features. Some of the arguments below are used by New Urbanists to rationalize their form-based code system in lieu of the traditional Euclidean zoning, while others discount the differences made in these arguments.

Euclidean Zoning Codes

Euclidean zoning, whose namesake derives from a Supreme Court decision dealing with "zoning-out", or the segregation of nuisance land uses during the toxic era of industrialization, is the standard type of zoning ordinance enacted in the United States. The three "dimensions" of regulation include use, bulk, and impact/performance. This form of zoning was created in an era responding to massive industrialization and the negative side effects of rapid urbanization. In the US today we undoubtedly live in a post-industrializing society, where it is more common to find a larger variety of permitted uses within a single area or zone. With this mixing of uses, parking becomes the largest constraint on a parcel's potential due to parking standards that were developed to promote auto-mobility in suburban landscapes. Nominal classifications of zones have also changed over time, re-adjusting to this mixing of zones. For example, you can easily find Mixed-Use Commercial zones, which allow for commercial retail, residential and manufacturing uses all to co-exist. Fortunately, noise and environmental regulations control the nuisance factor of mixing these uses so they do not have to be segregated in the landscape. However, these types of ordinances still use floor-area-ratios, parking ratios, set-back lines, units per acre densities, and lot coverages to determine built form and rely on negotiable

guidelines to establish the physical form that addresses the public realm. This form of zoning is proscriptive, in that it prohibits or limits certain activities. Often, these zoning conditions were written for suburban patterns of development and therefore generated auto-oriented urban fabric instead of a multi-modal one.

A city or county's zoning code is a component of their municipal ordinance. In California, cities and counties are legally required to create general plans that address the future transformation of land within their jurisdiction. The "consistency law" requires the zoning ordinance to be made consistent with the general plan zoning goals, within a reasonable period of time (Fulton 2005). This configuration essentially gives most of the legal weight to the general plan's recommendations for zoning and relies on a legal construct to ensure the actual update of the zoning ordinance; basically, if it's not being updated, someone has to sue or threaten to sue the municipality in order to move the city into compliance.[1]

Performance-based Codes

Code compliance based on specific performance criteria often addresses only a narrow scope of issues. They do not prescribe or prohibit solutions so long as they comply with measures identified in the code language. Performance-based codes frequently involve time-consuming calculations, which make them unpopular with the development community (Ben-Joseph 2005). Individualized measures like the Seattle Green Factor landscape standard and guidelines dictated by market interest, such as LEED and the Sustainable Sites Initiative are examples of recent types of performance-based standards focused on sustainable design. Even when cities codify these types of performance-based standards, such as San Francisco has adopted the LEED system into its city ordinance for all new construction, the results are difficult to perceive in urban situations because they occur on a smaller scale than greenfield development. These standards are usually associated with building permit compliance for infill sites. This is

[1] Charter cities may be exempt from these conditions.

noteworthy because most of the recent coding for sustainable and ecological design requires performance-based standards; These types of standards cost more to develop than proscriptive codes because of the upfront calculation development and testing required, so when the results are not immediately evident, the cost-benefit argument for performance-based codes becomes challenging.

"Performance zoning" and "incentive zoning" were developed in the 1960s and 1970s to promote a greater flexibility in the types of uses allowed and to incentivize developers towards specific areas and types of uses (Parolek *et al* 2008). The New Urbanists describe these types of zoning reform as 'Band-Aid' attempts at restructuring, but it should be noted that the majority of sustainable guidelines for development are based on performance standards and the New Urbanists themselves use transfer of development rights (TDR) as mitigation, which was derived from incentive zoning.

Form-based Codes

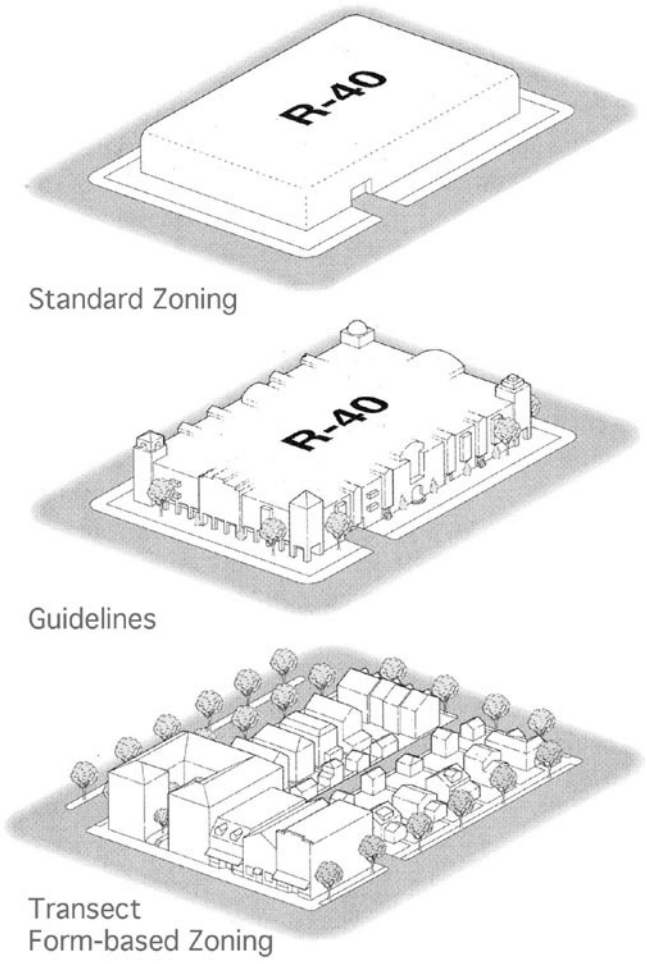
Form-based codes emerged from the New Urbanists' mission to combat sprawl. Arguably, Hausmann's regulations for Paris could be interpreted as form-based codes, but the monarchy's omnipotent power overshadows the comparison, but not the formal intentions. The development of Seaside, Florida produced the first New Urbanist form-based code, which was a building-type based code. The Transect theory model came later, along with the development of the theory as a standardized code, the Smart Code. Form-based codes are a "post-nuisance" form of coding the landscape that puts precedent on form over use. Form-based codes are prescriptive codes in that they prescribe the way built form should evolve, and how it should look. The level of prescription varies with the different types of form-based codes, which is an important nuance that often goes unnoticed.

Dan Parolek, one of the authors of the FBC guidebook for planners states, "Form Based Codes are holistic, addressing both private and public space design to create a whole place, including buildings, streets, sidewalks, parks, and parking. They regulate private development for the impact it has on the public realm," (2008, 11). The holistic approach works well for greenfield development, but how well does it apply to urban infill, especially along urban arterials? This question is addressed later on.

All form-based codes consist of three components: a regulating plan that outlines the area of influence, the specific development typologies presented in graphic and written form, and an administrative text. The level of prescription is often expressed in the development typologies, where the types can be as vague as "Neighborhood Center" or as specific as "Victorian architectural style Neighborhood Center with commercial on the ground floor and residential above, to be constructed from a list of approved materials and paint colors, etc." This range of articulation within the typologies is usually over-looked because the most popular examples of FBC have very specific architectural and building types included in their development typologies. The "vague" end of the prescription-spectrum undoubtedly allows for a greater variability in design and form.

Speaking in terms of the legal administration of Euclidean zoning, form-based codes combine the functions of a Specific Plan and the zoning amendment into a single action so the "consistency law" becomes moot once a municipality adopts the form-based code and commits to its enforcement. As mentioned above, guidelines are frequently employed to control urban form. Guidelines rely heavily on market demand, and only seem to be successful in areas where a municipality can afford to dictate the terms of development. Form-based codes are regulatory, not advisory so municipalities that commit to the process of installing a form-based code are expressing a serious intent to transform their community.

Below is an example that the New Urbanists Peter Katz and Steve Price use to explain to communities the differences between Euclidean Zoning, Guidelines, and Transect Form-based Codes (Farr 2008, 33).



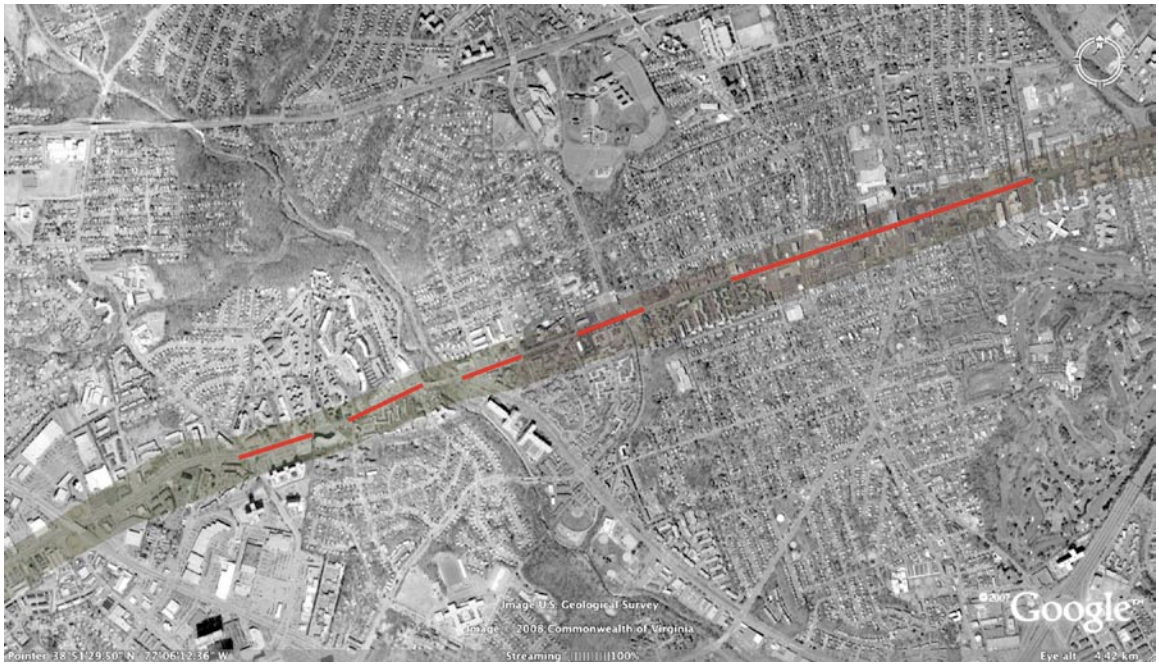
Guidelines are typically attached to conditional-use permits, or building projects that are subjected to design review committees who may impose specific requirements. If a property owner can show an unfair burden, then the requirements can be removed. An example of this type of "guideline gone wrong" is where the city of Nashville established a guideline for locating parking behind buildings. Walgreen's Pharmacy was applying for a permit to build on a corner lot and was contesting the parking condition on the permit as a hardship. Walgreen's, accustomed to suburban strip malls, said that it would find another site if it was required to put the parking in back because their customers would feel unsafe, or they would like some sort of

incentive to modify their typical plan to accommodate the city's request. This issue held up the approval of the project for more than two years and the deal fell through. If there had been an ordinance requiring or identifying the location of the parking in the rear, the Walgreen's would not have had the room to negotiate with the city and they would have been able to proceed with the development or find another site instead of being stuck in a bureaucratic impasse.

Like creating a Specific Plan, the drafting of a form-based code takes time and money, so it's only accessible to communities with a reasonable budget for planning or to those with an active and resourceful citizenry who advocate for this type of pro-active planning, such as is the case with Petaluma, California. The consensus-based community participation process of crafting a form-based code creates predictability for the types and forms of development that might occur within a community so this type of development potentially enjoys expedited permitting through administrative approval of use "by right." The consensus form-based code can subvert the development negotiation process, which includes the legal actions of initiative and referendum. In traditional Euclidean zoning, mixed-use development proposals with increased density often require a zoning amendment. In California, a zoning amendment requires legislative action, which is subject to public comment including the initiative and referendum process, which can tie up development projects for years if not permanently. Essentially, the will of the public can prevent private development from occurring on a specific parcel in their community. The consensus process, associated with form-based coding, front-loads these types of issues and circumvents the case-by-case legal disputes that are entitled to the public through the initiative and referendum process. The reduction in risk that this consensus presents for developers is a trade off that cities should carefully weigh.

The scale and scope of a form-based code is also similar to a specific plan, in that it looks, in great detail, at a limited area. Two examples of urban arterial form-based codes indicate a scope much less than five miles in length and focus on patches along the arterial, not a continuous

stretch. The one exception to this case is the city of Miami, Florida, which is undergoing a complete transformation of the entire city's code to a form-based model. Although it's only a speculative connection, it's worth noting that two of the major authors of Transect form-based code have vested interests in the city.



The Columbia Pike Form-base Code Plan Areas are marked in Red. The total image length is 3.37 miles, while the Code Area total length is 1.7 miles.

The coding of the landscape was initially instituted to control land use, bulk and impact for reasons of public health, safety and welfare. Euclidean zoning is deeply ingrained with cultural and social bias, but it did not dictate specific urban form. Form-based coding seeks to do exactly this: control the building and block forms of our landscape while, perhaps, obfuscating use.

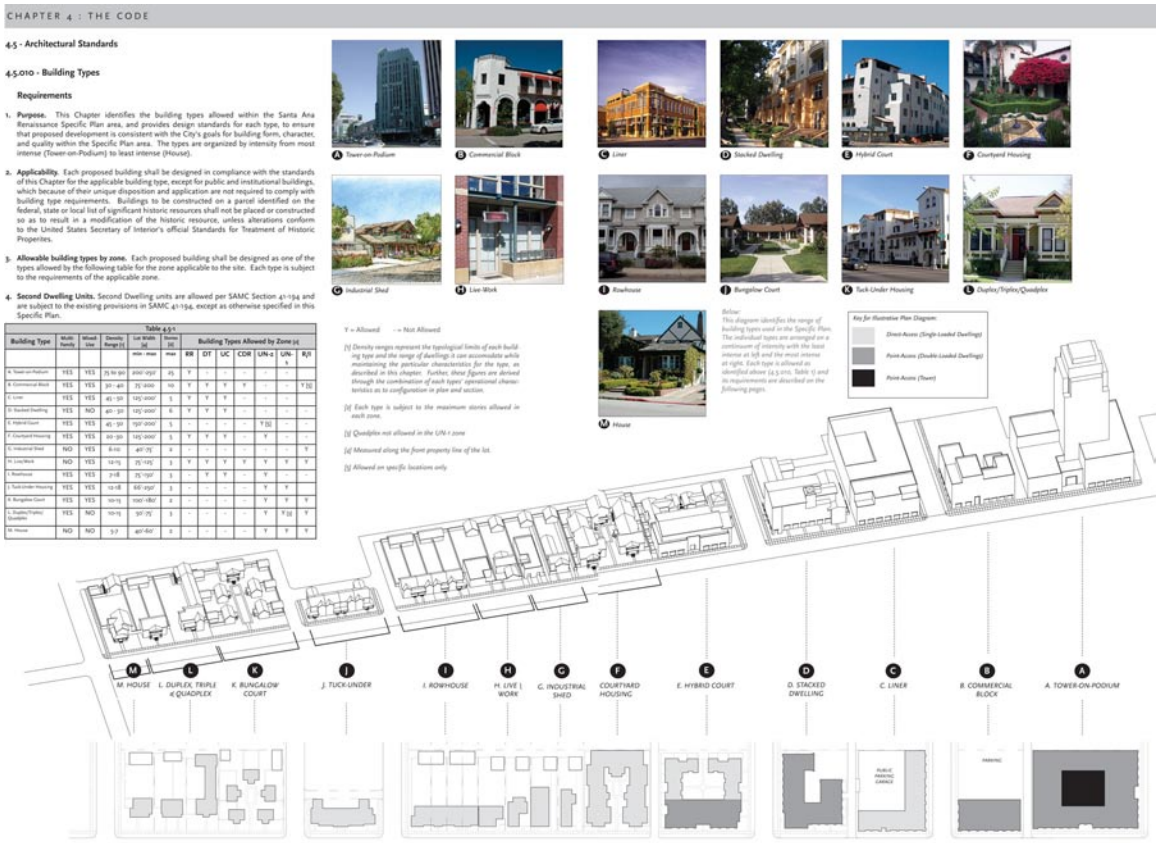
WHY FBC?

Form-based codes (FBC) are becoming more and more popular substitutes for Euclidean zoning. One day FBC may eventually replace Euclidean zoning in America, since the country has essentially stabilized into a post-industrial, post-nuisance economy that relies on technological controls and environmental regulations to account for the remaining toxic uses. The Transect theory is the most pervasive type of form-based code due to the model ordinance Smart Code, which is a fill-in-the blank format that is easy to use and the least expensive type of FBC to implement. However, Transect theory and its application in the Smart Code is heavily laden with middle class nostalgic bias, so if FBCs are going to become the primary functional form of coding our landscapes in the future, let's understand them for what they really are and choose to use them in informed ways.

Deconstructing FBC

As mentioned earlier, form-based codes began with a building-type based code, which proved to have significant onus on the shape and styles of the private realm. One could argue that the following types of codes, the street-based and frontage-based codes were crafted in direct reaction to the heavy-handed control of the private realm in the building-type code. The code pendulum returned to the center with the Transect theory, from which the universal Smart Code was drafted. The following sections contain a brief description of the different types of form-based codes. However, it is worth noting upfront New Urbanists believe that, "While each of these approaches is valid in appropriate places, the Transect is by far the most used and *most universally applicable* approach,"(Parolek 2008, 26 emphasis added).

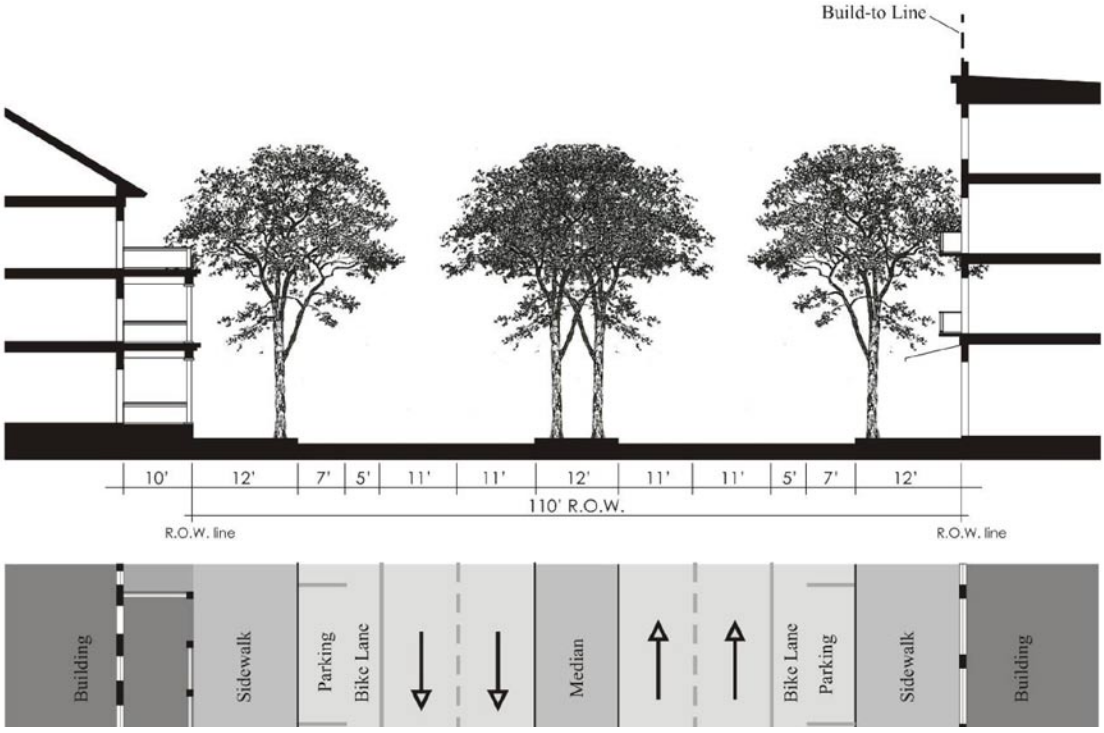
Building type-based codes use regulations for specific building types as their organizing principle and are effective for small areas with a limited scope of building types. This is the type of code that was used to develop Seaside, Florida. The Seaside code exemplifies one extreme of development control through code prescription.



Santa Ana Downtown Renaissance Specific Plan Draft 2007 (City of Santa Ana, California). Building Types and Architectural Styles are assigned to each development type in the Regulating Plan.

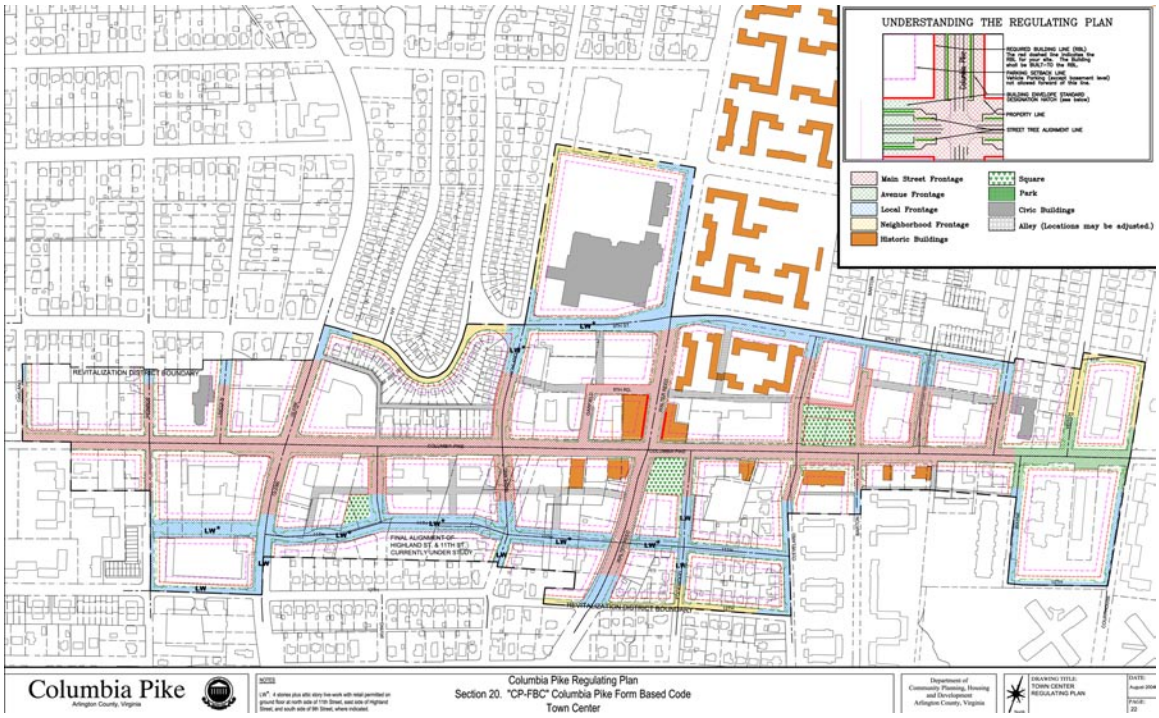
Street-based codes use the configuration of different street types to organize urban form. Buildings are referenced only to the extent they are needed to address the street frontage: height, frontage type, and build-to line. The city of Hercules, California used this type of code for the redevelopment of an industrial area into a series of residential neighborhoods, with limited commercial areas.

Central Hercules Street-based Code Regulating Plan (City of Hercules, California 2001)

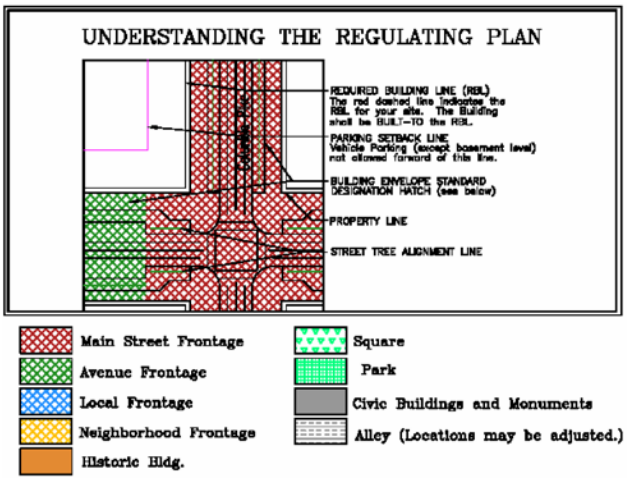


Central Hercules Street-based Code Four-lane Avenue (City of Hercules, California 2001)

Frontage-based codes are the next version in the evolution of the street-based code. This type of code only deals with the public realm and "link(s) the form and performance of a property's façade to its frontage," (Parolek et al 2008, 25). George Ferrell, a contributing author of the book Form-Based Codes notes that a frontage-based code keeps government control "in direct relation to civic responsibility" thereby allowing for a multitude of architectural solutions to occur within the private realm of the parcel (Parolek et al 2008). The Columbia Pike code and the Heart of Peoria code are both examples of frontage-based codes, which do not rely on the Transect theory.

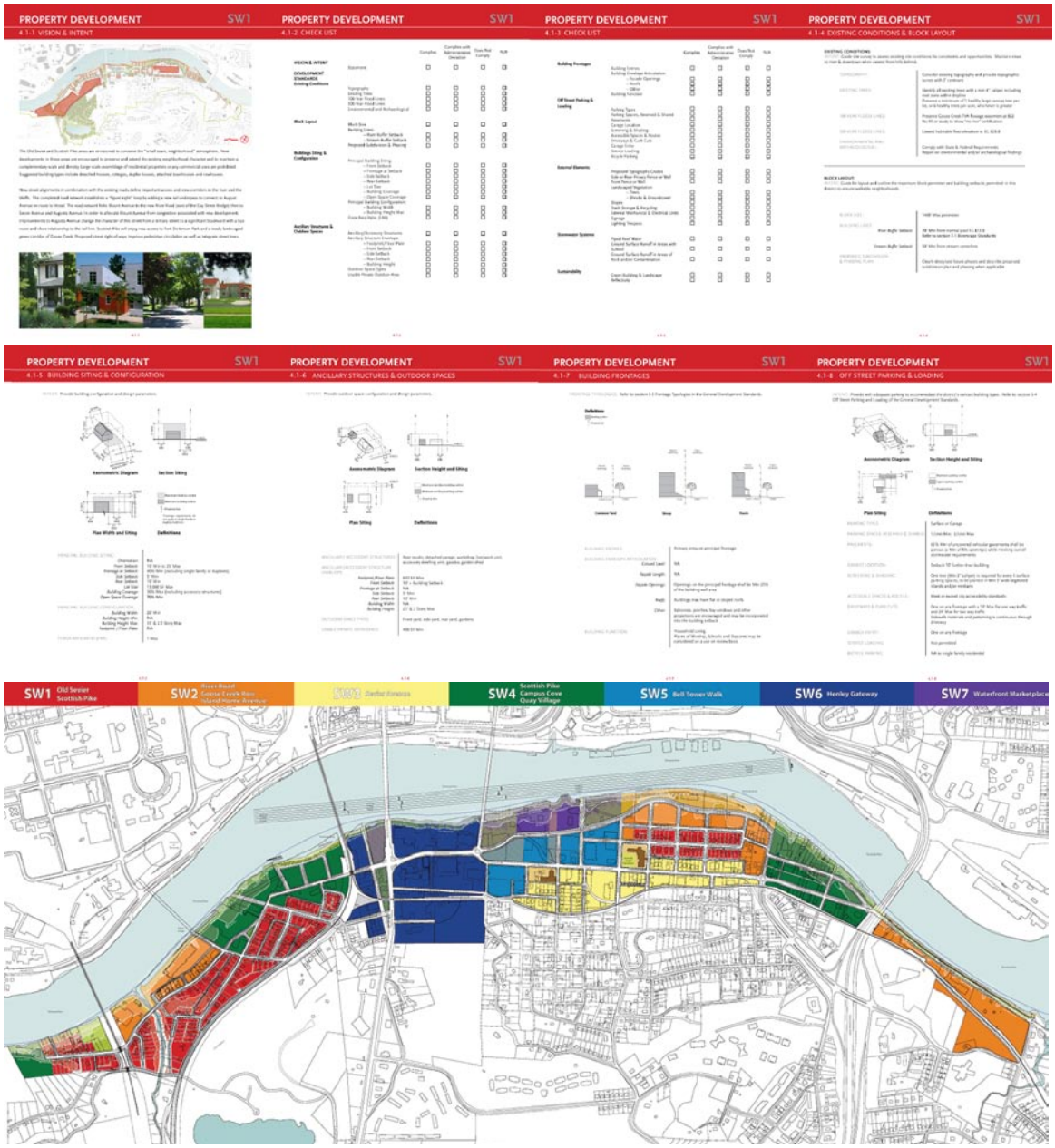


Columbia Pike Frontage-based Code Regulating Plan (City of Arlington, Virginia 2003)



Columbia Pike Frontage-bsed Code explanation diagram (City of Arlington, Virginia 2003)

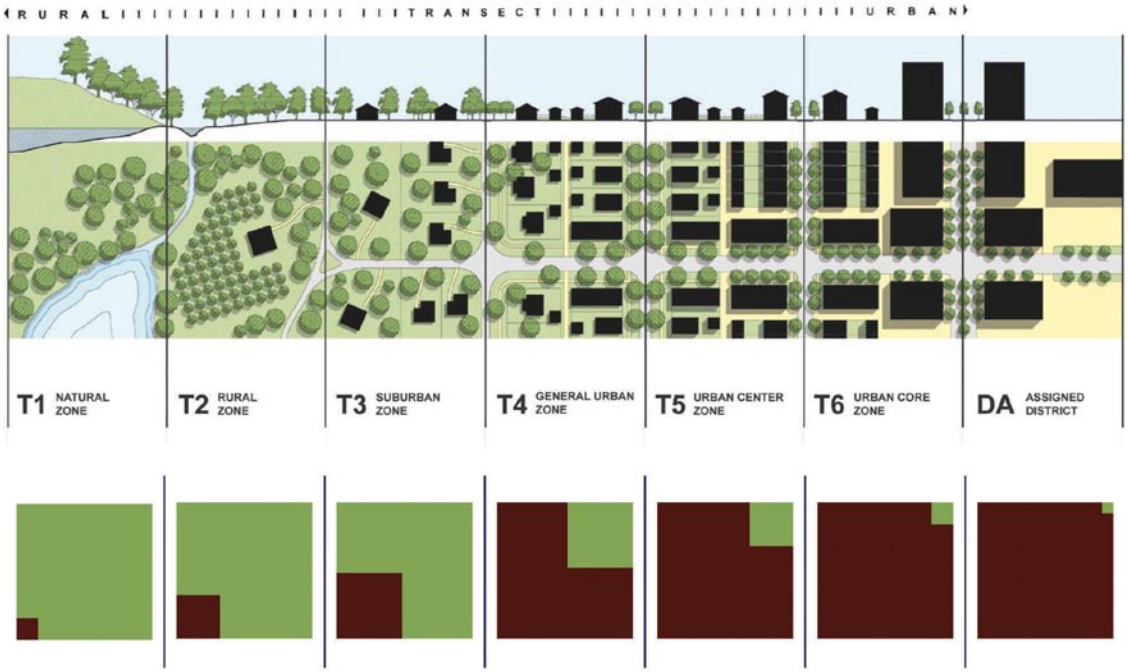
District-based codes are hybrid codes that mix the three types of codes above based at the scale of districts or neighborhoods. The hybrid code's regulating plan covers a larger landscape through district designations, which enables a greater flexibility in formal expression. Prescriptive detail would be time intensive and expensive to code at the multi-district scale, so this type of code situates at the "vague" end of the prescriptive spectrum. The Knoxvill South Waterfront form-based code is an exmaple of a district-based code.



Knoxville South Waterfront Code The South Waterfront Plan in Knoxville, Tennessee provides an example that maximizes flexibility within a form-based code and also includes performance requirements (City of Knoxville 2006).

The Transect

Transect planning claims its origins from ecology, but now represents the normative theory of New Urbanism. It prescribes the formal relationship between the public and private realms, as well it discretely lays out the "proper" spatial etiquette for the natural and built environments. As described in the book *Form-based Codes,* "The rural-to-urban transect is a means for considering and organizing the human habitat in a continuum of intensity that ranges from the most rural condition to the most urban. It provides a standardized method for differentiating between the intentions for urban form in various areas using gradual transitions rather than harsh distinctions," (Parolek *et al,* 2008, 18).



The green and brown diagram below the Transect illustration demonstrates how the roles of nature and the built environment are situated in opposition within the Transect Planning theory.

The Transect Form-based Code: The Smart Code

The Smart Code enables planners and communities in the same way that Christopher Alexander's *A Pattern Language* enabled the public to identify qualities of the built environment that they would like to reconstruct. Both are backwards-looking proposals for the future that designers do not always appreciate because they reduce the complexity of their profession to a handbook. The "model" Transect form-based code is called the Smart Code. Under Article 1 of the code, the intent for the block and the building plan states, "That the harmonious and orderly evolution of urban areas *should* be secured through form-based codes," (DPZ, 2008, SC6). Undoubtedly, the Smart Code is the easiest to apply because of its pre-packaged nature. Therefore, the bias of the Transect within the Smart Code, unless modified, could become the universal standard of urban form for the communities that adopt this code.

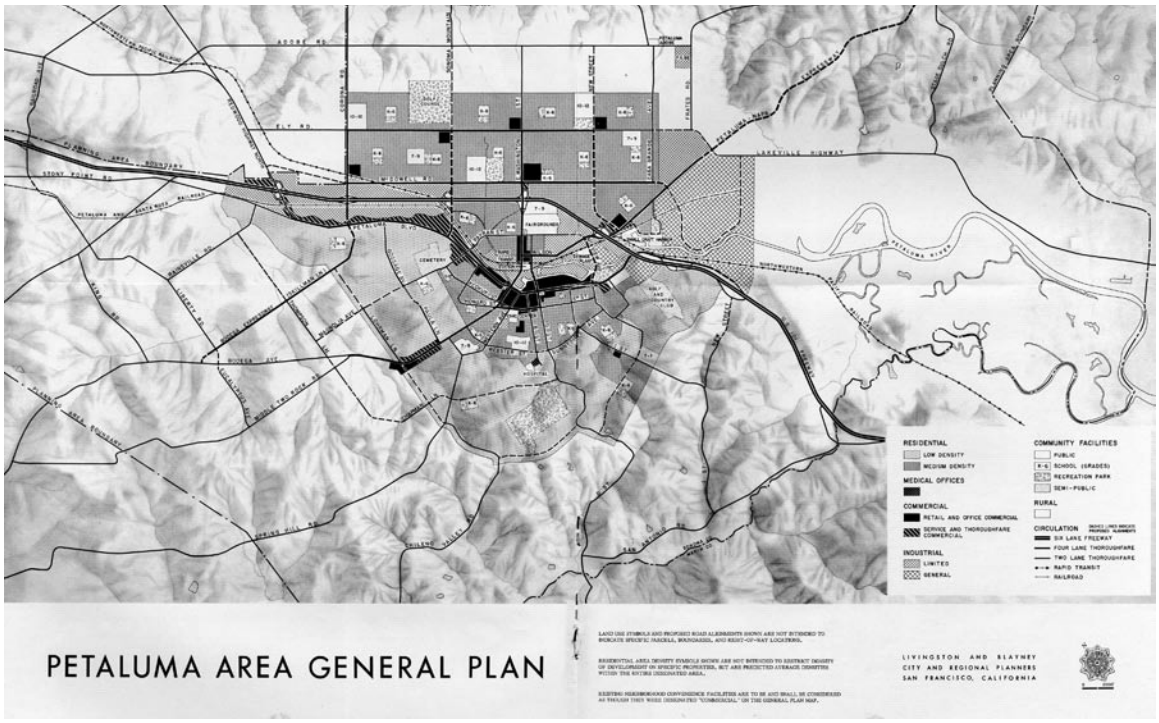
"Three new urbanist tools among many others have become the necessary ingredients for the practice of Form-Based Coding: the transect; spatial organization by neighborhood, district and corridor; and entitlement by building type," (Polyzoides as Foreword in Parolek *et al,* 2008, xv). Compare this to the three "dimensions" of Euclidean zoning: Use, Bulk, and Impact/ Performance (Fulton 2005). Perhaps there's an in-between that can accomplish the goals of sustainable development without so much of the bias of these two systems.

The true efficacy of the form-based code is its concise graphic conveyance of the complex zoning monster. The basic components of a form-based code consist of a Regulating plan that identifies the project boundary and the different realms/forms of development. In a transect-base code, these realms would be the transect zones, but in a frontage-based plan, they would represent different frontage types or based on street types in a street-based code. Other components of the code include, but are not limited to public space standards for thoroughfares and open space, building form standards, block standards, building type standards, architectural standards, landscape standards, and green building standards, which are undoubtedly performance-based

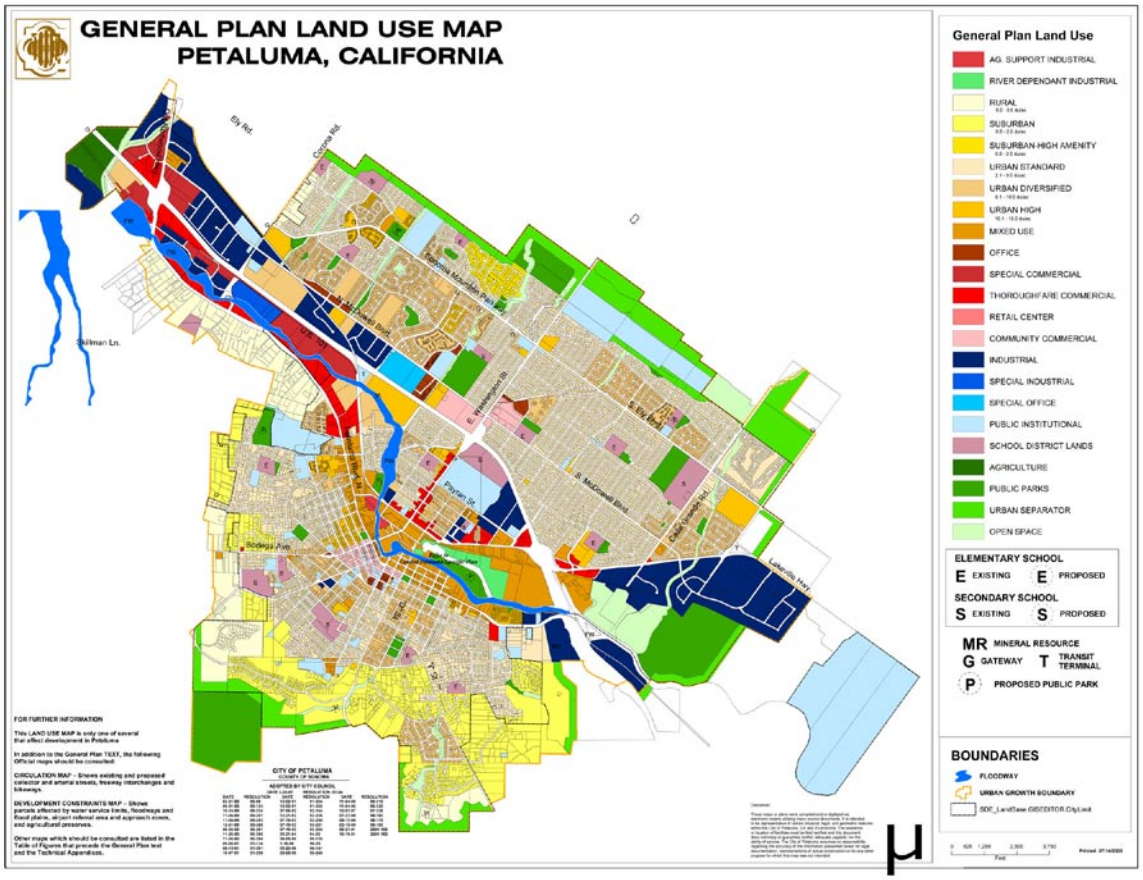
standards. The nuisance ordinances come in at the end. The administration section of the code explains the requirements for project application and review process, so that those wishing to develop within the code's jurisdiction clearly understand the process and how to read the code. A glossary, sometimes illustrated also facilitates understanding of the code and prevents misinterpretation of "terms of art."

Navigating the complex monster that is the General Plan

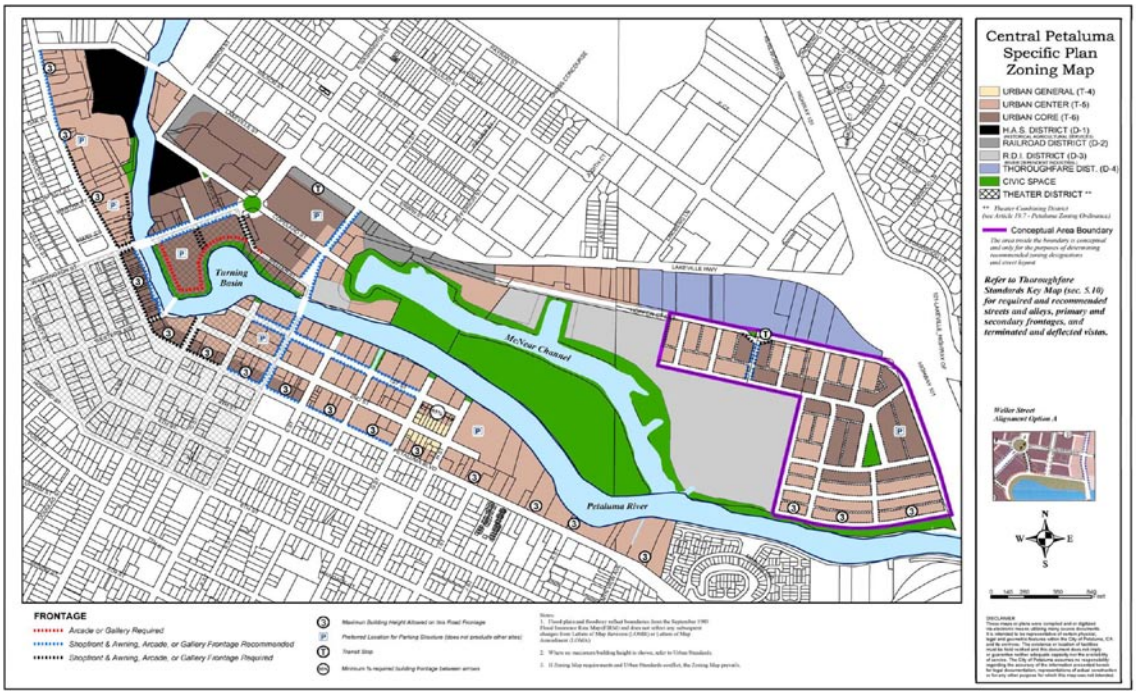
While the form-based code may create graphic clarity in conveying information on how to develop a property, the "splicing" of a form-based code into a conventional code only confuses the issue. Take, for example, the city of Petaluma. In 1962, the General Plan document for the city was a whopping fifteen pages long! By 1987 when it issued the General Plan for 1987-2005, the document totalled 148 pages long, increasing by almost one thousand percent! Despite this enormous increase, it was still a single planning document with which the zoning ordinance had to comply. In 2003, Petaluma adopted its first form-base code, the first one in California and recently just issued the final version of the form-based code for its downtown riverfront area. The General Plan document is now hundreds of pages long and is incomplete without the form-based code inserts. The areas in the general land use plan covered by the form-based code regulating plan all appear to be a single "mixed use" so the general land use plan loses the efficacy of conveying the diversity of land uses within the city.



Petaluma General Plan 1962 (City of Petaluma)



Petaluma General Plan 2003 (City of Petaluma) Can you find the Form-based code areas?



Petaluma Downtown Regulating Plan 2003 (City of Petaluma)

So, while form-based codes may facilitate permitting and community acceptance of development, they don't necessarily clarify navigation of planning documents. Perhaps this condition indicates a transition period, and will be remedied with time.

EXTRACTING FBC FROM THE TRANSECT

Response to the Transect and the Smart Code

The natural and built environments no longer need to be in opposition to one another. Nor does agricultural production need to remain a rural industry from which we are clearly disconnected as an urban population. The city is an educative landscape in which we can understand and appreciate urban/rural relationships as well as global/local relationships.

> After centuries of technological innovations serving as prosthetic devices which have combated the natural environment while alienating us from it, we have reached a point where our technology is corroborating and elaborating upon the holistic world views, a process which may itself illustrate the proposition that our universe is self-organizing on ever higher levels (Ellin 1999, 8).

So why do we need a supposedly universal, all encompassing code to prescribe the future built environment and its relationship to nature? The following sections critique specific standards of the Smart Code.

Infrastructure?

Where does the "back door" infrastructure exist in the Transect? It seems to be invisible or relegated to a special district that conveniently does not have a prescriptive relationship to any of the transect zones so as to avoid the uncomfortable environmental justice debates.

Civic Structures and Districts

Civic structures are also excluded from the prescriptive elements in the Transect landscape. Is this so they can become the outstanding buildings within the field of context? Most of the standards do not apply to districts, so essentially the code establishes a standardized context from which the districts differentiate themselves.

Land Use

Relegating all land uses, except most commercial and residential uses, to special districts and "warrants" which are the equivalent of conditional use permits, encodes a similar form of use-segregation as found in Euclidean zoning. Types of open space not identified as appropriate to individual transect zones are noted as being acceptable "by warrant," requiring legislative action to plan for a park in an urban area.

Succession

The succession plan in the Smart Code states that after twenty years, Transect Zones T3-T6 will automatically be rezoned to the next higher transect zone. This statement assumes stable economic growth, which is counter-intuitive to the current state of the global economy.

Block Size Determination

Block size for infill should be determined by an evaluation of adjacent neighborhood block structures rather than follow a prescribed maximum, as stated in the Smart Code.

Tree Species Diversity

Limiting tree species to one or two per thoroughfare standard goes against the ecological practice of growing a robust urban forest. Certainly trees are used as consistent design elements on main commercial streets to generate a perceptual corridor, but diversity of species can be gained in the neighborhoods, and to differentiate municipalities along a multi-jurisdictional urban arterial.

On Monotony and Homogeneity in the Transect

"Just as computer scientists are able to program immersive environments that look and feel natural, transect planners may be able to specify different urban intensities that look and feel appropriate to their locations," (Duany and Talen, 2002, 247). So, if it looks and feels authentic, does that mean it's really authentic? Disneyland anyone?

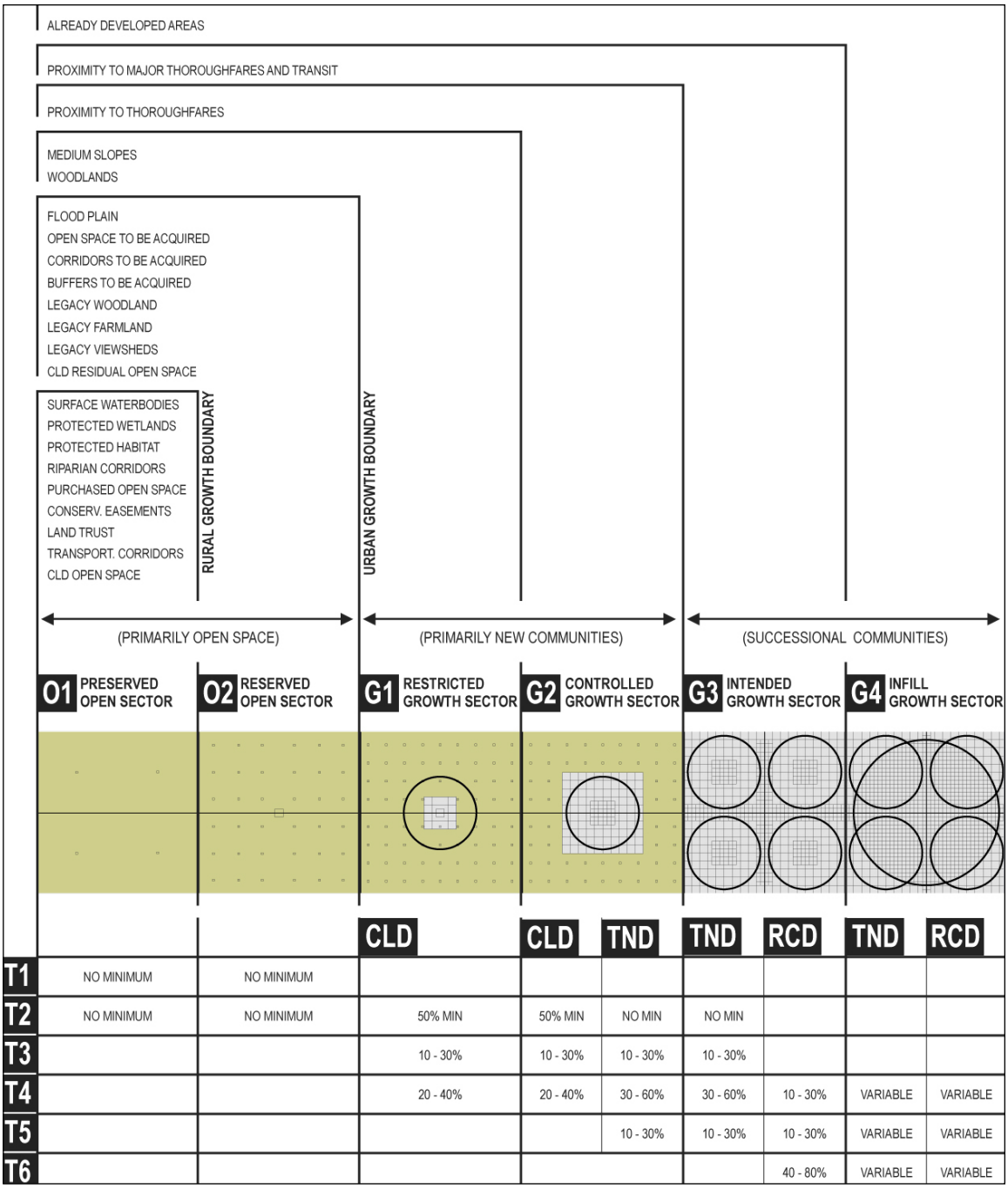
To explain this concept of "immersive environments" authors Duany and Talen give the following example: "A farmhouse would not be expected and therefore would not contribute to the immersive quality of an urban core," (Duany and Talen, 2002, 247). Are they talking about an immersive quality or a construction of complacency? The cultural landscape of the quotidian is derived from the palimpsest that history and social action have created. A farmhouse in an urban core could be a powerful testament for a community, such as the house that sits in the middle of the Oakland Children's Hospital Complex.

FBC attempts to standardize the relationships of urban forms to create smooth transitions between different use areas. It reduces conflict with this smoothing. FBC also universalizes the language in which we describe and plan for the built environment. The standardization aims for a highly contextual configuration of the standardized elements, making them somewhat customized. But the ultimate goal of this process is to create a smoothed out, perhaps seamless urban fabric. Isn't this a little bit too idyllic? Where is the opportunity for conflict? "The politics of universalism (or abstracted rights) has yielded to a politics of difference or recognition, whereby decision-making depends on context rather than on modernist binary logic" (Ellin 1999, 7). So what happens if the context is smoothed out into a continuum? How do we then know how to make decisions?

A DIFFERENT APPROACH TO THE TRANSECT

Transect Theory and the Smart Code as Applied to Urban Arterials: a quick study

The following is a theoretical design exercise that attempts to apply the Transect theory's Smart Code to a portion of San Pablo Avenue. For the purposes of this example, a Sector/Community Allocation type of G4 Regional Center Development will be used along with a linear pedestrian shed to simulate an urban arterial infill condition. Variable percentages of Transect areas T4 to T6 are prescribed for this type of "Successional Community." To demonstrate the normative prescription of the Transect theory, this example will only describe the urban form in the T4 General Urban Zone "by right" and not those permitted "by warrant" which is equivalent to a conditional use permit.



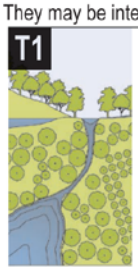
			CLD	CLD	TND	TND	RCD	TND	RCD
T1	NO MINIMUM	NO MINIMUM							
T2	NO MINIMUM	NO MINIMUM	50% MIN	50% MIN	NO MIN	NO MIN			
T3			10 - 30%	10 - 30%	10 - 30%	10 - 30%			
T4			20 - 40%	20 - 40%	30 - 60%	30 - 60%	10 - 30%	VARIABLE	VARIABLE
T5					10 - 30%	10 - 30%	10 - 30%	VARIABLE	VARIABLE
T6							40 - 80%	VARIABLE	VARIABLE

San Pablo Avenue belongs in the G4 Infill Growth Sector along the trasnect of community allocation (Smart Code 2008). This chart looks very similar to Central Place Theory diagrams.

SMARTCODE TABLE 1. TRANSECT ZONE DESCRIPTIONS

Municipality

TABLE 1: Transect Zone Descriptions. The following are general descriptions of the character of each Transect Zone. They may be interpreted as a constituent part of the Intent of this Code.



T-1 NATURAL

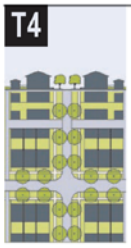
General Character:	Natural landscape with some agricultural use
Building Placement:	Not applicable
Frontage Types:	Not applicable
Typical Building Height:	Not applicable
Type of Civic Space:	Parks, Greenways

T-2 RURAL

General Character:	Primarily agricultural with woodland & wetland and scattered buildings
Building Placement:	Variable Setbacks
Frontage Types:	Not applicable
Typical Building Height:	1- to 2-Story
Type of Civic Space:	Parks, Greenways

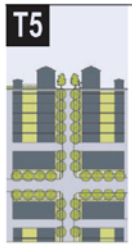
T-3 SUB-URBAN

General Character:	Lawns, and landscaped yards surrounding detached single-family houses; pedestrians occasionally
Building Placement:	Large and variable front and side yard Setbacks
Frontage Types:	Porches, fences, naturalistic tree planting
Typical Building Height:	1- to 2-Story with some 3-Story
Type of Civic Space:	Parks, Greenways



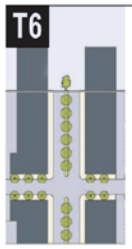
T-4 GENERAL URBAN

General Character:	Mix of Houses, Townhouses & small Apartment buildings, with scattered Commercial activity; balance between landscape and buildings; presence of pedestrians
Building Placement:	Shallow to medium front and side yard Setbacks
Frontage Types:	Porches, fences, Dooryards
Typical Building Height:	2- to 3-Story with a few taller Mixed Use buildings
Type of Civic Space:	Squares, Greens



T-5 URBAN CENTER

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
Building Placement:	Shallow Setbacks or none; buildings oriented to street defining a street wall
Frontage Types:	Stoops, Shopfronts, Galleries
Typical Building Height:	3- to 5-Story with some variation
Type of Civic Space:	Parks, Plazas and Squares, median landscaping

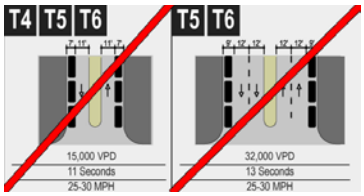


T-6 URBAN CORE

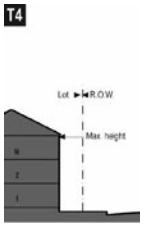
General Character:	Medium to high-Density Mixed Use buildings, entertainment, Civic and cultural uses. Attached buildings forming a continuous street wall; trees within the public right-of-way; highest pedestrian and transit activity
Building Placement:	Shallow Setbacks or none; buildings oriented to street, defining a street wall
Frontage Types:	Stoops, Dooryards, Forecourts, Shopfronts, Galleries, and Arcades
Typical Building Height:	4-plus Story with a few shorter buildings
Type of Civic Space:	Parks, Plazas and Squares; median landscaping

SmartCode Version 9.0

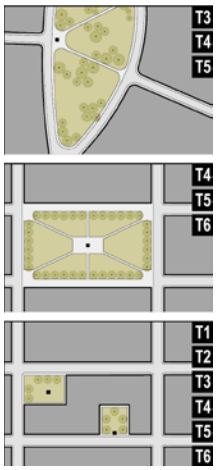
Transect zone descriptions (Smart Code 2008).



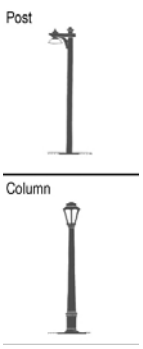
Road Types



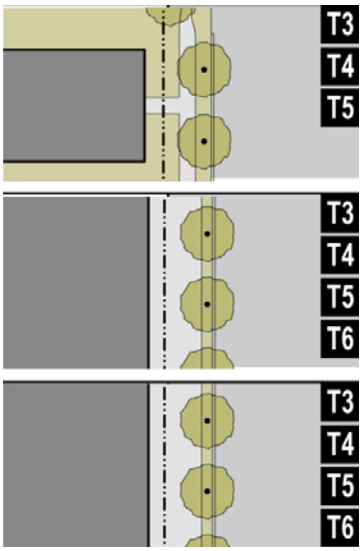
Building Configuration in relation to street frontage



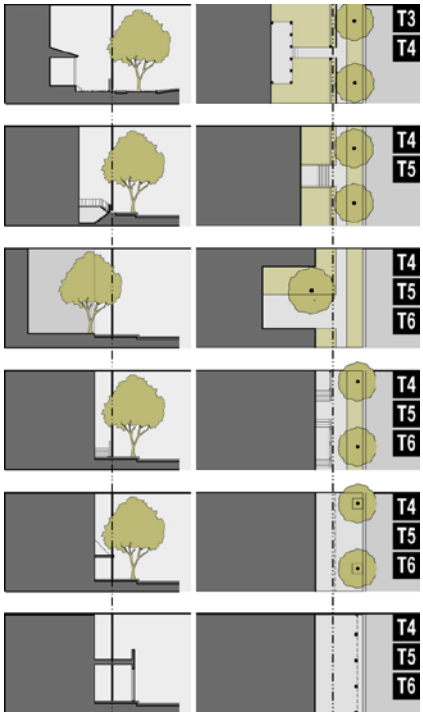
Types of Open Space



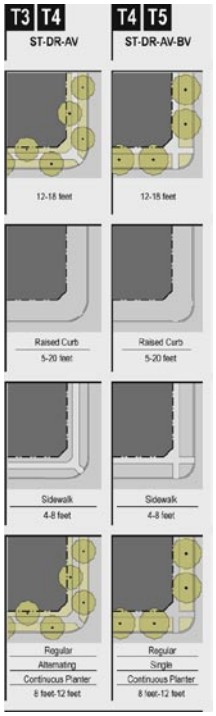
Types of Street Lights



General Frontage Types

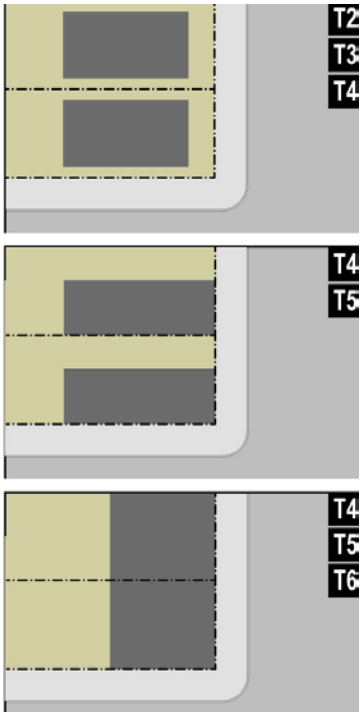


Building Frontage Options



Public Realm along Frontage

Types of Tree Forms



Building Disposition

Transect T4 design elements permitted for San Pablo Avenue. The road type for T4 does not match the configuration on San Pablo Avenue, so either the road should be changed or the development sector upgraded to T5.

These components represent forms that are prescribed for T4. The regulating plan for San Pablo Avenue would only designate the T4 condition. However, San Pablo Avenue is considered a T5 road type, so already there is a conflict in the Transect condition, when considering the holistic approach of the form-based code. Returning back to the allowable T4 development types and the Regulating Plan, there is no negotiation strategy for how the different building types in T4 interact with each other. Clearly, planners can decide which of these forms to use, but my intention for this study is to point out weaknesses of a code that claims universal applicability.

The variety of allowed tree species could reinforce a diverse urban forest with the exception that the code recommends only using one or two species per street type. San Pablo Avenue is only one street. This leads to the placement of the trees and landscape elements: trees are located in a planting strip between the sidewalk and the road. While this may be a typical tree location, the prescription of this location prevents opportunities for a more diverse or interactive streetscape where, for example, trees and parking lanes share the same space or planting areas contribute to stormwater management.

The following land uses are not permitted in T4: mixed use blocks, push carts, liquor stores, adult entertainment, live theater, movie theaters, museums, parking structures, surface parking lots, passenger terminals (BART), agricultural uses, automotive uses, hospitals, colleges, trade schools, and no industrial uses of any sort, except for electrical substations. What this means is that about 90% of the land uses existing on San Pablo Avenue are not permitted in the T4 Transect landscape. (Refer to land use map and distribution in the analysis chapter.) As for open space, only greens, squares and playgrounds are permitted in T4.

Mapping of San Pablo Avenue as described by the normative Transect theory.

In theory, the G4 Infill Growth Sector applies to the entire 25 miles of San Pablo Avenue. If linear pedestrian sheds of elongated 1/4 mile circles were drawn down its entire length, that would indicate 100 successional community plans would need to be prescribed for the nine cities and four towns along its right-of-way. Imagine undulating waves of T4 to T6 stretching into the sunset waning over the hill of the interstate overpass… The cultural landscape of the urban arterial as it has developed despite its second-class transport system classification is extremely diverse without a cohesive urban form. Would this diversity disappear or dissipate if the urban arterial transformed into a consistent gradient of urban form? Where do the skaters and the flea markets belong in the Transect landscape? What happens to the strip mall?

Transect as Descriptive Theory

Transect theory as a **normative theory** functions for greenfield development because the *tabula rasa* site condition provides the opportunity for a design to dictate the way a space should be and will be used. However, urban arterials belong to an existing urban fabric, so the prospect of applying a normative theory to a pre-existing condition implies a form of urban renewal that is no longer an acceptable practice in this country. Transect theory as a **descriptive theory** functions for urban infill because it can quickly describe the urban form and the densities that exist. However, using the Transect to describe existing conditions for the purpose of urban infill elucidates the fatal flaw of the normative theory because a transect typology of development is in fact, not normal. Transect theory assumes a mono-centric development pattern where natural and built environments are in direct opposition to one another. This is not the condition found on the urban arterial.

Another problem with the normative theory is the absence of infrastructure, other than street types, in the Transect. Infrastructure is an invisible layer within the normative theory of the Transect. However, in this thesis, the Transect is employed as a descriptive theory where infrastructure has its own Transect classification: TX. By acknowledging areas of major infrastructure rights-of-way, this classification can address how these spaces can be designed as public amenities.

TX: the infrastructure classification for the Transect as a descriptive theory. In this theory, there is no assumption of relationship between the different intensities of devlopment. The Transect types are simply used as a classification system.

The following map illustrates a section of San Pablo Avenue where each parcel has been assigned its appropriate Transect allocation. If a parcel only contains parking, it is mapped as TX. The Transect does not acknowledge the strip mall, a condition where one or two storey commercial buildings are setback on a parcel with large parking lots directly accessible from the street. This is a suburban typology and is therefore mapped as T3.

Mapping of San Pablo Avenue as described by the descriptive Transect theory.

Conclusion

The Ahwahnee Principles drafted by the Congress for New Urbanism truly describe the ideals for a sustainable society, but the coded landscape of the Transect falls short of this concept in many ways. David Harvey, in an article entitled, "The New Urbanism and the Communitarian Trap," expresses his trepidation over the New Urbanist (soon to be called Transect) theory as repeating the same mistake as the modernist theory from which it is trying to correct. "Put simply, does it not perpetuate the idea that the shaping of spatial order is or can be the foundation for a new moral and aesthetic order?"

The Transect form-based code is inappropriate for infill on urban arterials because its assumptions are in direct opposition to the existing urban form along the arterial. But this does not mean that less-biased, less-prescribed types of form-based codes could not be successfully applied to assist infill development and transformation along urban arterials. The holistic intentions of FBC to address "both private and public space design to create a whole place, including buildings, streets, sidewalks, parks, and parking," become incredibly complex when dealing with infill development along urban arterials that usually encompass complex multi-jurisdictional geographies. The urban arterial suffers from auto-mobility-based urban form, and it would take decades, if not centuries, to "smooth" it out. A "vague" form-based code can provide enough flexibility in form and design to accommodate the transformation of urban arterials from an auto-dominated space to a more-balanced multi-modal space. For urban arterials, the holistic intentions of the form-based code will have to operate in an incredibly incremental manner.

Given that the Transect and the Smart Code are the dominant types of form-based codes, it is plausible that most people use the three terms (Transect, Smart Code, FBC) interchangeably and others dismiss this type of coding as a tool to promote New Urbanist forms and theories. In its essence, a form-based code facilitates all types of urbanism, so why should the traditionalists claim rule over it?

The legal benefits of coding are far superior to guidelines, which are negotiable and fairly easily dismissed. If Haussman were alive as an American planner today, he would use codes over guidelines because he wouldn't have the power of the emperor behind his guideline enforcement; he would need the police power of the state.